CASE FILE COPY

CUMULATIVE INDEX

to

NASA Tech Briefs

1963-1969

February 1970

National Aeronautics and Space Administration
Introduction

Tech Briefs are short announcements of new technology derived from the research and development activities of the National Aeronautics and Space Administration. These briefs emphasize information considered likely to be transferrable across industrial, regional, or disciplinary lines and are issued to encourage commercial application.

This Cumulative Index to NASA Tech Briefs lists those published from 1963 through 1969. The main listing is divided into six categories: Electrical (Electronic), Physical Sciences (Energy Sources), Materials (Chemistry), Life Sciences, Mechanical, and Computer Programs.

A typical entry has these elements:

TECH BRIEF NUMBER       TITLE
B69-10012               MICROWAVE INTERFEROMETER CONTROLS CUTTING
DEPTH OF PLASTICS
HEISMAN, R. M. ICELAND, W. F. /N. AM. ROCKWELL
CORP./ DATE- FEB. 1969
M-FS-14673

Microwave interferometer system controls the cutting of plastic materials to a prescribed depth. The interferometer is mounted on a carriage with a spindle and cutting tool. A cross slide, mounted on the carriage, allows the interferometer and cutter to move toward or away from the plastic workpiece.

ORIGINATING SOURCE NUMBER

To help users locate information of value, four indexes are provided. The first is a subject index, arranged alphabetically:

SUBJECT HEADING

ABLATIVE MATERIALS

TITLE
New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
LEWIS-10576

ORIGINATING SOURCE NUMBER

TECH BRIEF NUMBER       CATEGORY
B69-10118  03

Note that in this index several routes are opened for obtaining further information. If the title seems promising, the Tech Brief number and category may be used to locate the abstract, which will be found in the main section arranged sequentially by Tech Brief number within each category. Further, the Tech Brief number can of course be used for obtaining a copy of the original Tech Brief.
The second index is a personal author index arranged alphabetically.

**AUTHOR**

**WALLACE, E. D.**

**TITLE**

Improved poppet valve provides positive damageproof seal  
M-FS-293

Weld preparation tool for pipes and tubing  
KSC-09955

**ORIGINATING SOURCE NUMBER**

**TECH BRIEF NUMBER**

**CATEGORY**

05

05

The third index relates all items by the originating source and number to the Tech Brief number and category.

**ARC-10105**

**ORIGINATING SOURCE NUMBER**

**B69-10117**

**TECH BRIEF NUMBER**

**CATEGORY**

01

The fourth index relates all items by the Tech Brief number and category to the originating source and number.

**B69-10002**  
**TECH BRIEF NUMBER**  
**CATEGORY**  
**ARG-10235**  
**ORIGINATING SOURCE NUMBER**
Availability of Tech Briefs

Subscriptions to Tech Briefs may be purchased from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151 (Attention: Code 410.4).

This index lists six categories of Tech Briefs. The Tech Briefs issued in 1970 will be divided into nine categories. The charge for an annual subscription to all nine categories is $20. Subscription rates for single categories are:

- Electronics/Electrical: $6.00
- Electronic/Electrical Systems: 3.00
- Physical Sciences: 4.00
- Materials/Chemistry: 5.00
- Life Sciences: 2.50
- Mechanics: 3.00
- Machinery, Equipment, and Tools: 2.50
- Fabrication Technology: 2.50
- Computer Programs: 3.00

A complete set of Tech Briefs issued prior to 1970 may be purchased for $110. All Tech Briefs issued in 1963 or 1964 may be purchased for $10; and all Tech Briefs issued in each year since then for $20 per year.

Requests for individual copies of Tech Briefs, and questions regarding the Tech Brief program, should be directed to:

TECHNOLOGY UTILIZATION DIVISION (Code UT),
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

This cumulative index replaces all previous issues of the Index to NASA Tech Briefs (NASA SP-5021). It was prepared by the Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Tisco, Inc.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Electrical (Electronic)</td>
<td>1</td>
</tr>
<tr>
<td>02</td>
<td>Physical Sciences (Energy Sources)</td>
<td>86</td>
</tr>
<tr>
<td>03</td>
<td>Materials (Chemistry)</td>
<td>113</td>
</tr>
<tr>
<td>04</td>
<td>Life Sciences</td>
<td>151</td>
</tr>
<tr>
<td>05</td>
<td>Mechanical</td>
<td>157</td>
</tr>
<tr>
<td>06</td>
<td>Computer Programs</td>
<td>213</td>
</tr>
<tr>
<td></td>
<td>Subject Index</td>
<td>I-1</td>
</tr>
<tr>
<td></td>
<td>Personal Author Index</td>
<td>I-745</td>
</tr>
<tr>
<td></td>
<td>Originator/Tech Brief Number Index</td>
<td>I-839</td>
</tr>
<tr>
<td></td>
<td>Tech Brief/Originator Number Index</td>
<td>I-859</td>
</tr>
</tbody>
</table>
01 ELECTRICAL (ELECTRONIC)

B63-10006
SETTING OF ANGLES ON MACHINE TOOLS SPEEDED BY MAGNETIC PROTRACTOR
VALE, L. B. DATE- MAY 1964
ARC-5
An adjustable protractor facilitates transference of angles to remote machine tools. It has a magnetic base incorporating a beam which can be adjusted until its shadow coincides with an image on the screen of a projector.

B63-10024
SOLENOID PERMITS REMOTE CONTROL OF STOP WATCH AND ASSEMBLES RESTARTING
KODAJ, C. DATE- JUN. 1964
PBC-17
Stop watch which may be remotely controlled by the use of a solenoid mechanism is described. When the solenoid is energized, the coil spring pulls the lever arm and starts the balance wheel. When it is not energized, the spring pulls the lever and stops the watch.

B63-10027
INCREASED PERFORMANCE RELIABILITY OBTAINED WITH DUAL /REDUNDANT/ OSCILLATOR SYSTEM
WELLIS, W. R. /IBM/ DATE- MAR. 1964
GSPC-36
Two crystal-controlled oscillators, each with an associated buffer stage, provide an output at a common point. The circuit design gives high reliability control of output frequency and amplitude.

B63-10033
INDIUM FOIL WITH BERYLLIA WASHER IMPROVES TRANSISTOR HEAT DISSIPATION
BILLIARD, J. JOHN, J. E. A. DATE- APR. 1964
GSPC-38
Indium foil, used as an interface material in transistor mountings, greatly reduces the thermal resistance of beryllia washers. This method improves the heat dissipation of power transistors in a vacuum environment.

B63-10091
MODIFIED FILTER PREVENTS CONDUCTION OF MICROWAVE SIGNALS ALONG HIGH-VOLTAGE POWER SUPPLY LEADS
KELLISON, B. P. DATE- MAY 1964
JPL-63
Very lossy powdered iron material, in the lining of a polyester resin, replaces the dielectric material in the short coaxial transmission line of a simple filter. The lossy material absorbs microwave signals along high voltage power supply leads.

B63-10118
STEP SWITCH WITH SIMPLE ACTUATOR PROVIDES MANY CONTACTS IN SMALL SPACE
SILVER, J. V. DATE- MAY 1964
JPL-122
To reduce the space required for a stepping switch with many contacts, a simple electromechanical actuator with a maximum number of wipers has been incorporated into a compact assembly. This small sized unit is inexpensive to fabricate.

B63-10174
MODULAR CHASSIS STEREOPHONICS PACKAGING AND INTERCONNECTING OF CIRCUIT BOARDS
ABENS, W. E. BOLINE, K. G. DATE- MAY 1964
JPL-236A
A system of modular chassis structures has simplified the design for mounting a number of printed circuit boards. This design is structurally adaptable to computer and industrial control system applications.

B63-10193
REMOVABLE PREHEATER ELEMENTS IMPROVE OXIDE INDUCTION FURNACE
LEIFOLD, E. H. DATE- JAN. 1964
JPL-288
Heat and corrosion resistant preheater elements are used in oxide induction furnaces to raise the temperature to the level for conducting electricity. These preheater elements are then removed and the induction coil energized.

B63-10227
ELECTROMECHANICALLY OPERATED CAMERA SHUTTER PROVIDES UNIFORM EXPOSURE
FOHL, A. G. DATE- MAR. 1964
JPL-357
A unidirectional camera shutter employing a solenoid and mechanical linkages permits uniform exposure and minimizes distortion of the image formed in the camera.

B63-10229
FLANGE ON MICROWAVE ANTENNA SUBREFLECTOR CUTS GROUND NOISE
POTTEN, P. D. DATE- MAY 1964
JPL-362
The subreflector of a microwave antenna has been redesigned so that its outer edge has a conical flange. This reduces noise by causing ground energy radiation to cancel out before entering the antenna.

B63-10238
SHAPED SUPERCONDUCTOR CYLINDER RETAINS INTENSE MAGNETIC FIELD
MILLIGAN, G. C. DATE- MAR. 1964
JPL-397
A superconducting cylinder is plotted from the flux lines of the magnetic field to be contained. This shaping reduces maximum flux densities and permits a stronger and more uniform magnetic field.

B63-10250
LEVEL OF SUPER-COLD LIQUIDS AUTOMATICALLY MAINTAINED BY LEVELOMETER
TENNBR, W. R. DATE- MAR. 1964
JPL-397
A levelometer system, in which the level of cryogenic liquid to be controlled affects the level of an electrolyte, automatically switches a pump on and off. A pressure sensitive diaphragm can also throw a microswitch to start or stop the pump.

B63-10255
TRANSFLUXOR CIRCUIT AMPLIFIES SENSING CURRENT FOR COMPUTER MEMORIES
MILLIGAN, G. C. DATE- MAR. 1964
JPL-406
To transfer data from the magnetic memory core to an independent core, a reliable sensing amplifier has been developed. Later the data in the independent core is transferred to the arithmetical section of the computer.

B63-10258
DOUBLET-THROW MICROWAVE DEVICE SWITCHES TWO LINES QUICKLY
CLAUS, R. STELBERG, C. T. DATE- FEB. 1964
JPL-410
By combining a single-throw microwave switch with a microwave circulator in a circuit, two input lines can be switched quickly. There is only a brief transition time when both/ or neither/ of the two lines are connected to an output line.

B63-10262
IGNITING SYSTEM FOR MERCURY LAMPS PROTECTS TRANSISTORIZED SUSTAINING SUPPLY
GUSTFRED, J. R. DATE- JUL. 1964
JPL-421
A current from a sustaining power supply flows through the mercury vapor lamp and, as there are no resistors in series with this supply, the power is efficiently used. This high voltage igniting device protects the transistorized high current, low voltage power supply.

B63-10264
NOVEL SPOON ANTENNA REDUCES SIDE LOBES, IMPROVES RADIATION PATTERN
POTTER, P. D. DATE- APR. 1964

A horn antenna, combining two propagation modes at selected power ratios, reduces side lobes, and improves the radiation characteristics. Noise and unwanted signals are considerably suppressed.

B63-10280
MEASURER ACCURATELY MEASURES FLOW OF LOW-CONDUCTIVITY FLUIDS
LOVE, S. G. DATE- MAY 1964

An electromagnetic flowmeter has been adjusted to minimize the errors inherent in measuring the flow of low conductivity fluids through use of a direct-coupled, differential cathode follower, whose grid potential is adjustable with respect to ground levels.

B63-10284
SMALL DIGITAL RECORDING HEAD HAS PARALLEL BIT CHANNELS, MINIMIZES CROSS TALK
ELLER, R. E. DATE- MAY 1964

A small digital recording head consists of closely spaced parallel wires, imbedded in a ferrite block to concentrate the magnetic flux. Parallel-recorded information bits are converted into serial bits on moving magnetic tape and cross talk is suppressed.

B63-10221
IMPROVED VARIABLE-RELUCTANCE TRANSDUCER MEASURES TRANSIENT PRESSURES
MORSON, R. W. PATTERSON, J. L. DATE- MAY 1964

A flush-diaphragm pickup and a feedback stabilized carrier amplifier are among the features incorporated into an improved variable-reluctance transducer. This low impedance device responds to steady-state as well as transient pressures.

B63-10325
OPTICS USED TO MEASURE TORQUE AT HIGH ROTATIONAL SPEEDS
KUSEK, A., JR. TIPFERMAN, M. DATE- DEC. 1964

In measuring torque transmitted by a high speed rotation shaft, an apparatus has been devised which includes a shaft, an optical system and readout mechanisms. This highly accurate method uses only optical contact with moving part and is statically calibrated.

B63-10342
RAYON HEATER FOR VACUUM FURNACES OFFERS HIGH STRUCTURAL RIGIDITY, LOW HEAT LOSS
VARY, A. DATE- MAY 1964

Some problems associated with high temperature heaters for vacuum furnaces have been eliminated by the use of shaped filaments of refractory metal. These filaments, supported in cylindrical array by ceramic spacers, operate at high voltage, low current power.

B63-10463
IMPROVED SENSOR COUNTS MICROMETEOROID PenETRATIONS
DAVISON, R. E. DATE- MAY 1964

A sensor, consisting of a thin dual-capacitor assembly with an outer film of thermal-control material, is used to detect micrometeoroid particles. A coincidence counting circuit is used to count the penetrations.

B63-10493
TWO-STAGE EMITTER FOLLOWER IS TEMPERATURE STABILIZED
SPRUCH, H. E. DATE- DEC. 1964

Two-stage temperature stabilized circuit using two transistors is described. Increase in temperature causes the base-to-emitter voltage of n-p-n transistor to become less positive whereas the base-to-emitter voltage of p-n-p transistor becomes less negative, so the temperature-induced variation in V sub 1 and V sub 2 cancel out.

B63-10508
CIRCUIT SWITCHES LATCHING RELAY IN RESPONSE TO SIGNALS OF DIFFERENT POLARITY
SMITH, L. S. DATE- MAY 1964

A circuit using one power supply and two storage capacitors, which may be separately discharged in opposite directions through a relay in response to change in polarity of a signal, is described.

B63-10511
FREQUENCY-SHIFT-KEYER CIRCUIT IMPROVES PCM CONVERSION FOR RADIO TRANSMISSION
MIESBACH, D. P. DATE- JUN. 1964

By affixing perforated magnetic recording tape to the falling end of a body, acceleration and velocity were measured. The measurement was made by allowing the tape to pass between a light source and a photoelectric sensor. Data was obtained from a readout device.

B63-10514
COMPUTER CIRCUIT WILL FIT ON SINGLE SILICON CHIP
SMITH, C. DATE- JUN. 1964

A simplified computer logic circuit of two NAND/NOT gates and three additional inputs to accomplish the count and shift function is described. The circuit has capacity for parallel read-in, counting, serial shiftout, complement input and set and reset.

B63-10529
CONNECTOR FOR THERMOCOUPLE LEADS SAVES COSTLY WIRE, MAKES RELIABLE CONNECTORS
MILLER, R. B. DATE- APR. 1964

A connector for use in the thermocouple circuits which is silver-brazed to the metal thermocouple sheath on one end and crimped over the insulation of the flexible lead on the other, assures protection against breakage and abrasion. A moisture-proof insulating material is used to encapsulate the wire junctions.

B63-10536
ROTARY SOLDERING TECHNIQUE PREVENTS OVERHEATING OF ELECTRICAL COMPONENTS
SPON- INNOVATOR NOT GIVEN /HUGHES AEROSPACE CO./
DATE- FEB. 1964
GSPC-91

By using a hot-air gun with a small orifice, heat may be localized to the soldering area of the chassis. The solder is placed around the capacitor which is inserted in the mounting hole so the ring is in contact with the chassis.  

B63-10537
SIMPLE CIRCUIT PROVIDES ADJUSTABLE VOLTAGE WITH LINEAR TEMPERATURE VARIATION
MOORE, L. W. /DATAFIC BRANCH/ DATE- MAR. 1964
JPL-WO0-029

A bridge circuit giving an adjustable output voltage that varies linearly with temperature is formed with temperature compensating diodes in one leg. A resistor voltage divider adjusts to temperature range across the bridge. The circuit is satisfactory over the temperature range of minus 20 degrees centigrade to plus 80 degrees centigrade.  

B63-10551
UNKNOWN SEISMOGRAPH LEVELS SELF, CORRECTS DIFFERENT ERRORS
SUPTON, G. /COLLEGE CITY./ DATE- MAY 1964
GSPC-120

Four-component, three-axis, feedback-controlled seismograph incorporates electronic circuitry for leveling and for monitoring the feedback signal required for servo-centering. Viscous damping of the earth-motion signal, compensation of the residual long-term drift, and centering of the seismometers are provided by automatic mechanisms.  

B63-10553
TRANSISTORIZED TRIGGER CIRCUIT IS FREQUENCY-CONTROLLABLE
SPON- INNOVATOR NOT GIVEN /DUKE UNIV./ DATE- JUN. 1964
GSPC-111

A trigger circuit employing two unijunction transistor oscillators, whose frequency is varied by changing the base-to-base voltage, provides variable electrical control of the frequency.  

B63-10554
HIGH EFFICIENT SQUARE-WAVE OSCILLATOR OPERATOR AT HIGH POWER LEVELS
SPON- INNOVATOR NOT GIVEN /DUKE UNIV./ DATE- JUN. 1964
GSPC-112

A square-wave oscillator circuit containing only simple resistor-capacitor combinations and transistors operates with high efficiency at relatively high power levels.  

B63-10555
COMPUTER DETERMINES HIGH-FREQUENCY PHASE STABILITY
NICHOLS, G. B. DATE- JUL. 1964
GSPC-113

A method of phase stability of a high frequency signal using a computer is accomplished by a circuit using two auxiliary oscillators, multipliers and low-pass filters in cross correlation with the oscillator producing the signal of interest.  

B63-10561
TINY SENSOR-TRANSMITTER CAN WITHSTAND EXTREME ACCELERATION, GIVES DIGITAL OUTPUT
MOSSINO, R. L. ROBBINSON, G. DATE- NOV. 1964
ABC-22

A self-pulsing oscillator transmits a pulsed signal. The time between pulses and the frequency are controlled by two networks. Variations in the component values in each of the two networks, due to environmental changes, appear as changes in frequency and time between pulses in the transmitted signal. Such a sensor is used to measure physical magnitudes.  

B63-10567
SIMPLE CIRCUIT CONTINUOUSLY MONITORS THERMOCOUPLE SENSOR
GREENWOOD, T. L. DATE- AUG. 1964
M-PS-61

A series circuit was developed to check the continuity in thermocouple sensors. This method may be used in monitoring continuity in any dc voltage-operated control circuit.  

B63-10572
DEVICE CALIBRATES VIBRATION TRANSDUCER AT AMPLITUDES UP TO 20 G
GREENWOOD, T. L. DATE- AUG. 1964
M-PS-86

A piezoelectric transducer provides accurate calibration of vibration amplitudes up to 20 G. The calibration system uses an electrosigraphically driven resonant beam to generate mechanical vibrations at a fixed frequency.  

B63-10579
SMALL FOAMED POLYSTYRENE SHIELD PROJECTS LOW-FREQUENCY MICROPHONES FROM WIND NOISE
TEDELL, R. L. DATE- MAY 1964
M-PS-123

A foamed polystyrene noise shield for microphones has been designed in teardrop shape to minimize air turbulence. The shield slips on and off the microphone head easily and is very effective in low-frequency sound intensity measurements.  

B63-10596
FRONT AND BACK PRINTED CIRCUIT LAYOUTS PRESENTED ON SINGLE SHEET
PERRY, J. DATE- OCT. 1964
GSPC-93

A diazo photographic process of clear plastic masters is used in reproducing front and back printed circuit layouts of differing intensity on a single sheet.  

B63-10597
PRECISION GAGE MEASURES ULTRAHIGH VACUUM LEVELS
HADDEN, J. B. SEARS, G. W. /GEN. DYN. CORP./ DATE- JUN. 1964
GSPC-119

Ionization gage in which internally generated X-rays are minimized is described. This gage permits the measurement of gas pressures in ultrahigh systems of micro-pico torr.  

B63-10599
LIQUID SWITCH IS REMOTELY OPERATED BY LOW DC VOLTAGE
MOORE, E. T. /DUKE UNIV./ DATE- MAY 1964
GSPC-120

A liquid switch which does not depend on any mechanical, gravitational, or inertial actuation is developed for use in space environments. It may be remotely operated on low dc voltage.  

B63-10600
CIRCUIT CONTROLS TRANSIENTS IN SCR INVERTERS
MOORE, E. T. WILSON, T. G. /DUKE UNIV./ DATE- JUN. 1964
GSPC-120

Elimination of starting difficulties in SCR inverters is accomplished by the addition of two taps of the output winding of the inverter. On starting or under transient loads, the two additional taps deliver power through diodes without requiring quenching of SCR currents in excess of normal starting load.  

B63-10603
MONOSTABLE CIRCUIT WITH TUNNEL DIODE HAS FAST RECOVERY
HEFFNER, F. DATE- MAY 1964
GSPC-132

A monostable multivibrator circuit using a tunnel diode makes it possible for the HSPV to exceed the performance of present multivibrators in two respects. The rise time of the output voltage is faster and the duty cycle is raised to approximately 95 percent.  

B63-10606
NEW SINTERING PROCESS ADJUSTS MAGNETIC VALUE OF FERRITE CORES
VIRAL, A. W. /IBM/ DATE- MAY 1964
GSPC-129

A two-phase sintering technique based on time and temperature permits reversible control of the
coercive threshold of sintered ferrite cores. Threshold coercivity may be controlled over a substantial range of values by selective control of the cooling rate.

B63-10609
TEMPERATURE-SENSITIVE NETWORK DRIVES ASTABLE MULTIVIBRATOR
SPOON- INNOVATOR NOT GIVEN /ECA/ DATE- OCT. 1964

Development of a simple circuit using two Zener diodes and five resistors, which provides a temperature-sensitive voltage to drive the astable multivibrator, is described.

B63-10613
CRYSTAL WAVEGUIDE WINDOW IS SEALED WITH PLASTIC FOAM
CLAESS, R. STILLE, G. C. DATE- JUN. 1964

Waveguide windows made with polystyrene preformed plastic and sealed with foamed-in-place plastic are useful in any microwave waveguide system using cryogenic cooling.

B64-10002
CIRCUIT RELIABILITY BOOSTED BY SOLDERING PINS OF DISCONNECT PLUGS TO SOCKETS
PFEBC, W. B. DATE- MAR. 1964

Where disconnect pins must be used for wiring and testing a circuit, improved system reliability is obtained by making a permanent joint between pins and sockets of the disconnect plug. After the circuit has been tested, contact points may be fused through soldering, brazing, or welding.

B64-10004
ULTRA-SENSITIVE TRANSDUCER ADVANCES MICRO-MEASUREMENT RANGE
REGALO, V. L. DATE- MAY 1964

An ultrasonic piezoelectric transducer, that converts minute mechanical forces into electrical impulses, measures the impact of micrometeoroids against space vehicles. It has uniform sensitivity over the entire target area and a high degree of stability.

B64-10007
LOW-POWER TRANSISTORIZED CIRCUIT PROVIDES STAIRCASE WAVEFORM
BRENN, G. D. DATE- JULY 1964

A low input power transistorized circuit is used to generate a staircase waveform of high step uniformity. Other characteristics are low step droop, fast transition time, and no feedback.

B64-10010
MODIFIED RF COAXIAL CONNECTOR ENDS VACUUM CHAMBER WIRING PROBLEM
WEINER, D. DATE- MAY 1964

A standard radio frequency coaxial connector is modified so that a plastic insulating sleeve can be mounted in the wall of a vacuum chamber. This eliminates ground loops and interference from cable connections.

B64-10016
COMPACT COAXIAL CONNECTOR FOR PRINTED CIRCUIT ADDS RELIABILITY
BROCK, T. Z. DATE- MAY 1964

Soldering and welding techniques are used to connect a coaxial cable to a printed circuit board. This device aids reliability control of equipment as standard connectors are bulky and heavy.

B64-10017
BLOCKING OSCILLATOR USES LOW-TRIGGERING VOLTAGE
SPOON- INNOVATOR NOT GIVEN /ECA/ DATE- DEC. 1964

To prevent premature triggering of a blocking oscillator, a smaller magnetic core is added to the conventional oscillator circuit. This serves as a second blocking oscillator and has a lower triggering threshold.

B64-10019
NEW METHOD USED TO FABRICATE GALLIUM ARSENIDE PHOTOVOLTAIC DEVICE
EILLIS, G. S. /ECA/ DATE- JUN. 1964

WO-062
A new method for fabricating photocells, or solar cells, substitutes copper iodide for zinc diffusion. This produces a p-type surface layer and a photovoltaic junction.

B64-10024
EFFICIENT CIRCUIT TRIGGERS HIGH-CURRENT, HIGH-VOLTAGE PULSES
GREEN, E. D. /WESTINGHOUSE ELEC. CORP./ DATE- JUN. 1964

MSC-18
Modified circuit uses diodes to effectively disconnect the charging resistors from the circuit during the discharge cycle. Result is an efficient parallel charging, high voltage pulse modulator with low voltage rating of components.

B64-10042
COMPUTER SENSES DEPLETION OF LUBRICANT IN JOURNAL BEARINGS
ROSS, A. DATE- DEC. 1964

LWIS-97
An ohmmeter is used as a sensor to determine when the lubricating oil in a high speed journal bearing becomes depleted.

B64-10064
DIGITAL LOGIC ELEMENTS PROVIDE ADDITIONAL FUNCTIONS FROM ANALOG INPUT
MATTY, T. C. /MCDONnell AIRCRAFT CORP./ DATE- JUN. 1964

MCC-64
A dc analog input can be used to produce an integrator with high dynamic range or a position servo with inherent stability. This is done by a switching system using digital-to-analog converters and an electronic switch to obtain the desired outputs.

B64-10065
CONTINUITY TESTER SCREENS OUT FAULTY SOCKET CONNECTIONS
GOLDING, G. DATE- MAY 1964

JPL-596
A device, used before and after assembly, tests the continuity of an electrical circuit through each pin and socket of multiple connector sockets. Electrically insulated except at the contact area, a test probe is dimensioned to make contact only in properly formed sockets.

B64-10080
IMPROVED INSERTION-LOSS TESTER
FINNIE, C. J. SCBUSTER, D. DATE- JUN. 1964

JPL-358
As improved test method accurately measures the insertion loss of RF components while avoiding amplifier drift. Currents are balanced across a bridge transformer with shorted probes and then with each component to be tested. Differences in adjustments indicate the loss.

B64-10109
ANALOG DEVICE SIMULATES PHYSIOLOGICAL WAVEFORMS
SHYKRA, D. M. DATE- NOV. 1964

MSC-51
An analog physiological simulator generates representative waveforms over a wide range of physiological conditions. Direct comparison of these waveforms with those from telemetry inputs permits quick detection of signal parameter degradation.

B64-10114
INSTRUMENT CRITICAL FOR TWO-STEP VOLTAGE DISCHARGE CHARACTERISTICS OF SILICON ZINC CELLS
CHESTER, A. M. /ELECR STORAGE BATTERY CO./ DATE- JUN. 1964
In silver-zinc cells, an auxiliary silver electrode is electrically connected to the positive terminal only during discharge. This eliminates the two-step discharge characteristic of such cells.

A simple transducer is used to measure low rates of convective and conductive heat transfer from a fluid to a cooled surface under steady-state conditions. Temperature drop is measured by two thermocouples embedded in a rod of low thermal conductivity.

A novel circuit combines pulse stretcher with N02 gate.

A simple emission-testing circuit for high-power vacuum tubes.

A simple transistor circuit uses a thermistor to change the vidicon target potential in relation to temperature differences.

A subminiature biotelemetry transmitter permits the measurement of biopotential response in humans or animals to controlled environmental stimuli without discomfort while engaged in normal activities.
cardiometer with solid state circuit elements has been developed. This computes the beat every 15 seconds and visually presents the data on numerical display tubes.

B64-10259
PNEUMOTACHOMETER COUNTS RESPIRATION RATE OF HUMAN SUBJECT
OTTS, J. W. DATE- NOV. 1964
To monitor breaths per minute, two rate-to-analog converters are alternately used to read and count the respiratory rate from an impedance pneumograph sequentially displayed numerically on electroluminescent matrices.

B64-10271
IMPROVED TECHNIQUE FOR LOCALIZING ELECTROPOLISHING FEATURES NOVEL NOZZLES
LEVERONE, P. T. /Positive-Temperature-Coefficient/ DATE- NOV. 1964
An improved electropolishing is accomplished by use of an electrolyte film, which is evenly distributed by an insulated nozzle designed to match the contour of the workpiece to be treated. The workpiece is connected to the positive terminal of a generator and the nozzle to the negative terminal.

B64-10280
SERVO SYSTEM FACILITATES PHOTOELASTIC STRAIN MEASUREMENTS ON RESINS
LEVERONE, E. M. DATE- NOV. 1964
To facilitate photoelastic measurements of the strains developed by stresses applied to birefringent resins, a servomechanism is employed.

B64-10281
PTC THERMISTOR PROTECTS MULTILOAD POWER SUPPLIES
LEVERONE, B. MANDELL, B. DATE- NOV. 1964
A PTC /Positive-Temperature-Coefficient/ thermistor placed in series with each branch load of a multiload circuit prevents power loss in parallel branches. This thermistor may be used in any circuit requiring current limiting or intended overload resetting.

B64-10283
MOUNTING FOR DIODES PROVIDES EFFICIENT HEAT SINK
M-PS-197
Efficient heat sink is provided by soldering diodes to metal support bars which are brazed to a ceramic base. Electrical connections between diodes on adjacent bars are made flexible by metal strips which aid in heat dissipation.

B64-10299
RADIATION-DETECTOR OPTICAL-IMAGING DEVICE IS OF SIMPLIFIED CONSTRUCTION
-spont- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC./ DATE- JAN. 1965
A simplified radiation detector was designed which employs an activated continuous front surface consisting of either the diffused or barrier type of semiconducting material with a grid structure on the nonactivated side of the detector. Its form may be either a rectangular coordinate or a polar coordinate system.

B64-10305
TRANSISTORIZED CONVERTER PROVIDES NONDISSIPATIVE REGULATION
-spont- INNOVATOR NOT GIVEN /DUKE UNIV./ DATE- DEC. 1964
A transistorized regulator converter efficiently converts fluctuating input voltages to a constant output voltage, avoiding the use of saturable reactors. It is nondissipative in operation and functions in an open loop through variable duty cycles.

B64-10309
TRANSISTORIZED CONVERTER PROVIDES NONDISSIPATIVE REGULATION
-spont- INNOVATOR NOT GIVEN /DUKE UNIV./ DATE- DEC. 1964
A transistorized regulator converter efficiently converts fluctuating input voltages to a constant output voltage, avoiding the use of saturable reactors. It is nondissipative in operation and functions in an open loop through variable duty cycles.

B64-10320
VOLTAGE GENERATOR SWEEPS OSCILLATOR FREQUENCY LINEARLY WITH TIME
-spont- INNOVATOR NOT GIVEN /MELPAR, INC./ DATE- JAN. 1965
A voltage-tuned oscillator circuit is described which sweeps the output signal frequency linearly exponentially with time.

B64-10330
ECONOMICAL FABRICATION PROCESS PRODUCES HIGH QUALITY JUNCTION TRANSISTORS
-spont- INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ DATE- DEC. 1964
A convenient, three-step fabrication process, with a p-type layer of gallium arsenide vapor deposited on a starting wafer of germanium, is used to produce heterojunction-homojunction p-n-p transistors. These are of high quality with good injection efficiency and low capacitance.

B65-10001
CIRCUIT CONVERTS AM SIGNALS TO FM FOR MAGNETIC RECORDING
-spont- INNOVATOR NOT GIVEN /RCA/ DATE- JAN. 1965
Convert AM signals to FM by relaxation-type voltage-controlled oscillator /VCO/. This circuit may be used in radar, telemetry, and test equipment.

B65-10002
TUNNEL-DIODE CIRCUIT FEATURES ZERO-LEVEL CLIPPING
-spont- INNOVATOR NOT GIVEN /RCA/ DATE- JAN. 1965
-spont- INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ DATE- DEC. 1964
A circuit, in a wide bandwidth mode, overcomes transient-producing capacitance switching by maintaining an equivalent voltage at all times. Bandwidth switching may be done at any time, and integrity of the loop lock is maintained.

B65-10005
COMPUTER MODIFICATION REDUCES TIME OF PERFORMING ITERATIVE DIVISION
-spont- INNOVATOR NOT GIVEN /IBM/ DATE- FEB. 1965
Time reduction in performing iterative division results from using a serial-by-parallel divider employing a look-ahead feature that predetermines the sign relationships of several iterations before the computer cycle begins. This method can be employed in any data handling system performing high-speed division.

B65-10266
MODIFICATION INCREASES LIGHT OUTPUT OF INJECTION-LUMINESCENT DIODES
-spont- INNOVATOR NOT GIVEN /RCA/ DATE- JAN. 1965
See also B64-10263
-spont- INNOVATOR NOT GIVEN /BARSHALL/ DATE- DEC. 1964
Modifying a section of the electrode area from the N-face of injection-luminescent diodes for injection-luminescent diodes increases light output. Light is emitted from the N-face as well as from the four edges of the diode.
B65-10010
INEXPENSIVE, STABLE CIRCUIT MEASURES HEART
DATE
VICK, R. A. DATE- JAN. 1965
MSC-95
Inexpensive transistorized circuit provides
reliable analog indications of heart rate in
response to preamplified electrocardiograph signal
applied to its input.

B65-10011
CIRCUIT IMPROVEMENT PRODUCES NONSTABLE
MULTIVIBRATOR WITH LOAD-CARRYING CAPABILITY
DATE
GOLDMAN, N. E. SCHELLHART, J. C. DATE- JAN. 1965
GSFC-304
Improved circuit provides greater reliability and
load-carrying capabilities for monostable
multivibrator.

B65-10012
HELICAL COAXIAL-RESONATOR MAKES EXCELLENT
RF FILTER
DATE
SPON- INNOVATOR NOT GIVEN /EC/ DATE- JAN. 1965
GSFC-243
Isolation of closely spaced transmitting and
receiving frequencies of an antenna without
insertion loss by filtering the receiver input is
accomplished by an inner conductor with two
winding helices and an outer conductor of
aluminum. A tuning slug is at either end of the
inner conductor form.

B65-10013
SIXTEN DIODE FUNCTION GENERATOR REQUIRES NO
EXTERNAL REFERENCE VOLTAGE
DATE
BOLTE, G. BURN, R. DATE- JAN. 1965
JPL-0031
Function generator utilizing parallel impedance
networks with zener diodes produces functions
which are discontinuous in slope. The function
generated appears at the output of the parallel
network in the form of a voltage varying in time.

B65-10016
CARBON ARC IGNITION IMPROVED BY SIMPLE
AUXILIARY CIRCUIT
DATE
SPON- INNOVATOR NOT GIVEN /EC/ DATE- JAN. 1965
MSC-103
High voltage, low current pulse in series with arc
power supply efficiently ignites a carbon arc.
The easily and economically produced circuit is
useful with arc burners and searchlights and with
plasma jets.

B65-10023
MINIATURE STRESS TRANSDUCER HAS DIRECTIONAL
CAPABILITY
DATE
SAD SIGUEL, A. SILVER, R. H. DATE- JAN. 1965
JPL-591
Miniature stress transducer uses a semiconductive
piezoresistive element to detect stress only on
specific axes. Measurement of internal mass
stress is based on the compressive deformation of
the transducer. The device is applicable to
constant stress monitoring in building and dam
structural parts.

B65-10025
LOGIC REDUNDANCY IMPROVES DIGITAL SYSTEM
RELIABILITY
DATE
SPON- INNOVATOR NOT GIVEN /STANFORD RES. INST./
JPL-SC-069
Reducant-channel system automatically corrects
any single error in a set of three binary signal
channels. This system is especially adaptable to
digital computers where data is transmitted in parallel
channels.

B65-10026
STEPPING MOTOR DRIVE CIRCUIT DESIGNED FOR LOW
POWER DRIVE
DATE
SPON- INNOVATOR NOT GIVEN /HARVARD COLL./ DATE-
FEB. 1965
GSFC-198
High power drain is eliminated by a circuit
consisting of a divide-by-two stage, two identical
inputs, a wiggle amplifier, driver, and power
output stages to drive the step motor.

B65-10028
TRANSISTOR VOLTAGE COMPARATOR PERFORMS OWN
SENSING
DATE
CLIFF, R. A. DATE- FEB. 1965
GSFC-228
Detection of the highest voltage input among a
group of varying voltage inputs is accomplished by a
transistorized voltage comparison circuit. The
collector circuits of the transistors perform the
sensing function. Input voltage levels are
governed by the transistors.

B65-10030
LIBRARY OF DOCUMENTS COMPRESSED INTO LAP-HELD
DISPLAY KIT
DATE
SPON- INNOVATOR NOT GIVEN /HATL. CASH REGISTER
CO./ DATE- FEB. 1965
MSC-123
A lightweight Apollo flight kit containing
microfilmed data is packaged in a hinged box with
a viewing screen cover, and a writing surface.
It is secured to the user's lap.

B65-10033
PHOTOELECTRIC SEMICONDUCTOR SWITCH OPERATES
WITH LOW LEVEL INPUTS
DATE
SPON- INNOVATOR NOT GIVEN /IBM/ DATE- FEB. 1965
JPL-SC-068
Photoelectric semiconductor switch with a buried
emitter region avoids high-leakage currents across the
emitter. It exhibits high emitter to
collector transport efficiency beta at low signal
levels.

B65-10041
PULSE HEIGHT ANALYZER OPERATES AT HIGH
REPETITION RATES, LOW POWER
DATE
SPON- INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS.,
INC./ DATE- FEB. 1965
W00-046
Simple multistage transistor gating circuit
provides a pulse height analyzer that operates at
high repetition rates and low power. The circuit
compares the input pulse heights to discrete
reference voltages.

B65-10045
THERMISTOR CONNECTOR ASSEMBLY INCREASES
ACCURACY OF MEASUREMENTS
DATE
SPON- INNOVATOR NOT GIVEN /ATLANTIC RES. CORP./
DATE- FEB. 1965
LANGLEY-62
Isolation of the thermistor from spurious heat
transfer for accurately measuring ambient air
Temperatures is accomplished by a mounting
consisting of a transparent plastic film bonded to a
U-shaped phenolic board with depositions of
aluminum on each face and upper edge, and a
variable capacitor for fine tuning.

B65-10047
CIRCUIT DETECTS ERRORS IN ADDRESS
DATE
BEG, R. DATE- FEB. 1965
M-PS-234
Whenever any error producing conditions arise in
an address, the circuit detects them and
signals the presence of the error to the computer
equipment and memory storage units.

B65-10050
MICROPARTICLE IMPACT SENSOR MEASURES ENERGY
DATE
SPON- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC.
CORP./ DATE- FEB. 1965
PL-10050
Hulling pyrometer uses Kerr cell shutter for
fast response
01 ELECTRICAL (ELECTRONIC)

B65-10010
Conventional pyrometer, in which Kerr cell replaces mechanical shutter and polarizers are added to filters, yields rapid shutter response.

B65-10051
Metall SHEATH IMPROVES THERMOCOUPLE USING GRAPHITE IN ONE LEG
SUPR- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC.
CORP./ DATE- MAR. 1965
B65-10042
Thermocouple using graphite in one leg is sealed in a moistureproof metal sheath which permits high heat output and good mechanical strength.

B65-10052
ZENER DIODE IS STARTER FOR TRANSISTOR REGULATED POWER SUPPLY
SUPR- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC.
CORP./ DATE- MAR. 1965
B65-10053
Zener diode in parallel with a silicon transistor supplies the starting current for a transistor-regulated power supply.

B65-10054
PULSE GENERATOR PERMITS NONDESTRUCTIVE TESTING OF COMPONENT BREAKDOWN VOLTAGE
SUPR- INNOVATOR NOT GIVEN /HODGE/P/躅EE/ DATE- MAR. 1965
B65-10058
Nondestructive testing of the breakdown voltage of transistors and other electronic components is achieved by a simple relay circuit. The circuit operates by applying low-energy, high-voltage microsecond pulses to the components under test.

B65-10055
FEED-THROUGH HAS POLYTERMAL FEATURE
SANDERS, L. H. DATE- MAR. 1965
B65-10059
Feed-through connector with individual solders pair in the polyterminal side provides good connections with small amounts of solder and permits visual inspection of boards. Polyterminal also provides a friction mechanical bond to position conductors prior to soldering.

B65-10061
SIMPLE CONTROL DEVICE SENSES SOLAR POSITION
LOMBORG, J. O. RANDALL, J. C. DATE- MAR. 1965
JPL-618
The amount of solar radiation incident on a specially coated bimetallic strip is simply and reliably controlled by a light valve. This device is valuable for systems requiring temperature regulation.

B65-10062
PULSED PLASMA ACCELERATOR OPERATES REPEITIVELY WITHOUT COMPLEX CONTROLS
SABOL, A. P. DATE- MAR. 1965
LANGLEY-48
Self-repeating pulsed plasma accelerator operates with a wide variety of gases over a large range of pressures without complex control equipment. The accelerator combines a circular channel with a tangential channel at the entrance way of a high-velocity gas.

B65-10066
FUEL CELL SERVES AS OXYGEN LEVEL DETECTOR
SUPR- INNOVATOR NOT GIVEN /GE/ DATE- MAR. 1965
JPL-SC-072
Monitoring the oxygen level in the air is accomplished by a fuel cell detector whose voltage output is proportional to the partial pressure of oxygen in the sampled gas. The relationship between output voltage and partial pressure of oxygen can be calibrated.

B65-10067
SENSITIVE LEVEL SENSOR MADE WITH SPIRIT LEVEL GIVES ELECTRICAL OUTPUT
BRYANT, E. L. DATE- MAR. 1965
LANGLEY-49
Sensor incorporating a circular spirit level, electrical lamp and two pairs of photocells, provides an electrical indication of flat surface level deviation.

B65-10068
AUTOMATIC THERMAL SWITCH ACCELERATES COOLING-DOWN OF CRYOGENIC SYSTEM
WEBER, H. R. DATE- MAR. 1965
JPL-55
Automatic switch uses short stainless steel tube with copper heat sinks to accelerate helium gas cooling and provides good thermal conductivity and good thermal insulation.

B65-10069
FEEDBACK OSCILLATOR FUNCTIONS AS LOW-LEVEL PULSE STRETCHER
SUPR- INNOVATOR NOT GIVEN /SPERRY RAND CORP./ DATE- MAR. 1965
GSFC-74
Low trigger pulses of the pulse stretcher circuit are obtained by forward biasing the transistor oscillator. The loop gain is kept below unity and prevents free-running oscillation. Two parallel feedback loops improve the stretching capabilities.

B65-10072
SYNCHRONIZED PULSE GENERATOR NEEDS NO EXTERNAL POWER
CARDO, C. A. JR. DATE- MAR. 1965
GSFC-574
Simple circuit with high input and low output impedance generates a fast rise-time pulse synchronized with an input pulse of slower rise and fall times. Circuit requires no external power.

B65-10073
SYSTEM MEASURES ANGULAR DISPLACEMENT WITHOUT CONTACT
DAVIS, W. T. DATE- MAR. 1965
LANGLEY-46
Optic system coupled to an electronic detection and measuring system converts angular movement of reflected light to a direct readout, without any direct contact with the object.

B65-10076
LIGHT-SENSITIVE POTentiOMETER MEASURES PRODUCT OF TWO VARIABLES
BAUR, G. C. DATE- MAR. 1965
GSFC-76
The output voltage from a photoconductive potentiometer circuit using galvanometer mirror reflecting the light beam is directly proportional to the product of the input voltage.
B65-10079
PHOTORELCTRIC SENSOR OUTPUT CONTROLLED BY
EYEBALL MOVEMENTS
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
M-P-274
The difference between the infrared absorption of the iris and infrared reflectivity of the eyeball controls the operation of a device consisting of an infrared source and amplifier, a cadmium selenide infrared sensor, and an infrared filter.

B65-10080
PHASE DETECTOR CIRCUIT SYNTHESIZES OWN
REFERENCE SIGNAL
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
I-PS-247
Circuit with isolation amplifier connected to a frequency multiplier and synchronous phase detector synthesizes the phase reference signal from the phase modulated input signal.

B65-10085
TRANSDUCER SENSES DISPLACEMENTS OF PANELS
SUBJECTED TO VIBRATION
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
ARC-37
Inductive vibration sensor measures the surface displacement of nonferrous metal panels subjected to vibration or flutter. This transducer does not make any physical contact with the test panel when measuring.

B65-10086
SIMPLE CIRCUIT FUNCTIONS AS FREQUENCY
DISCRIMINATOR FOR FPM SIGNALS
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
I-PS-247
This discriminator can be used as a constant current integrator in such circuits as linear sweep and time delay.

B65-10087
APPARATUS MEASURES SWELLING OF MEMBRANES IN
ELECTROCHEMICAL CELLS
SPON- INNOVATOR NOT GIVEN /AM. OPT. CO./ DATE- MAR. 1965
GSFC-280
Apparatus consisting of a pressure plate unit, four springs of known spring constant and a micrometer measures the swelling and force exerted by the polyether membranes of alkaline electrochemical cells.

B65-10089
TRANSUDER MEASURES TEMPERATURE DIFFERENTIALS
IN PRESENCE OF STRONG ELECTROMAGNETIC FIELDS
SPON- INNOVATOR NOT GIVEN /AMES/ DATE- APR. 1965
ARC-27
Measurement of temperature rise of cooling water under pressure and in strong electromagnetic fields is accomplished by a transducer using a magnetically shielded thermocouple arrangement. The thermocouple junctions are immersed in oil to isolate them from electric currents in the water.

B65-10091
SIMULATOR PRODUCES PHYSIOLOGICAL WAVEFORMS
SPON- INNOVATOR NOT GIVEN /HOSBUELL/ DATE- APR. 1965
GSFC-306
Physiological waveform simulator is capable of producing signals to simulate an auxiliary and a sternal electrocardiogram, blood pressure, respiratory rate and body temperature. This may be used to check out bioinstrumentation.

B65-10093
COMPUTER PROGRAMS SIMPLIFY OPTICAL SYSTEM
ANALYSIS
SPON- INNOVATOR NOT GIVEN /HOSBUELL/ DATE- APR. 1965
GSFC-306
The optical ray-trace computer program performs geometrical ray tracing. The energy-trace program calculates the relative monochromatic flux density on a specific target area. This program uses the ray-trace program as a subroutine to generate a representation of the optical system.

B65-10096
DIGITAL SYSTEM ACCURATELY CONTROLS VELOCITY
OF ELECTROMECHANICAL DRIVE
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
GSFC-297
Digital circuit accurately regulates electromechanical drive mechanism velocity. The gain and phase characteristics of digital circuits are relatively unimportant. Control accuracy depends only on the stability of the input signal frequency.

B65-10097
VARIABLE VOLTAGE SUPPLY USES ZENER DIODE AS
REFERENCE
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
GSFC-249
Using a zener diode as the reference element, a simple transistorized circuit provides a stable variable reference voltage.

B65-10102
SIMPLE CIRCUIT FUNCTIONS AS FREQUENCY
DISCRIMINATOR FOR FPM SIGNALS
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
GSFC-249
Improved magnetometer employs a cylindrical, high permeability magnetic core with a toroidal gating coil and a solenoid pickup coil. Flux interaction can be reduced by electrostatically shielding the pickup coil from the gating coil. The magnetometer principle can be applied to navigation devices.

B65-10105
SIMPLE FREQUENCY DIVER COMPOSED OF RELAXATION
OSCILLATORS USES TOPOLOGICAL GATING
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
GSFC-297
Improved variable load automatically tests dc power supplies over an extended current range. External meters monitor current and voltage, and multipliers at the outputs facilitate plotting the power curve of the unit.

B65-10108
MAGNETIC FIELD CONTROLS CARBON ARC TAIL FLAME
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
MSC-139
Polarity of two electromagnets placed near the exhaust flue cancels out a high carbon-arc field. The arc tail flame is correctly drawn to the exhaust flue and contamination is diverted. This device should reduce maintenance cycles on any arc-powered illuminator.

B65-10112
UNJUNCTION FREQUENCY DIVIDER IS FREE OF
BACKWARD LOADING
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
JPL-100-010
Simple frequency divider composed of relaxation oscillators uses unijunction transistors to reduce backward loading to a minimum. This circuit design is applicable in timing devices and sync generators for television systems.

B65-10118
TRANSISTORIZED CIRCUIT CLAMPS VOLTAGE WITH
0.1 PERCENT ERROR
SPON- INNOVATOR NOT GIVEN /FAIRCHILD STRATOS/ DATE- MAR. 1965
GSFC-319
Transistorized clamping circuit clamps either of two voltage levels to input of digital-to-analog
resistive matrix with 0.1 percent error. Clamping circuit technique has analog, digital, and hybrid circuit applications.

B65-10119  
VARIABLE FREQUENCY TRANSISTOR INVERTERS USE MULTIPLE CORE TRANSFORMERS  
SPON- INNOVATOR NOT GIVEN /DUKE UNIV./ DATE- APR. 1965  
GSFC-183

Magnetic-coupled multivibrators containing two or more square-loop cores with multiple windings in a single transformer package, provide indirect frequency control and improved operational characteristics. This multivibrator can be used for power oscillators, nonlinear magnetic circuitry and telemetry circuits.

B65-10120  
MULTIPLE TEST TUBES STIRRED MECHANICALLY  
LEON, B. J. STRONG, I. J. DATE- APR. 1965  
ARC-62

Mechanical device simultaneously stirs multiple test tubes under controlled laboratory conditions. The invention provides a variable stirring rate, minimal amount of contamination of tube contents, unattended and simple operation, and easy maintenance and cleaning.

B65-10123  
EFFICIENT THIN FILM HEATING ELEMENT TAKES MINIMUM SPACE  
BUSCH, A. H. DATE- APR. 1965  
GSFC-289

Light, thin-film heating element is formed by vacuum deposition of metal onto a nonconductive surface to be heated. This small-sized heater has a very fast response time.

B65-10128  
VARIABLE FREQUENCY MAGNETIC MULTIVIBRATOR GENERATES STABLE SQUARE-WAVE OUTPUT  
PAUL, S. DATE- MAY 1965  
GSFC-291

Variable frequency magnetic multivibrator operates in a full wave fashion to provide a stable square wave output over wide variations in temperature and power supply potential. This invention is applicable in clocks and control devices.

B65-10125  
SIMPLIFIED ELECTROSMETER HAS EXCELLENT OPERATING CHARACTERISTICS  
BRENTNER, R. E. DATE- MAY 1965  
JPL-413

Simplified and improved electrosmeter circuit provides high-input impedance, stability of gain and operating point, linear response, and low power requirements.

B65-10127  
TRAVELING-WAVE TUBE CIRCUIT SIMPLIFIES MICROWAVE RELAY  
ALLEN, W. W. IPPOLITO, L. J. NACE, D. A. DATE- MAY 1965  
GSFC-299

Circuit with a sawtooth-modulated traveling-wave tube, which acts as a frequency converter and as an amplifier, simplifies microwave transmission. Lower power losses and reduced size and weight are also realized in this circuit.

B65-10128  
PIONEERING GAGE TESTS PIN-CONNECTOR SOCKETS  
BOND, W. W. DATE- MAY 1965  
JPL-675

Connector pin consisting of a piezoresistive crystal, retainer spring and a bridge circuit with voltmeter is used to test connector sockets and may be adapted for multiple socket testing.

B65-10137  
INSTRUMENT CALIBRATES LOW GAS-RATE FLOMETERS  
COPELAND, A. C. FULTON, W. C. SMITHERS, W. A. DATE- MAY 1965  
MSC-134

Electronically measuring the transit time of a soap bubble carried by the gas stream between two fixed points in a burette calibrates flowmeters used for measuring low gas-flow rates.

B65-10130  
HIGH-GAIN AMPLIFIER HAS EXCELLENT STABILITY AND LOW POWER CONSUMPTION  
KLEINBERG, L. I. DATE- MAY 1965  
GSFC-272

Transistorized amplifier, in which an external reference voltage controls gain, combines high gain with stability and low power consumption. This circuit is useful in electronic servo and portable audio equipment.

B65-10139  
SPHERICAL ELECTRODE ELIMINATES HIGH-VOLTAGE BREAKDOWN  
FINK, R. C. VETRON, E. H. DATE- MAY 1965  
LEWS-155

Spherical electrodes surrounding electrode-dielectric junctions eliminate high-voltage breakdown. The gap between the spherical electrode and the dielectric must be of an optimum size for proper operation. Modified, this electrode should be suitable as a high-voltage feedthrough between various liquid and gaseous media.

B65-10142  
 AUXILIARY CIRCUIT ENABLES AUTOMATIC MONITORING OF EKG'S  
SPON- INNOVATOR NOT GIVEN /TEX. INST. FOR REHABILITATION AND RES. / DATE- MAY 1965 REAN- SEE ALSO B65-10143 AND B65-10101  
MSC-106

Auxiliary circuits allow direct, automatic monitoring of electrocardiograms by digital computers. One noiseless square-wave output signal for each trigger pulse from an electrocardiogram preamplifier is produced. The circuit also permits automatic processing of cardiovascular data from analog tapes.

B65-10143  
DIGITAL-OUTPUT CARDIOTACHOMETER MEASURES RAPID CHANGES IN HEARTBEAT RATE  
VICK, R. DATE- MAY 1965 REAN- SEE ALSO B65-10101 AND B65-10142  
MSC-133

Cardiotachometer circuits produce an output voltage proportional to the heartbeat rate on a beat-by-beat basis. This is less complex and less costly than the digital cardiotachometers.

B65-10145  
LOGARITHMIC AMPLIFIER USES FIELD EFFECT TRANSISTORS  
STEWART, J. L. DATE- MAY 1965  
JPL-509

Solid-state amplifier utilizes field effect transistors and planar junction diodes to provide a logarithmic response to a wide range of input signals.

B65-10146  
FREQUENCY OFFSET IN LINEAR FM/CW TRANSPONDER ELIMINATES CLUTTER  
SPON- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1965  
M-PS-289

Clutter is eliminated by offsetting the frequency of a transponder signal with respect to an interrogation signal. This improves the tracking of aircraft and spacecraft by FM/CW transponders.

B65-10151  
ROTOR POSITION SENSOR SWITCHES CURRENTS IN BRUSHLESS DC MOTORS  
SPON- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1965  
GSFC-315

Resistance switch incorporated in an induction motor is used for sensing rotor position and switching armature circuits in a brushless dc motor. This device drives the solar array system of an unnamed spyre satellite.

B65-10152  
CIRCUIT REDUCES DISTORTION OF FM MODULATOR
Correction circuit improves the linearity of a semiconductor laser used to modulate a free-running oscillator. This improvement only applies to audio frequency modulation and will not correct for slowly varying dc input in some telemetry systems.

**B65-10158**
LASER BEAM TRANSMITS ELECTRIC POWER
SPOON- INNOVATOR NOT GIVEN / RCA/ DATE- MAY 1965
GSFC-293
Semiconductor laser beam supplies sustained level of electrical power to remote location not served by conventional conductors. This system would be useful where transmission of energy is critical, such as in nuclear reactors, or other hazardous environments.

**B65-10159**
SOLID-STATE SWITCHING USED TO SPEED UP CAPACITIVE INTEGRATOR
BERCOMB, A. L., JR. DATE- JUN. 1965
LANGLEY-104
Capacitive integrator circuit using silicon-controlled switches/IGTs/ insures output voltage linearly proportional to input pulse width. This circuit provides high input impedance and relatively low output impedance.

**B65-10161**
INTERFEROMETER COMBINES LASER LIGHT SOURCE AND DIGITAL COUNTING SYSTEM
SPOON- INNOVATOR NOT GIVEN / RIT/ DATE- JUN. 1965
M-151
Measurement of small linear displacements in digital readouts with extreme accuracy and sensitivity is achieved by an interferometer. The instrument combines a digital electro-optical fringe-counting system and a laser light source.

**B65-10165**
SUPERCONDUCTOR MAGNETS USED FOR STAGGER-TUNING TRAVELING-WAVE MASER
SPOON- INNOVATOR NOT GIVEN / RCA/ DATE- JUN. 1965
GSFC-292
Superconducting materials reduce size and weight of magnets used for stagger-tuning individual traveling-wave maser crystals. The invention is useful in microwave communication systems requiring a high information rate.

**B65-10169**
PHASE SHIFT FREQUENCY SYNTHESIZER IS EFFICIENT, SMALL IN SIZE
SPOON- INNOVATOR NOT GIVEN / SPACE TECHNOLOG LABS./ DATE- JUN. 1965
M-150
Phase shift frequency synthesizer produces suppressed-carrier signals at the sum and difference frequencies. All unwanted frequencies are suppressed by this small-sized synthesizer.

**B65-10170**
DC TO AC CONVERTER OPERATES EFFICIENTLY AT LOW INPUT VOLTAGES
SPOON- INNOVATOR NOT GIVEN / DUKE UNIT./ DATE- JUN. 1965
GSFC-130
Self-oscillating dc to ac converter with transistor switching to produce a square wave output is used for low and high voltage power sources. The converter has a high efficiency throughout a wide range of loads.

**B65-10180**
FORCE CONTROLLED SOLENOID DRIVES MICROWAVE TESTER
SPOON- INNOVATOR NOT GIVEN / N. A. AVIATION/ DATE- JUN. 1965
WOO-125
Solenoid-driven device tests the integrity of a microwave joint between an electronic component lead wire and a wire ribbon by applying tension stress to the joint. Variable measured force is provided when either destructive or nondestructive testing is performed.

**B65-10181**
MODIFIED INTERELEMENT SPACING IMPROVES YAGI ANTENNA ARRAY
BECK, F. B. DATE- JUN. 1965
LANGLEY-130
Symmetrical antenna array is designed by adjusting the Yagi disk interelement spacing so that the grating lobe of the array factor coincides with the first sidelobe of the element pattern.

**B65-10184**
PRESSURE SENSOR RESPONDS ONLY TO SHOCK WAVE
SPOON- INNOVATOR NOT GIVEN / BOEING CO./ DATE- JUN. 1965
M-FS-238
Pressure sensor responds only to high pressure crest of a shock wave, and will not respond to conditions of overpressure. The sensor uses plates of a battery to produce voltage output used to activate an alarm signal or crew escape system.

**B65-10187**
CRITICAL MEASURES SHORT TERM, LARGE-MAGNITUDE FORCES
PFIEFFER, C. G. DATE- JUN. 1965
JPL-7-7
By using the magnitude of piezoelectric crystal response to distortion and compression, this device measures transient accelerations and their rate of change. The invention could be used in a servo control system by supplementing the accelerometer and taking over its function when its range is exceeded.

**B65-10193**
LOGIC CIRCUIT EXHIBITS OPTIMUM PERFORMANCE
Hudson, C. DATE- JUN. 1965
LANGLEY-129
Performance of circuits are compared to determine the optimum circuit configuration for implementation into microelectronic functions. Comparison is made in terms of power drain, propagation time, and component variations with temperature and load.

**B65-10194**
ANALOG-TO-DIGITAL CONVERTER HAS INCREASED RELIABILITY AND REDUCED POWER CONSUMPTION
THORNWALL, J. C. DATE- JUN. 1965
GSFC-246
Eight-bit analog-to-digital converter decreases average power consumption and increases component reliability. The converter uses solid-state components in pulse operation and magnetic core components for minimizing power consumption. The magnetic core components also increase reliability.

**B65-10195**
DEVICE MEASURES FLUID DRAG ON TEST VEHICLES
FREEMAN, H. JUDD, J. H. LEISS, A. DATE- JUN. 1965
LANGLEY-34
Electrochemical drag balance device measures the aerodynamic drag force acting on a vehicle as it moves through the atmosphere and telemeters the data to a remote receiving station. This device is also used for testing the hydrodynamic drag characteristics of underwater vehicles.

**B65-10196**
IMPROVED ELECTRICAL CONNECTOR IS MOISTURE AND CORROSION PROOF
SPOON- INNOVATOR NOT GIVEN / N. A. AVIATION/ DATE- JUN. 1965
MSC-164
Compression-sealed electrical connector made principally of plastic components is used in a corrosive atmosphere. This inexpensive and acutestproof connector can be modified to provide a multiple-pin connector.

**B65-10197**
IMPROVED SOLDERLESS CONNECTOR IS EASILY DISCONNECTED
SPOON- INNOVATOR NOT GIVEN / HUGHES AIRCRAFT CO./ DATE- JUN. 1965
JPL-134
Solderless type solderless connector is easily
disconnected and reassembled and resists vibration. The connector, which uses a tapered split sleeve that is tightened by a nut into a mating lug, is used where standard solder lugs and to connect unsolderable wire.

B65-10199
MODULAR THERMOELECTRIC CELL IS EASILY PACKAGED IN VARIOUS ARRAYS
NIST, J. DATE- JUN. 1965
GSPC-339

Modular thermoelectric cells are easily packaged in various arrays to form power supplies and have desirable voltage and current output characteristics. The cells employ two pairs of thermoelectric elements, each pair being connected in parallel between two sets of aluminum plates. They can be used as solar energy conversion devices.

B65-10200
DENSITY TRACK MADE WITH COMPUTER PRINTOUT
WILSON, M. DATE- JUN. 1965
GSPC-322

Special drum for a computer-controlled printer improves density trace of scientific data. The drum provides uniformly shaped characters and even spaced variations of print density that precisely reflect data magnitude. This device plots temperature profiles, geographic contours, pressure gradients, electric potential gradients, and magnetic field configurations.

B65-10202
QUICK-DISCONNECT COUPLING PROVIDES SAFE TRANSFER OF HAZARDOUS FLUIDS
DR. K. B. SCHROED, H. W. DATE- JUN. 1965
LWTS-125

Quick-disconnect coupling is used for uncopling of plumbing during ground-to-vehicle transfer of cryogenic and hazardous fluids. The coupling allows remote positive control of liquid pressure and flow during the transfer operation, remote connection and separation capabilities, and negligible liquid spillage upon disconnection.

B65-10203
TINT BIOMEDICAL AMPLIFIER COMBINES HIGH PERFORMANCE, LOW POWER DRAW
DEMOO, G. J. DATE- JUL. 1965
ARC-41

Transistorized, portable, high performance amplifier with low power drain facilitates biomedical studies on mobile subjects. This device, which utilizes a differential input to obtain a common-mode rejection, is used for amplifying electrocardiogram and electromyogram signals.

B65-10204
VOLTAGE VARIABLE OSCILLATOR HAS HIGH PHASE STABILITY
MELN, C. P. DATE- JUL. 1965
LAMBERT-123

Two or more series RLC circuits are used with a negative feedback amplifier to make a voltage variable oscillator. This combination results in high phase stability and optimum frequency modulation.

B65-10206
SENSITIVE ELECTROCHEMICAL FEATURES DIGITAL OUTPUT
DOONG, H. DATE- JUL. 1965
GSPC-285

Four-stage transistorized electrotherm eliminates the need for a logarithmic compression network. It measures very low currents and produces a digital output directly indicative of the input current magnitude.

B65-10208
HYBRID COMPUTER TECHNIQUE YIELDS RANDOM SIGNAL PROBABILITY DISTRIBUTIONS
CAPERSON, R. D. DATE- JUL. 1965
ARC-34

Hybrid computer determines the probability distributions of instantaneous peak amplitudes of random signals. This combined digital and analog computer system reduces the errors and delays of manual data analysis.

B65-10209
OSCILLATOR CIRCUIT MEASURES LIQUID LEVEL IN TANKS
SPOR- INNOVATOR NOT GIVEN /IBM/ DATE- JUL. 1965
M-PS-245

Oscillator circuit automatically measures the liquid level in tanks. The circuit employs a twin transmission line as a liquid level probe.

B65-10212
DETECTOR CIRCUIT COMPENSATES FOR VIDICON BEAM CURRENT VARIATIONS
SPOR- INNOVATOR NOT GIVEN /RCA/ DATE- JUL. 1965
GSPC-310

Signal detector circuit compensates for black level shifts in vidicons by dark current cancellation. It clamps the video signal to the dark current component of the signal. The device also compensates for background noise variation or transducer bias fluctuations in other repetitive pulse systems.

B65-10213
MULTIAXIAL ANALYZER DETECTS LOW-ENERGY ELECTRONS
GSPC-329

Three curved plate energy analyzers coupled with three electron multiplier tubes detect and measure low energy electron flux in several directions simultaneously.

B65-10215
ELECTRICAL PROBE ENSURES RELIABLE CONTACT IN SOCKET
SPOR- INNOVATOR NOT GIVEN /IBM/ DATE- JUL. 1965
M-PS-315

Spring-loaded probe makes a reliable electrical contact by producing a circular wiping motion at the tip when inserted into a mating socket.

B65-10218
GRAPHITE ELEMENT SERVES AS RADIANT HEAT SOURCE
DATE- JUL. 1965
M-PS-105

Radiators using a graphite heating element as a radiant heat source have high heat flux and long operational lives. They are used to test the thermal resistance of materials.

B65-10221
INSTRUMENT ACCURATELY MEASURES EXTREMELY LOW AIR DENSITIES
SPOR- INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/ DATE- AUG. 1965
M-PS-193

Gauge accurately measures low air densities in high-vacuum systems. It relies on the detection of near-visible light radiated from nitrogen molecules present in the system.

B65-10223
VOLTAGE CONTROLLED OSCILLATOR IS EASILY ALIGNED, HAS LOW PHASE NOISE
STDNOR, R. L. DATE- AUG. 1965
JUL-510

Voltage Controlled Oscillator /VCO/, represented by an equivalent Rf circuit, is easily adjusted for optimum performance by varying the circuit parameter. It contains a crystal drive level which is also easily adjusted to obtain minimum phase noise.

B65-10225
SAMPLE RC CIRCUIT ACCURATELY COUNTS TO 24
STAFFORD, R. L. DATE- AUG. 1965
GSPC-317

Ripple-through counter with divide-by-24 output pulse is used in digital control clocks to register hours and give a daily output signal. It uses commercially available digital modules that incorporate and gates with flip-flops.

B65-10226
MAGNETIC-SHIFT-REGISTER CIRCUIT CONTROLS STEP
Motor Operator

Veillette, L. J. Date- Aug. 1965

GSC-340

A magnetic-shift-register circuit controls bidirectional operations of a phase-pulsed step motor. The circuit draws no power in standby, is nonregenerative, and is insensitive to switching transients.

B65-10228

Simple Circuit Produces High-Speed, Fixed Duration Pulses

Garrahon, N. M. Date- Aug. 1965

GSC-285

Circuit generates an output pulse of fixed width from a variable width input pulse. The circuit consists of a tunnel diode in parallel with an inductance driven by a constant current generator. It is used for pulsed communications equipment design.

B65-10232

Field Effect Transistor Presents High Input Impedance in AC Amplifier

Marshall, J. H. Date- Aug. 1965

JPL-500

Four-stage transistorized ac amplifier provides high input impedance and operates at low intrinsic noise levels. It is suited to carrier or narrow band sine wave applications.

B65-10233

High-Speed Square-Wave Current Limiter Operates Efficiently

Gronvold Innovator Not Given /Labko Sci./ Date- Aug. 1965

JFL-009

Transistorized high speed circuit limits currents from a square-wave ac power supply. The current limiter resets after each half cycle of the square wave and thus minimizes power losses.

B65-10234

Simple Circuit Reduces Transistor Switching Time

Gronvold Innovator Not Given /Westinghouse Elec. Corp./ Date- Aug. 1965

GSFC-316

Silicon-Controlled Rectifier (SCR), gated by a voltage divider, controls the potentiometer in transistorized switching circuits. The SCR acts as a gate to trigger the switching transistor only when the input signal reaches an amplitude that will switch the transistor rapidly.

B65-10237

Brushless DC Motor Uses Electron Beam Switching Tube As Compressor

Gronvold, P. Date- Aug. 1965

GSC-345

Electron beam switching tube eliminates physical contact between rotor and stator in brushless dc motor. The tube and associated circuitry control the output of a dc source to sequentially energize the motor stator windings.

B65-10238

Solid-State Laser Transmitter Is Amplitude Modulated

Bildesbach, S. Date- Aug. 1965

MSC-121

Amplitude modulated laser transmitter affords radio frequencies unlimited bandwidth. The system, which is solid state and compact, uses a gallium arsenide diode that emits in the near infrared.

B65-10242

Electrometer Has Automatic Zero Bias Control

Gronvold Innovator Not Given /Applied Physics Corp./ Date- Aug. 1965

GSC-350

Zero biasing circuit in a vibrating reed type electrometer counterbalances residual potential. It charges a capacitor to the residual potential and connects that capacitor in series with the vibrating reed so that the voltages cancel. This enables the electrometer to read zero output potential in the absence of an input current.

B65-10263

Novel Probe Simplifies Electronic Component Testing

Syener, W. F. Date- Aug. 1965

GSC-342

Test probe, in conjunction with standard equipment, tests axial-lead electronic components in their original packages. The probe can be modified to test any electronic component with automatic or nonautomatic equipment.

B65-10244

Lightweight Coaxial Cable Connector Reduces Signal Loss

Hutchins, A. G., Jr. Date- Aug. 1965

JPL-720

Connectors with milled interface surfaces for perfect electrical contact eliminate secondary-emission discharge and low signal loss in RF coaxial cables. The connectors which contain alignment and centering components for proper joint concentricity are used in communications systems designs.

B65-10247

Servo Calorimeter Measures Material Heating Rate

Gilmore, G. Wilson, J. H. /Westinghouse Elec. Corp./ Date- Aug. 1965

Nu-0024

Servo calorimeter accurately measures the heating rate of a material exposed to nuclear radiation independently of the specific heat thermal conductivity of the material. The electrical power used is a direct measure of the nuclear heating rate.

B65-10249

Manual-Feed Adapter Permits Microfilming of Continuous Oscilloscope Output

Berrett, J. /Westinghouse Elec. Corp./ Date- Aug. 1965

Nu-0029

A manual-feed adapter used with a microfilm recording unit permits continuous filming and reduces oscillograph output to manageable dimensions.

B65-10255

Boron Trifluoride Nuclear Detector Preamplifier Uses Single-Cable Connection

Beckelman, J. D. /Shumaker, R. E. Date- Aug. 1965

Lewis-178

Preamplifier for a nuclear particle detector operates with a single interconnecting cable. Isolating and bypass networks permit this simple cable operation.

B65-10257

Inductor Flyback Characteristic Gives Voltage Regulator Fast Response

Kite, G. Date- Aug. 1965

GSFC-361

Voltage regulator alternately connects an inductor in parallel and in series with the input voltage source. This flyback voltage regulator provides a regulated dc voltage to varying loads from a varying dc supply and gives fast response to load and supply changes.

B65-10258

Gapped Toroid Provides Infinite Resolution of Delay-Line Pickup

Borish, G. B. Date- Aug. 1965

GSC-370

Gapped toroid magnetically coupled to a delay line provides continuous adjustment of the delay line signal retrieval. A rotating screw moves the toroid pickup parallel to the delay line. This device can be used in signal detection devices and instrumentation equipment.

B65-10259

Increased Junction Lead Inductance Ballasts High-Frequency Transistors

Gilbert, G. J. /ECA/ Date- Sep. 1965

GSFC-387

Segmentation of transistor bonding stripes and the inherent inductance of individual leads provides
ballast for even current distribution across the junction of a high-frequency transistor.

B65-10260
SINGLE PULSE COUNTING CIRCUIT COMPUTES SUM
OF SQUARES
SCHAEFFER, D. H. DATE- SEP. 1965
GSPC-391
Pulse counting circuit with an extra chain of flip-flops, delay lines, and gates computes the sum of the squares of the pulse sequences. A pulse train and the sum of the squares of the pulses are simultaneously completed.

B65-10263
INDICATING DEVICE ENSURES PROPER MATING OF
ELECTRICAL CONNECTORS
JENKINS, L. H. SIMMONS, W. H. DATE- SEP. 1965
MSC-155
Indexing splines with modified standard male and female connectors eliminates the possibility of incorrect mating. Large stock quantities of differently indexed connectors are unnecessary since connectors from a single stock can be indexed as desired at installation time.

B65-10264
PLASTIC BAGS IN EVACUATED CHAMBER MAKE
LIGHTWEIGHT GAS SAMPLING SYSTEM
SHAPER, W. M. /GE/ DATE- SEP. 1965
FRC-31
Portable, lightweight system collects the exhaust gas of an aircraft during flight for use in analyzing combustion efficiency. The system uses an evacuated chamber and plastic bags.

B65-10265
WELD LEAKS RAPIDLY AND SAFELY DETECTED
SPENCER, L. D. DATE- SEP. 1965
N-FS-362
Test method detects leaks that occur during hydrostatic pressure testing of welded joints in metal tanks. A strip of aluminum foil and a strip of water-soluble paper are placed over the weld. A voltage applied between the tank wall and the foil strip is monitored to detect a decrease in ohmic resistance caused by water leakage into the paper layer.

B65-10267
ELECTROUMETER PREAmPLIFIER HAS DRIFT CORRECTION
FEEDBACK
LABARTE, L. C. /AERO SCI./ DATE- SEP. 1965
JPL-SET-074
Negative feedback circuit corrects output drift in an electrometer. The negative feedback is used in the no signal state to maintain the output level at zero reference. Drift voltage storage in the signal on state is also used to provide a drift-free readout.

B65-10268
MULTIPLE TEST CHAMBER EXPOSES MATERIALS TO
VARIOUS ENVIRONMENTS
JOHNSTON, R. L. DATE- SEP. 1965
MSC-179
Multiple compartment test chamber exposes several material specimens to various environmental conditions for prolonged periods. The specimens are individually mounted in chamber compartments, rotated to various positions, and measured through optical windows to determine progressive changes in the material properties.

B65-10269
SAMPLE DEVICE PRODUCES ACCELEROMETER
CALIBRATION PULSE
SPENCER, D. W. DATE- SEP. 1965
N-FS-363
Shock-impulse exciter produces a remote checkout of the amplitude calibration and frequency response of a piezoelectric vibration accelerometer. The exciter employs a bimetal spring to apply a mechanical acceleration pulse of a known amplitude and frequency to the accelerometer.
AT PRESENT LEVEL
SPOK- INNOVATOR NOT GIVEN /AVCO CORP./ DATE- SEP. 1965

K-FS-331
Optimum decision-level circuit maintains the decision threshold at any preselected percentage of the input-signal amplitude. Communications equipment involving recognition of transmitted digital information can benefit from this circuit.

B65-10282
CONSTANT-CURRENT REGULATOR IMPROVES TUNNEL DIODE THRESHOLD-DETECTOR PERFORMANCE
CANCRO, C. A. DATE- SEP. 1965

GSFC-239
Grounded-base transistor is placed in a tunnel diode threshold detector circuit, and a bias voltage is applied to the tunnel diode. This provides the threshold detector with maximum voltage output and overload protection.

B65-10284
FIELD-EFFECT TRANSISTOR REPLACES BOLLY TRANSFORMER IN ANALOG-GATE CIRCUITS
SPON- INNOVATOR NOT GIVEN /RADIATION, INC./ DATE- SEP. 1965

GSFC-351
Metal-Oxide Semiconductor Field-Effect Transistor /MOSEF/ analog-gate circuit adapts well to integrated circuits. It provides better system isolation than a transformer, while size and weight are appreciably reduced.

B65-10286
UPPERCASE AND LOWERCASE COMPUTER PRINTOUT INCREASES BRANABILITY
BAND, W. W. /DOC., INC./ JONESEGG, M. B. DATE- SEP. 1965

NO-12
Print chain of 120 characters facilitates production of computer printout in both uppercase and lowercase characters. Although the output speed is reduced, the use of the print chain increases the computer printout readability.

B65-10287
PHOTO-RESISTANCE ANALOG MULTIPLIER HAS WIDE RANGE
HARTENSTEIN, R. G. DATE- SEP. 1965

GSFC-360
Photoactivated bridge facilitates equal performance of analog multipliers over a wide frequency range. The multiplier operates from direct current to an upper frequency limited by either the light source or the closed-loop amplifier.

B65-10289
BORON NITRIDE HOUSING COOLS TRANSISTORS
SPON- INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ DATE- SEP. 1965 REAN- SEE ALSO B65-10033 AND B65-10186

NO-079
Boron nitride ceramic heat sink cools transistors in r-f transmitter and receiver circuits. Heat dissipated by the transistor is conducted by the boron nitride housing to the metal chassis on which it is mounted.

B65-10290
F6/CW SYSTEM MEASURES AIRCRAFT ATTITUDE
SPON- INNOVATOR NOT GIVEN /BELPAR/ DATE- SEP. 1965

K-FS-276
F6/CW radar system measures attitude of an approaching aircraft relative to a ground station. The F6/CW transmitter on board the aircraft transmits through two antennas to a ground-based receiver.

B65-10293
ELECTROSTATICALLY DRIVEN DYNAMIC CAPACITOR EMPLOYING CAPACITIVE FEEDBACK
LONGBURG, J. O. DATE- OCT. 1965

JEL-771
Three-part signal electrode provides capacitive feedback to an oscillator driven dynamic capacitor in an electrometer circuit.

B65-10298
TITANIUM DIAPHRAGMS MAKES EXCELLENT AMPLIFIER CATHODE SUPPORT
TEICH, W. W. /RAYTHEON CO./ DATE- OCT. 1965

GSFC-394
Cathode support structure designed around a titanium diaphragm prevents radial misalignment between the cathode and anode in amplifiers. The titanium exhibits low thermal conductivity, tolerates lateral thermal expansion of the cathode, and is a poor primary and secondary emission medium.

B65-10299
ELECTROPHORETIC RESISTOR REGULATES HIGH CURRENT
BAECEER, J. P. JEDLICKA, J. B. WAGNER, C. B. DATE- OCT. 1965

ABC-04
Electrophoretic resistor maintains a constant direct current in each of several high-power parallel loads, of variable resistance, across a single source. It provides current regulation at any preset value by dissipating the proper amount of energy therally, and uses a column of mercury to vary the effective length of a resistance element.

B65-10300
IMPURITY DIFFUSION PROCESS FOR SILICON SEMICONDUCTORS IS FAST AND PRECISE
MC LUSKI, R. M. MC LUSKI, R. M. SKONEN, G. W. /WESTINGHOUSE ELECTRICAL CORP./ DATE- OCT. 1965

GSFC-397
Impurity diffusion process produces precision silicon semiconductor junctions economically and fast. Oxide is deposited on a silicon wafer and a controlled concentration of impurity atoms in gas form is simultaneously introduced into the reaction.

B65-10301
REMOTE RAPIDLY VARYING PressURES ACCURATELY MEASURED
SPON- INNOVATOR NOT GIVEN /GE/ DATE- OCT. 1965

FAC-28
Transmitting-damping tube with one end closed, the other open to a pressure source, has a pressure sensor connected to a port close to the pressure source. This accurately measures transient or rapidly varying fluid pressures.

B65-10304
IMPROVED STRAIN-WIRE FLOWMEASURES HAS FAST RESPONSE TIME
DILLON, R. C. DUNBAR, W. R. DATE- OCT. 1965

LAB-241
Strain-sensitive resistance wires in a Wheatstone bridge arrangement form the sensing element of a flowmeter. The change in resistance of the wires is measured as a function of stream velocity. Thus the electrical output is a measure of both rapidly varying and steady fluid-flow rates.

B65-10305
THIN-FILM RESISTORS USED IN FUNCTIONAL ELECTRONIC BLOCKS
SPON- INNOVATOR NOT GIVEN /WESTINGHOUSE ELECTRICAL CORP./ DATE- OCT. 1965

GSFC-380
Vapor-deposited thin-film resistors replace diffused resistors in p-n tank circuits in a solid state electronic block. This allows an optimum parallel capacitance to be obtained for circuit applications requiring a high resistance and a low capacitance.

B65-10306
OPAQUE MICROFICHES MASTERED PERMITS EASY READING
LOWE, E. S. /DOC., INC./ DATE- OCT. 1965

NO-7
White-pigmented backing applied to the reverse side of microfilm master sheets makes the area opaque and easily readable. This technique is of value for organizations involved in large volume information storage and retrieval.
B65-10307
FREQUENCY CORRECTION DEVICE USES DIGITAL CIRCUITRY
SCHARFEN, B. DATE- OCT. 1965
SSPC-268
Signal acquisition and tracking system covering a wide range of frequencies uses digital circuitry to sample the frequency of an incoming signal and provide correction pulses to the voltage-controlled oscillator. The circuit can also sense the presence of a signal on any one of the input lines.

B65-10308
ELECTRONIC ASPER-BHOUR INTEGRATOR IS ACCURATE TO ONE PERCENT
FALICOTTICH, J. DATE- OCT. 1965
SSPC-203
Electronic asper-hour integrator is based on current-to-frequency conversion. It operates on low power and is accurate to one percent. This device can measure the asper-hour capacity of batteries and can be adapted for other functions.

B65-10309
THERMOELECTRIC ELEMENTS DIFFUSION-BONDED TO TUNGSTEN ELECTRODES
SPON- INNOVATOR NOT GIVEN /TYCO LABS./ DATE- OCT. 1965
H65-10366
Solid-state diffusion process bonds lead telluride and lead telluride-tin telluride thermoelectric elements to tungsten electrodes. The resulting bond is nonmagnetic and has high strength and low electrical and thermal resistance. This method is also used with tantalum electrodes.

B65-10310
THRESHOLD DETECTOR PRODUCES NARROW PULSES AT HIGH REPEITION RATES
GARRAHAN, R. M. DATE- OCT. 1965
GSPC-383
Solid state device generates fixed width output pulses from variable width input pulses in the nanosecond range. The circuit produces pulse repetition rates in the megacycle range and exhibits low power drain.

B65-10311
PCB MAGNETIC TAPE SYSTEM EFFICIENTLY RECORDS AND REPRODUCES DATA
COLE, P. T. DATE- OCT. 1965
GSPC-375
Split-phase PCB technique consists of data and clock signal recording and reproduction systems. This PCB magnetic tape system achieves a high packing density on the tape and provides a symmetrical reproduction of the recorded signal.

B65-10313
PLANETARY CAMERA CONTROL IMPROVES MICROFICHE PRODUCTION
CHEESEFORD, W. L. LEWIS, B. B. /DOCS., INC./ DATE- OCT. 1965
HG-1
HG-5
Microfiche is prepared using an automatic control system for a planetary camera. The system provides blank end-of-row exposures and signals card completion so the legend of the next card may be photographed.

B65-10314
HYBRID CIRCUIT ACHIEVES PULSE REGENERATION WITH LOW POWER DRAIN
CAMBO, C. A. DATE- OCT. 1965
GSPC-382
Hybrid tunnel diode-transistor circuit provides a solid-state, low power drain pulse regenerator, frequency limiter, or gated oscillator. When the feedback voltage exceeds the input voltage, the circuit functions as a pulse normalizer or a frequency limiter. If the circuit is directly coupled, it functions as a gated oscillator.

B65-10315
MAGNETIC MEASURES ORTHOGONAL COMPONENTS OF MAGNETIC FIELDS
SPON- INNOVATOR NOT GIVEN /SPECTRA PHYS./ DATE- OCT. 1965
GSPC-395
Driven magnetometer accurately measures the components of a low strength magnetic field in each of three mutually perpendicular directions. To accomplish this, it employs the principle of magnetic resonance in optically pumped rubidium vapor.

B65-10317
INSTRUMENT PERFORMS NONDESTRUCTIVE CHEMICAL ANALYSIS, DATA CAN BE TELEMMETERED
TURKUSCH, A. /CHICAGO UNIV./ DATE- OCT. 1965
JPL-SC-076
Instrument automatically performs a nondestructive chemical analysis of surfaces and transmits the data in the form of electronic signals. It employs solid-state nuclear particle detectors with a charged nuclear particle source and an electronic pulse-height analyzer.

B65-10318
REMOTE CONTROL ELECTRICAL SWITCHING SYSTEM HAS 1000-OUTPUT CAPABILITY
SPON- INNOVATOR NOT GIVEN /IBM/ DATE- OCT. 1965
J-P,S-380
Electromechanical remote control system has a capacity of 1000 individual on-off functions yet uses only seven pairs of telephone-type lines for interconnection. Installation and maintenance costs are decreased by using this system.

B65-10320
BROGDED PRESSED DISK ELECTRODE HAS LOW CONTACT POTENTIAL
DATE, J. L. BOSIE, B. /INST. OF RES. AND INSTRUMENTATION/ DATE- OCT. 1965
BD-10025
MSC-158
Pressed-disk electrode with low contact potential monitors physiological processes. It consists of silver and silver chloride combined with bentonitic clay. The clay affords a surface that permits use over extended periods without contact deterioration.

B65-10322
CAR-OPERATED LIMIT SWITCH FEATURES SAFE FUSE REPLACEMENT
WEBB, G. J. /MCDONNELL AIRCRAFT CORP./ DATE- OCT. 1965
MSC-216
Two hermetically sealed, short travel, limit switches permit fuse replacement without danger of a spark or arcing. The switches are wired in parallel circuits and actuated by manually operated cams containing the circuit fuses.

B65-10324
SELECTOR BOND DECREASES RESISTANCE OF LIGHT-ACTIVATED SWITCH
SPON- INNOVATOR NOT GIVEN /IBM/ DATE- JUN. 1965
JPL-SC-101
Vapor-deposited amorphous selenium bond decreases the ON resistance of a gallium arsenide-silicon light-activated, low-level switch. The switch is used under a pulse condition to prolong switch life and minimize errors due to heating, dewetting, and overdrawing.

B65-10325
DIRECT FORCE-MEASURING TRANSDUCER USED IN BLOOD PRESSURE RESEARCH
RICE, J. J. /STAFFORD RES. INST./ NEWGERD, P. M. /STANFORD INST./ DATE- NOV. 1965
ARC-83
Direct force measuring transducer acts as an arterial tonometer, gives a direct readout to instrumentacion, and is unaffected by ambient noise. It uses a semiconductor strain gage which is deflected by pressure pulses in the artery. The deflection changes the resistance of the gage and alters the voltage reading on the associated instrumentation.

B65-10328
FEED-THROUGH CONNECTOR WITHSTANDS HIGH TEMPERATURES IN VACUUM ENVIRONMENT
REIDSMAN, W. S. /GEOPHYS. CORP. OF AM./ DATE- NOV. 1965
COMMUNICATION SYSTEM USES MODULATED LASER BEAM

JCHNSTON, A.

FOECE-R65-10333

GSFC-440

KREISMAN, J.

R65-10329

GSFC-442

CLIFF, W.

NOV. 1965

ULTRAHIGH VACUUM RANGE

ELFINAT

FREQUENCY DISCRIMINATOR UITB BINARY OUTPUT

U-FS-371

FOSTER, M.

COEPACT

B65-10347

B65-10343

MINIATURE SERVO ACCELEROBOMETER IS FORCE-BALANCED

JOHNSON, R. /CALIF. INST. RES. FOUND./ DATE-NOV. 1965

JPL-155

Miniature servo accelerometer measures unusually small forces of torques. The pendulous mass of the accelerometer is suspended by fused quartz torsion fibers in an electrostatically force-balanced environment. It is used in gravity surveys for exploring mineral deposits.

B65-10343

DELAYED RIPLEY COUNTER SIMPLIFIES SQUARE-ROOT COMPUTATION

CLIFF, R. DATE-NOV. 1965

GSFC-398

Ripple subtract technique simplifies the logic circuitry required to perform binary addition and subtraction. The adder uses dual input and delayed output flip-flops in one register. The contents of this register are summed with those of a standard register through conventional AND gates.

B65-10345

VARIABLE WORD LENGTH ENCODER REDUCES TV BANDWIDTH REQUIREMENTS

SIEVERSON, N. E., JR. DATE-NOV. 1965

LANGLEY-67

Adaptive variable resolution encoding technique provides an adaptive compression pseudo-random noise signal processor for reducing television bandwidth requirements. Complementary processors are required in both the transmitting and receiving systems. The pretransmission processor is analog-to-digital, while the postreception processor is digital-to-analog.

B65-10347

COMPACT SCR TRIGGER CIRCUIT FOR IGNITION SWITCH OPERATES EFFICIENTLY

POSTER, L. Z. DATE-NOV. 1965

M-FS-371

Trigger circuit with two series-connected SCR triggers an ignitron switch used to discharge high-energy capacitor banks. It does not require a warmup period and operates at relatively high efficiency.

B65-10349

FREQUENCY DISCRIMINATOR WITH BINARY OUTPUT ELIMINATES TUNED CIRCUITS

DE VELDE, K. /EDM/ DATE-NOV. 1965

M-FS-376

Frequency discriminator has a binary output and permits microminiaturized packaging techniques. It uses a bandpass amplifier and standard logic elements that convert two input frequencies to two discrete logic pulses.

B65-10350

ZENER DIODE CONTROLS SWITCHING OF LARGE DIRECT CURRENTS

SPRON- INNOVATOR NOT GIVEN /IBM/ DATE-NOV. 1965

MSC-189

High-current zener diode is connected in series with the positive input terminal of a dc supply to block the flow of direct current. A high-frequency current control signal is applied across the zener diode. This circuit controls the switching of large dc signals.

B65-10352

VIBRATING DIAPHRAGM MEASURES HIGH ELECTROSTATIC FIELD STRENGTHS

SPRON- INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/ DATE-NOV. 1965

MSC-189

Meter with flexible conductive diaphragm measures electrostatic charge density on a conducting surface in a vacuum. The diaphragm is supported from an insulated conductive support ring rigidly attached to the conductive surface whose electrostatic charge density is to be measured.

B65-10353

MULTIPHASE CLOCK-PULSE GENERATOR USES SIMPLIFIED CIRCUITRY

SPRON- INNOVATOR NOT GIVEN /IBM/ DATE-NOV. 1965

MSC-189

Multiphase clock-pulse generator converts a simple pulse train into nonoverlapping clock pulses. The generator employs multistable circuits to minimize the number of electronic components.

B65-10355

SIMPLE CIRCUIT PERFORMS BINARY ADDITION AND SUBTRACTION

CLIFF, R. A. SCHEEGER, D. R. DATE-NOV. 1965

GSFC-399

Ripple adder reduces the number of logic circuits required to perform binary addition and subtraction. The adder uses dual input and delayed output flip-flops in one register. The contents of this register are summed with those of a standard register through conventional AND gates.

B65-10359

IMPROVED Wire MEMORY MATRIX USES VERY LITTLE POWER

PSDEE, J. A. /SPERRY RAND CORP./ DATE-NOV. 1965

JPL-SC-167

Thin-film, plated-wire memory matrix for computer applications requires little power yet has higher speed and four times greater storage capacity than ferrite-core memories of the same size.

B65-10361

HIGH-INTENSITY FLASHING BEACON POWERED BY MERCURY CELLS

SPRON- INNOVATOR NOT GIVEN /LANGLEY/ DATE-NOV. 1965

LANGLEY-80

Pair of xenon flashlamps powered by mercury batteries in a transistorized circuit provides a flashing beacon with an effective intensity of a second-magnitude star at a distance of ten statute miles. This beacon is lightweight, long lasting and it withstands shock and vibration.

B65-10362

TEMPERATURE TRANSUDER HAS HIGH OUTPUT, IS TIME STABLE

FOLLETT, M. H. /BALL BROTHERS RES. CORP./ DATE-NOV. 1965

GSFC-446

Compact, lightweight temperature transducer requires no amplification of its output signal and is time stable. It uses two temperature-dependent characteristics of a silicon transistor to provide a zero-to-five-volt signal proportional to temperature.
B65-10363

HYDROGEN/OXYGEN REGENERATIVE FUEL CELL COMBINES HIGH EFFICIENCY WITH LOW COST

DOYLE, H. F. AND STEPHENS, C. W. /ELECTRO-OPT. SYSTEMS/ DATE- DEC. 1965

W00-091

Hydrogen/oxygen regenerative fuel cell stores electrical energy efficiently and inexpensively. The fuel cell has a high energy-to-weight ratio, and is adapted for a large number of cycles with deep discharge.

B65-10369

THREE-POSITION ROCKER SWITCH ACTUATOR HAS POSITIVE CENTERING

PUCINNHELLI, A. A. SMITH, J. R., JR. DATE- DEC. 1965

ARC-1

Quick-acting, remote controlled valve connects either one of two oxygen or air supplies to a breathing tube. The valve, which is fall-safe, incorporates a cammed piston arrangement that is driven by a remote controlled reversible rotary solenoid or reversible electric motor.

B65-10377

BINARY COUNTER USRS FLUID LOGIC ELEMENTS

SPOK- INNOVATOR NOT GIVEN /HAI CORP./ DATE- DEC. 1965

N-FS-323

Binary counter with two fluid flip-flops in each stage has an output taken from the output of the second flip-flop. The flip-flops each contain three fluid logic elements.

B65-10379

THREE-DIMENSIONAL WIRE-MESH CAPACITOR SYSTEM MEASURES FLUID DENSITY

SPOK- INNOVATOR NOT GIVEN /GARRETT CORP./ DATE- DEC. 1965

W00-194

Gaging system automatically measures the bulk density of a stored, electrically nonconductive fluid containing varying portions of liquid and vapor. The system employs a three-dimensional wire-mesh capacitor whose capacitance varies with the bulk density of the fluid dielectric medium between the capacitor plates.

B65-10380

DEVICE DETECTS UNBONDED AREAS IN PLASTIC LAMINATES

SPOK- INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ DATE- DEC. 1965

W00-204

Device generates an acoustic signal whose frequency changes disclose the presence of delaminated or unbonded areas in plastic laminates. A microphone makes the frequency change audible.

B65-10381

KEYED PLUGS AND SOCKETS PREVENT IMPROPER CONNECTIONS

SUCKER, B. L. LAMKIN, N. /McDONNELL AIRCRAFT CORP./ DATE- DEC. 1965

MSC-231

Plugs and sockets individually keyed so that no plug can be mated with other than its proper socket facilitates multiple connection in electrical systems.

B65-10382

PHOTOELECTRIC SYSTEM CONTINUOUSLY MONITORS LIQUID LEVEL

SPOK- INNOVATOR NOT GIVEN /BOEING CO./ DATE- DEC. 1965

M-FS-417

Photoelectric system continuously monitors liquid level.

B65-10386

IN SITU CORE AND WINDOW MANUFACTURE

SPOK- INNOVATOR NOT GIVEN /BOEING CORP./ DATE- DEC. 1965

MSC-256

Molds insulating spacer with one or more cavities is used as an insulated holder for mounting metal-cased transistors in a chassis containing densely packed electronic components. The transistors are mechanically supported on their bases and electrically isolated from each other by the holder.

B65-10387

SHRINKABLE SLEEVE ELIMINATES SHIELDING GAP IN RF CABLE

SPOK- INNOVATOR NOT GIVEN /GENERAL DYN. CONV AIR/ DATE- DEC. 1965

W00-207

Shrinkable sleeve between the connector and the terminated portion of the shielding. The assembly is enclosed in a heat-shrinkable plastic sleeve which completes the continuous RF shield.

B65-10389

INSULATOR-HOLDER PROTECTS TRANSISTORS IN DENSE ELECTRONIC ASSEMBLIES

SPOK- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ DATE- DEC. 1965

MSC-14

Molded insulating spacer with one or more cavities is used as an insulated holder for mounting metal-cased transistors in a chassis containing densely packed electronic components. The transistors are mechanically supported on their bases and electrically isolated from each other by the holder.

B65-10392

NONCONTACTING VIBRATION TRANSUDER HAS CONSTANT SENSITIVITY

FLAGG, B. DATE- DEC. 1965

LABLET-99

Noncontacting transducer with constant sensitivity automatically measures the vibration amplitudes along the span of a vibrating structure of irregular contour. A system employing a feedback control position the transducer at a constant height above the test surfaces. A differential transformer facilitates calibration and extends the amplitude range of the system.

B65-10396

ADHESIVE-BACKED TERMINAL BOARD ELIMINATES MOUNTING SCREWS

SPOK- INNOVATOR NOT GIVEN /H. AN. AVIATION/ DATE- DEC. 1965

MSC-173

Low-profile terminal board is used in dense electronic circuits where mounting and working space is limited. The board has a thin layer of pressure-sensitive adhesive backing which eliminates the need for mounting screws.

B65-10398

BINARY COUNTER ACCUMULATES TIME BY COMPLEMENTARY PRESENT

ZAREYEN, G. E. /H. AN. AVIATION/ DATE- DEC. 1965

MSC-242

Binary counter reduces the number of logic elements required to furnish electrical control functions. The counter is automatically preset to the complement of the desired time increments in milliseconds. An output pulse is produced each time it reaches its capacity.

B65-10400

ELECTRICALLY HEATED DIAPHRAGM ELIMINATES USE OF THERMITECHNICS

NATHANSON, R. C. /H. AN. AVIATION/ DATE- DEC. 1965

MSC-241

Membrane-type diaphragms is used in systems where fluids are contained under pressure until a certain pressure threshold or point of time has been reached when the fluids are automatically released. The diaphragm is resistance heated until its strength is degraded to the point of rupture, thus releasing the contained fluids.
COMPUTER CIRCUIT CALCULATES CARDIAC OUTPUT

CUPROUS

REACTION HEAT USED IN STATIC WATER REMOVAL

B66-10026
IMPROVED CARBON ELECTRODE REDUCES ARC SPATTERING
SPON- INNOVATOR NOT GIVEN /UNION CARBIDE CORP./
DATE- JAN. 1966
MSC-219
Carbon rod core with a smaller proportion of rare earth compounds than in standard cores reduce arc spattering in optical equipment. This core is produced without additional cost or equipment.

B66-10028
PORTABLE SELF-POWERED DEVICE DETECTS INTERNAL FLAWS IN TUBULAR STRUCTURES
GILMOUR, G. /WESTINGHOUSE ELEC. CORP./
DATE- JAN. 1966
NU-0019
Portable probe and eddy-current-sensitive circuitry detects internal flaws or hard spot inclusions in an electrically conductive tubular channel by recording the conductivity change at the defect point.

B66-10034
CIRCUIT EXHIBITS POWER EFFICIENCY GREATER THAN 75 PERCENT
HANCOVITZ, F. J. /N. AM. AVIATION/ DATE- FEB. 1966
MSC-254
Variable duty cycle pulser increases circuit power efficiency by more than 75 percent when operating solenoid valves. The pulser provides a low-level holding current after a high-level current has actuated the solenoid valves.

B66-10036
FLOWMETER MEASURES LOW GAS-FLOW RATES
WELLS, F. E. DATE- FEB. 1966
M-PS-215
Positive-displacement flowmeter measures low gas-flow rates by gating the time required for a slug of mercury to pass between two reference levels in a tube of known volume.

B66-10038
CIRCUIT OPERATES AS SINE FUNCTION GENERATOR
BOGART, T. J. /N. AM. AVIATION/ DATE- FEB. 1966
MSC-255
Electronic circuit drives sine function generator using square wave and sawtooth sweep generators. The circuit replaces electromechanical driver and increases accuracy.

B66-10039
CONTROL SYSTEM MAINTAINS SELECTED LIQUID LEVEL
BERGSEON, R. L. SCHUCK, J. W. /HONEYWELL/ DATE- FEB. 1966
M-PS-470
Single-sensor control system maintains liquid hydrogen at a preselected desired level within a tank, regardless of boiloff. It calibrates output in percentage. Thus, when the fuel is at the desired level, the system output will indicate 100 percent regardless of what percent of tank capacity the fuel has reached.

B66-10041
COLD CATHODE IONIZATION GAUGE HAS RIGID METAL HOUSING
HERSOG, R. K. KRISMAN, W. S. /GEOPHYS. CORP. OF AM./ DATE- FEB. 1966
GSPC-445
Cold cathode ionization gage is a stainless steel housing accurately measures high pressures. The penning effect is used with a high voltage discharge in the presence of a magnetic field for an ion current proportional to the gas pressure in
22

01 ELECTRICAL (ELECTRONIC)

HOMEWORK-CORE PANELS
DATE- MAR. 1966
LANGELEY-202
Overall thermal conductivity of homework-core panels at elevated temperatures is measured by an apparatus with a heater assembly and a calibrated heat-rate transducer. The apparatus has space between the heater and transducer for insertion of a test panel and insulation.

B66-10128
OPTICAL GYRO PICKOFF OPERATES AT CRYPTOGENIC TEMPERATURES
SPON- INNOVATION NOT GIVEN /AER/ DATE- MAR. 1966
H-TS-407
Two-axis pickoff for cryogenic gyros uses solid-state light sources and sensors. This compact system operates efficiently at cryogenic temperatures.

B66-10129
DIGITALLY CONTROLLED PULSE-LEVEL DISCRIMINATOR OPERATES OVER WIDE VOLTAGE RANGE
CAMERON, L. A. DATE- MAR. 1966
GSF-324
Low power drain discriminator circuit generates an output pulse when an input pulse exceeds a discrete digitally controlled threshold voltage. The discriminator operates over a wide linear or nonlinear range of threshold levels. It uses several amplifier stages ahead of a fixed-reference threshold detector.

B66-10130
MATERIALS PHYSICALLY TESTED IN VARIABLE-ENVIRONMENT CHAMBER
KESSLER, A. C. DATE- MAR. 1966
JPL-785
Controlled environment chamber for physical tests of crushable materials encloses both the test specimen and the devices for performing the tests. The chamber may be stepped through a range of changing environment.

B66-10133
OMIDIRECTIONAL ANTENNAS TRANSMIT AND RECEIVE OVER LARGE BANDWIDTH
WOODWARD, G. N., JR. /RCA/ DATE- MAR. 1966
GSF-425
For exchanging wideband signals between two distant ground stations, low-gain antennas with wide angular coverage and circular polarization are mounted on a single mast extending from a satellite. The transmitting antenna has two decoupled ports or inputs for eliminating switching problems when using two transmitters on different frequencies.

B66-10134
HIGH TEMPERATURE THERMOCOUPLE OPERATES IN REDUCTION ATMOSPHERE
HOFF, R. G. /KELFRED-130/ CORP./ DATE- MAR. 1966
NEO-0048
Thermocouple continuously measures a flowing gas up to 4500 degrees F in a hazardous environment. The thermocouple combines rhodium and tungsten in the probe, housing, and swaged extension lead. The wires extend continuously from the cold junction to the probe tip to eliminate errors from secondary thermocouple effects.

B66-10141
OPTICALLY DRIVEN SWITCH TURN-OFF TIME REDUCED BY OPAQUE COATING
SPON- INNOVATION NOT GIVEN /IBM/ DATE- APR. 1966
JPL-50-107
Turn-off response time of an optically driven switch is reduced by placing an opaque covering over the passivating silicon dioxide layers. The coating prevents photon absorption so that carriers are not trapped or stored on the base region, thus shortening turn-off time.

B66-10142
DIFFUSION TECHNIQUE STABILIZES RESISTOR VALUES
GALLAGHER, R. C. /GULIA/ M. N. /WESTINGHOUSE ELEC. CORP./ DATE- APR. 1966
SMC-203
Reduction of the contact resistance stabilizes the values, over a broad temperature range, of resistors used in linear integrated circuits. This reduction is accomplished by p-plus diffusion under the alloyed aluminum contacts.

B66-10144
MOUNTING IMPROVES HEAT-SINK CONTACT WITH BERYLLIA WASHER
SPON- INNOVATION NOT GIVEN /COLLINS RADIO CO./ DATE- APR. 1966
REB- SEE ALSO 66-10033
MSC-194
To conduct heat away from electrical components that must be electrically insulated from a metal heat sink, a metal washer and a coil spring are placed between one end of the electrical component and the beryllia washer mounted on the heat sink. The thermal paths are formed by the component lead and base, the metal and beryllia washers, and the compressed spring.

B66-10146
POLYMER DEFORMATION GAUGE MEASURES THICKNESS CHANGE IN TENSILE TESTS
SHOYLES, R. F. /BRO/ DATE- APR. 1966
JPL-745
Lightweight deformation gauge attached to a polymer specimen determines the thickness changes undergone by the specimen during the testing of its tensile and elongation properties. Mechanical noise from outside sources is dampened when the assembly is hung on a light rubber band.

B66-10148
TESTER PERIODICALLY REGISTERS DC AMPLIFIER CHARACTERISTICS
CRES, D. WENZEL, G. E. DATE- APR. 1966
MSC-190
Motor-driven switcher-recorder periodically registers the zero drift and gain drift signals of a dc amplifier subjected to changes in environment. A time coding method is used since several measurements are shared on a single recorder trace.

B66-10150
SWITCHING MECHANISM SENSES ANGULAR ACCELERATION
SPON- INNOVATION NOT GIVEN /BALL BROS. RES. CORP./ DATE- APR. 1966
GSF-462
Switching mechanism actuates an electrical circuit when a predetermined angular acceleration and displacement are reached. A rotor in the mechanism overcomes the restraint of a magnetic field when the case in which the detector is mounted reaches the predetermined angular acceleration.

B66-10159
IMPROVED SYSTEM MEASURES OUTPUT ENERGY OF PYROTECHNICAL DEVICES
SHOYLES, R. N. /N. AM. AVIATION/ DATE- APR. 1966
WOO-256
System for measuring the output energy of pyrotechnic devices discharges the reaction products into a test chamber. It measures the radiant heat output from a pinhole aperture as well as internal pressure changes on a common time base.

B66-10160
ELECTROPHYSICAL TRANSDUCER AUTOMATICALLY LIMITS MOTOR CURRENT
LOVITT, J. F. DATE- APR. 1966
LEWIS-253
Pneumatic controller regulates the load on a centrifugal freon compressor in a water cooling system, thus limiting the current input to an electric motor driving it. An electro-mechanical transducer monitoring the motor input current sends out air signals which indicate changes in the current to the pneumatic controller.

B66-10161
TRANSDUCER MEASURES FORCE IN VACUUM ENVIRONMENT
GLENN, D. C. DATE- APR. 1966
LEWIS-210
Transducer assembly measures force in a vacuum environment. The assembly consists of a standard capacitance probe and a torque beam. This transducer can be used in high-pressure as well as in low-pressure environments for static and dynamic force measurements.

B66-10162
FIXTURE AIDS SOLDERING OF ELECTRONIC COMPONENTS ON CIRCUIT BOARD
Hoggs, E. B. DATE- APR. 1966
ARC-56
Spring clamp fixture holds small electronic components in a desired position while they are being soldered on a circuit board. The spring clamp is clipped on the edge of the circuit board and an adjustable spring-steel boom holds components against the board. The felt pad at the end of the boom is replaced with different attachments for other holding tasks.

B66-10163
TWO-LIGHT CIRCUIT CONTINUOUSLY MONITORS AC GROUND, PHASE, AND NEUTRAL WIRES
NRC, D. W. /N. A. AVIATION/ DATE- APR. 1966
MSC-356
Two-transistor, two-lamp circuit monitors the continuity of ac ground, neutral, and phase wires. The circuit gives different visual indications if any one of the three lines should become open circuited.

B66-10168
FATIGUE TESTER ACHIEVES TRUE AXIAL MOTION
THROUGH FLEX PLATES AND BARS
HENGSTENBERG, T. F. /WESTINGHOUSE ASTRONUCLEAR LAB./ KOEHLER, C. R. DATE- APR. 1966
NU-0021
Lever load-amplifying fatigue testing machine with a load cycle frequency of 100 to 900 cycles per minute applies the load through true axial motion. First friction and bearing wear are eliminated by replacing these parts with flex plates and bars.

B66-10170
SCANNING PHOTOMETER SYSTEM AUTOMATICALLY DETERMINES ATMOSPHERIC LAYER HEIGHT
WOLFF, H. /MIT/ DATE- APR. 1966
MSC-245
Two photometers, placed a given distance apart, determine the height of nonuniform luminous layers in a synchronous manner. Photometer outputs are correlated by a simple analog correlation computer to automatically give the luminous layer height. This system is used to determine visibility ceilings at airports.

B66-10177
BINARY FLUID AMPLIFIER SOLVES STABILITY AND LOAD PROBLEMS
LARSEN, R. B. KEEPER, E. D. /GIANNINI CONTROLS CORP./ DATE- MAY 1966
ERC-15
Digital fluid amplifier has load intensity, high stability, and operates at low Reynolds numbers. It contains specially designed nozzles to provide uniform exit-velocity profiles and to ensure jets of low turbulence.

B66-10179
COMPLEMENTARY MONOSTABLE CIRCUITS ACHIEVE LOW POWER DRAIN AND HIGH RELIABILITY
KLEMBERG, L. L. LAYTON, R. C. DATE- MAY 1966
GSP-4-33
Two-transistor multivibrator has minimum power dissipation and maximum reliability. It simplifies the use of components that are subject to environmental changes or other unpredictable behavior.

B66-10180
TEIN-FILM GAGE MEASURES LOW HEAT-TRANSFER RATES
SPITZER, C. H. DATE- MAY 1966
LANOLITY 205
Low heat-transfer gage facilitates determination of the transition between laminar and turbulent conditions, in the boundary layer surrounding slender and moderately slender coves under test in a hypersonic blowdown helium tunnel. The gage consists of a thin layer of vacuum-evaporated platinum on a heat resistant glass substrate contoured to fit model surfaces.

B66-10182
SUBMINIATURIZED GAS CHROMATOGRAPH GIVES FAST, EFFICIENT ANALYSIS
WILKINS, W. F. DATE- MAY 1966
JPL-735 JPL-737 JPL-736 JPL-740
Space oriented, lightweight, subminiaturized gas chromatograph analyzes gas samples in a few seconds with a carrier gas flow of one milliliter per second. In extraterrestrial exploration, the system could be used with a mass spectrometer for detection of life-supporting compounds.

B66-10193
SOLED STATE THERMOSTAT HAS INTEGRAL PROBE AND CIRCUITRY
SPRO- INNOVATOR NOT GIVEN /METRO PHYS., INC./ DATE- MAY 1966
R-PS-204
Compact, reliable thermostat provides a temperature readout signal and a continuous temperature-control output for temperature monitoring by automatic checkout equipment or telemetry systems. It employs a solid state circuit in a housing rigidly attached to a thermistor probe.

B66-10198
DEVICE WITHOUT ELECTRICAL CONNECTIONS IN TANK MEASURES LIQUID LEVEL
SHERMAN, J. S. /R. C. ARBORETUM-GEN. CORP./ DATE- MAY 1966
W00-235
Vertical static float in a tank measures the liquid level without the use of electrical connections in the tank. The float transmits the buoyant force of the liquid to an external force transducer. It is insensitive to tank pressure and temperature changes.

B66-10200
APPARATUS PRESENTS VISUAL DISPLAY OF SEMICONDUCTOR SURFACE CHARACTERISTICS
SHUMER, R. A. DATE- MAY 1966
JPL-665
Apparatus presents a representation of the physicochemical condition of the surface layers of a semiconductor. It is based on the principle that the surface layers of a semiconductor will conduct an electric current when exposed to a beam of light.

B66-10203
SOLDERING IRON TEMPERATURE IS AUTOMATICALLY CONTROLLED
LIU, J. Y. DATE- MAY 1966
ARC-57
Bridged cradle-microswitch arrangement maintains a soldering iron at less than peak temperature when not in use. The microswitch introduces a voltage reducing element into the soldering iron power circuit when the iron is placed on the cradle. The iron, when removed from the cradle, returns to operating temperature in 15 to 30 seconds.
In-like transducers systems measure flow rate of chemically active propellant fluids. The system uses one low-flow transducer and one high-flow transducer. Each consists of separate heater and temperature-sensing elements.

**B66-10220**

**ULTRASONIC RECORDING SCANNER USED FOR NONDESTRUCTIVE WELD INSPECTION**

**SPOW- INNOVATOR NOT GIVEN /BOEING CO./ DATE- MAY 1966**

Portable ultrasonic recording scanner is used for nondestructive inspection of welds. It is adaptable to continuous operation in one direction while maintaining oscillatory motion at a right angle to this direction. The scanning speed and oscillation frequency are independently adjustable.

**B66-10223**

**MULTICOLOR STROBOSCOPE PINPOINTS RESONANCES IN VIBRATING COMPONENTS**

**SPOW- INNOVATOR NOT GIVEN /CALIF. INST. RES. FOUND./ DATE- MAY 1966**

Stroboscopic system, which uses three different colored lights, rapidly scans a multicomponent assembly and provides a visual indication of resonant frequencies. The lights are pulsed at the same flash frequency but at different phases.

**B66-10224**

**FET COMPARATOR DETECTS ANALOG SIGNAL LEVELS WITHOUT LOADING ANALOG DEVICE**

**WALLACE, W. L. /GE/ DATE- MAY 1966**

FET comparator circuit detects discrete analog computer output levels without excessively loading the output amplifier of the computer. An FET common source amplifier is coupled to a differentiator amplifier to a bistable transistor flip-flop. This circuit provides a digital output for analog voltages above or below a predetermined level.

**B66-10225**

**SINGLE-CRYSTAL SEMICONDUCTOR FILMS GROWN ON FOREIGN SUBSTRATES**

**VOHL, F. /ECA/ DATE- MAY 1966**

Intermediate alloy formed between foreign substrates and semiconductor material enable the growth of single crystal semiconductor films on the alloy layer. The melted film must not ball up on the surface of the substrate and neither chemically react nor alloy with the intermediate alloy formed on the substrate.

**B66-10232**

**ELECTRONIC PHASE-LOCKED-LOOP SPEED CONTROL SYSTEM IS STABLE**

**STORE, F. A. /RAYMOND ENG. LAB./ DATE- JUN. 1966**

Phase locked-loop circuit is used for playback motors in digital tape recorders where the reproducer output remains in exact synchronism with an external reference clock over extended periods. It removes the motor dynamics from the control loop so that the loop is stable without damping.

**B66-10245**

**ROGUE MICROELECTRONIC MODULE PACKAGE SUPPORTS CIRCUITRY ON HEAT SINK**

**JOHNSON, A. L. /MINNEAPOLIS-HONEYWELL REGULATOR CO./ DATE- JUN. 1966**

Rugged module package for thin film hybrid microcircuits incorporated a rigid, thermally conductive support structure, which serves as a heat sink, and a lead wire block in which T-shaped electrical connectors are potted. It protects the circuitry from shock and vibration loads, dissipates internal heat, and simplifies electrical connections between adjacent modules.

**B66-10251**

**POLARIZING KEYS PREVENT MISMATCH OF CONNECTOR**

**PLUGS AND RECEPTABLES**

**CHAPIRO, A. /AER. AV. AVIATION/ DATE- JUN. 1966**

Keying prevents mismatching of plugs and receptacles in connector patching of instrumentation involving several thousand leads. Each receptacle and plug contains three polarizing keys that must mate in a complementary mode before the connector pins and sockets will engage.

**B66-10260**

**MULTIPLE TEMPERATURES SAMPLED USING ONLY ONE REFERENCE JUNCTION**

**COPE, G. F. DATE- JUN. 1966**

In a multitemperature sampling system where the test thermocouples are a distance from the reference thermocouples, an intermediate thermal junction block is placed between the sets of thermocouples permitting switching between a single reference and the test thermocouples. This reduces the amount of cabling, reference thermocouples, and cost of the sampling system.

**B66-10261**

**SIMPLIFIED CIRCUIT CORRECTS FAULTS IN PARALLEL BINARY INFORMATION CHANNELS**

**GOLDBERG, J. /STANFORD RES. INST./ DATE- JUN. 1966**

Simplified circuit prevents the appearance of erroneous output signals from the possible failure of any single-channel element interconnected in parallel binary information channels. The circuit is simplified and economical because it does not use redundant channels.

**B66-10268**

**BINARY SEQUENCE DETECTOR USES MINIMUM NUMBER OF DECISION ELEMENTS**

**PEHLIBA, K. DATE- JUN. 1966**

Detector of an n-bit binary sequence code within a serial binary data system assigns states to memory elements of a code sequence detector by employing the same order of states for the sequence detector as that of the sequence generator when the linear recursion relationship employed by the sequence generator is given.

**B66-10270**

**MAGNETICALLY OPERATED LIMIT SWITCH HAS IMPROVED RELIABILITY, MINIMIZES ACOUSTIC NOISE**

**STEINER, R. /A. AV. AVIATION/ DATE- JUN. 1966**

Limit switch for reliable, low-travel, snap action with negligible arcing uses an electrically nonconductive permanent magnet consisting of a ferrimagnetic ceramic and ferromagnetic pole shoes which form a magnetic and electrically conducting circuit with a ferrous-metal armature.

**B66-10271**

**PN ACQUISITION DEMODULATOR ACHIEVES AUTOMATIC SYNCHRONIZATION OF A TELEMETRY CHANNEL**

**CONVILLION, L. DATE- JUN. 1966**

Data demodulator for automatic sync acquisition provides as automatic means for obtaining initial word and bit synchronization in a pulse-code-modulated/phase-shift-keyed digital communications system.

**B66-10272**

**EXCLUSIVE-OR LOGIC CIRCUIT HAS USEFUL PROPERTIES**

**DATE, W. G. DATE- JUN. 1966**

Single, simple exclusive-or logic connective eliminates excessive hardware and the number of interconnections between logic modules. This circuit performs the necessary switching for the exclusive-or operation and amplifies, restores, and inverts the signal.

**B66-10278**

**BRASS ALLOYS USED AS TEMPERATURE INDICATORS**

**RICE, E. E. /AEROJET-GEN. CORP./ DATE- JUL. 1966**
DATE- JUN. 1966
RU-0063
Patches of braze alloys having known fusion are applied to portions of a metal surface where temperature indicators are required. This method is used to measure temperatures over the range of 175 degrees to 2100 degrees Fahrenheit where it is not feasible to employ conventional temperature detectors.

B66-10280
STRAIN GAGE NETWORK DISTINGUISHES BETWEEN THERMAL AND MECHANICAL DEFORMATIONS
CROWLING, F. J. /DATE- JUN. 1966
GSFC-478
Strain gage network measures the thermal coefficient of linear expansion of composite metal structures. The network consists of a test gage and two dummy gages arranged to distinguish thermally induced deformation from mechanical strain.

B66-10282
SIMPLE CIRCUIT PROVIDES RELIABLE MULTIPLE SIGNAL AVERAGE AND REJECT CAPABILITY
GERSHAN, R. L. /AUGUST-GEN. CORP./ DATE- JUN. 1966
NU-0069
Substitution average and reject circuit based on diode clamping allows detection of individual functional deviations in a multiple signal system without shutting down the entire system.

B66-10286
VACUUM TEST FIXTURE IMPROVES LEAKAGE RATES MEASUREMENTS
MATEK, H. MARK, H. /GUMMAN AIRCRAFT CORP./ DATE-JUN. 1966
MSC-271
Cylindrical chamber, consisting of two matching halves, forms a vacuum test fixture for measuring leakage rates of individual connections, brazed joints, and entrance ports used in closed fluid flow line systems. Once the chamber has been sufficiently evacuated, atmospheric pressure holds the two halves together.

B66-10287
DETECTION SYSTEM SECURES POSITIVE ALARM ACTIVATION IN DIGITAL MESSAGE LOSS
ROKOS, P. BERSTEIN, A. NELSON, E. D. /RCA/ DATE- JUN. 1966
WQ-208
Lost word detection system /NOW/ provides special identification for each error detection message transmitted from receiver to transmitter. The message is identified as an original message or an n-times retransmitted message so the receiver can detect where a retransmission request was not fulfilled and activate an alarm.

B66-10291
LARGE CAPACITOR PERFORMS AS A DISTRIBUTED PARAMETER PULSE LINE
GOODING, T. J. /GEN. SYS./ASTRONOMICS/ DATE- JUL. 1966
LEWIS-176
Capacitor of extended foil construction performs as a distributed parameter pulse line in which current, amplitude, and period are readily controlled. The capacitor is used as the energy storage element in a pulsed plasma accelerator.

B66-10292
CIRCUIT PROTECTS REGULATED POWER SUPPLY AGAINST OVERLOAD CURRENT
AFTIB, E. B. /WESTINGHOUSE ELEC. CORP./ DATE- JUL. 1966
GSFC-453
Sensing circuit in which a tunnel diode controls a series regulator transistor protects a low voltage transistorized dc regulator from damage by excessive load currents. When a fault occurs, the faulty circuit is limited to a preset percentage of the current when limiting first occurs.

B66-10293
DAMPING TECHNIQUE GIVES ACCELEROMETER FLAT
SALKORSKI, ILLUST
B66-10324
DATE- JUL. 1966
M-YS-850

Photometric analyzer measures NBA /nonvolatile residue/ in trichloroethylene and other organic solvents. The analyzer converts the liquid solvent to aerosol and passes it between an optically focused light beam and a photodetector that is connected to standard amplifying and readout equipment.

B66-10329
INSTRUMENT TRANSITS VANISHING POINT TO ILLUSTRATION POINT
ALVAREZ, R. R. /N. AM. AVIATION/ DATE- JUL. 1966 MSC-267A

Instrument transmits the vanishing point of an illustration to a point on the illustration on a diminishing scale that also serves as a straightedge.

B66-10328
CORK IS USED TO MAKE TOOLING PATTERNS AND MOLDS
B66-10329
HOFMAN, F. J. /N. AM. AVIATION/ DATE- JUL. 1966 MSC-425

Sheet and waste cork are cemented together to provide a tooling pattern or mold. The cork forms a workpiece that withstands moderately high temperatures under vacuum or pressure with minimum expansion, shrinkage, or distortion.

B66-10339
INSPECTION OF FINE WIRE TRANSFORMERS BY CAPILLARY TUBE WIRE HOLDER
Raphael, R. A. /N. AM. AVIATION/ DATE- JUL. 1966 MSC-150

Capillary tube wire holder provides a mount for fine wires for photomicrographs. The holder is mounted in a stainless steel tube and cast in a transparent casting material. It protects and permits easy location of the wire.

B66-10333
VIBRATOR IMPROVES SPARK EROSION CUTTING PROCESS
THOMAS, L. R. /NORTHROP-GEN. CORP./ DATE- JUL. 1966 NO-0071

Variable frequency mechanical vibrator improves spark erosion cutting process. The vibration of the cutting tip permits continual flushing away of residue around the cut area with nondestructive electric transformer oil during the cutting process.

B66-10334
STRAIGHTEN GRID FACILITATES REMOVAL OF GRID-SURFACED CORNICAL WORKPIECE FROM DIE
BUPEF, E. F. /N. AM. AVIATION/ DATE- JUL. 1966 NG-716

Female die facilitates the removal of a sheet metal structure from a die used for explosive forming of the metal. The female die consists of a smooth conical frustum made of fiber glass with a cured epoxy-resin surface on which a molded grid pattern made of a polyurethane resin is overlaid.

B66-10341
ULTRASONIC EMISSION METHOD ENABLES TESTING OF ADHESIVE BONDS
PHARR, L. SCHMITZ, G. /GEN. AM. TRANSPORTATION CORP./ DATE- AUG. 1966 UC-799

Detection of acoustic energy emitted by adhesive bonds subjected to tensile stresses at frequencies above sixteen kilocycles per second is used as a method for determining bond strength. This method is used in measuring adhesive bond strengths on metal honeycomb core panels.

B66-1034A
PHASE INVERTER PROVIDES VARIABLE REFERENCE
SPOR- INNOVATOR NOT GIVER /RCA/ DATE- AUG. 1966 RG-23

Dual-transistor difference amplifier provides a push-pull output referenced to a dc potential which can be varied without affecting the signal levels. The amplifier is coupled with a feedback circuit which can vary the operating points of the transistors by equal amounts to provide the variable reference potentials.

B66-10347
BEST PARTICLE INJECTOR FOR HYPERSONIC VELOCITY ACCELERATORS PROVIDES HIGH CHARGE-TO-MASS RATIO
BRUNO, O. S. DATE- AUG. 1966 B66-10349

Injector imparts a high charge-to-mass ratio to microparticles and injects them into an electrostatic accelerator so that the particles are accelerated to meteoric speeds. It employs relatively large apertures in the anode and cathode structures with a relatively wide separation, thus permitting a large increase in the allowable injection voltages.

B66-10349
ELECTRICALLY CONDUCTIVE FIBERS THERMALLY ISOLATE TEMPERATURE SENSORS

Mounting assembly provides thermal isolation and an electrical path for an unbacked thermal sensor. The sensor is suspended in the center of a plastic mounting ring from four plastic fibers, two of which are coated with an electrically conducting material and connected to electrically conductive coatings on the ring.

B66-10350
TRANSISTOR CIRCUIT INCREASES RANGE OF LOGARITHMIC CURRENT AMPLIFIER
GILMOUR, G. /WESTINGHOUSE ASTRONUCLEAR LAB./ DATE- AUG. 1966 BG-50-11

Circuit increases the range of a logarithmic current amplifier by combining a commercially available amplifier with a silicon epitaxial transistor. A temperature compensating network is provided for the transistor.

B66-10351
FUNCTION GENERATOR ELIMINATES NECESSITY OF SERIES SUBRATION

Mode generator using four building-block circuits produces complex waveforms without the necessity of series summation. This highly specialized method of producing complex waveforms requires less power than present methods and uses simpler circuitry.

B66-10353
ACCELERATION-CONDITIONED PRESSURE TRANSDUCER HAS PAST RESPONSE
SPOR- INNOVATOR NOT GIVER /CONNELL AEBOR. LAB./ DATE- AUG. 1966 LATHER-713

Flush-diaphragm transducer accurately measures small dynamic pressures when it is subjected to high accelerations and severe temperature environments. The transducer uses piezoelectric crystals for measuring the pressure and balancing out acceleration forces.

B66-10355
BRUSHLESS DC MOTOR HAS HIGH EFFICIENCY, LONG LIFE
STUDER, P. A. DATE- AUG. 1966 GSFC-181

Brushless dc motor operates as a commutator in a vacuum environment with high efficiency and long life. Because of its excellent response time, it can be used in the servomechanism field.

B66-10356
SNIPPER USED AS PORTABLE HYDROGEN LEAK DETECTOR
BIGNER, F. H. KOMMER, M. A. /N. AM. AVIATION/
Sniffer type portable monitor detects hydrogen in air, oxygen, nitrogen, or helium. It indicates the presence of hydrogens in contrast with activated palladium black by a change in color of a thermochromic paint, and indicates the quantity of hydrogen by a senor probe and continuous readout.

Device serves as hinge and electrical connector for circuit boards. Hinge makes both sides of electrical circuit boards readily accessible for component checkout and servicing. The hinge permits mounting of two circuit boards and incorporates connectors to maintain continuous electrical contact between the components on both boards.

New computer system simplifies programming of mathematical equations. Automatic Mathematical Translator (AMTRAN) permits scientists or engineers to enter mathematical equations in their natural mathematical format and to obtain an immediate graphical display of the solution. This automatic-programming, on-line, multiterminal computer system allows experienced programmers to solve nonroutine problems.

Automated drafting system uses computer technique. Drafted system produces schematic and block diagrams from the design engineers freehand sketches. This system codes conventional drafting symbols and their coordinate locations on standard size drawings for entry on tapes that are used to drive a high speed photocomposition machine.

Infrared television is used to detect hydrogen fires. Television system detects hydrogens fires in test facilities. It sees in the infrared and displays on a standard cathode ray monitor screen.

Hydrogen fire detection system features sharp discrimination. Fire detection system discovers fires by detecting the flickering ultraviolet radiation emitted by the OH molecule, a short-lived intermediate combustion product found in hydrogen-air flames. In a space application, the system discriminates against false signals from sunlight and rocket engine exhaust plume radiation.

Pneumatic binary encoder replaces multiple solenoid system. Pneumatic binary encoder replaces solenoid system in the pilot stage of a digital actuator. The encoder operates in flip-flop manner to valve gas at either high or low pressures. By rotating the disk in a pinion-to-encoding gear ratio, six to eight adder circuits may be operated from single encoder.
B66-1032
INDUCTIVE SYSTEM DETECTS LEVEL OF CONDUCTING FLUIDS
ROESKE, P. W. DATE- AUG. 1966
LEWIS-322
Inductive system monitors the liquid level of a conductive fluid that is at a high temperature in a fully closed opaque container. The system is useful in high temperature liquid-metal systems. It shows fast response and is relatively insensitive to temperature fluctuations.

B66-10393
COMPOSITE FILTER STEPS UP REJECTION SLOPES IN MICROWAVE APPLICATION
SPOR- INNOVATOR NOT GIVEN /DOME AND MARGOLIS/
DATE- AUG. 1966
GSPC-480
Composite filter is used to obtain sharp rejection slopes in microwave transmission by filtering techniques. It consists of a bandpass filter to shape the passband and a bandreject filter on each edge of the bandpass filter to steepen the rejection slopes.

B66-10394
HIGH PRESSURE CRYOGENIC LIQUID FLOW SIGHT ASSEMBLY PROVIDES STREAMLINED FLOW FOR EASY OBSERVATION
ROBERT, H. E. MINKIN, H. L. DATE- AUG. 1966
LEWIS-310
Window assembly facilitates observation of cryogenic liquids flowing through a narrow pipe at pressures up to several hundred pounds per square inch. This high-pressure cryogenic observation assembly which houses a thin wall glass pipe held within a steel retainer can accommodate fluids under a wide range of pressures and temperatures.

B66-10396
SOLID STATE DEVICES MONITOR RELAY CONTACTS
QUIBN, J. B. DATE- SEP. 1966
JPL-755
Hand carried, solid state, 16-channel detector system constantly monitors contact conditions in relays. The system is relatively insensitive to external noise and is powered by standard 110 volt ac.

B66-10397
MINIMUM PERMISSIBLE LEAKAGE RESISTANCE ESTABLISHED FOR INSTRUMENTATION SYSTEMS
FREEMAN, J. L. /H. M. AVIATION /
DATE- SEP. 1966
N-FS-348
Mathematical formulas are used to determine if, and to what extent, an instrumentation system that has been exposed to the elements should be dried out to restore minimum permissible leakage resistance to ground. Formulas are also derived and used for an intermediate number of systems that are exposed to moisture penetration.

B66-10401
DIELECTROMETER DESIGN PERMITS MEASUREMENT IN VACUUM UNDER IRRADIATION
SPOR- INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./
DATE- SEP. 1966
N-FS-355
Dielcctrometer permits measurement of dielectric constant and dielectric losses in a vacuum environment exposed to radiation. It is not necessary to remove the sample from the chamber during testing.

B66-10404
NEW COMPUTER PROGRAM SOLVES WIDE VARIETY OF HEAT FLOW PROBLEMS
ALMOND, J. C. /BOEING CO./
DATE- SEP. 1966
N-FS-421
Bowling Engineering Thermal Analyzer /BETA/ computer program uses numerical methods to provide accurate heat transfer solutions to a wide variety of heat flow problems. The program solves steady-state and transient problems in almost any situation that can be represented by a resistance-capacitance network.

B66-10407
DIRECTION INDICATOR SYSTEM DOES NOT REQUIRE COMPLICATED OPTICS
MILNE, A. W. /GEN. DIN./CONVAIR /
DATE- SEP. 1966
WOO-305
Direction indicator which aligns a system relative to a light source uses two photocells as light sensors to form a set. Each set indicates one direction. This indicator has no moving parts and provides very fine vernier acquisition.

B66-10409
MODULAR POROUS PLATE SUBLIMATOR /EPPS/ REQUIRE ONLY WATER SUPPLY FOR COOLANT
KATHRIN, H. J. /IBM/
DATE- SEP. 1966
M-FS-1374
Modular porous plate sublimators, provided for each location where heat must be dissipated, conserve the battery power of a space vehicle by eliminating the coolant pump. The sublimator requires only a water supply for coolant.

B66-10412
LEAK LOCATOR FOR VACUUM JACKETED PIPELINES ELIMINATES NEED FOR REMOVAL OF OUTER JACKET
WELLS, G. B. /H. M. AVIATION /
DATE- SEP. 1966
N-FS-662
Device for locating leaks in a vacuum-jacketed liquid-hydrogen transfer line consists of two Mylar discs, a source of nitrogen and helium gas, and an mass spectrometer. The outer jacket of the pipeline does not need to be removed for the locator to be used.

B66-10413
ANALOG SOLAR SYSTEM MODEL RELATES CELESTIAL BODIES SPATIALLY
BAERG, H. DATE- SEP. 1966
JPL-195
Portable analog planetarium indicates the relative time and space angular locations of the sun and planets. Distance measuring scales, angular direction indicators, and typical probe trajectories are included.

B66-10414
ELECTRICALLY CONTROLLED OPTICAL LATCH AND SWITCH REQUIRES LESS CURRENT
STEINWIAK, W. A. 1966
M-PS-112
Electronic optical latch and switch requires less current to activate an optically activated switch than in prior art.

B66-10419
METAL OXIDE SILICON /MOS/ TRANSISTORS PROTECTED FROM DESTRUCTIVE DAMAGE BY WIRE DEVICE
DEBRO, G. J. DEVINS, R. J. DATE- SEP. 1966
ABC-65
Loop of flexible, small diameter, nickel wire protects metal oxide silicon /MOS/ transistors from a damaging electrostatic potential. The wire is attached to a music-wire spring, slipped over the MOS transistor case, and released so the spring tensions the wire loop around all the transistor leads, shorting them together. This allows handling without danger of damage.

B66-10420
ELECTRONIC BIDIRECTIONAL VALVE CIRCUIT PREVENTS CROSSTIE DISTORTION AND THRESHOLD EFFECT
KERNICK, A. /WESTINGHOUSE ELEC. CORP./
DATE- SEP. 1966
MCC-193
Four-terminal network forms a bi-directional valve which will switch or alternate an ac signal without crossover distortion or threshold effect. In this network, an isolated control signal is sufficient for circuit turn-on.

B66-10423
AN INVESTIGATION OF PHASE-LOCK LOOP SWEEP-FREQUENCY SYNCHRONIZATION
DYTE, R. A. /LOCKHEED MISSILES AND SPACE CO./
DATE- SEP. 1966
RAPID SYNCHRONIZATION OF PHASE-LOCKED OSCILLATORS IS BEST ACHIEVED BY THE SWEPT-FREQUENCY ACQUISITION TECHNIQUE, WHEREIN THE VOLTAGE-CONTROLLED OSCILOCKER (VCO) IS LINEARLY SWEPT THROUGH THE UNCERTAINTY BAND. THE THEORETICALLY PREDICTED SWEET SPOT Rates OF THIS TECHNIQUE AND THE OBSERVED EXPERIMENTAL RESULTS DIFFER BY LESS THAN SEVEN PERCENT.

B66-10426
COMPUTER SIMULATION PROGRAM IS ADAPTABLE TO INDUSTRIAL PROCESSES
SCHULTE, F. E.//BEB-240
LAWRENCE-240

THE REACTION KINETICS ABLATION PROGRAM /HEAP/, DEVELOPED TO SIMULATE ABLATION OF VARIOUS MATERIALS, PROVIDES MATHEMATICAL FORMULATIONS FOR COMPUTER PROGRAMS WHICH CAN SIMULATE CERTAIN INDUSTRIAL PROCESSES. THE PROGRAMS ARE BASED ON THE USE OF NONSYMMETRICAL DIFFERENCE EQUATIONS THAT ARE EMPLOYED TO SOLVE COMPLEX PARTIAL DIFFERENTIAL EQUATION SYSTEMS.

B66-10427
ELECTRICAL CABLE WITHSTANDS SEVERE ENVIRONMENTAL CONDITIONS
KAYE, J. A. //B.A. AVIATION/ DATE- SEP. 1966

MULTICORE ELECTRICAL CABLES RETAIN THEIR CIRCUIT INTERTY AND REMAIN FLEXIBLE AND ABRASION RESISTANT IN SEVERE ENVIRONMENTAL CONDITIONS OF HEAT, VIBRATION, AND WATER.

B66-10429
VIDEO SIGNAL PROCESSING SYSTEM USES GATED CURRENT MODE SWITCHES TO PERFORM HIGH SPEED MULTIPLICATION AND DIGITAL-TO-ANALOG CONVERSION

VIDEO SIGNAL PROCESSOR USES SPECIAL-PURPOSE INTEGRATED CIRCUITS WITH NONSATURATING CURRENT NODE SWITCHING TO ACCEPT TEXTURE AND COLOR INFORMATION FROM A DIGITAL COMPUTER IN A VISUAL SPACEFLIGHT SIMULATOR AND TO COMBINE THESE DISPLAY ON COLOR CRT WITH ANALOG INFORMATION CONCERNING FADING.

B66-10430
SOLID-STATE SWITCH INCREASES SWITCHING SPEED
MAC GOWAN, G. M. /MARTIN CO./ DATE- OCT. 1966

SOLID STATE SWITCH FOR COMMUTATING CAPACITORS IN AN RC COMMUTATED NETWORK INCREASES SWITCHING SPEED AND EXTENDS THE FILTERING OR COMMUTATING FREQUENCY SPECTRUM WELL INTO THE KILOCYCLE REGION. THE SWITCH IS EQUIVALENT TO THE STANDARD DOUBLE-POLE DOUBLE-THROW /DPDT/ RELAY AND IS DRIVEN FROM DIGITAL MICROCIRCUITS.

B66-10431
CONTROL CIRCUIT MAINTAINS UNITY POWER FACTOR OF REACTIVE LOAD
KRAEGER, H. MATTISON, L. H.//BIB/ DATE- OCT. 1966

CIRCUIT INCLUDING FEEDBACK CONTROL ELEMENTS AUTOMATICALLY CORRECTS THE POWER FACTOR OF A REACTIVE LOAD. IT MAINTAINS POWER SUPPLY EFFICIENCY WHERE NEGATIVE LOAD REACTANCE CHANGES AND VARY BY PROVIDING CORRECTIVE ERROR SIGNALS TO THE CONTROL WINDINGS OF A POWER SUPPLY TRANSFORMER.

B66-10432
REMOTE PREAMPLIFIER CIRCUIT MAINTAINS STABILITY OVER WIDE TEMPERATURE RANGE
MAC HAUGHTON, R. G. /VARIAN ASSOCIATES/ DATE- OCT. 1966

CIRCUIT REMAINS STABLE OVER A WIDE TEMPERATURE RANGE WHILE PREAMPLIFYING LIGHT SIGNALS FALLING ON A PHOTOCELL AND TRANSMITTING THEM THROUGH A TRANSMISSION LINE TO A REMOTE AMPLIFIER. THE CIRCUITS PREAMPLIFIER CONSISTS OF A GROUNDED EMMITTER NF StAGE FOLLOWED BY A PMI EMMITTER.

B66-10433
LINEAR SIGNAL NOISE SUMMER ACCURATELY DETERMINES AND CONTROLS S/N RATIO
SUNDBY, J. L. /WESTINGHOUSE ELEC. CORP./ DATE- OCT. 1966

LINEAR SIGNAL NOISE SUMMER PRECISELY CONTROLS THE RELATIVE POWER LEVELS OF SIGNAL AND NOISE, AND MIXES THEM LINEARLY IN ACCURATELY KNOWN RATIO. THE S/N RATIO ACCURACY AND STABILITY ARE GREATLY IMPROVED BY THIS TECHNIQUE AND ARE ATTAINED SIMULTANEOUSLY.

B66-10436
SHAFT ENCODER PRODUCES DIGITAL OUTPUT
BILLIS, D. A. /HUGHES AIRCRAFT CO./ DATE- OCT. 1966

SHAFT ENCODER SYSTEM USING SOLID STATE COMPONENTS ACTS AS A SINGLE-SIDEBAND MODULATOR TO ACCURATELY REPRODUCE PHASE INFORMATION IN 2-MC SIGNALS. THIS SYSTEM IS USEFUL IN TELEMETRY, AIRCRAFT COMMUNICATIONS AND POSITION-FINDING STATIONS, AND RF WAVE TEST CIRCUITRY.

B66-10437
SINGLE-SIDEBAND MODULATOR ACCURATELY REPRODUCES PHASE INFORMATION IN 2-MC SIGNALS
REINHOLD, G. F. /SPERRY MICROWAVE ELECTRONICS CO./ DATE- OCT. 1966

PHASE-Locked OSCILLATOR SYSTEM USING SOLID STATE COMPONENTS ACTS AS A SINGLE-SIDEBAND MODULATOR TO ACCURATELY REPRODUCE PHASE INFORMATION IN 2-MC SIGNALS. THIS SYSTEM IS USEFUL IN TELEMETRY, AIRCRAFT COMMUNICATIONS AND POSITION-FINDING STATIONS, AND RF WAVE TEST CIRCUITRY.

B66-10438
SENSITOMETER SYSTEM FOR LIQUID HYDROGEN HAS HIGH ACCURACY, FAST RESPONSE
SPOK- INNOVATORS NOT GIVEN /FRANKLIN GRO CORP./ DATE- OCT. 1966

SENSITOMETER SYSTEM FOR CRYOGENIC LIQUIDS USES TWO BALANCED IONIZATION CHAMBERS CONTAINING XENON GAS, WITH X RAYS AS THE RADIATION SOURCE. THE X RAYS ARE HEAVILY FILTERED WITH A LEAD SHIELD TO MAKE THE ENERGY SPECTRUM SUCH LESS DEPENDENT ON THE VOLTAGE APPLIED TO THE X RAY TUBE.

B66-10439
ION CHAMBERS SIMPLIFY ABSOLUTE INTENSITY MEASUREMENTS IN THE VACUUM ULTRAVIOLET
SCHRAMM, J. A. N. /UGMR. CORP. OF AM./ DATE- OCT. 1966

SINGLE OR DOUBLE ION CHAMBER TECHNIQUE MEASURES ABSOLUTE RADIATION INTENSITIES IN THE EXTREME VACUUM ULTRAVIOLET REGION OF THE SPECTRUM. THE ION CHAMBERS USE RARE GASES AS THE ION CARRIERS. PHOTONS ABSORBED BY THE GAS CREATE ONE ION PAIR FOR A MEASURE OF THESE IS A MEASURE OF THE NUMBER OF INCIDENT PHOTONS.

B66-10440
PHOTOELECTRIC SCANNER MAKES DETAILED WORK FUNCTION MAPS OF METAL SURFACE
RASOR, R. S. /THOMO ELEC. ENG. CORP./ DATE- OCT. 1966

PHOTOELECTRIC SCANNER MAKES THE WORK FUNCTION OF A METAL SURFACE BY SCANNING IT WITH A LIGHT SPOT AND MEASURING THE RESULTING PHOTOCURRENT. THE DEVICE IS CAPABLE OF USE OVER A RANGE OF SURFACE TEMPERATURES.

B66-10441
STANDARD ARC WELDERS PROVIDE HIGH AMPERAGE DIRECT CURRENT SOURCE
BASLEY, G. D. BROOKS, J. D. DATE- OCT. 1966

STANDARD ARC WELDERS OR POWER SUPPLIES ARE HOOKED UP IN PARALLEL OR SERIES CONNECTIONS TO OBTAIN AN ADEQUATE SUPPLY OF CURRENT OR VOLTAGE FOR VARIOUS
VIDICONs DURING VIBRATION

ALLEN, OCT. THERMIONIC JPL-SC-113

1966 

B66-10444

THERMIONIC SCANNER PINPOINTS WORK FUNCTION OF EMITTER SURFACES 

BASON, R. H. /THROO ELECTRON ENG. CORP./ DATE- OCT. 1966

JPL-SC-177

In the electron tube testing, a thermionic scanner was used for checking the performance of vidicons in mechanical vibration tests. The vidicon electron beam is modulated with an external signal during the write period thereby storing the image on the vidicon face.

B66-10462

INSTANT AUTOMATICALLY SELECTS PEAK ACCELERATION SIGNAL FROM SEVERAL ACCELEROMETERS 

CHAPMAN, C. F. DATE- OCT. 1966

JPL-794

Solid state circuit selects the highest of several ac accelerometer signals and gates this signal to an output amplifier, preserving all the frequency information in the peak signal. If the amplitudes of the accelerometer signals change with time, the circuit will continually switch to the highest signal, rejecting the smaller signals.

B66-10465

SOLID STATE CIRCUIT SWITCHES AC LOAD 

CHAPMAN, C. F. HUGHES AIRCRAFT/ DATE- OCT. 1966

JPL-798

Differential amplifier circuit switches ac signals with peak amplitudes greater than 5 volts. This solid state circuit biases a switching transistor on and off by a 0.1 to 5.0 dc control voltage.

B66-10466

STUDY COMPARES METHODS FOR THE NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS 

SPROW, INNOVATOR NOT GIVEN /GEORGE INST. OF TECHNOL./ DATE- OCT. 1966 SEE ALSO NASA-CR-51060

B66-10489

BIPOLAR CURRENT DRIVER FOR MEMORY CIRCUITS 

CHONG, C. P. DATE- OCT. 1966

JPL-785

Study compares the use of five different methods for the computer solution of the restricted three-body problem. It describes the implementation of each method on a Burroughs B-5000 computer and in terms of speed and accuracy.

B66-10486

DEVICE TO COLOR MODULATE A STATIONARY LIGHT SOURCE 

RAND DATE- DEC. 1966

M-1C

Signal controlled system color modulates a beam of light while also providing high intensity and a stationary beam, either collimated or focused. The color modulation acquired by the present system can be compatible with any color film by employing color filters forced to provide a color wedge having a color distribution compatible with the film color sensitivity.

B66-10578

PLUG-IN CONNECTOR SOCKET ACCEPTS COAXIAL CABLE END 

MITCHELL, D. VAN LOON, J. A. DATE- NOV. 1966

ARG-9

Connector which includes a spring-loaded contact that receives a protruding center conductor and an internal collet to clamp against a collar attached to a woven outer conductor, is used as a receptacle for the end of a coaxial cable. This plug-in connector socket is used successfully with remote manipulators.

B66-10480

SIMPLE, ONE TRANSISTOR CIRCUIT BOOS'TS PULSE AMPLITUDE 

MEOD, T. CUTLER HAMMER/ DATE- OCT. 1966

M-2E-400

Electrical pulse generator uses power transistors and solid-state controlled rectifiers for producing a high current pulse having fast rise and fall times. At quiescent conditions, the standby current consumption of the circuit is equal to zero.

B66-10456

PULSER GENERATOR USING TRANSISTORS AND SILICON CONTROLLED RECTIFIERS PRODUCES HIGH CURRENT PULSES WITH FAST RISE AND FALL TIMES 

WOOLFSON, M. G. DATE- OCT. 1966

M-2E-405

Electrical pulse generator uses power transistors and silicon controlled rectifiers for producing a high current pulse having fast rise and fall times. At quiescent conditions, the standby current consumption of the circuit is equal to zero.

B66-10461

MODIFIED THERMOCOUPLE IS EFFECTIVE FROM MINUS 250 DEG TO 5000 DEG F 

MORN, W. H. /H. AR. AVIATION/ DATE- NOV. 1966

M-2E-420

Modified, commercially available thermocouple which measures the temperature of a spacecraft heat shield, is capable of continuous measurement in the range of minus 250 deg to 5000 deg F. The modified thermocouple and a metal shield are used for monitoring metal treating furnaces in high temperature technology, and in certain corrosive environments.
**B66-10481**
**MODIFIED McNEOLD PRESSURE GAGE ELIMINATES MEASUREMENT ERRORS**
KELLS, R. C. DATE- NOV. 1966
ABC-62
Modification of a McNeold gage eliminates errors in measuring absorbed pressure of gases in the vacuum range. A valve which is internal to the gage and is magnetically actuated is positioned between the mercury reservoir and the sample gas chamber.

**B66-10482**
**AUTOMATIC CRYOGENIC LIQUID LEVEL CONTROLLER IS SAFE FOR USE NEAR COMBUSTIBLE SUBSTANCES**
LEWIS, R. DATE- OCT. 1966
LEWIS-195
Automatic mechanical liquid level controller that is independent of any external power sources is used with safety in the presence of combustibles. A gas filled capillary tube which leads from a pressurized chamber, is inserted into the cryogenic liquid reservoir and becomes a liquid level sensing element or probe.

**B66-10486**
**SOLID STATE CIRCUIT CONTROLS DIRECTION, SPEED, AND BRAKING OF DC MOTOR**
KANNA, N. F. DATE- OCT. 1966
JPL-757
Full-wave bridge rectifier circuit controls the direction, speed, and braking of a dc motor. Gating in the circuit of Silicon Controlled Rectifiers/SCRs/controls output polarity and braking is achieved by reversing SCR thyristor to short circuit the reverse voltage generated by reversal of motor rotation.

**B66-10488**
**SPIRAL SPRING/STRAIN GAGE COMBINATION ACCURATELY MEASURES SHOCK INDUCED DEFLECTION**
BIBWEN, R. A. WALKER, R. R. /W. A. AVIATION/ DATE- OCT. 1966
MSC-789
Spiral springs equipped with strain gages which are hard-wired to readout instrumentation, measure deflection between two relatively smooth surfaces in a drop test that causes them to close near flatness. This technique has been successfully used on Apollo spacecraft, and should be adaptable to short circuit the reverse voltage generated by reversal of motor rotation.

**B66-10490**
**SOLENOID MAGNETIC FIELDS CALCULATED FROM SUPERPOSED SEMI-INFINITE SOLENOIDS**
BROWN, G. V. PLAY, L. DATE- NOV. 1966 REAM- SEE ALSO NASA-TH-D-2494
LEWIS-184
Calculation of a thick solenoid coil's magnetic field components is made by a superposition of the fields produced by four solenoids of infinite length and zero inner radius. The field produced by this semi-infinite solenoid is dependent on only two variables, the radial and axial field component coordinates.

**B66-10491**
**MINIATURE CAPACITIVE ACCELEROMETER IS ESPECIALLY APPLICABLE TO TELEMETRY**
COOG, G. W. HARRISON, B. R. DATE- NOV. 1966
REAM- SEE ALSO B66-10425
ABC-72
Capacitive accelerometer design enables the construction of highly miniaturized instruments having full-scale ranges from 1 g to several hundred g. This accelerometer is applicable to telemetry and can be tailored to cover any of a large number of acceleration ranges and frequency responses.

**B66-10492**
**CIRCUIT PREVENTS OVERCHARGING OF SECONDARY CELL BATTERIES**
HENDRIKS, T. J. POTTER, N. H. SIEKORE, K. O. DATE- NOV. 1966
GSFC-454
Circuit prevents battery cell overcharging by detecting and reducing the charging voltage to the open-circuit voltage of the battery when this current falls to a predetermined value. The voltage control depends on the fact that the charging current falls significantly when the battery nears its fully charged state.

**B66-10493**
**STUDY SHOWS EFFECT OF SURFACE PREPARATIONS ON IMPROVING THERMIONIC EMISSION**
VAN SORREN, L. VAN SORREN, L. /THERMO ELECTRON ENG. CORP./ DATE- NOV. 1966
JPL-2C-740
Specimens thermonic emitters were electropolished and electroetched to study the effect of surface preparations on improving thermionic emission. The best technique found was to electropolish the annealed rhenium surface and then electroetch it. The effect of electroetching was to remove other crystal planes faster than basal planes.

**B66-10494**
**OPTICAL MONITOR PANEL PROVIDES FLEXIBLE TEST PANEL CONFIGURATIONS**
GRIFFIN, F. D. DATE- NOV. 1966
KSC-66-18
Optical monitor panel projects a chosen panel configuration upon a translucent screen by using a master projector and appropriate slide to project panel board nomenclature and a series of smaller individual projectors to superimpose sensor indicators upon the projected panel board.

**B66-10496**
**COMPUTER PROGRAM PERFORMS FLOW ANALYSIS THROUGH TURBINES**
LBF-236
Computer program based on an equation for the velocity gradient along an arbitrary quasi-orthogonal analysis flow through a turbomachine. The program obtains meridional solutions for a hub-to-shroud analysis and blade-to-blade analysis at the hub, shroud, and shroud surfaces in a single computer run.

**B66-10497**
**HIGH VOLTAGE POTENTIAL DIVIDER CALIBRATED BY SIMPLE DEVICES**
LEWIS, R. W. DATE- NOV. 1966
ABC-53
Resistance divider device incorporates a potentiometer, switches, and a null detector to calibrate high potential dividers under high voltage operation conditions. Calibration can be performed within one minute or less than 0.001 percent.

**B66-10500**
**DIGITAL SYSTEM PROVIDES SUPERREGULATION OF NANOSECOND AMPLIFIER-DISCRIMINATOR CIRCUIT**
FORGES, R. G. DATE- NOV. 1966
ABC-61
Feedback system employing a digital logic comparator to detect and correct amplifier drift provides stable gain characteristics for nanosecond amplifiers used in counting applications. Additional anticoincidence logic enables application of the regulation circuit to the amplifier and discriminator while they are mounted in an operable circuit.

**B66-10501**
**ELECTRONIC CIRCUIT DELIVERS PULSE OF HIGH INTERVAL STABILITY**
FISHER, B. /W. A. AVIATION/ DATE- NOV. 1966
MSC-673
Circuit generates a pulse of high interval stability with a complexity level considerably below systems of comparable stability. This circuit is being used as a linear frequency
Circuit incorporating a bisynchronous demodulator for an electro-optic star-tracking sensor provides a signal proportional to star intensity without interference from background light in the field of view. The system works best on a sharply focused star image and requires a 50 percent duty cycle.

COMPUTER PROGRAM DETERMINES PERFORMANCE EFFICIENCY OF REMOTE MEASURING SYSTEMS

M-PB-1137

Computer programs control and evaluate instrumentation system performance for numerous rocket engine test facilities and prescribe calibration and maintenance techniques to maintain the systems within process specifications. Similar programs can be written for other test equipment in an industry such as the petrochemical industry.

SOLID STATE ANNUNCIATOR FACILITATES COMPLEX SYSTEM TROUBLESHOOTING

N-PB-1136

Solid state annunciator monitors up to 60 parameters for a dc voltage change from zero to 28 volts in the testing of complex systems. This annunciator is presently being used for testing of the complex J-2 rocket engine.

COMPUTER PROGRAM DETERMINES INVENTORY SIZE

FASPAN, R. "/N. AM. AVIATION/

DATE- NOV. 1966

N-PB-1135

FORTRAN 4 computer program calculates optimum size of a small inventory of relatively complex or expensive items. This program can be used in situations where the initial cost of purchase is large or when there is a need for a balanced inventory on a short production run.

PULSE STRETCHER HAS IMPROVED DYNAMIC RANGE AND LINEARITY

LARSEN, R. M. DATE- NOV. 1966

ASCII-82

Current-switching pulse stretcher overcomes the diode nonlinearity and capacitive feedthrough of voltage switching diode-capacitor stretchers and lengthens nanosecond pulses so that their amplitude may be determined and extends the dynamic range of the pulse stretcher. The rise time of the output pulse in response to a step function is approximately 5 nanoseconds.

LOG LEVEL ACCELEROMETER TEST METHODS ARE INVESTIGATED

NELSON, R. H., JR. ELOSEBRE, H. S. "/DYN. EES. CORP./ DATE- NOV. 1966

N-PB-1066

Problems associated with testing accelerometers to an accuracy where the standard error is less than .0000001 g are centered around the elimination of uncertainties in the acceleration input to the accelerometer. By placing a test rig in free fall, the uncertainty in the earth's gravity field can be eliminated.

COMPUTER ROUTINE ADDS FLOATING CAPABILITIES TO EXISTING PROGRAMS

HARRES, J. C. LINNEKEIN, J. S. /LIITON IND./ DATE- NOV. 1966

GSU-430

FLOATAN, a generalized plot analysis routine written for the IBM 7094 computer, minimizes the difficulties in adding plot capabilities to large existing programs. FLOATAN is used in conjunction with a binary tape writing routine and has the ability to plot any variable on the intermediate binary tape as a function of any other.

MIXED TUBE DISPLAY UNIT EMPLOYS TIME-SHARED LOGIC

GRAY, J. DATE- NOV. 1966

ABB-117

Cathodes of display tubes wired in parallel achieve input switching simplification of a mix tube display system. Use of time-shared logic energizes the appropriate anode and inhibits all unnecessary cathodes.

DIGITAL SYSTEM DETECTS BINARY CODE PATTERNS CONTAINING ERRORS

MULLER, R. H. THARPE, H. R., JR. DATE- NOV. 1966

GSFC-541

System of square loop magnetic cores associated with code input registers to react to input code patterns by reference to a group of control cores in such a manner that errors are canceled and patterns containing errors are accepted for amplification and processing. This technique improves reception capabilities in PCM telemetry systems.

ANTENNA SIMULATOR PERMITS REINSTALLATION SYSTEM CHECKOUT

ELtz, A. D. SCHMIDT, R. F. DATE- NOV. 1966

GSFC-522

Antenna simulator provides for evaluation checkout of corporate feeds, monopulse sum-and-difference networks etc., in a shielded environment prior to system checkout on an antenna pattern range. This technique is useful wherever simulation of monopulse antenna element characteristics is desired for checkout of ancillary equipment in a controlled environment.

PYROMETRY HANDBOOK DESCRIBES PRACTICAL ASPECTS OF SURFACE TEMPERATURE MEASUREMENTS OF OPAQUE MATERIALS

BEARSTEET, J. E. BUCCIO, D. R. DATE- NOV. 1966

BEAN- SEE ALSO NASA-79-D-3604

LEWIS-349

Handbook contains extensive reference literature and results from pertinent experiments to provide a collection of applied technology and reference sources for engineers and technicians. Fundamental equations of radiation, off-design corrections, characteristics of pyrometers, and calibration apparatus and techniques are discussed.

FLOWMETER MEASURES FLOW RATES OF HIGH TEMPERATURE FLUIDS

VARY, A. DATE- NOV. 1966

LEWIS-328

Flowmeter in which flow rate is determined by measuring the position and thus the displacement of an internal float acted upon by the flowing fluid determines the flow rates of various liquid metals at elevated temperatures. viscous forces cause the float to move from its mounted position, affording several means for measuring this motion and the flow rate.
B66-10526

STUDY OF VORTEX VALVE FOR MEDIUM TEMPERATURE SOLID PROPELLANTS

BILAS, W. E. /RCA CORP./ JAMES, R. G. /RCA CORP./ DATE- NOV. 1966

Fluid state vortex valve secondary injection control system shows considerable promise for future application to solid propellant rocket engine thrust vector control. The single axis injection system tested was capable of providing secondary injection thrust vector control using 2000 deg F gas.

B66-10525

COMPUTER PROGRAM PERFORMS STATISTICAL ANALYSIS FOR RANDOM PROCESSES

B66-10525

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

DATE- NOV. 1966

Random Vibration Analysis Program /HAYAN/ performs statistical analyses on a number of phenomena associated with flight and captive tests, but can also be used in analyzing data from many other random processes.

B66-10526

IMPROVED DESIGN PROVIDES FASTER RESPONSE TIME IN PHOTOMULTIPLIER

DATE- NOV. 1966

B66-10529

COMPUTER PROGRAM SEARCHES CHARACTERISTIC DATA OF DIODES AND TRANSISTORS

DATE- NOV. 1966

Computer programs perform statistical spectral analyses of up to seven time series. These programs should have applicability to a variety of engineering systems in the fields of geophysics, physiology, acoustics, and structural analysis.

B66-10531

HEAT FLUX SENSOR DESIGN REDUCES EXTRAMOUS SOURCE EFFECTS

DATE- NOV. 1966

B66-10533

METHOD PERMITS MECHANICAL AND ELECTRICAL CHECKOUT OF PIEZOELECTRIC TRANSDUCERS WHILE INSTALLED IN A SYSTEM

DATE- NOV. 1966

B66-10534

MICROFILM OF THE TEXT IS AVAILABLE UPON REQUEST.

DATE- NOV. 1966

Inspection system for bonded honeycomb assemblies is accurate, fast, and automated. The ultrasonic system consists of inner and outer transducer positioning assemblies with suitable motor controls, a centerless turntable assembly, water squirters assemblies, and an inspection program completely encoded on tape suitable for use on a
SECURITY MONITORS UP TO FIFTEEN REMOTE AREAS SIMULTANEOUSLY

Security warning system consisting of 15 television cameras is capable of monitoring several remote or unoccupied areas simultaneously. The system uses a comutator and decommutator, allowing time-multiplexed video transmission. This security system could be used in industrial and retail establishments.

MINIATURE ELECTROPLATED PREAMPLIFIER

Effective compensation for input capacitance

Negative capacitance preamplifier using a dual MOS/Metal Oxide Silicon transistor in conjunction with bipolar transistors is used with intracellular microelectrodes in recording bioelectric potentials. Applications would include use as a pickup plate video amplifier in storage tube tests and for photographic chamber measurements.

COMPUTER PROGRAMS CALCULATE POTENTIAL AND CHARGE DISTRIBUTIONS IN A PLASMA

Computer program determines the potential and charge distributions between two electrodes in a plasma. Solutions of the Vlasov equations for intracellular storage tube tests and for ionization chamber measurements.

A FAST-NEUTRON SPECTROMETER OF ADVANCED DESIGN

Fast neutron spectrometer combines helium filled proportional counters with solid-state detectors to achieve the properties of high efficiency, good resolution, rapid response, and effective gamma ray rejection.

SIMPLIFIED FIXTURE PERMITS PRECISION ALIGNMENT OF AN OPTICAL TARGET

Optical target holder is permanently placed for instrument sighting, yet is adjustable and easily aligned.

TRISPHERE SPARK GAP ACTUATES OVERVOLTAGE RELAY

Trisphere spark gap and high voltage relay provide a positive, fast acting, high current capacity device that will sense an overvoltage condition and remove power from the circuit before ionization breakdown. When an overvoltage occurs, the spark gap breaks down and conducts an actuating current to the relay which removes power from the circuit.

ONE-COUNT MEMORY CIRCUIT PREVENTS MACHINE RUDE INTERACTION

One-count memory logic circuit used with electromechanical counter-printer machines operates in either count or print mode. The circuit advances the counter when the machine is in the count mode and provides storage for the count pulse when the machine is in the print mode.

PULSE TECHNIQUE PROVIDES MORE ACCURATE CHECKOUT OF EXPLODING BRIDGE WIRE DEVICE

Expanding Bridge Wire /EBW/ is treated as a transmission line system and pulse reflection techniques are used for checking the electrical integrity of an EBW cartridge. A step voltage is propagated into the system and the reflected voltage waves are monitored.

COLLECTOR/COLLECTOR GUARD BIAS BALANCING CIRCUIT ELIMINATES EDGE EFFECTS

Circuit in which an emitter is maintained opposite a concentric collector and guard structure is achieved by matching the temperature and potential of the guard with that of the collector over the operating range. This control system is capable of handling up to 100 asperes in the guard circuit and 200 asperes in the collectors circuit.

PHOTOCELL SHADOWING TECHNIQUE IMPROVES LIGHT SOURCE DETECTOR

Lightweight, compact modular system that includes an acquisition photocell is used as a light source tracking detector that exhibits minimum scale factor change with increased light source angle. Photocells of various types, responsive to other portions of the spectrum, could be used to acquire and track infrared, ultraviolet, and other source fluxes.

COMPUTATIONAL PROCEDURE FOR FINITE DIFFERENCE SOLUTION OF ONE-DIMENSIONAL HEAT CONDUCTION PROBLEMS REDUCES COMPUTER TIME

Computational procedure reduces the numerical effort whenever the method of finite differences is used to solve ablation problems for which the surface recession is large relative to the initial slab thickness. The number of numerical operations required for a given maximum space mesh size is reduced.

MONITORING CIRCUIT ACCURATELY MEASURES MOVEMENT OF SOLENOID VALVE

Solenoid operated valve in a control system powered by direct current issued to accurately measure the valve travel. This system is currently in operation with a 28-vdc power system used for control of fluids in liquid rocket motor test facilities.

DEVICE ACCURATELY MEASURES AND RECORDS LOW GAS-FLOW RATES

Free-floating piston in a vertical column accurately measures and records low gas-flow rates. The system may be calibrated, using an
adjustable flow-rate gas supply, a low pressure gage, and a sequence recorder. From the calibration rates, a nomograph may be made for easy reduction. Temperature correction may be added for further accuracy.

B66-10574
NONDESTRUCTIVE TEST METHOD ACCURATELY SORTS MIXED BOLTS
DEZIER, C. J. DATE- DEC. 1966
K-FS-1426
Neutron activation analysis method sorts copper plated steel bolts from nickel plated steel bolts. Copper and nickel plated steel bolt specimens of the same configuration are irradiated with thermal neutrons in a test reactor for a short time. After thermal neutron irradiation, the bolts are analyzed using scintillation energy readout equipment.

B66-10576
A CONTINUOUSLY OPERATING SOURCE OF VACUUM ULTRAVIOLET BELOW 500 ANGSTROMS
SHOTTON, W. /INNOVATION NOT GIVEN /SPACE SCI. INC./ DATE- DEC. 1966
GSFC-545
Duo planar type source of ultraviolet radiation operates in the wavelength region below 500 angstrom. Since the spectra produced are determined almost completely by the gas injected, and because the source operates continuously, this arrangement is beneficial in the development and calibration of filters and detectors within discrete wavelength ranges.

B66-10577
ULTRASONIC WATER COLUMN PROBE SENSORS FOR Testing OF WELDS
HOOP, J. R. /MC DONALD, J. A. /GE/ DATE- DEC. 1966
NQ-58
Ultrasound device consisting of a coaxial rod and transducer enclosed in a cylindrical probe which is filled withazonized or distilled water speeds up the test of welds. Rubber diaphragms are molded to produce the desired test beam angle.

B66-10579
AN ORTHONORMALIZATION PROCEDURE FOR MULTIVARIABLE FUNCTION APPROXIMATION
STEIGER, H. DATE- DEC. 1966
M-FS-1313
Where a function of several variables is given numerically in tabular form, an orthonormalization technique allows an approximation of the numerical data to be determined in a convenient functional form. In this technique, the speed and accuracy of coefficient computation are much improved.

B66-10580
RESISTOR MONITORS TRANSFER OF LIQUID HELIUM
DEESEES, W. D. DATE- DEC. 1966
LANGLEY-229
Large resistance change of a carbos resistor at the liquid helium temperature distinguishes between the transfer of liquid helium and gaseous helium into a closed Dewar. The resistor should be physically as small as possible to reduce the heat load to the helium.

B66-10581
DETECTOR MEASURES POWER IN 50 TO 30,000 GHZ RADIATION BAND
ABARS, F. K. /HUGHES LAB./ DATE- DEC. 1966
ER-26
Broadband power detector assembly measures electromagnetic radiation in the 50 to 30,000 GHz band. The assembly includes a matched pair of detectors which incorporate thin-films radiation absorbers. The detector is effective with either coherent or incoherent radiation.

B66-10584
OPTICAL SUPERHETERO DyNE RECEIVER USES LASER FOR LOCAL OSCILLATOR
LORD, E. F. /SYLVANIA ELECTRON. SYSTEMS/ DATE- DEC. 1966
M-FS-1605
Optical superheterodyne receiver uses a laser coupled to a frequency translator to supply both the incident signal and local oscillator signal and thus permit reception of amplitude modulated video bandwidth signals through the atmosphere. This receiver is useful in scientific propagation experiments, tracking experiments, and communication experiments.

B66-10590
STUDY MADE OF APPLICATION OF STEREOSCOPIC DISPLAY SYSTEM TO ANALOG COMPUTER SIMULATION
M-FS-1263
Stereooscopic visual display system provides both a qualitative and measurable presentation for functions of several variables. A primary application of such a display system is in analog computer simulation of sets of differential equations.

B66-10591
ELECTRONIC CIRCUIT PROVIDES ACCURATE SENSING AND CONTROL OF DC VOLTAGE
LOTTUS, M. B. /WESTINGHOUSE ASTRONUTL. LAB./ DATE- DEC. 1966
HU-0069
Electronic circuit used relay coil to sense and control dc voltage. The control relay is driven by a switching transistor that is biased to cutoff for all input up to slightly less than the threshold level.

B66-10592
SENSORS MEASURE SURFACE ABLATION RATE OF REENTRY VEHICLE HEAT SHIELD
LANGLEY-287
Sensors measure surface erosion rate of ablating material in reentry vehicle heat shield. Each sensor, which is placed at precise depths in the heat shield is activated when the ablator surface erodes to the location of a sensing point. Sensor depth and activation time determine ablator surface erosion rate.

B66-10598
DESIGN CONCEPT FOR PRESSURE SWITCH CALIBRATOR
SLINGEVELAND, M. G. /GE DATE- DEC. 1966
NQ-36
Calibrator and switch design enables pressure switches to operate under 150 g shock loads. The design employs a saturated liquid- to- vapor phase transition at constant pressure to produce a known force independent of displacement over a usable range.

B66-10599
PRESSURE PROBE COMPENSATES FOR DIMENSIONAL TOLERANCE VARIATIONS
BANNER, R. A. /AREQUT-GEN. CORP./ DATE- DEC. 1966
LEWIS-302
Flexible, compressible spring- loaded pressure probe measures the static pressure between the rotor stages on an axial- flow fuel pump. This probe is used in installation where a drilled static pressure tap or a rigid impulse tube cannot be used. Its parameters must be specially determined for each installation.

B66-10600
HIGH FREQUENCY WIDE-BAND TRANSFORMER USES COAX TO ACHIEVE HIGH TURN RATIO AND FLAT RESPONSE
DE PARRY, T. DATE- DEC. 1966
ARG-107
Center-tap push- pull transformer with toroidal core helically wound with a single coaxial cable creates a high frequency wideband transformer. This transformer has a high coupling coefficient, and a flat broadband response.

B66-10603
NOFFIT ANALOG MEMORY CIRCUIT ACHIEVES LONG
DURATION SIGNAL STORAGE
SPON- INNOVATOR NOT GIVEN /JBM/ DATE- DEC. 1966
NESC-560
Memory circuit maintains the signal voltage at the output of an analog signal amplifier when the input signal is interrupted or reversed. The circuit uses MOSFET/Metal Oxide Semiconductor Field-Effect Transistor/devices as voltage-controlled switches, triggered by an external voltage-sensing device.

B66-10605
ELECTRICAL CONTINUITY SCANNER FACILITATES IDENTIFICATION OF WIRES FOR SOLDERING TO CONNECTORS
BOULTON, H. C., D'ILEMENDANT, R. A. /W. AR.
AVIATION/ DATE- DEC. 1966
NESC-626
Electrical continuity scanner automatically scans 50 wires in 2 seconds to correlate all wires in a circuit with their respective known ends. Modifications made to the basic plan provide circuitry for scanning up to 250 wires.

B66-10606
A RADIOATTER-PYROMETER
DATE- DEC. 1966 NASA SEE ALSO NASA-TN-D-2405
LMS-284
Radiometer-pyrometer measures the spectral absorption, emission, and temperature of gases. The major problems involved in spectro-radiometric measurements are nonuniform spectral sensitivity, nonlinearity, poor absolute accuracy, wide range of intensities, and wide range of wavelengths.

B66-10607
DEVELOPMENTAL INSTRUMENT SUPPLIES ACCURATE ATTITUDE AND ATTITUDE-RATE DATA
SPON- INNOVATOR NOT GIVEN /KOLT, HESSNER, AND NEWMAR, INC./ DATE- DEC. 1966
NO-97
Three orthogonal-plane projection provides accuracy of readout of both attitude and attitude-rate information in an easily interpreted, uncluttered arrangement where blind navigation of a moving body is involved. The longitudinal length of the projection is constant, and independent of the pitch and roll attitudes of the moving body.

B66-10612
RESISTANCE THERMOMETER HAS LINEAR RESISTANCE-TEMPERATURE COEFFICIENT AT LOW TEMPERATURES
KUTZ, W. /GEN. DYN./ DATE- DEC. 1966
WGO-190
Resistance thermometer incorporating a germanium resistance element with a platinum resistance element in a wheatstone bridge circuit has a linear temperature-resistance coefficient over a range from approximately minus 140 deg C to approximately minus 253 deg C.

B66-10614
STUDY OF THEORY AND APPLICATION OF LONG DURATION BEAM FLUX TRANSDUCERS
HEZAN, J. R., ROBBERTSON, S. J. /HEAT TECHOL.
LAB./ DATE- DEC. 1966
N-FS-1265
Theory and application of transducers used to measure heat flux in tests of more than one second duration.

B66-10617
UROVEMO MEMORY WORD LINE CONFIGURATION ALLOWS HIGH STORAGE DENSITY
SPON- INNOVATOR NOT GIVEN /UNIVAC/ DATE- DEC. 1966
GSPC-559
Plated wire memory word drive line allows high storage density, good plated wire transitions, and a simplified memory plane configuration. A half-turn word drive line with a magnetic keeper is used. The ground plane provides the return path for both the word current and the plated wire transmission line.

B66-10619
COMPUTER PROGRAM SIMPLIFIES TRANSIENT AND STEADY-STATE TEMPERATURE PREDICTION FOR COMPLEX BODY SHAPES
GILLEN, K. N. /W. AR. AVIATION/ DATE- DEC. 1966
NESC-589
Computer program evaluates heat transfer modes and calculates either the transient or steady-state temperature distributions throughout an object of complex shape when heat sources are applied to specified points on the object. It uses an electrothermal model to simulate the conductance, heat capacity, and temperature potential of the object.

B66-10621
CONNECTOR ACTS AS QUICK COUPLING IN COAXIAL CABLE APPLICATION
BECHL, A. G., JR. DATE- DEC. 1966
JPL-803
Quick-coupling connector whose inner shells are threaded to the cable ends and whose outer shells have tracks that register in channels machined in the inner shells are rotated 90 deg to effect a locking of the coupling. This connector faithfully reproduces excellent electrical characteristics no matter how frequently assembled and disassembled.

B66-10622
POINT-SOURCE DETECTION SYSTEM REJECTS SPATIALLY EXTENDED RADIATION SOURCES
MAYWELL, P. F., JR. /WESTINGHOUSE ELECTRIC CORP./ DATE- DEC. 1966
GSPC-446
System employing digital space correlation to suppress false target signals in a point-target tracking device is a reliable method for discriminating a distant target from false targets in the field of view of an infrared detection system or tracking device.

B66-10623
THERMOCOUPLES ELECTRICALLY CHECKED WHILE CONNECTED TO DATA SYSTEM
SPON- INNOVATOR NOT GIVEN /REP. AVIATION CORP./ DATE- DEC. 1966
LANGLEY-182
Constant current source is connected across the output of the millivolt measuring system to monitor the electrical continuity and resistance of multiple thermocouple installations without disconnecting them from a data system. This technique monitored gage thermocouple leads during the assembly and preflight testing of the Project Fire reentry packages.

B66-10624
MINIATURE TELERAY SYSTEM ACCURATELY MEASURES PRESSURE
FREEm, T. B. DATE- DEC. 1966 NASA SEE ALSO B66-10771 AND B66-10057
ARC-74
Miniature, low power, teleray system that can be used with commercially available strain gage pressure transducers accurately measures pressure with a small implantable pressure cell and transmitter. The system has been used to date only with pressure transducers, but the circuit is equally applicable to any measurement using a strain gage sensor.

B66-10625
COMPACT MICROWAVE MIXER HAS HIGH CONVERSION EFFICIENCY
PEREEN, R. J., ROBBINS, H. A. /HUGHES AIRCRAFT CO./ DATE- DEC. 1966
GSPC-197
Compact, lightweight microwave mixer has a relatively high conversion efficiency and power output. The mixer employs a pair of back-to-back voltage-variable capacitors in a stripline network.

B66-10629
PRECISION CW LASER AUTOMATIC TRACKING SYSTEM INVESTIGATED
N-FS-1606

36
Precision laser tracker capable of tracking a low acceleration target to an accuracy of about 20 microradians is being constructed and tested. This laser tracking has the advantage of discriminating against other optical sources and the capability of simultaneously measuring range.

B66-10632
ACCURATE DEPTH CONTROL PROVIDED FOR THERMOCOUPLE JUNCTION LOCATIONS


LANGLEY-289
Flight reentry experiments define the total heating on a large blunt-nosed body by means of imbedded thermocouples. The thermocouples, installed in a beryllium layered forebody, were designed to provide minimal feasible disturbance of local heat flow with accurate depth control of the thermocouple junction locations.

B66-10636
AUTOMATIC SYSTEM DETERMINES MOMENTS OF INERTIA OF ASTRONAUTICAL OBJECTS

SPON- INNOVATOR NOT GIVEN /SPACE, INC. /DATE- DEC. 1966

M-PS-1769
Automatic system rapidly and accurately determines moments and products of inertia of asymmetrical objects. The system combines a torsional pendulum arrangement and a precision rate table with simplified analog computers to determine the desired quantities directly, without the need for additional calculations.

B66-10637
INSTRUMENT ACCURATELY MEASURES SMALL TEMPERATURE CHANGES ON TEST SURFACE

HARVEY, W. D. /MILLER, R. B. /DATE- DEC. 1966

REAR- SEE ALSO NASA-TN-D-2846

LANGLEY-174
Calorimeter apparatus accurately measures very small temperature rises on a test surface subjected to aerodynamic heating. A continuous thin sheet of a sensing material is attached to a base support plate through which a series of holes of known diameter have been drilled for attaching thermocouples to the material.

B66-10640
VOLUME-RATIO CALIBRATION SYSTEM FOR VACUUM GAGES

SPON- INNOVATOR NOT GIVEN /LEWIS/ /DATE- DEC. 1966

LEWIS-303
Volume-ratio calibration system consists of a gas source, a pressure gauge, small volume tank, large volume chamber, plus appropriate piping, valves, and vacuum source. This system used in conjunction with commercial vacuum gauges evaluates its ability to accurately produce desired pressures in the .000001 to .01 torr range.

B66-10644
THEORY-EXIS ATTITUDE AND DIRECTION REFERENCE INSTRUMENT HAS ONLY ONE MOVING PART

BOSSLER, F. B. /BELL AEROSPACE CORP. /DATE- DEC. 1966

M-PS-1819
Lunar vehicle instrument combines the functions of attitude reference, direction reference, and display in a unit having only one moving part. The device, using bubble levels and a calibrated dial, is used as a sextant prior to takeoff, and as a backup navigation system during flight.

B66-10645
CONCEPT FOR USING LASER BEAMS TO MEASURE ELECTRON DENSITY IN PLASMAS

LONG, S. H. /BOEING CO. /DATE- DEC. 1966

M-PS-965
Concept is proposed for using laser beams as a means of measuring electron density at various points in flame or plasma exhausts. Measurement of the electron density is obtained by detecting reflected waves in the plasma that were activated by the laser.

B66-10650
MAGNETORESISTORS MONITOR RELAY PERFORMANCE

KNEES, D. Q. /BOEING CO. /DATE- DEC. 1966

M-PS-1754
Magnetoresistor monitors the action of relays without disturbing circuit parameters or degrading relay performance. The magnetoresistor measures the relay magnetic flux produced under transient conditions to establish the characteristic signature of the relay.

B66-10653
THERMOCOUPLES EASILY INSTALLED IN HARD-TO-GET-TO PLACES

GROFFER, F. G. /N. AM. AVIATION/ /DATE- DEC. 1966

M-PS-1946
Thermocouple wires attached to charged capacitors are inserted in a drilled hole. An electric charge fuses the thermocouple wires to the host material. This method has shown excellent results in fusing nichrome, chromel, Inconel, and stainless steel wires to nickel, beryllium, iron, steel, Inconel, and stainless steel.

B66-10658
DIGITAL FREQUENCY COUNTER PERMITS READOUT WITHOUT DISTURRING COUNTING PROCESS

WINKELSTEIN, W. /DATE- DEC. 1966

JPL-906
Digital frequency counter system enables readout accurately at one-second intervals without interrupting or disturbing the counting process. The system incorporates a master counter and a slave counter with novel logic interconnections. The counter can be readily adapted to provide frequency readouts at 0.1 second intervals.

B66-10659
LOGIC CIRCUITRY USED TO AUTOMATICALLY TEST SHIELDED CABLES

DIBB, G. /DATE- DEC. 1966

HG-60
Automatic cable tester checks multiple shielded conductors assembly cable connections. The tester uses logic circuitry to sequentially test all conductors and their shields to reveal any connection error in a GO-NO GO test.

B66-10661
STUDY OFFAST RESPONSE THERMOCOUPLE MEASUREMENT OF TEMPERATURES IN CRYPTOGENIC GASES

SIEBASHK, T. /LOWE, A. R. /BOEING CORP. /DATE- DEC. 1966

M-PS-1659
Thermocouples fabricated from uninsulated small diameter wire have fast reproducible response times. The thermocouple is thermally isolated from its supports by making the leads of sufficient length so that the heat conduction down the leads is small and assuming that the leads adjacent to the junction are subjected to the same thermal conditions.

B66-10664
PACKAGING OF ELECTRONIC MODULES

FITTER, L. /DATE- DEC. 1966

JPL-881
Study of design approaches that are taken toward optimizing the packaging of electronic modules with respect to size, shape, component orientation, interconnections, and structural support. The study does not present a solution to specific packaging problems, but rather the factors to be considered to achieve optimum packaging designs.

B66-10668
PHOTOGRAPIHC METHOD MEASURES PARTICLE SIZE AND VELOCITY IN FLUID STREAMS

DICKERSON, E. A. /N. AM. AVIATION/ /DATE- DEC. 1966

M-PS-1536
Method employing a nonframing motion picture camera, a continuous front light source, and a strobe light determines the size and velocity of small particles in nonturbulent fluid streams. This method is used in the study of the motion of
solid and liquid particles in research and industrial fluid flow systems.

B66-10669
GAS LEAK DETECTOR IS SIMPLE AND INEXPENSIVE
MITCHELL, D. K. /BOEING CO./ DATE- DEC. 1966
N-PS-1206

Pressure sensor monitors small gas leaks in piping and pressure vessels. A combination of a paper ribbon and adhesive plastic tape is used to cover the area to be monitored and the pressure sensor is placed over a hole in the tape and paper.

B66-10670
COMPUTER PROGRAM DETERMINES CHEMICAL COMPOSITION OF PHYSICAL SYSTEM AT EQUILIBRIUM
KWONG, S. S. /W. AERO. AVIATION/ DATE- DEC. 1966
MSC-119

FORTRAN 4 digital computer program calculates equilibrium composition of complex, multiphase chemical systems. This is a free energy minimization method with solution of the problem reduced to mathematical operations, without concern for the chemistry involved. Also certain thermodynamic properties are determined as byproducts of the main calculations.

B66-10671
COMPUTER PROGRAM DETERMINES CHEMICAL EQUILIBRIUM IN COMPLEX SYSTEMS
GORDON, S. ZELEZNIK, F. X. DATE- DEC. 1966
GSFC-559, 560

Computer program numerically solves nonlinear algebraic equations for chemical equilibrium based on iteration equations independent of choice of coordinates. This program calculates theoretical performance for frozen and equilibrium composition during expansion and Chapman-Jouguet flame properties, studies combustion, and design hardware.

B66-10675
GAGE ACCURATELY CONTROLS FORCE FOR PLACING CHIPS ON SUBSTRATES
BERES, W. F. /IBM/ DATE- DEC. 1966
M-PS-1941

Device is developed to control the force used in manually placing chips on substrates. It controls the compression load between 2 small members at least as low as 25 grams by means of a force control gage that is preset by varying the spring deflection.

B66-10679
BLACKBODY CAVITY RADIOMETER HAS RAPID RESPONSE
HALEY, F. C. DATE- DEC. 1966
JPL-521

Fast response, spectrally linear standard detector in the form of a blackbody cavity radiometer calibrates rapidly responding photodetectors and a calibrated standard detector. A power amplifier with new automatic gain reduces error signal without stability loss. It may be used as a blackbody radiator by manipulation of the bridge variable arm.

B66-10680
SLIDE RULE-TYPE COLOR CHART PREDICTS REPRESSED PHOTO TONES
GRIFFIN, J. P. /A. E. AVIATION/ DATE- DEC. 1966
MSC-1227

Slide rule-type color chart determines the final reproduced gray tones in the production of briefing charts that are photographed in black and white. The chart shows both the color and intensity of the gray tones resulting from black and white photographic reproduction.

B66-10685
PROCESS REDUCES SECONDARY RESONANT EMISSION IN ELECTRONIC COMPONENTS
EBENBACH, H. DATE- DEC. 1966
JPL-934

Process reduces secondary electron emission in coaxial connector and in waveguides in the atmosphere. The assembly is placed in a vacuum chamber and is gradually vented to the atmosphere. It is exposed to high voltage, argon gas, and a hydrocarbon gas during the process.

B66-10687
STUDY OF HOT WIRE TECHNIQUES IN LOW DENSITY FLOWS WITH HIGH TURBULENCE LEVELS
HANSON, A. R. KRAUSE, P. R. LARSON, R. E. DATE- DEC. 1966
N-PS-1269

Prediction of heat, mass, species, and momentum fluxes in a space vehicle and aerodynamic noise production by supersonic jet and rocket exhausts requires a predictable method of the associated turbulence fields. The hot wire is a technique that will allow an experimental determination of turbulent properties.

B66-10690
LOW INPUT VOLTAGE CONVERTER/REGULATOR MUTES EXTERNAL DISTORTIONS
BOW- INNOVATOR NOT GIVEN /BOWEYELL, INC./ DATE- DEC. 1966
GSFC-527

Low-input voltage converter/regulator constructed in a coaxial configuration minimizes external magnetic field distortion, suppresses radio noise interference, and provides excellent heat transfer from power transistors. It converts the output of fuel and solar cells, thermionic diodes, thermoelectric generators, and electrolytical batteries to a 28 V dc output.

B66-10691
EQUIVALENT CIRCUIT FOR A FIELD EFFECT TRANSISTOR ESTABLISHED FOR COMPUTER SIMULATION
KING, L. J. /IBM/ DATE- DEC. 1966
M-PS-1752

Equivalent circuit for the field effect transistor made up of circuit elements can be simulated by existing computer programs.

B66-10692
SOLID-STATE RECOVERABLE FUSE FUNCTIONS AS CIRCUIT BREAKER
THOMAS, E. F. JR. DATE- DEC. 1966
GSFC-560

Molded, conductive epoxy recoverable fuse protects electronic circuits during overload conditions, and permits them to continue to function immediately after the overload condition is removed. It has low resistance at ambient temperature, and high resistance at an elevated temperature.

B66-10693
ELECTRODEALLY SEALED CELLS PROTECTED FROM INTERNAL GAS PRESSURE
CASBRON, W. R. /GE/ DATE- DEC. 1966
GSFC-555

Manufacturing process prevents damage to hermetically sealed nickel-cadmium secondary cells by buildup of gas pressure during overcharging and reversed charging conditions. The cells are manufactured with less charge capacity in the positive electrode than in the negative electrode, and two additional electrodes are added.

B66-10696
LOW RATE FLOW SWITCH CAN BE USED FOR GAS OR LIQUID
DARK, R. T. JR. DATE- DEC. 1966
JPL-867

Flow switch operable at low flow rates is used for detecting the flow of a water coolant in a vacuum deposition apparatus. This switch utilizes one or more reed switches which are actuated by a sliding magnet.

B66-10699
MONITORING SYSTEM DETERMINES AMPLITUDE AND TIME OF VIBRATION CHANNEL PEAKS
ANDERSON, V. O. DATE- DEC. 1966
JPL-879

Adaptive scheme advocated in this innovation will reduce processing time and is applicable to
environmental testing and to space-borne or aircraft-borne vibration monitoring devices requiring a large number of channels.

**B66-10706**
LOGARITHMIC CURRENT SIMULATOR GENERATES ELECTRICAL CURRENTS ACCURATELY BETWEEN 10 TO THE MINUS 11 AMPERE TO 10 TO THE MINUS 3 AMPERE
WILSON, J. /WESTINGHOUSE ASTRONUC. LAB./ DATE-DEC. 1966
NU-0087
Current generator accurately simulates electric currents in the range of 10 to the minus 11th power to 0.001 ampere. Compensation networks have been devised to improve the accuracy at the lower current levels.

**B66-10709**
THERMOCOUPLE-FLEXIBLE CABLE CONNECTOR
INSULATOR IS HIGHLY RELIABLE
GRACEY, C. M. /RENOJET-GEN. CORP./ DATE-DEC. 1966
NU-0082
Plastic/polycarbonate/insulator improves thermocouple reliability in test operations. The insulator is molded in half sections, assembled mechanically and eliminates electrical shorting.

**B67-10001**
PROGRAM COMPUTES SINGLE-POINT FAILURES IN CRITICAL SYSTEM DESIGNS
BROWN, E. R. /PAR. AN. AVIATION/ DATE- JAN. 1967
MSC-603
Computer program analyzes the designs of critical systems that will either prove the design is free of single-point failures or detect each member of the population of single-point failures inherent in a system design. This program should find application in the checkout of redundant circuits and digital systems.

**B67-10002**
COMPUTER PROGRAM DETECTS TRANSIENT MALFUNCTIONS IN SWITCHING CIRCUITS
CALVIN, E. L. /PAR. AN. AVIATION/ DATE- JAN. 1967
MSC-604
A program which accepts a system model in the form of Boolean equations and solves these equations using a ternary algebra will determine the response of large combinational and sequential switching circuits to given input changes, taking into account malfunctions due to races, hazards, and oscillations.

**B67-10009**
TESTER FOR STUDY OF ROLLING ELEMENT BEARINGS
ZEITZEN, E. V. DATE- FEB. 1967
LEWIS-305
Five-ball fatigue tester makes possible the study of rolling element phenomena. The device consists of a driven test ball pyramided upon four lower balls positioned by a separator and free to rotate in an angular contact raceway.

**B67-10013**
SELF-STARTING PROCEDURE SIMPLIFIES NUMERICAL INTEGRATION
DATE- JAN. 1967 REAR- SEE ALSO NASA-TN-D-2936
ARC-50
A self-starting, multistep procedure for the numerical integration of ordinary differential equations is devised to produce all the required backward differences directly from the initial equations. The self-starting element eliminates nonessential tallying to determine starting values.

**B67-10015**
ALUMINIZED THIN-WINDOW PROPORTIONAL-COUNTER
TURN IS STRONGER, MORE RESPONSIVE IN LONG WAVELENGTH REGION
SCHOPPER, R. W. /SHELD, R. A. /CORNELL UNIV./ DATE- JAN. 1967
JPL-689
A thin-window proportional counter tube of 0.25-mil Mylar with a thin aluminum coating on one side permits efficient detection of long wavelength X rays. It is sufficiently rugged for long-term use in space or other demanding environments.

**B67-10017**
SHORTENED HORN-REFLECTOR ANTENNA
LAMB, F. A. DATE- JAN. 1967
GS-562
A shortened horn-reflector antenna overcomes the mechanical disadvantages and complexity of the conventional horn-reflector antenna. The shortened antenna offers broadband performance, economic construction, very low antenna temperature, and excellent pattern performance.

**B67-10020**
MINIATURE CAPACITOR FUNCTIONS AS PRESSURE SENSOR
BABKET, R. G. DATE- FEB. 1967
JPL-903
Miniature capacitor operates as a differential pressure telemetry sensor during free flight of the test model in a hypersonic wind tunnel. The capacitor incorporates a beryllium copper diaphragm. It is also used as an absolute pressure sensor.

**B67-10022**
VARIABLE-PULSE SWITCHING CIRCUIT ACCURATELY CONTROLS SOLID-STATE ACTUATIONS
GILLOT, J. D. /PAR. AN. AVIATION/ DATE- FEB. 1967
RI-25-1956
Solid state circuit generating adjustable square wave pulses of sufficient power operates a 28 volt dc solenoid valve at precise time intervals. This circuit is used for precise time control of fluid flow in combustion experiments.

**B67-10025**
COMPUTER/PERT TECHNIQUE MONITORS ACTUAL VERSUS ALLOCATED COSTS
HESSEY, E. WALKER, J. R. DATE- FEB. 1967
LEWIS-260
A computer method measures the user's performance in cost-type contracts utilizing the existing NASA program evaluation review technique without imposing any additional reporting requirements. Progress is measured by comparing actual costs with a value of work performed in a specific period.

**B67-10027**
FEED-THROUGH CONNECTOR COUPLES RF POWER INTO VACUUM CHAMBER
GRANDY, G. L. /WESTINGHOUSE ASTRONUC. LAB./ DATE- FEB. 1967
NU-0096
Feed-through device connects RF power to an RF coil in a vacuum chamber. The coil and leads are water cooled and vacuum tight seals are provided at the junctions. The device incorporates silver soldered copper tubes, polytetrafluoroethylene electrical insulators, and O-ring vacuum seals.

**B67-10028**
MONITOR ASSURES AVAILABILITY AND QUALITY OF COMMUNICATION CHANNELS
SMITH, G. P. /RCA/ DATE- FEB. 1967
KSC-66-38
System monitors a communication channel for proper circuit parameters and energizes an alarm if these parameters do not fall within allowable limits. It comprises a monitor-signal transmitter at the transmitting end of the channel and a monitor-signal receiver at the receiving end.

**B67-10029**
INSTRUMENT SEQUENTIALLY SAMPLES AC SIGNALS FROM SEVERAL ACCELEROMETERS
CHAPMAN, C. P. DATE- FEB. 1967 REAR- SEE ALSO
B66-10462
JPL-884
Scanner circuit sequentially samples the ac signals from accelerometers used in conducting noise vibration tests, and provides a time-averaged output signal. The scanner is used in conjunction with other devices for random noise vibration tests.
LOCAL MEASUREMENTS IN TURBULENT FLOWS
THROUGH CROSS CORRELATION OF OPTICAL SIGNALS
FISHER, M. J. DATE- FEB. 1967
NASA-1268
Crosed beam correlation method measures turbulent fluctuations in transonic and supersonic flows. Two crosed beams of radiation are crossed at the point of interest in the flow, and the power loss of each beam is measured with two independent photodetectors, which yield information about the turbulent properties.

HIGH TRANSIENTS SUPPRESSED IN ELECTROMAGNETIC DEVICES
HATTON, C. W. DATE- FEB. 1967
ESC-66-13
A bifilar winding around the magnetic core of electromagnetic devices suppresses high transient voltages. The winding is alternately spaced vertically and radially from the core to achieve a high coefficient of coupling.

THERMOELECTRIC METAL COMPARATOR DETERMINES COMPOSITION OF ALLOYS AND METALS
STONE, C. C. WALKER, D. E. DATE- FEB. 1967
ARC-215
Emf comparing device nondestructively inspects metals and alloys for conformance to a chemical specification. It uses the Seebeck effect to measure the difference in emf produced by the junction of a hot probe and the junction of a cold contact on the surface of an unknown metal.

RESIDUAL MAGNETISM HOLDS SOLENOID ARMATURE IN DESIRED POSITION
CRAWFORD, R. F. /GEN. ENG./ DATE- MAR. 1967
INFS-343
Holding solenoid uses residual magnetism to hold its armature in a desired position after excitation current is removed from the coil. Although no electrical power or mechanical devices are used, the solenoid has a low tolerance to armature displacement from the equilibrium position.

STUDY MADE OF EXPLOSIVE CUTTING IN SIMULATED SPACE ENVIRONMENTS
COLEMAI, R. H. HAMILTON, L. G. /HAYS INTERN./ CORP. DATE- MAR. 1967
NASA-SP-4-53440
M-PS-1597
Study indicates the feasibility of explosive cutting and establishes techniques applicable to in-space cutting operations. Results show no degradation of the explosive and that work hardening of the target material is limited to the cut edge.

ABSOLUTE VISCOSITY MEASURED USING INSTRUMENTED PARALLEL PLATE SYSTEM
BROOKS, H. H. DATE- MAR. 1967
JPL-878
An automatic system measures the true average shear viscosity of liquids and viscous materials, using the parallel plate method and automatically displays the results on a graphic record. This eliminates apparatus setup and extensive calculations.

IMPROVED FLUID CONTROL CIRCUIT OPERATES ON LOW POWER INPUT
GEHLEN, V. DATE- MAR. 1967
LEVTS-225
Standard electromagnetic relay actuates fluid control circuits with low level electrical signals by switching a fluid amplifier that drives a spool valve.

MULTIPURPOSE INSTRUMENTATION CABLE PROVIDES INTEGRAL THERMOCOUPLE CIRCUIT
ZELLER, G. /WESTINGHOUSE AVIATION/ BNL./ DATE-
MAR. 1967
MB-0108
Multipurpose cable with an integral thermocouple circuit measures strain, vibration, pressure, throughout a wide temperature range. This cable reduces bulky and complex circuitry by eliminating separate thermocouples for each transducer.
particles in a clean room. It categorizes and
records the particles according to size and
functions simultaneously in three separate areas.
The counter uses a transducer head to transform
light signals into electric signals.

B67-1007
COMPUTER PROGRAM SIMULATES DESIGN, TEST,
AND ANALYSIS PHASES OF SENSITIVITY
EXPERIMENTS
ALEXANDER, A. N. / N. AM. AVIATION/ DATE- APR. 1967
M-PS-1946
Modular program with a small main program and
several specialized subroutines provides a general
purpose computer program to simulate the design,
test and analysis phases of sensitivity
experiments. This program allows a wide range of
design-response function combinations and the
addition, deletion, or modification of
subroutines.

B67-10080
INSTRUMENT CONTINUOUSLY MEASURES DENSITY
OF FLOWING FLUIDS
JACOBS, D. R. / MACINE, J. MILLER, C. Y. / NBS/
DATE- APR. 1967
LEWIS-309
Electromechanical densitometer continuously
measures the densities of either single-phase or
two-phase flowing cryogenic fluids. Measurement is
made on artificial flow. The instrument operation
is on the principle that the mass of any vibrating
system is a primary factor in determining the
dynamic characteristics of the system.

B67-10084
CIRCUIT INCREASES CAPABILITY OF HYSTERESIS
SYNCHRONOUS MOTOR
MARKOWITZ, I. N. / RCA/ DATE- APR. 1967
MSC-834
Frequency and phase detector circuit enables a
hysteresis synchronous motor to drive a load of
given torque value at a precise speed determined
by a stable reference. This technique permits
driving larger torque loads with smaller motors
and lower power drain.

B67-10085
TRIPLE MODULAR REDUNDANCY /TRM/ COMPUTER
OPERATION IMPROVED
BALL, M. HARDIE, P. H. / IBM/ DATE- APR. 1967
MSC-831
Switching off a failed element plus one of the
good elements in the TRM computer operation keeps
the reliability curve from crossing the simplex
curve. This method increases reliability and
prevents system failure.

B67-10086
AUTOMATIC CHANNEL SWITCING DEVICE
BALL, M. CLAUSCH, G. N. / IBM/ DATE- APR. 1967
M-PS-832
MSC-834
Automatic channel switching device operates with
all three modular redundant channels when
there are no errors. When a failure occurs,
channel and module switching isolate the failure
to a specific channel. Since only one must
operate correctly, reliability is increased.

B67-10087
TRANSLATOR PROGRAM CONVERTS COMPUTER
PRINTOUT INTO BRAILLE LANGUAGE
POWELL, R. A. / BEING CO./ DATE- APR. 1967
M-PS-2061
Computer program converts print image tape files
into six dot Braille cells, enabling a blind
computer programmer to monitor and evaluate data
generated by his own programs. The Braille
output is printed 8 lines per inch.

B67-10090
SYSTEM AUTOMATICALLY SUPPLIES PRESSURE
ANALYTICAL SAMPLES OF HIGH-PRESSURE CASES
LANGDON, H. N. / IIT RES. INST./ DATE- APR. 1967
M-PS-1814
High-pressure-reducing and flow-stabilization
system delivers analytical gas samples from a gas
supply. The system employs parallel capillary
restrictors for pressure reduction and downstream
throttling valves for flow control. It is used
in conjunction with a sampling valve and minimizes
alterations of the sampled gas.

B67-10091
SYSTEM MAINTAINS CONSTANT PENETRATION
DURING FUSION WELDING
COOK, G. / REID ENG./ M. CAMPBELL, R. M. DATE- APR. 1967
M-PS-957
Servo system senses variations in fusion welding
process, and adjusts the control parameters to
compensate for them. The system assumes a
correlation between uniform weld penetration and
temperature gradients near the molten puddle. It
senses weld properties and makes adjustments to
travel speed and weld current.

B67-10092
RESEARCH A NEW MANAGEMENT TRAINING CONCEPT
DENAULT, E. F. VACCARE, R. J. DATE- APR. 1967
G-SC-574
Goddard Research Engineering Management
Exercise provides experience in R&D project
decision making from a management rather than
technological view. The participant directs a
hypothetical project presented in the management
simulation technique. He uses old or new methods
without concern for rewards or penalties existing
in real life.

B67-10093
STEEL GAGE CIRCUIT PROVIDES FATIGUE
TESTING MACHINE WITH ACCURATE CYCLE COUNT
PARK, R. / RESEARCH HOUSE AERONAUTICAL LAB./ DATE- APR. 1967
M-PS-714
Fatigue tester determines the number of cycles to
fatigue failure of brittle specimens. A strain
gage on the loading arm records the loading
applied to the component. As the component
starts to break, the load is reduced and the
strain gage stops the cycle counter.

B67-10097
HEATER CONTROL CIRCUIT PROVIDES BOTH FAST
AND PROPORTIONAL CONTROL
HABLOCK, R. W. / IBM/ DATE- APR. 1967
M-PS-905
Proportional control circuit supplies a heater
with full current, from a pulsating dc source, to
a present temperature and then switches to
proportional control for fine temperature
regulation. Two resistors and a diode are added
to the existing circuit. The circuit can be
adapted to control other functions.

B67-10099
SYSTEM ENABLES MORE COMPLETE CALIBRATIONS
OF DYNAMIC-PRESSURE TRANSDUCERS
TURNER, D. P. / IIT RES. INST./ DATE- APR. 1967
M-PS-2063
Absolute pressure calibration system using a
Michelson interferometer calibrates phase
characteristics and pressure sensitivities of the
transducers that monitor acoustic or aerodynamic
pressure fields. The interferometer uses a
helium-neon laser light source and interchangeable
acoustic signal generators to produce acoustic
waves.

B67-10101
DOUBLE EMITTER SUPPRESSED CARRIER MODULATOR
USING COMMERCIALLY AVAILABLE COMPONENTS
HAIST, C. F. Filed Co./ DATE- APR. 1967
M-PS-2494
Double emitter suppressed carrier modulator
develops a signal-to-carrier minimum output ratio
of 40 db and signal input of 2.5 volts. The circuit
uses a commercially available double
emitter chopper transistor. It eliminates tuning
potentiometers and reduces sideband harmonics.

B67-10103
POLYHEDRAL MANIPULATOR AP-168
TUTT, G. E. / N. AM. AVIATION/ DATE- APR. 1967
MSC-1231
Linear Systems Design Evaluation Program,
AP-168 combines the many different analysis techniques used to evaluate and manipulate polynomials. The single program is in a pseudo instruction abstraction. It allows the user to enter polynomials of the laplace operators and to manipulate them freely.

B67-10104 PARASTRICT UP-CONVERTER INCREASES FLEXIBILITY OF MASER
SUNY, R. H. DATE- APR. 1967
EJC-67-98

Parastreic up-converter translates a broad band of signals to the fixed tuned input frequency of a maser. This modified maser can operate in the 1700-2300 kc range, eliminating the need to duplicate equipment. It may be applied in communications and radio astronomy.

B67-10106 RF INDUCER HAS HIGH Q, IS STABLE AT HIGHER TEMPERATURES
WILEY, R. H. DATE- MAY 1967
JPL-1019

Encapsulated RF inductor with an insulated coil has a high Q and remains stable for long periods of time at high temperatures. The coil is wound on a core and both are encapsulated in an epoxy resin. Two terminals are soldered to the coil.

B67-10108 COMPUTER PROGRAM REDUCES CALCULATION TIME OF NORMAL RESPONSE FUNCTIONS
ALEXANDER, R. J. ROYTHAM, J. N.
/NA. AVIATION/ DATE- MAY 1967
NFC-1977

FORTRAN 2 computer program rapidly calculates parameters of maximum likelihood estimate form sensitivity experiment data populations. The program uses the Newton-Raphson iterative procedure to calculate the mean and standard deviation of portions of the cumulative normal response function.

B67-10111 FIXTURE TESTS BELLOWS RELIABILITY THROUGH REPETITIVE PRESSURE/TEMPERATURE CYCLING
LEVISON, C. /SPEEY GYROSCOPE CO./ DATE- MAY 1967
MSC-1176

Fixture explores the reliability of bellows used in precision in inertial systems. The fixture establishes the ability of the bellows to withstand repetitive over-strain pressure cycling at elevated temperatures. It is applicable in quality control and reliability programs.

B67-10115 LIQUID HYDROGEN DENSITOMETER UTILIZES OPEN-ENDED MICROWAVE CAVITY
SPEATA, N. WEBBER, C. DATE- APR. 1967 REAS
SEE ALSO NASA-TN-D-3680
LEWIS-390

Open-ended microwave cavity directly measures the density of flowing liquid, gaseous, or two-phase hydrogen. Its operation is based on derived relations between the cavity resonant frequency and the dielectric constant and density of hydrogen.

B67-10116 DETECTION OF ENTRAPPED MOISTURE IN HONEYCOMB SANDWICH STRUCTURES
HALLBARK, W. P. /NA. AVIATION/ DATE- MAY 1967
MSC-1103

Thermal neutron moisture detection system detects entrapped moisture in intercellular areas of bonded honeycomb sandwich structures. A radium/beryllium fast neutron source bombards a specimen. The emitted thermal neutrons from the target nucleus are detected and counted by a boron trifluoride thermal neutron detector.

B67-10119 TV SYNCHRONIZATION SYSTEM FEATURES STABILITY AND NOISE IMMUNITY
LEANDER, P. P. DATE- MAY 1967
JPL-915

Horizontal jitter in the video presentation in television systems is prevented by using an additional sync level. This circuitry uses simultaneous signals at both sync and porch frequencies, providing a sync identification from which a coincidence circuit can generate pulses having the required stability and noise immunity.

B67-10119 PERSONAL COMMUNICATION SYSTEM COMBINES HIGH PERFORMANCE WITH MINIORIZATION
ATLAS, A. H. /NA. AVIATION/ DATE- MAY 1967
MSC-720 MSC-732

Personal communication system provides miniaturized components that incorporate high level signal characteristics plus noise rejection in both microphone and earphone circuitry. The microphone is designed to overcome such spacecraft flight problems as noise, ambient noise level, and RF interference.

B67-10125 EDGE-TYPE CONNECTORS EVALUATED BY ELECTRICAL NOISE MEASUREMENT
SHEPHERD, S. L./BOEING CO./ DATE- MAY 1967
NFC-2243

Electrical noise measurement system measures noise generated by edge-type connectors and circuit cards when they are subjected to sinusoidal vibration. It provides a signal across the contact area and monitors the signal change during vibration. Noise measured can be expressed as a varying change in total contact resistance.

B67-10127 CALIBRATING ULTRASONIC TEST EQUIPMENT FOR CHECKING METAL STRIP STOCK
PETERSON, R. H./AEROSTART-GM. CORP./ DATE- JUN. 1967
MSC-10009

Calibration technique detects minute laminar-type discontinuities in thin metal strip stock. Patterns of plastic tape are preselected to include minutely calculated discontinuities and the tape is applied to the strip stock to intercept the incident sonic beam.

B67-10130 MODIFIED UNIVIBRATOR COMPENSATES FOR OUTPUT TIMING ERRORS
STRAUS, H. G. DATE- MAY 1967
ABP-95

One-stage, delay compensation amplifier, added to conventional univibrator circuitry time-synchronizes the trailing edge of the output pulse with the origin of the input pulse. The trailing edge is independent of the amplitude of the input pulse.

B67-10135 INTEGRATOR CAN EASILY BE SET AND RESET WITH AN ELECTRONIC SWITCH
DEGO, G. J. DATE- MAY 1967
MSC-10002

Electronic switch sets and resets integrator circuit to some initial condition using a grounded capacitor. This circuit also uses four equal resistors and an operational amplifier.

B67-10136 COMPUTER PROGRAM CALCULATES MONOTONIC MAXIMUM LIKELIHOOD ESTIMATES USING METHOD OF REVERSALS
ALEXANDER, R. J. ALEXANDER, N. J./NA. AVIATION/ DATE- MAY 1967
NFC-1516

FORTRAN 2 computer program calculates maximum estimates of a monotonic non-decreasing response function. The program uses the method of reversals algorithm which applies to the analysis of univariate or multivariate sensitivity experiments.

B67-10137 VARIABLE RELUCTANCE SWITCH AVOIDS CONTACT CORROSION AND CONTACT BOUNCE
WATSON, P. C./MIT/ DATE- MAY 1967
MSC-1178

Variable reluctance switch avoids contact corrosion and bounce in a hostile environment. It
consists of a wire-wound magnetic core and moveable bridge piece that alters the core flux pattern to produce an electrical output useful for switching control media.

B67-10139
RECORDING AND TIME EXPANSION TECHNIQUE FOR HIGH-SPEED, SINGLE-SHOT TRANSIENT VIDEO SIGNAL
HC MAYNE, R. J. SANDE, R. C. DATE- MAY 1967
ARC-10003
High-speed, single-shot, transient voltage is recorded on a video tape recorder, which, when played back, converts the single signal to a repetitive signal. This drives a sampled data translator which lengthens the original transient production time, suitign it to an x-y plotter or computer tape recorder use.

B67-10140
CLAMP PROVIDES EFFICIENT CONNECTION FOR HIGH-DENSITY CURRENTS
M-FS-2417
Electrical connector clamp /bus bar/ gives high contact-surface efficiency for providing a high current to thin wall stainless steel tubing containing hydrogen gas. It uses lead solder to provide the electrical equivalent of a fusion bond without degrading the grain structure, permitting disassembly and reuse of the components.

B67-10142
THIN FILM PROCESS FORMS EFFECTIVE ELECTRICAL CONTACTS ON SEMICONDUCTOR CRYSTALS
POMBROH, N. P. ROBERTS, J. S. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1967
M-FS-2343
Process makes microscopic, low-resistance electrical contacts on hexagonal n-type silicon carbide crystals used for microelectronic devices. A vacuum deposition of aluminum is etched to expose the bare silicon carbide where the electrical contacts are made. Sputtering alternating layers of tantalum and gold forms the alloy film.

B67-10143
DESIGN CONCEPTS USING RING LASERS FOR FREQUENCY STABILIZATION
NOCKE, R. /HONEYWELL INC./ DATE- MAY 1967
M-FS-2468
Laser frequency stabilization methods are based on a frequency discriminant which generates an unambiguous deviation signal used for automatic stabilization. Closed-loop control stabilizes cavity length at a null point. Some systems have a stabilizing laserdiode or plexo-electric dither and others use a Doppler gain tube.

B67-10144
PROCESSES FACILITATES PHOTO-RESIST MASK ALIGNMENT ON SIL CRYSTALS
POMBROH, N. P. ROBERTS, J. S. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1967
M-FS-2394
Growth of silicon dioxide on a silicon carbide crystal ensures proper orientation of photoresist masks on the crystals used for semiconductor devices. The crystal is heated in a water vapor-saturated gas to delineate p-n junctions that intersect the crystal surface.

B67-10145
TEST INSTRUMENTATION EVALUATES ELECTROSTATIC HAZARDS IN FLUID SYSTEMS
MC COLLINS, L. H. HENRY, R. KEES, D. /ECING CO./ DATE- MAY 1967
M-FS-2277
B±1 fuel surface potential is measured with a probe to determine the degree of hazard originating from static electricity buildup in the hydraulic fluid. The probe is mounted in contact with the fluid surface and connected to an electrostatic voltmeter.

B67-10146
HYDROGEN MASER AS A HIGHLY STABLE FREQUENCY REFERENCE
VANTER, J. YESSOT, R. /VARINI ASSOC./ DATE- MAY 1967
M-FS-2473
Hydrogen maser is stable short-term and long-term frequency reference for precision tracking systems. Its resettability is expressed as the rms drift from the mean.

B67-10150
MULTIPLEXING CONTROL DEVICE HANDLES MAPPING OF WIDE VARIATIONS IN SAMPLING RATES
SPW- INNOVATION NOT GIVEN /WESTINGHOUSE ELEC. CORP./ DATE- JUN. 1967
M-FS-1971
MSS telecommunication system concept provides the ability to change according to needs indicated by the data without any change to the lunar experiement equipment. The system will include a magnetic core memory as the data multiplexing control device.

B67-10151
ELECTRONIC FREQUENCY DISCRIMINATOR
BEEH, W. J. /MOTOROLA, INC./ DATE- JUN. 1967
M-FS-2436
Digital comparator permits discrimination at accuracy of reference frequency. The comparison circuit is a shift register element.

B67-10152
METHODS FOR IMPROVING APPARENT RESOLUTION OF TELEVISION
WILSON, R. H. DATE- MAY 1967
ERC-65
Technique using short term temporal integration characteristics of the observer visual system improves the apparent resolution of television video presentations. The raster is displaced slightly on each frame so the eye can integrate the information in each raster grain. This phase shift increases a switching time delay.

B67-10153
STUDY OF TITRIDE IRON CRYSTAL RODS EXHIBITS NEW MAGNETOSTATIC ECHO MODE
KEDZIE, R. W. /SPERRY RAND RES. CENTER/ DATE- JUN. 1967
ERC-37
Echo mode in YIG rods has different behavior in magnetic fields. This mode, discovered at 6.5 gigahertz, experiences a linear variation. The time delay exhibited is a linear function of the applied magnetic field and the input pulse frequency.

B67-10154
SUBRATURE DEFLECTION CIRCUIT OPERATES INTEGRATED SWEEP CIRCUITS IN TV CAMERA
SCHAFF, F. L. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1967
MNC-1263
Small magnetic sweep deflection circuits operate a hand-held linear television camera. They convert timing signals from the synchronizer into waveforms that provide a raster on the vidicon target. Raster size remains constant and linear during wide voltage and temperature fluctuations.

B67-10156
VOLTAGE REGULATOR/AMPLIFIER IS SELF-REGULATED
MSC-1240
Signal modulated, self-regulating voltage regulator/amplifier controls the output b-plus voltage in modulated regulator systems. It uses self-oscillation with feedback to a control circuit with a discontinuous amplitude action feedback loop.

B67-10157
DESIGN CONCEPT FOR IMPROVED PHOTO-SCAN TUBE
MALLING, L. B. DATE- JUN. 1967
JPL-818
Conceptual photo-scan tube avoids complexity of internal lens scanning and beam-current adjustment.
by optical scan readout. It differs from a conventional image orthicon in its use of an external oscilloscope tube.

B67-10160 A POWER-SPECTRAL-DENSITY COMPUTER PROGRAM CHAPMAN, C. P. DATE- JUN. 1967 NPO-10 126

Computer program simplifies and clarifies random noise vibration test results. It also varies PSD test specifications, sets up automatic equalization equipment, and calculates an exact acceleration level for the random noise prior to the test.

B67-10161 SENSING DISKS FOR SLUG-TYPE CALORIMETERS HAVE HIGHER TEMPERATURE STABILITY SPO- INNOVATOR NOT GIVEN /SOUTHERN RES. INST./ DATE- JUN. 1967 N-P-1867

Graphite sensing disk for slug-type radiation calorimeters exhibits better performance at high temperatures than copper and nickel disks. The graphite is heat-soaked to stabilize its emittance and the thermocouple is protected from the graphite so repeated temperature cycling does not change its sensitivity.

B67-10162 CLOSED CIRCUIT TV SYSTEMS MONITORS WELDING OPERATIONS GILMAN, H. /F. AM. AVIATION/ DATE- JUN. 1967 HSC-11002

TV camera system that has a special vidicon tube with a gradient density filter is used in remote monitoring of TIG welding of stainless steel. The welding operations involve complex assembly welding tools and skates in areas of limited accessibility.

B67-10165 HYBRID SOLID STATE SWITCH REPLACES ROTOR-DRIVEN POWER SWITCH BOOTH, F. A. SCHLOSS, A. I. DATE- JUN. 1967 JPL-931

Hybrid solid state switch replaces existing rotor-driven power switches used on spacecraft. It uses a transistor circuit to limit the open circuit voltage and allow small relay contacts to handle high transient currents at reasonable cycle life.

B67-10166 EFFICIENT MILLIMETER WAVE /400 GHE/ DIODE FOR HARMONIC POWER GENERATION SPO- INNOVATOR NOT GIVEN /ADVAN. TECHNOL. CORP./ DATE- JUN. 1967 NQ-61

Epitaxial gallium arsenide diode junction forced in a crossed waveguide structure operates as a variable reactance harmonic generator. This varactor diode can generate power efficiently in the millimeter wavelength range.


Data is input to magnetic tape on a single format card that specifies the system, location, and component, the test point identification number, the operators initial, the date, a data code, and the data itself. This method is efficient for large volume data storage and retrieval, and permits output variations without continuous program modifications.


Structural Analysis and Matrix Interpretive System eliminates high-speed digital computer restrictions of lack of generalization and lack of flexibility. Programming concepts of the system are standardization, modularity, and programming for intermediate-size problems.

B67-10175 NUMERICAL DATA FRAME READOUT SYSTEM USED IN TESTING TELEMETRY SYSTEMS COPPE, C. E. GRETHER, J. E. DATE- JUN. 1967 GBSC-551

Digital telemetry systems are treated by a display that offers direct readout as high data rates. The rates appear in numerical format and are adaptable to photographic recording techniques. The system can show bit drops at a memory output or locate a malfunction in a system.


Terminal burn-in or baking step time in the processing of planar silicon devices is extended to reduce their inversion tendencies. The collector-base junction of the device is also cyclically biased during the burn-in.

B67-10179 A THEORETICAL MODEL FOR DETERMINING TURBINE FLOWMETER SENSITIVITY SMITH, R. L. /F. AM. AVIATION/ DATE- JUN. 1967 N-P-1772

Analytical model of turbine-type flowmeter guidelines in the selection of valid extrapolation of available calibration data. An expression for flowmeter performance is developed to include the effects of fluid friction, bearing drag, and magnetic drag upon helical rotor design.

B67-10180 STUDY INDICATES FLUID DIGITAL COMPUTATION SYSTEMS ARE FEASIBLE SPO- INNOVATOR NOT GIVEN /GE/ DATE- JUN. 1967 N-P-520

Digital computation systems using fluid amplifiers are proven practical. The response speed is adequate for space applications and they are reliable in adverse environments. The systems may be feasible for satellite attitude controls and guidance computers for manned orbital stations.

B67-10190 SWITCHING-TYPE REGULATOR CIRCUIT HAS INCREASED EFFICIENCY CLAPP, M. /SANDERS ASSOCIATES, INC./ DATE- JUN. 1967 HSC-1063

Switching series regulator circuit uses an inductive network to feed most of the current applied to the control circuit to the load. This circuit eliminates resistive losses and the need for heat sinks.


Calorimeter measures the exhaust energy from a shot of a pulsed plasma gun accelerator. It has a fast response time and requires only one measurement to determine the total energy. It uses a long ribbon of copper foil wound around a glass frase to form a resonant cavity.

B67-10194 TECHNIQUE FOR STRIP CHART RECORDER TIME NOTATION SPO- INNOVATOR NOT GIVEN /SOAPRO CORP./ DATE- JUN. 1967 GBSC-473

Single recorder channel helps determine the time an event is recorded on the readout of a strip chart recorder. It presents hours, tens of minutes, and minutes by a unique method of time
increment identification. This facilitates recording timing marks.

B67-10199 ELECTRODE AMPLIFIER OPERATES OVER DYNAMIC RANGE OF FIVE ORDERS OF MAGNITUDE KATE, N. /MARSHALL LAB./ DATE- JULY 1967 ARC-75 Special purpose electrometer amplifier is capable of operation over a dynamic range of five orders of magnitude. This is achieved by using a servo controlled attenuator in the feedback path for the amplifier.

B67-10201 ELECTRONIC CIRCUITRY USED TO AUTOMATE PAPER CHROMATOGRAPHY STEFFENSEN, G. H. DATE- JUNE 1967 JNL-840 Electronic circuit is used in a paper chromatograph instrument that has excellent sensitivity and furnishes a printed record of each test. The circuit measures and records changes in conductivity in a strip of chromatographic paper as different solutions are placed on it.

B67-10203 AUTOMATED MICROSTRING IS HIGHLY ACCURATE AND RELIABLE STUART, J. L. DATE- JUNE 1967 BPO-142 Syringe meters small volumes of fluid used in chemical analysis. The standard body and plunger are adapted to fit with a motor driven micrometer, making a reliable and convenient device.

B67-10204 A CONCEPTUAL, PARALLEL OPERATING DATA COMPRESSION PROCESSOR ANDERSON, T. O. DATE- JUNE 1967 BPO-10068 Data compressor processor concept envisions a simplified system for telemetry communications. It is simultaneously a zero-order processor and a floating aperture, a variable aperture, and a binary integer aperture with a decoded buffer fullness counter.

B67-10205 QUARTZ CRYSTALS DETECT GAS CONTAMINANTS STEPHENS, J. B. DATE- JUNE 1967 BPO-10144 Piezoelectric quartz crystals detect condensable gas contaminants backstreaming into a vacuum chamber when a pump is evacuating the chamber. One crystal acts as a thermometer, the other detects mass change. They are energized by electronic equipment which records frequency changes.

B67-10206 PLOTTER DESIGN SIMPLIFIES DETERMINATION OF IMAGE SENSOR TRANSFER CHARACTERISTIC BAKER, L. E. DATE- JUNE 1967 BPO-10164 Transfer characteristic of vidicons and other image sensors are measured by light from a calibrated electroluminescent panel as a function of the current output of the image sensor. The plot of current output versus the calibrated light output is the transfer characteristic.

B67-10213 FM CARRIER DEVIATION MEASURED BY DIFFERENTIAL PROBABILITY METHOD DUGGAN, A. P., JR. HADDOCK, J. /BOEING CO./ DATE- JUNE 1967 JPL-216 Differential probability FM system measures FM deviation of a carrier modulated by a complex signal. The peak-to-peak amplitude is measured and related to the frequency shift of the carrier signal. The deviation is described in terms of a probability as well as a peak value.

B67-10215 RUN NUMBERING SYSTEM USE WITH DATA RECORDERS PEASE, L. L. /BOEING CO./ M-PS-2557 Run numbering identification system provides a permanent identification on the recorder traces of data runs. It automatically enters, by pulse coding, the number of the current data run on the recorder trace. The system uses a keyboard, registers, counters, amplifiers, and a pulse generator.

B67-10220 LOW SPEED, LONG TERM TRACKING ELECTRIC DRIVE SYSTEM HAS ZERO BACKLASH RICHTER, H. L. STOLLER, F. W. DATE- JULY 1967 BPO-10173 Electric drive system provides low speed, long term tracking of targets that move at a sidereal rate. It utilizes eddy-current energized actuators that are free from radio frequency interference generation and a solid state feedback amplifier with provisions for antibacklash biasing.

B67-10221 AMPLIFIER PROVIDES DUAL OUTPUTS FROM A SINGLE SOURCE WITH COMPLETE ISOLATION DIPPEL, C. R. /WESTINGHOUSE ASTRONUC. LAB./ NEFF, G. A. /NEFF INST. CORP./ DATE- JULY 1967 NDC-10056 Amplifier provides two amplified outputs from a single input signal with complete transformer isolation. It uses modulation techniques to obtain the separated output.

B67-10226 LABORATORY PULSE MODULATOR USES MINORITY CARRIER STORAGE DIODES SPORE- INNOVATOR NOT GIVEN /Sylvania Electron. Systems/ DATE- JULY 1967 M-PS-2442 Pulse modulator is capable of continuously variable pulse width over a 10 to 1 range of 1.0 microsecond to 0.1 microsecond and operates over a wide range of pulse repetition rates. Pulse width diversity is obtained by operating step-recovery diodes in the reverse conduction mode.

B67-10229 GLOW DISCHARGE DENSITY SENSOR PROBE LIFE IS EXTENDED MABUGH, R. A. /BOEING CO./ DATE- JULY 1967 M-PS-1707 Excitation of the glow discharge probes with a high peak-to-peak voltage square wave reduces instability of density sensors. This results in good probe life plus output stability over a wide range.

B67-10230 FUSED DIODE PROVIDES VISUAL INDICATION OF FUSE CONDITION JENKINS, K. E. DATE- JULY 1967 ESS-67-16 Fused diode combines a semiconductor diode and a circuit protective fuse within a common transparent cartridge. It provides visual indication of fuse condition which precludes the necessity of making resistance checks with an ohmmeter.

B67-10231 IMPROVED ATMOSPHERIC PARTICLE ANALYZER SPORE- INNOVATOR NOT GIVEN /BLOCK ENG./ DATE- JULY 1967 ESS-33 nephelometer measures aerosol particles in wide concentration and size distribution ranges. It measures the light scattered from the aerosol particles at a controlled sampling rate to ensure laminar flow through the sample tube, and thereby eliminates the need for sheath air.

B67-10234 AN IMPROVED NUCLEAR MAGNETIC RESONANCE SPECTROMETER KILBANK, E. D. HANAWALT, S. L. DATE- JULY 1967 JPL-762 Cylindrical sample container provides a high
degree of nuclear stabilization to a nuclear magnetic resonance/spectrometer. It is placed coaxially about the nmr insert and contains reference sample that gives a signal suitable for locking the field and frequency of an nmr spectrometer with a simple audio modulation system.

B67-10239
A PHOTOCARDIOGRAM SIMULATOR
KREPER, J. H. DATE- JUL. 1967
KSC-67-94
Simulator calibrates and checks out photocardiograms used in physiological monitoring of astronauts in flight and during flight simulation. It is also used to check out telemetry systems and instrumentation systems for photocardiograms monitoring in hospitals and medical care centers, and in training personnel to use such systems.

B67-10242
WEB BELT LOAD MEASURING INSTRUMENT HAS EXCELLENT STABILITY
WALKER, R. R. /W. AM. AVIATION/ DATE- JUL. 1967
MSC-923
Web belt system measures belt or strap load. It is partially disassembled and installed on an existing belt without cutting or re-threading the belt. A strain gauge, installed on one of the support beams, eliminates errors due to uneven loading.

B67-10246
IMPROVED TELEVISION SIGNAL PROCESSING SYSTEM
WONG, N. Y. DATE- JUL. 1967 BRO- SEE ALSO
B67-10005
MSC-1045
Digital system processes spacecraft television pictures by converting images sensed on a photostorage vidicon to pulses which can be transmitted by telemetry. This system can be applied in the processing of medical X ray photographs and in electron microscopy.

B67-10248
RECTILINEAR DISPLAY GIVES ACCELERATION LOAD FACTOR AND VELOCITY INFORMATION
MSC-1045
Spacecraft entry monitoring system /EMS/ gives a rectilinear display of acceleration load factor and velocity information. This allows an astronaut to respond with manual spacecraft attitude corrective maneuver commands.

B67-10249
COMPUTER PROGRAM SAMPLES DIGITAL DATA FOR CTV DISPLAY
DAY, D. J. WICKES, W. R. /W. AM. AVIATION/ DATE- JUL. 1967
MSC-992
High volume, multichannel data reduction computer program permits selection of the rates at which digital data is sampled. The program, written in POLEN & S source language, also permits accessibility to the original mass of data.

B67-10250
EXPERIMENTAL COHERENT FRACTIONAL FREQUENCY MIXEXCIER AT S-BAND
MOSSBURN, S. A. /SMITH ELECTRONICS CO./ DATE- JUL. 1967
M-PS-2927
Experimental circuit produces an efficient fractional frequency multiplier that will operate on a 5.6 kw, 2,101.6 MHz input signal to achieve an output-to-input frequency ratio of 240/221. Step-recovery diodes used in all frequency-changing stages result in a coherent offset frequency.

B67-10251
AN EFFICIENT, TEMPERATURE-COMPENSATED SUBCONDUCTOR OSCILLATOR
LAWRENCE, E. H. RIAD, B. C. /HUGHES AIRCRAFT CO./ DATE- AUG. 1967
JPL-SC-991
Telemetry subcarrier oscillator has temperature stability, consumes a minimum of power, and has a high input impedance. Its output frequency is a linear function of the magnitude of an input signal. A circuit using an input buffer with a field effect transistor serves as the temperature-compensating element.

B67-10253
SOLID STATE PHASE DETECTOR REPLACES BULKY TRANSFORMER CIRCUIT
NOBERLY, C. L. /MOTOROLA/ DATE- JUL. 1967
MSC-11007
Miniature solid state phase detector using MOSFET is used in a phase lock loop with a sun-bit detector in an integrated data-link circuit. This replaces bulky transformer circuits. It uses an inverter amplifier, a modulator switch, and a buffer amplifier.

B67-10254
A CALIBRATION BEAMS FOR SPECTRUM ANALYZERS
LARSON, B. S. DATE- JUL. 1967
MSC-10987
Spectrum analyzer calibration system is rapid and provides an accurate family of adjustable markers at any point in the spectrum. Pulse width controls determine the number of markers. The unit operates with a repetition rate from 300 cps to 40 kc at a center frequency from 10 kc to 2 Mc.

B67-10255
ABSOLUTE FREQUENCY STABILIZATION OF LASER OSCILLATOR AGAINST LASER AMPLIFIER
SIEGFRIED, A. R. /SYLVANIA ELECTRONICS SYSTEMS/ DATE- JUL. 1967
MSC-10987
Long-term absolute frequency stabilization of a laser oscillator is obtained when the lasers oscillation frequency is referenced to the exact center of an atomic transition. A laser amplifier acts as a discriminator to indicate when the laser frequency deviates from the center of its atomic transition.

B67-10257
FAST-RESPONSE FREQUENCY-TO-ANALOG CONVERTER
RAGHUNATHAN, R. S. /W. AM. AVIATION/ DATE- JUL. 1967
MSC-709
Frequency-to-analog converter has a fast response time and a low ripple. The circuit uses a frequency-to-pulse converter which provides two pulse trains, both at the same frequency as that of the input signal, but with a 10 microsecond difference between the trains.

B67-10258
MULTICHANNEL PULSE HEIGHT ANALYZERS IS INEXPENSIVE, FEATURES LOW POWER REQUIREMENTS
BRAHMS, J. C. SARKADI, A. A. /NEW HAMPSHIRE UNIV./ DATE- AUG. 1967
BGH-10050
Multichannel pulse height analyzers performs balloon and rocket investigations of solar neutrons with energies greater than 10 MeV. The lightweight unit can operate in a temperature range of minus 30 degrees to plus 70 degrees C and withstand storage temperatures from minus 50 degrees to plus 90 degrees C.

B67-10259
A PIEZOELECTRIC PRESSURE PROBE
FRIEND, W. H. MORPH, C. L. SHAFFIELD, T. /MC GILL UNIV./ DATE- JUL. 1967
LMT-393
Piezo-electric pressure type probe measures the impact velocity or pressure of a moving debris cloud. It measures pressures up to 200,000 psi and peak pressures may be recorded with a total pulse duration between 5 and 65 msec.

B67-10260
TESTER AUTOMATICALLY CHECKS INSULATION OF INDIVIDUAL CONDUCTORS IN MULTIPLE-STRAND CABLES
SHAW, J. VUCKOVICH, M. /WESTINGHOUSE AERONAUT. 46
IMPACTS OF OVER 15,000 G
NFC-10775
High impact pressure regulator used with a high impact gas scannograph withstands impacts of over 15,000 g. By the passage of fluid through the first and second chambers of the regulator, the pressure of the scannograph is regulated from a specific input valve to the desired output pressure valve.

B67-10275
PRIMARY CELL USES NEITHER LIQUID NOR FUSED ELECTROLYTES
GUTMANN, F. EMMAN, A. M. ERBAUM, A. /DATE-AUG. 1967 READ-SEE ALSO B66-10682
NFC-10001
Dry, solid state primary battery cell establishes an electrode reaction by a charge transfer mechanism without liquid phase ionization of electrolyte compounds. The charge transfer complex is sufficiently conductive to permit the passage of useful current.

B67-10276
SYSTEM PRECISELY CONTROLS OSCILLATION OF VIBRATING MASS
HANCOCK, D. J. /BUNKER-RABO CORP./ DATE- AUG. 1967
N-PS-1875
System precisely controls the sinusoidal amplitude of a vibrating mechanical mass. Using two sets of coils, the system regulates the drive signal amplitude at the precise level to maintain the mechanical mass when it reaches the desired vibration amplitude.

B67-10277
IN FIDUCIAL SCANNER MONITORS MANY TEST POINTS
PORTIER, R. J. /BOSING CO./ DATE- AUG. 1967
N-PS-1937
Infrared /IR/ scanners are used in test systems that involve many signal paths from transducers to a central evaluation point. The scanner, an IR-sensitive vidicon, looks at the indicator panels of each subsystem of the equipment being tested and picks up the level of radiation from each IR source mounted thereon.

B67-10284
VIBRATOR ELAPSED TIME IS AUTOMATICALLY CONTROLLED
EBRONICK, E. A. /N. AM. AVIATION/ DATE- AUG. 1967
N-PS-2573
Circuit determines elapsed operating time for vibrators when three vibrators are located in one room and are powered by two amplifiers through either of two control systems. It operates the control system elapsed time clocks only when voltage is applied to the vibrator armatures.

B67-10289
WIDE-BAND, HIGH EFFICIENCY OPTICAL MODULATOR
REQUIRES LESS THAN 10 WATTS DRIVE POWER
N-PS-12733
Wideband optical modulation system operates with less than 10-watts drive power. It consists of an optical modulator and transistorized driver that combines small cross-section potassium diiodeer phosphor crystals with laser beam-condensing optics. Optical modulation systems may serve importantly in future space communication systems.

B67-10294
SENSITIVE BRIDGE CIRCUIT MEASURES CONDUCTANCE OF LOW-CONDUCTIVITY ELECTROLYTE SOLUTIONS
SCHMIDT, E. /DATE- AUG. 1967
N-PS-1937
Compact bridge circuit measures sensitive and accurate conductance of low-conductivity electrolyte solutions. The bridge utilizes a phase sensitive detector to obtain a linear deflection of the null indicator relative to the...
Measured conductance. 

B67-10299
ELECTRONIC DUMMY FOR ACOUSTICAL TESTING
RMA- SEI ALSO N66-25565
MSC-206 N66-1164 N66-1165 N66-1166
Electronic Dummy /ED/ used for acoustical testing represents the average male torso from the Xiphoid process upward and includes an acoustic replica of the human head. This head simulates natural flesh, and has an artificial voice and artificial ears that measure sound pressures at the eardrums or the entrance to the ear canal.

B67-10300
CIRCUIT PROVIDES OVERCURRENT PROTECTION TO PUSH-PULL AMPLIFIER
SKORRA, D. J. /HUGHIESS/ DATE- AUG. 1967
MSC-12033
Circuit in push-pull amplifier limits the current flowing to a predetermined level and provides that overcurrent in one half of the amplifier turns off the other half.

B67-10303
PROCESS CONTROLS INTRODUCTION OF SELECTIVE IMPURITIES INTO SEMICONDUCTOR WAFERS
BARTHOLOMEY, W. C. TOPPER, A. R. /RCA/ DATE- AUG. 1967
GSPC-523
Modified three step process controls the concentration of lithium dopant within a silicon wafer. Individually controlled on a p-type wafer, the concentration of the p-type silicon containing the dopant is removed, prior to redistributing the remaining portion of the dopant into the bulk of the wafer.

B67-10311
TRANSISTOR BIASED AMPLIFIER MINIMIZES DIODE DISCRIMINATOR THRESHOLD ATTENUATION
LABSEP, R. H. DATE- AUG. 1967
ARG-163
Transistor biased amplifier has a biased diode discriminator driven by a high impedance signal source, rather than a voltage source with several hundred ohms output impedance. This high impedance input arrangement makes the incremental impedance of the threshold diode negligible relative to the input impedance.

B67-10313
PRECISION CAPACITORS HAVE IMPROVED TEMPERATURE AND OPERATIONAL STABILITY
BROOKSHIER, W. W. LEWIS, R. W. DATE- AUG. 1967
ARG-169
Vacuum dielectric capacitor is fabricated from materials with very low temperature coefficients of expansion. This precision capacitor in the 1000-2000 picofarad range has a near-zero temperature coefficient of capacitance, eliminates ion chamber action caused by air ionization in the dielectric, and minimizes electromagnetic field charging effects.

B67-10314
SiC/Si DIODE TRIGGER CIRCUIT PROVIDES AUTOMATIC RANGE SWITCHING FOR LOG AMPLIFIER
SPON- INNOVATORS NOT GIVEN /SICOM/ DATE- AUG. 1967
M-FS-1579
SiC/Si diode pair provides automatic range change to extend the operating range of a logarithmic amplifier-conversion circuit and assures stability at or near the range switch-over point. The diode provides hysteresis for a trigger circuit that actuates a relay at the desired range extension point.

B67-10317
IMPROVED HEAD-CONTROLLED TV SYSTEM PRODUCES HIGH-QUALITY BRIGHT IMAGE
COHEN, B. LINDBERG, J. RINGESS, D. POTTS, C. DATE- SEP. 1967
ARG-128
Manipulator operator uses an improved resolution tv camera/monitor positioning system to view the remote handling and processing of reactive, flammable, explosive, or contaminated materials. The pan and tilt motions of the camera and monitor are slaved to follow the corresponding motions of the operators head.

B67-10318
ELECTRONIC TEST INSTRUMENT GENERATES EXTREMELY SMALL CURRENT SIGNALS
BRICKNER, W. K. DATE- SEP. 1967
ARG-176
Generator produces dynamic test signals in the range from 0.001 to 10 to the minus 12th power amperes. It involves an extension of the technique of applying a triangular voltage waveform to a small capacitor to obtain a square-wave output current. The effects of stray capacitance are minimized by appropriate shielding.

B67-10333
BEAR Joint Quality Tested ELECTROMAGNETICALLY
GRAVES, D. B. /R. NAV. AVIATION/ DATE- SEP. 1967
N-FS-12795
Nondestructive electromagnetic method detects the extent of gold/nickel braze alloy flow in an engine injector sleeve-to-post joint. Voltage is induced in an inductor coil, along with a magnetically permeable material. Altering the quantity of braze alloy present can then be measured.

B67-10334
FIELD EFFECT TRANSISTORS IMPROVE BUFFER AMPLIFIER
SPON- INNOVATORS NOT GIVEN /DYNATRONICS/ DATE- OCT. 1967
N-FS-916
Unity gain buffer amplifier with a Field Effect Transistor /FET/ differential input stage responds much faster than bipolar transistor when operated at low current levels. The circuit uses a dual FET in a unity gain buffer amplifier having extremely high input impedance, low bias current requirements, and wide bandwidth.

B67-10335
METHOD OF IMPROVING CONTACT BONDS IN SILICON INTEGRATED CIRCUITS
LITTLE, W. J. /WESTINGHOUSE ELECT. CORP./ SCHUSTER, R. A. DATE- SEP. 1967
N-FS-1753
Fabrication method produces stable and reliable metallic systems for interconnections, contact pads, and bonded wires in silicon planar integrated circuits. The method is based on substrate isolation of the interconnection metal from the contact pad and bonded wire.

B67-10336
DEVICE ENABLES CALIBRATION OF MICROPHONES AT HIGH SOUND PRESSURE LEVELS
GIBLER, A. /WESTINGHOUSE ELECT. CORP./ DATE- SEP. 1967
N-FS-11980
Coupling device accurately calibrates microphones at high sound pressure intensities. The system which uses a liquid as the coupling medium can operate in an automatic mode by using a standard microphone as a control sensor. Feedback from the standard microphone controls the calibration signal level.

B67-10338
ACCURACY OF LASER MEASUREMENTS IMPROVED BY PULSE AUTO CROSS CORRELATOR ELECTRONIC SYSTEM
CAMPARIELLA, S. J. /BELPAR/ DATE- SEP. 1967
MSC-10633
Pulse autocorrelator electronic system discriminates between the dispersion effect of a disturbed laser signal and background noise by detecting multipath arrivals of Gaussian-shaped signal pulses. The autocorrelation function is time-dependent and can be determined by integrating the product of a received pulse and its delayed replicas.

48
VIBRATION ANALYSIS UTILIZING MOSSBAUER EFFECT
Roughton, W. A. DATE- SEP. 1967 REAR- SEE ALSO NASA-SP-1-132 M-P2-11974
Measuring instrument analyzes mechanical vibrations in transducers at amplitudes in the range of a few to 100 angstroms. This instrument utilizes the Mossbauer effect, the phenomenon of recoil-free emission and resonant absorption of nuclear gamma rays in solids.

NOCT. 10343 LIMIT CIRCUIT PREVENTS OVERDRIVING OF OPERATIONAL AMPLIFIER
OPENHAN, P. L. /AEROJET-GEN. CORP./ DATE- SEP. 1967 NUC-10052
Cutoff-type high gain amplifier coupled by a diode prevents overdriving of operational amplifier. An amplified feedback signal offsets the excess input signal that tends to cause the amplifier to exceed its preset limit. The output is, therefore, held to the set clamp level.

B67-10347 CURRENT PULSE AMPLIFIER TRANSMITS DETECTOR SIGNALS WITH MINIMUM DISTORTION AND ATTENUATION
BUSH, W. E. /WESTINGHOUSE ASTRONUCL. LAB./ DATE- SEP. 1967 NUC-10055
Amplifier translates the square pulses generated by a boron-trifluoride neutron sensitive detector located adjacent to a nuclear reactor to slower, long exponential decay pulses. These pulses are transmitted over long coaxial cables with minimum distortion and loss of frequency.

B67-10356 REPAIRABLE, HIGH-DENSITY MICROELECTRONIC MODULE PROVIDES EFFECTIVE HEAT SINK
CARLSON, K. J. /BOEING CO./ DATE- OCT. 1967 M-P2-13075
Repairable modular system is used for packaging microelectronic flat packs and miniature discrete components. This three-dimensional compartmented structure incorporates etched phosphor bronze sheets and windows with etched wire conductors. It provides an effective heat sink for electric power dissipation in the absence of convective cooling means.

B67-10357 DIGITAL-TO-ANALOG CONVERTER OPERATES FROM LOW LEVEL INPUTS
WINKLESTEIN, R. A. DATE- OCT. 1967 JPL-907
Circuit controls a voltage controlled oscillator from computer output binary data representing a location adjacent to a nuclear reactor to slower, long exponential decay pulses. These pulses are transmitted over long coaxial cables with minimum distortion and loss of frequency.

B67-10359 TEST DEVICE PREVENTS WELD JOINT DAMAGE BY ELIMINATING AXIAL PIN FORCES ON UNPOTTED MODULES
CREEB, R. E. /GEN. DYN./ DATE- OCT. 1967 LEWIS-10201
Test device makes electrical connection to pins on unpotted electronic modules without introducing any displacing forces of the pins, thus preventing weld joint damage. The pins are spaced in a centering header, but are free to slide in and out except for restraint from welded wire joints.

B67-10361 POCKET-SIZE MANUAL TAPE READER DEVICE AIDS COMPUTER TAPE CHECKING
ORLE, F. L. /BOEING CO./ DATE- OCT. 1967 KSC-10056
Pocket-size plastic manual tape reader device aids in reading, interpreting, and correcting binary and octal coded punched tapes. The coded information is more easily read if the color of the back plate contrasts sharply with that of the tape.

B67-10362 NOVEL RF PROBE ELIMINATES NEED FOR CALIBRATION IN PLASMA ACCELERATORS
MILLER, D. B. /GE/ DATE- OCT. 1967 LEWIS-10127
Novel RF antenna probe in plasma accelerators continuously maps the RF field both within and beyond the accelerator. It eliminates the need for installing probes in the accelerator walls. The moving RF probe can be used to map the RF electrical field under various accelerator conditions.

B67-10363 SYSTEM AUTOMATICALLY PROVIDES DYNAMIC LAUNCH DECISION CRITERIA
DOIG, J. E. /BOEING CO./ DATE- OCT. 1967 M-P2-13063
Saturn 5 dynamic Launch Decision Criteria model provides instantaneous criteria, derived from the parasitic behavior of a complex system such as a space launch vehicle plus its payload, for the decision making of launch management personnel.

B67-10367 TRANSDUCER MEASURES EMBEDMENT STRESSES IN ELECTRONIC MODULES
SMITH, M. H. /DOUGLAS AIRCRAFT CO./ DATE- OCT. 1967 M-P2-13046
Strain gage load transducer measures axial embedment stresses in resins used for encapsulation of welded electronic modules. It simulates the geometry of an actual electronic component and can be modified in size, shape, and operating temperature.

B67-10368 SIGNAL GENERATOR CONVERTS DIRECT CURRENT TO MULTIPHASE SUPPLIES
KAYSER, U. /ALLIS-CHALMERS ENG. CO./ DATE- OCT. 1967 KSC-11043
Multiphase wave generator uses multivibrators in a feedback control mode that produces output signal pairs that are impressed on the primary windings of inverter transformers sequentially with a 120 degree phase shift from each other.

B67-10369 MULTIPLE METER MONITORING CIRCUITS SERVED BY SINGLE ALARM
HANDY, L. /PHENIX AIRCRAFT ENGINEERING CORP./ DATE- OCT. 1967 M-P2-10966
Circuitry for multiple meter relay circuits provides complete isolation for each circuit served by a single alarm and permits alarm reset after an out-of-tolerance event in one relay circuit so that the remaining relay circuits continue to be alarm protected.

B67-10370 MECHANICAL PROPERTIES OF WIRE INSULATION AUTOMATICALLY DETERMINED
DAYW, P. S. GILL, W. L. DATE- OCT. 1967 B67-10983
Three separate mechanisms test the insulation on electrical wire specimens for mechanical resistance to flexure, abrasion or wear, and vibration. The test mechanisms performs the evaluation tests on insulated wire specimens in a chamber which can be controlled to simulate space or spacecraft cabin environments.

B67-10374 CIRCUIT AUTOMATICALLY CALIBRATES FLOWMETER AGAINST LIQUID-LEVEL GAGE REFERENCE
FIELD, E. J. /W. N. AVIATION/ DATE- OCT. 1967 M-P2-2144
Turbin-type flowmeter uses the flow of liquid from a tank with reed-type liquid level switches as a calibration reference. A circuit to generate a reliable gate signal consists of an input and switch identification stage, monostable
and bistable multivibrators, and a signal inverter and pulse output stage.

B67-10378
FLOWMEETER DETERMINES MIX RATIO FOR VISCUOS ADHESIVES
ABLEBI, C. B. /DOUGLAS AIRCRAFT CO./ DATE- OCT. 1967
M-PS-1208
Flowmeter determines mix ratio for continuous flow mixing machine used to produce an adhesive from a high viscosity resin and aliphatic amine hardener pumped through separate lines to a mixer blender. The flowmeter uses strain gages in the two flow paths and monitors their outputs with appropriate instrumentation.

B67-10382
USB OF COLOR-CODED SLEEVE SHUTTERS
ACCELERATOR OSCILLOGRAPH CHANNEL SELECTION
BOUCHIS, T. /BOEING CO./ BOWDEN, F. W. DATE- OCT. 1967
KSC-10092
Sleeve-type shutters mechanically adjacent individual galvanometer light beams onto or away from selected channels on oscillograph papers. In complex test setups, the sleeve-type shutters are color coded to separately identify each oscillograph channel. This technique could be used on any equipment using tubular galvanometer light sources.

B67-10384
CRACK GROWTH MEASURED ON FLAT AND CURVED SURFACES AT CRYOGENIC TEMPERATURES
ORANGE, T. W. /SULLIVAN, T. L. DATE- OCT. 1967
LEWIS-369
Multiple element continuity gage measures plane stress crack growth plus surface crack growth under plane strain conditions. The gage measures flat and curved surfaces and operates at cryogenic temperatures.

B67-10386
CONTINUOUS WAVE DETECTOR HAS WIDE FREQUENCY RANGE
M-PS-1049
Portable battery-operated detector indicates the presence of steady state signals exceeding a predetermined value over a wide frequency range by the closure of output relay contacts. It was designed to monitor electronic equipment used in the Saturn 2 program.

B67-10397
LAMP ENABLES MEASUREMENT OF OXYGEN CONCENTRATION IN PRESENCE OF WATER VAPOR
BRASCO, F. J. /PERKIN-ELMER CORP./ BORGERHARD, J. R. PAIS, W. S. DATE- OCT. 1967
M-PS-10043
Open-electrode ultraviolet source lamp radiates sufficient energy at 1800 angstroms and 1870 angstroms for use in a double-beam, dual-wavelength oxygen sensor. The lamp is filled with xenon at a pressure of 100 cm of Hg.

B67-10399
ROUBED SWITCH RESPONDS TO MINUTE PRESSURE DIFFERENTIALS
FRIEND, L. C. /BENDIX CORP./ SHORE, R. D. DATE- OCT. 1967
M-PS-12704
Pressure responsive switching device exhibits high sensitivity but is extremely rugged and resistant to large amplitude shock and velocity loading. This snap-action, single pole-double throw switch operates over a wide temperature range.

B67-10390
HIGH POWER DC/DC AND DC/AC ELECTRICAL POWER CONVERSION TECHNIQUES DEVELOPED
BRENNAN, G. WHITE, W. T. DATE- OCT. 1967
M-PS-13227
Small magnetic amplifiers pass square waves through transformers and provide regulation by varying the pulse width on the secondary of the output power transformers. This pulse duration modulation is provided by a control rectifier technique or a phase-shift technique.

B67-10396
MULTIPLEXER USES INSULATED GATE-FIELD EFFECT TRANSISTORS
GUSKIN, S. S. /BOEING CO./ DATE- OCT. 1967
M-PS-13096
Small lightweight multiplexer incorporates high-speed insulated gate field effect transistors for all digital logic functions, including the internally generated 3.6-kHz clock. It consists of 30 primary channels, each of which is sampled 120 times per second.

B67-10399
POTASSIUM PLASMA CELL FACILITATES THERMONIC ENERGY CONVERSION PROCESS
RICHARDS, M. K. DATE- OCT. 1967 BLAIR- SEE ALSO
ANL-6802
ARG-0010
Thermonuclear energy converter converts nuclear generated heat directly into high frequency and direct current output. It consists of a potassium plasma cell, a tantalum emitter, and a silver plated copper collector. This conversion process eliminates the steam interface usually required between the atomic heat source and the electrical conversion system.

B67-10402
AUTOMATIC TELEMETRY CHECKOUT SYSTEM
GEORGE, W. V. /BOEING CO./ DATE- NOV. 1967
M-PS-12580
Telemetry checkout station is designed to automatically perform measurements on the vehicle telemetry. Its features include real-time digitizing and computer controlled station setup, data processing, and self-check. The station can handle a wide variety of automatic tests by changing its computer programs.

B67-10404
CONTROL APPARATUS FOR SPECTRAL ENERGY SOURCE
GORDON, W. A. DATE- NOV. 1967
LEWIS-391
Automatic light-controlling system for dc arc emission spectrographs controls the vaporization rate of the sample and stabilizes the dc arc. The output energy is regulated such that advantage can be taken of the highly sensitive dc arc source without sacrificing the desired precision.

B67-10410
CURRENT STEERING COMPARATOR OFFERS VERSATILITY
RUBATTILI, L. J. DATE- OCT. 1967
JPL-812
Novel current steering comparator is capable of stepping to all possible locations from any location by appropriate control logic, and is easily tailored to specific user requirements.

B67-10412
TORQUE METER AIDS STUDY OF HYSTERESIS MOTOR RINGS
COLE, K. /METALS RESEARCH ASSOCIATES/ DATE- NOV. 1967
M-PS-12219
Torque meter, simulating hysteresis motor operation, allows rotor ring performance characteristics to be analyzed. The meter determines hysteretic motor torque and actual stresses of the ring due to its mechanical situation and rotation, aids in the study of asymmetries or defects in motor rings, and measures rotational hysteresis.

B67-10416
DIELECTRIC PRISMS WOULD IMPROVE PERFORMANCE OF QUASI-OPTICAL MICROWAVE COMPONENTS
CARMICHAEL, J. W. DATE- OCT. 1967
ERF-10011
Properties of the Brewster angle and internal reflection in a dielectric prism are proposed as the basis of a new type of element for use in oversize waveguide in quasi-optical microwave components. Waveguide loss is reduced and precision broadband attenuators, phase shifters,
and directional couplers can be constructed on the basis of the properties.

B67-10422
INFRARED RADIOMETER
BIRD, A. N. /SOUTHERN RES. INST./ DATE- NOV. 1967

INFRARED RADIOMETER

Radioimeter may be used either with an f/16 telescope to measure thermal radiation from the dark moon or with a short-range optical system to measure thermal radiation from laboratory samples.

B67-10424
TEMPERATURE-SENSED CRYOGENIC BLEED MAINTAINS LIQUID STATE IN TRANSFER LINE
LINDGREN, A. R. /AL. AN. AVIATION/ DATE- OCT. 1967

INFRARED RADIOMETER

Inverted tee, installed at a high point in a cryogenic transfer line, is equipped with an insulated bleed line that passes a fixed amount of cryogenic fluid at atmospheric pressure. A sensing device actuates a west valve in the tee stack whenever gaseous nitrogen is present.

B67-10425
ALUMINUM HEAT SINK ENABLES POWER TRANSISTORS TO BE MOUNTED INTEGRIALLY WITH PRINTED CIRCUIT BOARD
JACOBZI, C. /BOEING CO./ SEWELL, E. /NA. AVIATION/ DATE- NOV. 1967

INFRARED RADIOMETER

Hard coated aluminum circuit boards demonstrate the feasibility of obtaining an electrical power circuit of high packaging density with very high thermal conductivity and mechanical strengths.

B67-10426
CONCEPTUAL NONORTHOGONAL GYRO CONFIGURATION FOR GUIDANCE AND NAVIGATION
GILMORE, J. F. /MIT/ DATE- NOV. 1967

INFRARED RADIOMETER

Nonorthogonal sensor configuration using six single-degree-of-freedom inertial references, gyroscopes and a complete data processing and self-contained failure detection-and-isolation system provides redundant capabilities to guidance and navigation systems. This system has been formulated in a strap-down configuration to attain maximum redundancy.

B67-10433
ALGORITHMIC MONTE CARLO PROCEDURE REDUCES STATISTICAL ANALYSIS TIME AND COST FACTORS
AFRICANO, R. C. /NA. AVIATION/ LGGSCSC, T. S. DATE- NOV. 1967

INFRARED RADIOMETER

Algebraic Monte Carlo procedure statistically analyzes performance parameters in large, complex systems. The individual effects of input variables can be isolated and individual input statistics can be changed without having to repeat the entire analysis.

B67-10434
INTERFERENCE EFFECTS ELIMINATED IN RANDOM ORIENTED SPACE STATION ANTENNA SYSTEM
REllLE, R. B. /LOCKHEED-CALIF. CO./ DATE- NOV. 1967

INFRARED RADIOMETER

System eliminates destructive interference effects among multiple omnidirectional or semi-omnidirectional antennas on a large spacecraft that is either spin-stabilized or randomly oriented relative to the ground station with which communication is necessary.

B67-10436
BATTERY CHARGE REGULATOR IS COULOMETER CONTROLLED
PULIKOVIC, J. DATE- NOV. 1967

INFRARED RADIOMETER

Coulometer controlled battery charge regulator controls nickel/cadmium type primary cells used in space applications. The use of the coulometer as an amper hour measuring device permits all available current to go to the battery until full charge state is reached, at which time the charge rate is automatically reduced.

B67-10444
ELLIPSOIDAL-MIRROR REFLECTOMETER ACCURATELY MEASURES INFRARED REFLECTANCE OF MATERIALS
DURN, S. J. /NASA. BUR. OF STDs./ EICHMUND, J. C. DATE- NOV. 1967

INFRARED RADIOMETER

Reflectometer accurately measures the reflectance of specimens in the infrared beyond 2.5 microns and under geometric conditions approximating normal irradiation and hemispherical viewing. It includes an ellipsoidal mirror, a specially coated averaging sphere associated with a detector for minimizing spatial and angular sensitivity, and an incident flux chopper.

B67-10446
FOIL RADIOMETER ACCESSORY IMPROVES MEASUREMENTS
PAULKOVICE, J. DATE- NOV. 1967

INFRARED RADIOMETER

The responsiveness of a foil radiometer is increased and its time constant is simultaneously decreased by isolating the foil in a controlled environment. Using an optical system, it is coupled to the media to be measured, and the resulting concentration of energy permits the thermocouple junction temperature to respond quickly.

B67-10448
DIGITAL VOLTAGE-CONTROLLED OSCILLATOR

INFRARED RADIOMETER

Digital voltage-controlled oscillator generates a variable frequency signal controlled linearly about a center frequency with high stability and is phase controlled by an applied voltage. Integrations ahead of the digital circuitry provides linear operation with control voltage having appreciable noise components.

B67-10458
DESIGN FOR HIGH-TEMPERATURE /1600 DEG F/ LIQUID METAL PRESSURE TRANSDUCER
ENGDAHL, R. E. /CONSOLIDATED CONTROLS CORP./
DAYS- NOV. 1967
LWIS-10144
Thermionic diode sensor is used as a pressure transducer in advanced space power systems using liquid metals as working and heat transfer media at temperatures up to 1000 deg F. The sensor converts the motion of a pressure actuated refractory alloy capsule into a suitable electrical output.

B67-10459
STABLE AC PHASE AND AMPLITUDE COMPARATOR
BROCK, W. /MARTIN CO./ DATE- NOV. 1967
N-PS-13086.
Stable ac phase and amplitude comparator detects excessive vehicle maneuvering or vibration. It has phase demodulation, low-pass filter, and multiple threshold-setting capability designed specifically for low drifts over a wide range of temperatures.

B67-10460
RANGE RECORDING TECHNIQUE ENABLES FOUR-WAY POLARIZATION MEASUREMENTS
SWINDALL, P. R. /CONSOLIDATED COFFELS CORP./ DATE- NOV. 1967
N-PS-12447.
Manually tracked antenna is the most critical part of range recording system which has signal strength recording responses from dc to 20 kHz. The system records all polarizations simultaneously.

B67-10461
PROTECTED, HIGH-TEMPERATURE CONNECTING CABLE
ENGDAHL, R. E. /CONSOLIDATED COFFELS CORP./ DATE- NOV. 1967
LWIS-10179.
Ceramic insulated, swaged stainless steel, sheathed, protective atmosphere cable admits electrical leads into an 1800 deg F air-environment test chamber. The cable has some bending capability and provides for nine niobium alloy conductors. An arsenic purge during the TIG weld closure protects internal wires from oxidation and embrittlement.

B67-10467
AUTOMATIC TESTING DEVICE FACILITATES NOISE CHECKS AND ELECTRONIC CALIBRATIONS
HARROLD, J. L. /WESTINGHOUSE CORP./ DATE- NOV. 1967
LWIS-10173.
Automatic Digital Noise Checker determines the noise content of the many analog inputs of a data acquisition system and whether the Electronic Calibrations /EC/ on some data channels are operating properly.

B67-10468
SERIES TRANSISTORS ISOLATE AMPLIFIER FROM FLICKER VOLTAGE
DARBY, W. /GEN. DYN. CORP./ DATE- NOV. 1967
MSC-11023.
Circuit enables high sawtooth currents to be passed through a deflection coil and isolate the coil driving amplifier from the flicker voltage. It incorporates a switch consisting of transistors in series with the driving amplifier and deflection coil. The switch disconnects the deflection coil from the amplifier during the retrace time.

B67-10469
MINIATURE TELEVISION CAMERA
DETTERVILLE, B. J. /TELEDYNE SYSTEMS CO./ DATE- NOV. 1967
N-PS-11967.
Ultraminiature television camera with a total volume of 20.25 cubic inches, requires 28 vac power, operates on UHF and accommodates standard 8-mm optics. It uses microelectronic assembly packaging techniques and contains a magnetically deflected and electrostatically focused vidicon, automatic gain control circuit, power supply, and transmitter.

B67-10470
TECHNIQUE ELIMINATES HIGH VOLTAGE ARcing AT ELECTRODE-INSULATOR CONTACT AREA
REEDLE, C. DATE- NOV. 1967
LWIS-10133.
Coating the electrode-insulator contact area with silver epoxy conductive paint and forcing the electrode and insulator tightly together into a permanent connection, eliminates electrical arcing in high-voltage electrodes supplying electrical power to vacuum facilities.

B67-10471
TRANSIENT SENSOR DEVELOPMENT
CASE, J. /FRED. ELK. CORP./ DATE- NOV. 1967
N-PS-13370 N-PS-13371.
Pulse width/amplitude- and noise-sensors are updated to integrated circuit design concepts, and rise time/amplitude sensor design is reduced to an operational prototype to make all the sensors compatible for one system operation. Therefore, transients interfering with the design operation of receivers could be individually isolated and identified.

B67-10475
BLOOD PRESSURE REPROGRAMMING ADAPTER ASSISTS SIGNAL RECORDING
VICK, R. A. DATE- DEC. 1967
MSC-265.
Blood pressure reprogramming adapter separates the two components of a blood pressure signal, a dc pressure signal and an ac Korotkoff sounds signal, so that the Korotkoff sounds are recorded on one channel as received while the dc pressure signal is converted to FM and recorded on a second channel.

B67-10481
CONVERTER PROVIDES CONSTANT ELECTRICAL POWER AT VARIOUS OUTPUT VOLTAGES
FAULKOVICH, J. DATE- DEC. 1967
GSFC-1009.
Power converter, using an inverted flyback technique, transfers electrical energy at a constant rate from a solar cell source to a number of individual batteries, which are to be charged one at a time. The converter inverts the polarity of the solar cell source and provides the correct charging voltage.

B67-10482
SURFACE-CRACK DETECTION BY MICROWAVE METHODS
FEINSTEIN, L. /BRUDY, R. DATE- DEC. 1967
ARC-10009.
Microwave surface-crack detection system examines metallic surfaces with a noncontacting probe. The change in the microwave signal reflected from the surface under investigation is an indication of the existence of surface flaws. This technique can detect flaws and scratches as small as 100 microinches.

B67-10487
LONG TIME CONSTANT TIMER REQUIRES NO RECOVERY TIME
SOMERLOCK, C. R. DATE- DEC. 1967
GSFC-10091.
Ticking circuit delivers relatively long pulses, yet requires no recovery time after turnover. It can be retriggered before it has timed out and turned off.

B67-10496
DIGITAL SERVO READOUT SYSTEM INCREASES RECORDING ACCURACY OF SERVO-BALANCE SCAlES
FOPPELL, L. C. /WESTINGHOUSE ASTRONUC./ LAB./ DATE- DEC. 1967
N-PS-10125.
Digital servo readout system increases recording accuracy of servo-balance weighing scales. Reliability is also increased due to the reduction of the number of components.

B67-10497
HIGH TEMPERATURE THERMOCOUPLE DESIGN PROVIDES GAS COOLING WITHOUT INCREASING OVERALL SIZE OF UNIT
SELLER, G. J. /WESTINGHOUSE ASTRONUC./ LAB./ DATE- DEC. 1967
N-PS-10515.
High temperature thermocouple uses a thermoelement...
of noncircular cross section with insulation of circular cross section to provide space for the flow of coolant gas down the probe.

B67-10499

VANADIUM DIAPHRAGM ELECTRODE SERVES AS HYDROGEN DIFFUSER IN LITHIUM HYDROXIDE CELL

CROUTHMEL, C. R.; HEINRICH, R. R.; JOHNSON, C. R.

DATE- DEC. 1967 BEAN- SEE ALSO B67-10189

Lithium hydride cell uses vanadium diaphragm electrode as a hydrogen diffuser. Vanadium is high in hydrogen gas solubility and permeability, is least sensitive to adverse surface effects, maintains good mechanical strength in hydrogen atmospheres, and appears to be compatible with all alkali-halide electrolytes and lithium metals.

B67-10503

COMPOSITE SOLAR CELL MATRIX IS RELIABLE, LIGHTWEIGHT AND FLEXIBLE

YASUI, H. K.

DATE- DEC. 1967

NFC-10821

Conducting strips mechanically and electrically connect individual solar cells into a linear array of cells, called a solar submodule, and then connect in series two or more submodules to form a solar cell matrix. Tiny perforations in the strip make it easy to solder them directly to the individual solar cells.

B67-10505

THIN FILM THERMAL DECTECTOR

BABBATIAH, J.

DATE- DEC. 1967

JFL-943

Abnormally large variation of capacitance with temperature is obtained in thin film capacitors when a fixed ionic space charge is present in sufficient density in a dielectric film. This effect is the basis for a new kind of thin film thermal detector, whose performance at room temperature equals or exceeds that of comparable devices at much lower temperatures.

B67-10506

PERFORMANCE OF TUBE-TYPE FLOWMETERS IN LIQUID HYDROGEN

DATE- DEC. 1967 BEAN- SEE ALSO NASA-TN-D-3770

LEWIS-10137

Tests using commercially available flowmeters provide information on the constancy in water of the calibration factor /pulses per unit volume/, on the maximum deviation of the factor from its mean value, and on the probability of predicting the calibration factor of a meter in liquid hydrogen at full scale.

B67-10507

TEST AND INSPECTION FOR PROCESS CONTROL OF MONOLITHIC CIRCUITS

SPANGSBERG, R. /WESTINGHOUSE ELEC. CORP./ DATE- DEC. 1967

M-FS-13084

Report details the test and inspection procedures for the mass production of high reliability integrated circuits. It covers configuration control, basic fundamentals of quality control, control charts, wafer process evaluation, general process evaluation, evaluation score system, and diffusion evaluation.

B67-10513

IMPROVED CIRCUIT FOR MEASURING CAPACITIVE AND INDUCTIVE REACTANCES

DALING, I. MC CARTY, V. /KLIA. UNIV. REG. INST./ DATE- DEC. 1967

M-FS-13083

Amplifier circuit measures very small changes of capacitive or inductive reactance, such as produced by a variable capacitance or variable inductance displacement transducer. The circuit employs reactance-sensing oscillators in which field effect transistors serve as the active elements.

B67-10514

APPARATUS MAKES KLYSTRON OPERATING FREQUENCY ADJUSTABLE FROM REMOTE POINT

CLARK, R. C.

DATE- DEC. 1967

KFC-09331

Apparatus makes possible proper frequency adjustment in a receiver using a push klystron for a traveling-wave master. It incorporates a tunable overcoupled cavity with iris of appropriate size to accomplish frequency spread over the desired range and to maintain the Q of the klystron circuit at the optimum value.

B67-10515

VIDEO SYNCHRONIZATION PROCESSOR OVERCOMES POOR SIGNAL-TO-NOISE RATIO

WEBB, D. L.

DATE- DEC. 1967

KFC-10082

Video synchronization processor overcomes poor signal-to-noise ratio which occurs during adverse signal conditions caused by flame attenuation, antenna pattern nulls, and near-horizon tracking. The system maintains sync lock far below the point where excessive noise would render the video useless.

B67-10517

CORE AND COLUMN SOLAR ENERGY CONCENTRATOR


LANGLY-210

Solar energy concentrator consists of a reflective membrane cone and a stepped parabolic column located along the optical axis of the cone. The membrane cone can be folded for packaging and is supported by an expandable ring at the rim of the cone when erected. The stepped parabolic column can be telescoped for packaging.

B67-10519

CIRCUIT MEASURES HYSTERESIS LOOP AREAS AT 30 Hz

HOFFMAN, C. /BIDWEST APPLIED SCI. CORP./ D. SPILG.

DATE- OCT. 1967

M-FS-13069

Analog circuit measures hysteresis loop areas as a function of time during fatigue testing of specimens subjected to sinusoidal tension-compression stresses at a frequency of Hz. When the sinusoidal stress signal is multiplied by the strain signal, the dc signal is proportional to hysteresis loop area.

B67-10538

FLAME SPRAYED DIELECTRIC COATINGS IMPROVE HEAT DISSIPATION ELECTRONIC PACKAGING

MACKAT, T. L. /DOUGLAS AIRCRAFT CO./ MULLER, A. M. VANARAM, J. B.

DATE- DEC. 1967

N-PS-13569

Heat sinks in electronic packaging can be flame sprayed with dielectric coatings of alumina or beryllia and finished off with an organic sealer to provide high heat and electrical resistivity.

B67-10536

EUTECTIC FUSE PROVIDES CURRENT AND THERMAL PROTECTION UNDER HIGH VIBRATION

ZEROKROS, N. /N. A. AVIATION/ DATE- DEC. 1967

M-FS-13664

Eutectic fuses provide current and thermal protection to an electronic system and maintain this protection under high vibration environments. The fuses are embedded within heat shrinkable sleeving which provides positive closing action under the conditions of high current or temperature.

B67-10538

DOUBBLE COPPER SHEATH MULTICONDUCTOR INSTRUMENTATION CABLE IS DURABLE AND HUGE INSTALLED IN HIGH THERMAL OR NUCLEAR RADIATION AREA

MC CRAW, A. W., JR. /AEROSPACE GEN. CORP./ DATE- DEC. 1967

NUC-10007

Multiconductor instrumentation cable in which the conducting wires are routed through two concentric copper tube sheaths, employing a compressed insulator between the conductors and between the inner and outer sheaths, is durable and easily installed in high thermal or nuclear radiation area. The double sheath is a barrier against moisture, abrasion, and vibration.
B67-10540
AUTOMATIC TRANSDUCER SWITCHING PROVIDES
ACCURATE WIDE RANGE MEASUREMENT OF PRESSURE
DIFFERENTIAL
YODER, S. K. /ABBOT-GEN. CORP./ DATE- DEC. 1967
8-PS-10001
Automatic pressure transducer switching network sequentially selects any one of a number of limited-range transducers as gas pressure rises or falls, extending the range of measurement and lessening the chances of damage due to high pressure.

B67-10544
ANALOG BUFFER ISOLATES HIGH IMPEDANCE SOURCE FROM LOW IMPEDANCE LOAD
DENBY, W. A. /DOUGLAS AIRCRAFT CO./ DATE- DEC. 1967
8-PS-13061
Analog buffer amplifier isolates a high impedance source from a low impedance load through an impedance ratio of approximately 200 million to one. Isolation is accomplished with little alteration to temperature stability, linearity, and gain parameters.

B67-10545
INSTRUMENTATION MONITORS TRANSPORTED MATERIAL THROUGH VARIETY OF PARAMETERS
HARBER, R. G. /AM. AVIATION/ DATE- DEC. 1967
8-PS-12938
Transport instrumentation system used in transporting sensitive or delicate equipment measures the environmental parameters to which the equipment is exposed and records them constantly in time reference. The system provides a complete historical record plus the capability of taking corrective action where indicated by real time readout.

B67-10546
DEVELOPMENT OF LOW TEMPERATURE ELECTRICAL MEASUREMENTS
LEWIS-10326
Self-contained low temperature battery system consisting of a magnesium anode, potassium thiocyanate-ammonia electrolyte and a cathode composed of a mixture of sulfur, carbon, and mercuric sulfate operates for at least seventy-two hours within a discharge temperature range of plus 20 degrees C to minus 90 degrees C.

B67-10548
GM/LOCAL-TIME CONVERSION CHART
CEWELING, C. J. DATE- DEC. 1967
GSPC-10521
GM/local-time conversion is made by a longitude pocket instrument that automatically indicates desired information by simply manipulating the movable portion of the instrument in accordance with a set of simple instructions imprinted on the reverse side of the instrument.

B67-10550
HIGH-TEMPERATURE /1100 DEGREES F/ CAPACITORS OPERATE WITHOUT SUPPLEMENT COOLING
STAPLETON, R. E. /WESTINGHOUSE ELEC./ DATE- DEC. 1967
LEWIS-10324
Multilayered capacitor with one-all thick pyrolytic boron nitride and wrap around sputtered electrodes achieves parallel electrical interconnections in a stacked configuration of 3 to 9 wafers. These capacitors are compact, lightweight, and suitable for operation in high temperatures without supplemental cooling.

B67-10552
LIGHT-CONTROLLED RESISTORS PROVIDE QUADRATURE SIGNAL REJECTION FOR HIGH-GAIN SERVO SYSTEMS
MC CAULEY, D. B. /PELICO/ DATE- DEC. 1967
NSD-380
Servo amplifier feedback system, in which the phase sensitive detection, low pass filtering, and multiplication functions required for quadrature rejection, are preforged by light-controlled photoresisters, eliminates complex circuitry. System increases gain, improves signal-to-noise ratio, and eliminates the necessity for compensation.

B67-10553
SIMPLE FIRST ORDER DATA COMPRESSION PROCESSOR CONCEPT
ANDERSON, T. O. DATE- DEC. 1967
8-PS-10338
Data-compression processing systems based on an analog-to-digital converter (ADC), includes a qualitative comparator for comparison of the ADC output with a ramp generator, which is connected as a bidirectional binary counter with selective inputs. A bidirectional ramp counter selects the proper ramp through a ramp generator selection network.

B67-10554
CALIBRATION TECHNIQUE FOR ELECTROMAGNETIC FLOWMETERS
LEWIS-10328
Thermal calorimetric method is used to calibrate electromagnetic flowmeters for liquid alkali metals. The electromagnetic flowmeter is placed in the liquid metal flow system in series with a thermal calorimeter. Therefore, the calculated flow rate through the calorimeter can be compared directly with the respective electromagnetic flowmeter reading.

B67-10557
IMPROVED CAVITY-TYPE ABSOLUTE TOTAL-RADIATION RADIOMETER
JPL-807
Conical cavity-type absolute radiometer measures the intensity of radiant energy to an accuracy of one to two percent in a vacuum of ten to the minus fifth torr or lower. There is a uniform response over the ultraviolet, visible, and infrared range, and it requires no calibration or comparison with a radiation standard.

B67-10558
SOLID STATE SINGLE-ENDED SWITCHING DC-TO-DC CONVERTER
HANKE1, R. A. /AUBURN UNIV./ DATE- DEC. 1967
8-PS-13098
Solid state, single-ended switching dc-to-dc converter electrically isolated a dc supply from the prime dc power service.

B67-10559
SOLID STATE ZERO-BIAS BILATERAL SWITCH
HOPFED, J. M. / RCA/ DATE- DEC. 1967
GSPC-332
Circuit switches a plus or minus 2.5 volt peak, dc to 300 kHz input to an operational amplifier. Featured in a bilateral transistor which draws a saturation current of equal amplitude and opposite polarity to the saturation current of the bilateral transistor, cancelling the dc bias effect at the output.

B67-10560
FLAT PACK INTERCONNECTION STRUCTURE
SIMPLIFIES MODULAR ELECTRONIC ASSEMBLIES
FATZER, L. DATE- DEC. 1967
JPL-818
Flat pack interconnection structure composed of stick modules simplifies modular electronic assemblies by allowing a single axis mother board. Two of the wiring planes are located in the stick module, which is the lower level of assembly, with the third wiring plane in the mother board.

B67-10561
TRANSISTOR H PARAMETER CONVERSION SLIDE RULE
GRAFTON, B. E. DATE- DEC. 1967
JPL-649
Slide rule enables the ready conversion of transistor h parameters from one form to another.
and reduces calculation time by a factor of 5 to 10. The scales are selected to cover all ranges
of each parameter that will normally exist for any
transistor, and answers are given in the correct
order of magnitude, making powers-of-ten
calculations unnecessary.

B67-10562
IMPROVED DIGITAL TV ENCODING AND DECODING
SYSTEM
DUTTERNANN, A. R. /PHILCO-FORD CORP./ DATE- DEC.
1967
MSC-11147
Analog-to-digital coder and digital-to-analog
decoder system handles wideband TV signals. The
system incorporates solid state plug-in modular
units and is operated in a VSD /Variable Slope
Delta Modulation/ mode or in the conventional
one-bit DM /Delta Modulation/ mode.

B67-10565
LOGIC CIRCUIT DETECTS BOTH PRESENT AND
MISSING NEGATIVE PULSES IN SUPERIMPOSED
WAVEFORMS
RICE, R. E. /DOUGLAS AIRCRAFT/ DATE- DEC. 1967
H-FS-12518
Pulse divide and determination network provides a
logical determination of pulse presence within a
data train. The network uses digital logic
circuitry to divide positive and negative pulses,
to shape the separated pulses, and to determine,
by means of coincidence logic, if negative pulses
are missing from the pulse train.

B67-10569
MOSFET IMPROVES PERFORMANCE OF POWER SUPPLY
REGULATOR
LOCKBROS, D. C. DATE- DEC. 1967
GSC-10022
Circuit with Metal Oxide Semiconductor Field
Effect Transistor /MOSFET/ as the voltage
reference, provides a high degree of power supply
voltage regulation and temperature compensation.

B67-10571
ANALOG VOICING DETECTOR RESPONDS TO PITCH
ABEL, E. S. WATKINS, R. E. /PHILCO-FORD CORP./
DATE- DEC. 1967
GSC-10085
Modified electronic voice encoder /Vocoder/ includes an independent analog mode of operation in
addition to the conventional digital mode. The
Vocoder is a bandwidth compression equipment that
permits voice transmission over channels, having
only a fraction of the bandwidth required for
conventional telephone-quality speech
transmission.

B67-10572
TELEPRINTER USBS THERMAL PRINTING TECHNIQUE
PERKINS, R. D. PERKINS, J. E. TAYLOR, J. W.
THOMAS, D. G. PERKINS, R. E. /NATIONAL CASE REGISTER
CO./ DATE- DEC. 1967
MSC-11327
Alphanumeric/facsimile printer receives serial
digital data in the form of a specified number of
bits per group and prints it on thermally
sensitive paper. A solid state shift-register
memorizes the incoming serial digital data.

B67-10576
NONDESTRUCTIVE TESTING TECHNIQUES USED IN
ANALYSIS OF HONEYCOMB STRUCTURE BOND
STRENGTH
SHOHAN, D. C. MARTIN, G. MOORE, J. F. THOMAS,
G. VARMENY, R. S. /W. A. AVIATION/ DATE- DEC.
1967
H-FS-1214 H-FS-1221
DOT /Driver-Displacement Oriented
Transducer/, applicable to both lap shear type
application and honeycomb sandwich structures,
measures the displacement of the honeycomb
composite face sheet. It incorporates an
electromagnetic driver and a displacement
measuring system into a single unit to provide
noncontact bond strength measurements.

B67-10578
IMPROVED FREQUENCY DIVIDER DEPLOYS

TRANSISTOR AVALANCHE EFFECT
JOHNS, C. E. DATE- DEC. 1967
NPO-10008
New frequency divider circuit can be synchronized
over a wider input control frequency range, has
greater phase stability, and is less sensitive to
temperature changes than conventional synchronized
oscillators. The new circuit uses the avalanche
breakdown mode of operation of transistors.

B67-10576
MULTIPLE TELEVISION TRANSMISSION SYSTEM
REED, W. E. DATE- DEC. 1967
MSC-11555
Time-multiplexing systems enable several cameras
to share a single commercial television
transmission channel. This system is useful in
industries for visually monitoring several
operating areas or instrument panels from a remote
location.

B67-10585
COMPUTER MEMORY ACCESS TECHNIQUE
TATTARELLI, L. J. DATE- DEC. 1967
NPO-10201
Computer memory access commutator and steering
gate configuration produces bipolar current pulses
while still employing only the diodes and magnetic
amplifiers of the classic commutator, thereby
appreciably reducing the complexity of the memory
assembly.

B67-10587
LASER COMMUNICATION SYSTEM IS INSENSITIVE TO
ATMOSPHERICALLY INDUCED NOISE
PACKARD, J. H. /AIRCRAFT ARMATURES/ DATE- DEC.
1967
GSC-10296
Angle modulated transmitted reference heterodyne
laser communication system is insensitive to
atmospherically induced amplitude noise
fluctuations and phase distortions.

B67-10595
CONCEPTUAL SERVO TECHNIQUE FOR CONTROLLING
TAPE DRIVERS
SHEFFER, R. /KINELOGIC CORP./ CASH TAYLOR, R.
DATE- DEC. 1967
H-FS-12955
Electronic speed control design maintains magnetic
tape in close synchronism at the airborne
and ground stationed devices. Use of the servo
system during the record and reproduce modes
results in the minimum amount of frequency
distortion and flutter.

B67-10598
CARDIOTACHOMETER WITH LINEAR BEAT-TO-BEAT
FREQUENCY RESPONSE
DEBOO, G. S. FORD, J. M. SMITH, D. B. DATES-
DEC. 1967
ARC-10033
Cardiotachometer detects and displays the human
heart rate during physiological studies. It
provides linear response to the heart rate,
records heart rate during rest and under heavy
stress, provides a beat-to-beat indication of
cardiac changes in heart rate, and is relatively free of
interfering signals from activities other than the
heart rate.

B67-10603
MULTIPLE CURRENT SOURCE OFFERS LOW POWER
LOSSES AND HIGH RELIABILITY
SPARK- INNOVATOR NOT GIVEN /STANFORD RES. INST./
DATE- DEC. 1967
langs-66
Pulse current source uses low loss, high
reliability, LC circuits to provide the necessary
high impedance for magnetic memory cores,
frequently used in digital computational
equipment. Square-loop reactors replace the
semiconductor switches previously used.

B67-10606
PREDICTION OF RADIATION DAMAGE EFFECTS IN
TRANSISTORS
SPARK- INNOVATOR NOT GIVEN /MAC/ DATE- DEC. 1967
GSC-10021
Quantitative relationships between radiation dosage to transistors and resultant damage are established. Calculation of these dose levels is based on high energy particle population data and analysis of the embrittlement effect provided by the enclosures surrounding a given transistor.

B67-10614
STUDY OF THERMAL EFFECTS ON NICKEL-CADMIUM BATTERIES
FOLEY, R. T. /AM. UNIV./ WEBSTER, W. B. DATE- DEC. 1967 HEAN- SEE ALSO B67-10615
GSFC-10003
Isothermal continuous flow calorimeter is designed to test a nickel-cadmium battery under numerous orbital conditions. This sensitive calorimeter collects cell data such as oxygen pressure and rate of heat generation, and calculates changes in enthapy.

B67-10615
IMPROVED CALORIMETER PROVIDES ACCURATE THERMAL MEASUREMENTS OF SPACE BATTERIES
FOLEY, R. T. /AM. UNIV./ WEBSTER, W. B. DATE- DEC. 1967
GSFC-10003A
Isothermal continuous flow calorimeter measures the thermal characteristics of space batteries undergoing typical orbital cycles. This is 28 times as sensitive as calorimeters previously used.

B67-10616
VAPOR DEPOSITION PROCESS PROVIDES NEW METHOD FOR FABRICATING HIGH TEMPERATURE THERMOCOUPLES
BERLY, G. A. /WESTINGHOUSE ASTRONUC. LAB./ ZAKUSKA, G. J. DATE- DEC. 1967
NRC-10152
Fabrication techniques for high temperature thermocouples had all components so that differential thermal expansion and contraction do not result in mechanical slippage and localized stress concentrations. Installation space is reduced or larger thermoelements and thicker insulation can be used to improve temperature measurement accuracy.

B67-10620
BALLPOINT PROBE GIVES OPTIMUM RESULTS IN ULTRASONIC TESTING
ELTON, B. E. /EFACO/ DATE- DEC. 1967
N-PS-13590
Ballpoint-type ultrasonic probe assembly focuses its beam precisely on the bond lines of a composite thin face sheet structure when testing for bond integrity. It can scan in any direction, and eliminate external couplant spray.

B67-10624
TEMPERATURE-STABILIZED, TRIGGERABLE MICHELECTRONIC ASTABLE MULTIVIBRATOR STARTS RELIABLY
STEERING, W. J. /WESTINGHOUSE ELECT. CORP./ DATE- DEC. 1967
MSC-1173
Multiple chip custom block, MIC construction is used to fabricate an ultracompact, low-power astable multivibrator. The design provides a multivibrator that free runs, eliminating lockup, is triggerable, pulling into synchronization with an external signal source, and permits design flexibility for controlling the frequency variations with temperature.

B67-10629
ELECTRONIC SKewing CIRCUIT MOnitors exact POSITION oF OBJECT UNDERWATER
ROLER, R. /WESTINGHOUSE ASTRONUC. LAB./ TAYLORSON, R. DATE- DEC. 1967
W-10146
Linear Variable Differential Transformer /LVDS/ electronic skewing circuit guides a long cylindrical capsule underwater into a large tube so that it does not contact the tube wall. This device detects movement of the capsule from a reference point and provides a continuous signal that is monitored on an oscilloscope.
level by deflection rate change.

B67-10652
DEVELOPMENT OF DETONATION REACTION ENGINE
R-PS-14020
Section engine operates on the principle of a controlled condensed detonation. In this engine the gas products that are expelled from the engine to produce thrust are generated by the condensed detonation reaction. The engine is constructed of two basic sections consisting of a detonation wave generator section and a condensed detonation reaction section.

B67-10656
LOW COST SCR LAMP DRIVER INDICATES CONTENTS
OF DIGITAL COMPUTER REGISTERS
CLIFF, E. A. DATES- DEC. 1967
GSFC-10221
Silicon Controlled Rectifier SCR/ lamp driver is adapted for use in integrated circuit digital computers where it indicates the contents of the various registers. The threshold voltage at which visual indication begins is very sharply defined and can be adjusted to suit particular system requirements.

B67-10657
REFLECTOMETER FOR RECEIVER INPUT SYSTEM
STEHLBROD, C. T. DATES- JAN. 1968
NPO-10843
Reflectometer, built into a microwave input system, measures the amount of devices in the waveguide system of tracking receivers. Match measurements can be made on a routine calibration basis. It was installed in the X-band receiving system in the feed cone of the 210-ft antenna.

B67-10658
DAMAGES IN ROLLING ELEMENT BEARINGS MAY BE DETECTED EARLY
WELCHBODD, B. DATES- DEC. 1967
EQ-10031
Early detection method locates damage or small defects in rolling element bearings of critical machine components. This detection method operates on the principle that an impact is generated each time a defect in an otherwise smooth surface is in intimate moving contact with another smooth surface.

B67-10661
AIR SAMPLER COLLECTS AND PROTECTS MINUTE PARTICLES
WOOD, R. C. /LITTON SYSTEMS/ DATES- DEC. 1967
EQ-10037
Air ejector impactor sampler collects and protects samples of particles greater than 0.1 micron in diameter. In operation, it causes impaction of particle-laden air onto several collection surfaces within a collection cylinder. When not operating, the collector cylinder is maintained in a retracted state within a protective envelope.

B67-10662
PHASE PLANE DISPLAYS DETECT INCipient FAILURE IN SERVO SYSTEM TESTING
AFFENITO, F. J. /DUNLAP AND ASSOCIATES/ NOBL, J. G. DATES- DEC. 1967
EQ-10018
Computer based data conditioning and display technique detects incipient failure in servo system testing, for use in prelaunch checkout of complex nonlinear servomechanisms. These phase planes display enable identification of on-line, unusual or abnormal servo responses which can be displayed compactly in the time domain on a cathode ray tube.

B67-10668
UNIQUE FREQUENCY-SHIFT-KEYED DEMODULATION SYSTEM
STALOFF, C. /BAC/ TELTELBRAU, S. DATES- JAN. 1968
GSFC-217
Frequency-Shift-Keyed PSK demodulator provides a frequency discriminator whose outputs are separate and applied to two identical decoding channels, one decoding binary ones and the other decoding binary zeros. This demodulator rejects data applied to it at any frequency higher than 10 Kc.

B67-10669
ULTRAMINIATURE MANOMETER-TIPPED CARDIAC CATHETER
ARC-10054
Miniature diaphragm-type capacitance transducer capable of being mounted on the end of a cardiac catheter has been developed for measurement of intravascular pressures. The transducer can be inserted in small ducts, arteries and veins, without disturbing the flow characteristics. It is very useful for making measurements in babies.

B67-10672
THERMIONIC DIODE SWITCHING HAS HIGH TEMPERATURE APPLICATION
LUZEBEKE, S. S. SHIMADA, K. DATES- JAN. 1968
NFO-10404
Thermionic converter switch permits chopping in the immediate vicinity of a low-voltage, high current power source, eliminating line losses due to temperature limitations of semiconductor devices.

B67-10674
AREAS OF IRREGULAR, DISCONTINUOUS PATTERNS RAPIDLY AND ACCURATELY MEASURED
URFORD, J. A. WEITFIELD, C. W. DATES- JAN. 1968
GSFC-10184
Simple, rapid method measures the surface area of a pattern such as comprised by the conductors on a printed circuit board. A negative or positive film of the circuit layout is placed over a uniformly illuminated transilluminant surface and the proportion of light transmitted to silicon solar cells is determined.

B67-10675
BROADBAND CHOKE SUPPRESSES SPURIOUS CURRENTS IN ANTENNA STRUCTURE
MSC-10013
Quarter-wavelength chokes are mounted on the coaxial line of an antenna structure to prevent induced spurious currents from affecting the antenna radiation frequency pattern. The choke-absorbent combination approximately doubled the usable frequency range for the antenna studied.

B67-10676
SCAN RATE CONVERTER FOR TAPE RECORDING AND PLAYBACK OF TV PICTURES
BOLT, R. J. DATES- JAN. 1968
NPO-10166
Magnetic tape recording and playback equipment converts television pictures, both black and white and color, form one scan rate to another. The equipment indexes color picture frames for retrieval electronically and can be used as a document storage and retrieval medium that is compatible with hard-copy printout machines.

B69-10001
DC PIN-TO-PIN TESTING OF INTEGRATED CIRCUITS
THOMAS, E. F. DATES- JAN. 1968
GSFC-10284
External pin-to-pin nondestructive testing procedure measures the electrical characteristics of each element in an integrated circuit. The procedure involves choosing specific pairs of pins and applying appropriate test voltages to them.

B69-10002
GAGE MONITORS QUALITY OF CROSS-WEB RESISTANCE WELDS
STEEL, J. VELJCH, A. DATES- JAN. 1968
GSFC-90549
Gage nondestructively monitors the quality of cross-wire resistance welds during the welding
operation. The gage gives a dial indication of the relative embedment of the cross wires during the actual welding operation. A direct relationship exists between the depth of embedment and both weld strength and consistency.

B68-10003
LINEAR ANALOG DC VOLTAGE-TO-PULSE WIDTH CONVERTER
CROCKETT, W. E. DATE- JAN. 1968
GSFC-556
Circuit converts a dc analog input signal to pulse widths that are proportional to the input signal voltage. The circuit would be particularly useful as an analog-to-digital converter where low power, ruggedness, reliability, and good linearity are prime requirements.

B68-10007
SENSEL SENSOR AVERAGES TEMPERATURE OF NONUNIFORM PROFILE
DITTRICH, R. T. DATE- JAN. 1968
LEWIS-10362
Instrument that measures an average temperature across a nonuniform temperature profile under steady-state conditions has been developed. The principle of operation is an application of the expansion of a solid material caused by a change in temperature.

B68-10008
IMPROVED PHASE LOCKED LOOP RECEIVER
DALKY, T. J. /GEN. DYN./ELECTRON/ DATE- JAN. 1968
GSFC-09561
Improved phase locked loop receiver tracks and demodulates a signal whose signal-to-noise ratio may be low and whose information sidebands are close in frequency. This receiver recovers the carrier from input signals and applies it to a demodulator which recovers the sidebands.

B68-10012
ONE-SHOT PULSE SHAPE CIRCUIT
RADYX, R. G. /HUGHES HERCULES CO./ DATE- JAN. 1968
XGS-11379
Pulse shaper circuit exhibits low power dissipation, self setting, and easy triggering. It is basically a magnetic one-shot multivibrator consisting of two blocking oscillators and an inhibit circuit.

B68-10015
INPUT GATE CIRCUIT CONVERTED FOR USE AS LINEAR AMPLIFIER
HAPEE, T. P. /HIN/ DATE- JAN. 1968
M-P5-14265
Commercially available integrated circuit that is marketed as a digital computer input gate circuit was converted to a linear amplifier in a microphonic circuit that has high input impedance, low output impedance, low cost, and is small enough to fit on a standard printed circuit card.

B68-10016
SMALL, LOW POWER ANALOG-TO-DIGITAL CONVERTER
M-P5-13954
A small, low-power, high-speed, 8-bit analog-to-digital converter using silicon chip integrated circuits is suitable for use in airborne telemeter data systems. The successive approximation method of analog-to-digital conversion is used to generate the digital output.

B68-10017
REGULATED DC-TO-DC CONVERTER FEATURES LOW POWER DRAIN
THORNBALL, J. DATE- JAN. 1968
GSFC-03429
A regulated dc-to-dc converter requires negligible standby power for the operation of critical electronic equipment. The main operating circuitry consume power intermittently according to load conditions, rather than constantly.

B68-10018
DIGITAL DATA AVERAGER IMPROVES CONVENTIONAL MEASUREMENT SYSTEM PERFORMANCE
MSC-12078
Multipurpose digital averager provides measurement improvement in noisy signal environments. It provides increased measurement accuracy and resolution to basic instrumentation devices by an arithmetical process in real time. It is used with standard conventional measurement equipment and digital data printers.

B68-10019
CIRCUIT DETECTS VOLTAGE DECREASE IN COMPUTER POWER SUPPLY
HORCH, W. H. DATE- FEB. 1968
MSC-67-120
High-speed response monitoring circuit detects voltage decrease or dropout in any single phase or all three phases simultaneously of a 3-phase 60 Hz computer power supply. It uses lamps to indicate voltage conditions and provides a digital pulse output for a chronological record of voltage irregularities.

B68-10027
ANALYSIS OF FLUTTER IN TAPE TRANSPORT SYSTEMS
DATIS, R. C. SIMPSON, R. S. /ALABAMA UNIV./ DATE- JAN. 1968
H-PS-11970
Effect of flutter on digital data is recorded by magnetic tape recorders used with instrumentation systems. Major effect for both FM and direct recording techniques is shown to be a perturbation of the signal time base.

B68-10028
ELECTROIC APERTURE CONTROL DEVIRED FOR SOLID STATE IMAGING SYSTEM
M-P5-12828
Electronic means of performing the equivalent of automatic aperture control has been devised for the new class of television cameras that incorporates a solid state imaging device in the form of phototransistor mosaic sensors.

B68-10030
FLARE ANGLES MEASURED WITH BALL GAGE
CLISCHNOW, D. WALL, W. A. DATE- MAY 1968
M-P5-14690
Precision tungsten carbide balls measure the internal angle of flared joints. Measurements from small and large balls in the flare throat to an external reference point are made. The difference in distances and diameters determine the average slope of the flare between the points of ball contact.

B68-10051
THIN FILM HEAT TRANSFER GAGE IS STABLE AT HIGHER TEMPERATURES
LOYD, J. E. PICKARD, B. F. /ASTRO-SPACE LABS./ DATE- MAR. 1968 R-PS-92 Also B66-10160
R-P5-12396
Thin film convective heat transfer gage functions effectively for prolonged periods at temperatures up to 1000 degrees F. An initial resistance shift does not inhibit the performance or accuracy of the gages, as the original resistance-temperature relationship remains unchanged.

B68-10054
AMPLITUDE AND FREQUENCY READOUT OVERLAY
FITCH, A. E. DATE- MAR. 1968
GSFC-10183
Amplitude and frequency readout overlay simplifies the interpretation of oscillograph traces for full scale deflections of one inch. The overlay increases accuracy in data interpretation and saves time in analyzing oscillograph records.

B68-10056
LUMINESCENT SCREEN COMPOSITION FOR
CATHODE RAY TUBES

ERC-19
NPO-10118
DECODER

ElectroniC circuit provides automatic level control for liquid nitrogen traps.

B68-10058
SIMPLIFIED, HIGH-SPEED BINARY DATA DECODERS
ANDERSON, T. O. DATE- FEB. 1968
NPO-10111

Simplified, high-speed decoder of encoded binary data received over a noisy channel is provided in a versatile apparatus that can accommodate more than one particular set of codes. The apparatus is applicable to satellite, lunar, and planetary data transmission.

B68-10059
THERMAL SHORT IMPROVES SENSITIVITY OF CHROMOGENICALLY COOLED MASHER
CLAUSS, R. C. DATE- MAR. 1968
NPO-09775

Exit-line, quarter-wave thermal short cools the center conductor of the signal-input coaxial transmission line to a cryogenically cooled traveling wave maser. It reduces both the thermal noise contribution of the coaxial line and the heat leak through the center conductor to the maser at 4.4 degrees K.

B68-10061
ELECTRONIC CIRCUIT PROVIDES AUTOMATIC LEVEL CONTROL FOR LIQUID NITROGEN TRAPS
TURVY, R. B. DATE- MAR. 1968
KRC-10127

Electronic circuit, based on the principle of increased transistor resistance corresponding to decreases in temperature provides an automatic level control for liquid nitrogen cold traps. The electronically controlled apparatus is practically service-free, requiring only occasional reliability checks.

B68-10063
PLASTIC PREFORMS FACILITATE FABRICATION OF WELDED CORDWOOD ELECTRONIC MODULES
STUMWAN, J. C. DATE- MAR. 1968
LEWIS-50339

Molded plastic preforms facilitate the fabrication of small lots of welded cordwood circuits. The preforms retain the components during welding and electrical checkout and facilitate encapsulation of the welded module when used with a conventional potting shell.

B68-10065
MULTICHANNEL IMPLANTABLE TELEMETRY SYSTEM
FISHER, T. B. DATE- MAR. 1968 READ- SEE ALSO B64-10057, AND B64-10059
ARC-10083

Multichannel telemetry system is used for chronic implantation in animals to monitor a variety of physiological parameters. A hermetically sealed unit, the system uses a time-sharing multiplexer scheme to compare between various sensor inputs and enables the number of channels to be increased or decreased.

B68-10067
SELF-CORRECTING, SYNCHRONIZING RING COUNTER USING INTEGRATED CIRCUIT DEVICES
MAASBERG, W. A. /IBM/ DATE- MAY 1968
N-FS-13901

Three band gate circuits are used to add error detection and reset logic circuitry for initiating and retaining the correct binary state in the flip-flop circuits of a ring counter. As the input signals are counted, the position of the specified state moves in ordered sequence around circuit loop.

B68-10068
DIVERSITY RF RECEIVING SYSTEM WITH IMPROVED PHASE-LOCK CHARACTERISTICS
DE LOR, V. J. LANDSHEER, C. B. /IBM/ DATE- MAR. 1968
IGS-01222

Improved diversity receiving system automatically utilizes the combined output from its two independent receiving channels /with cross-polarized receiving antennas/ to increase the reliability of maintaining the requisite phase lock for optimum signal reception. It is adapted for use with AM, FM, or narrow band FM signals.

B68-10069
PRINCIPLES OF OPTICAL-DATA PROCESSING TECHNIQUES
SHURLAN, A. R. DATE- MAR. 1968
GSPC-10271

Document presents optical-data processing information on a level which will convey the basic principles involved to those having a general technical background. Mathematical discussions are included but are not required for a basic understanding.

B68-10070
DEVELOPMENT OF BLIALIC TEST FIXTURE ENCLSudes CHROMOGENIC APPLICATION
N-FS-14185 M-FS-14189

Test fixture has the capacity of producing biaxial stress fields in test specimens to the point of failure. It determines biaxial stress by dividing the applied load by the net cross section. With modification it can evaluate materials, design concepts, and production hardware at cryogenic temperatures.

B68-10073
NEW MICROELECTRONIC POWER AMPLIFIER
NEW, T. G. /WESTINGHOUSE ELEC. CORP./ DATE- MAR. 1968
N-FS-13621

Integrated push-pull power amplifier fabricated on a chip of silicon has interdigitated power transistors and is hermetically encapsulated in a beryllia flat package. It provides current output greater than the nominal 10 amperes from an input current drive of 1 ampere.

B68-10074
IMPROVED DC VOLTAGE MULTIPLIER
SAVELLLE, C. R. /SPACO/ DATE- MAR. 1968
N-FS-14042

Circuit multiplies a dc input voltage in the millivolt range to yield a larger dc output voltage bearing a fixed ratio to the input voltage. The supply voltage need not be precisely regulated, the potentiometer need not be linear, and the gain of servo amplifier is not critical.

B68-10079
MAGNETIC TAPE TRANSPORT CONTROLLED BY BOXING TRANSDUCER HEADS
CROYER, J. SALCEDO, G. SPERRY, J. D. /AMPEX CORP./ DATE- MAR. 1968
GSPC-483

Magnetic tape transport includes a common drive for both the tape drive capstans and the rotating record/reproduce heads. Speed of the drive may be varied within a preselected range, but, once selected, remains constant so head and capstan are driven in synchronization and at constant speed.

B68-10083
TWIN SOLUTION CALORIMETER DETERMINES HEATS OF FORMATION OF ALLOYS AT HIGH TEMPERATURES
DARBY, J. B., JR. KLEE, E. KLEPPA, O. J. /CHICAGO UNIV./ DATE- APR. 1968
ARC-10114

Calvert-type, twin liquid metal solution calorimeter determines the heats of formation of transition metal alloys at high temperatures. The twin differential calorimeter measures the small heat effects generated over extended periods of time, has maximum operating temperature of 1073 degrees K and an automatic data recording system.
GYRATOR-TYPE CIRCUITS REPLACE UNGROUNDED

DEBRO, G. J. DATE- MAR. 1968

Gyrator circuits using only transistors, capacitors, and resistors which can replace both grounded and ungrounded inductors have been developed to permit compact microcircuitization of circuits by integration of all the components.

METHOD OF DISJOINING ADHESIVELY BONDED

SACARAMORE, P. J. /ECA/ DATE- MAY 1968

NORTHWESTERN

Embedment of resistive heating elements in a circuitry by integration of the adhesive bond between the module, and metal heat sink and the potting material without damaging the components. Electrical power applied to the elements causes breakdown of bonding material.

SUPERCONDUCTING SWITCH PERMITS MEASUREMENT

GOVIND, R. H. BOBENRE, E. P. DATE- APR. 1968

ARG-90260

Superconducting, on-off switch measures small, thermoelectrically generated voltages produced by thermocouples in a liquid helium bath. Placed in a shunt configuration between the thermocouple and the measuring device, the measuring device senses the sum of the voltage to be measured and the spurious thermoelectric voltages.

NEW CAMERA TUBE IMPROVES ULTRASONIC

SHALL VOLTAGES AT CRYOGENIC

EPPICIIENCE, H. C. COLLINS, W. J. JACOBS, J. M.

INSTRUCTION SYSTEM

NOWESTERN UNIT./ DATE- APR. 1968

ARG-90237

Electron multiplier, incorporated into the camera tube of an ultrasonic imaging system, improves resolution, effectively shields low level circuits, and provides a high level signal input to the television camera. It is effective for inspection of metallic materials for bonds, voids, and homogeneity.

MONITOR SENSES AMOUNT OF CONTAMINATION

SHEEHY, R. N. DATE- MAR. 1968

SPACOF-10212

Monitoring device detects and indicates directly the amount of contamination deposited on a surface. It uses an optical system in conjunction with a suitable collimated light source and associated electronics. Change in its output signal is proportional to the optical absorption characteristics of the sample plate surface.

AUTOMATIC CONTOUR WELDER INCORPORATES

SPEED CONTROL SYSTEM

WILL, R. A. DATE- MAR. 1968

S-P-14574

Speed control system maintains the welding torch of an automatic welder at a substantially constant speed. The system is particularly useful when welding contoured or unusually shaped surfaces, which cause the distance from the work surface to the weld carriage to vary in a random manner.

ACCUOMULATOR FOR SHAFT ENCODER

CARROLL, C. C. CHILD, J. A. ROBINSON, R. J.

NORTHWESTERN UNIV./ DATE- MAR. 1968

M-P-13599

Digital accumulator relies almost entirely on integrated circuitry to process the data derived from the outputs of gyro shaft encoder. After the read command is given, the output register collects and stores the data that are on the set output terminals of the up-down counters.

ALTERNATING CURRENT ELECTROMAGNETIC SERVO

BOGUE, R. K. DATE- MAY 1968

XRF-03838

Electromagnetic device accurately indicates the responses of various sensors in high performance flight research aircraft to conditions encountered in flight. The device responds to sensor inputs to move a slideable armature along an indicator scale by the force of currents induced in the armature winding.

PORTEABLE PULSE CODE MODULATION /PCM/

BRADANIN, P. A. KLUTS, J. T. /N. AM. AVITATION/

DATE- MAR. 1968

MSC-11269

Small, programmable, high speed PCM subsystem, supports the variety of signals inherent in sophisticated equipment. A signal generated by a transducer is first conditioned to the proper signal range, then sampled by an external multiplexer or by the subsystems directly and then converted and transmitted to a receiving station.

PROJECTION TRANSPARENCIES FROM PRINTED

GUNNERS, L. S. NICKERSON, T. B. /BOEING CO./

DATE- APR. 1968

N-P-16608

Method for preparing project transparencies, or view graphs, permits the use of almost any expendable printed material, pictures, charts, or text, in unlimited color or black and white. The method can be accomplished by either of two techniques, with a slight difference in materials.

FLIGHT-BACK MOUNTING WOULD INCREASE

MICROCIRCUIT PACKAGING DENSITY

GOLANIO, S. DATE- APR. 1968

MSC-12055

Piggy-back method of packaging integrated circuits will increase packaging density and design flexibility. It will also eliminate interconnection leads between the die and associated inductances, and thus increase the attainable frequency response of the circuit.

HIGH EFFICIENCY, HIGH FREQUENCY MAGNETIC

SCHAEFF, F. L. /WESTINGHOUSE ELEC. CORP./ DATE-

APR. 1968

MSC-11597

Electromagnetic deflection yoke stores energy during the scan and releases it in the flyback or retrace. The operation of the device involves a method of switching to a voltage high enough to dissipate the flyback pulse during the retrace time and then operating during the scan time at a much lower voltage.

BILATERAL, ZERO-IMPEDANCE STATIC

SCHOMUTH, C. L. /WESTINGHOUSE ELEC. CORP./

DATE- APR. 1968

LEWIS-10129

Static semiconductor switching circuit eliminates the undesirable features of electromechanical relays and conventional semiconductor switching circuits. There is no net zero voltage drop at the terminals and thus a zero impedance for bilateral currents there.

CIRCUIT ENHANCES VERTICAL RESOLUTION IN

RABY SCANNING SYSTEMS

ALSOYSEY, W. H. GREENWOOD, J. R. BOLLY, G. M.

DATE- APR. 1968

MSC-12123

Circuit enhances vertical resolution in electron beam, raster scanning systems exhibiting aperture distortion in the vertical direction. A sensitized area /image/ produces a video output.
when the scan beam nears it, which causes vertical elongation in the reconstructed images of all sensitized areas on the surface.

COMPENSATION CIRCUIT IMPROVES OPERATION OF INDUCTIVE COUPLING TRANSFORMERS

IEEE-10128
RELIABLE, SELF-CALIBRATING VIBRATION TRANSDUCER
MC KINNEY, R. L. /DATE- APR. 1968
LANGLEY-89

Transducer system measures the uniaxial vibration amplitudes /deflections/ and frequency of a body subjected to mechanical vibration. The basic system is self-calibrating and provides an output which unambiguously indicates the direction as well as the magnitude of the uniaxial deflections.

B68-10129

PHASE-LOCK LOOP FREQUENCY CONTROL AND THE DROPOUT PROBLEM

ATTWOOD, S. ELINE, A. J. /HOTROLA/ /DATE- APR. 1968

- Circuitry eliminates undesirable modulation effects in rotary transformers which transfer electrical energy to and from angular rate transducers on a gyroscope. It cancels the error by feeding back compensation signals through a tertiary winding on the rotor of the output rotary transformer.

B68-10130

IMPROVED COMPENSATION CIRCUIT FOR DIRECT-COUPLED AMPLIFIERS

BREUER, D. R. /WSN SPACE TECHNCL. LABS./ /DATE- APR. 1968

- Drift- and offset-control circuit compensates the inherent temperature drift and offset of a closed-loop feedback amplifier. It overcomes the disadvantages of conventional chopping circuits used to minimize drift in low-level, direct-coupled amplifiers.

B68-10133

RELIABLE, SELF-CALIBRATING VIBRATION TRANSDUCER

MC KINNEY, R. L. /DATE- APR. 1968

- Transducer system measures the uniaxial vibration amplitudes /deflections/ and frequency of a body subjected to mechanical vibration. The basic system is self-calibrating and provides an output which unambiguously indicates the direction as well as the magnitude of the uniaxial deflections.

B68-10134

STEREO PHOTOMACROGRAPHY SYSTEM

LINDSEY, R. F. /DATE- APR. 1968
LANGLEY-10176

- Stereo photomacrography system provides sharply focused and correctly exposed stereo pairs of photographs through a stereomicroscope. The system uses components of the old system but incorporates a sharp focusing system and includes an improved photometer.

B68-10140

IMPROVED COMPENSATION CIRCUIT FOR INDUCTIVE COUPLING TRANSFORMERS

SPGW- INVENTOR M. G. GIVEN /SHERET GYROSCOPE CO./ /DATE- APR. 1968

- Circuitry eliminates undesirable modulation effects in rotary transformers which transfer electrical energy to and from angular rate transducers on a gyroscope. It cancels the error by feeding back compensation signals through a tertiary winding on the rotor of the output rotary transformer.

B68-10130

SOLAR HIGH-PRESSURE GAS FACILITES CALIBRATION OF TURBINE FLOWMEETERS FOR LIQUID HYDROGEN

HRAUSO, L. E. MANN, A. J. /DATE- MAY 1968

- Nitrogen gas at a pressure of 60 atmospheres and ambient temperature facilitates the calibration of turbine flowmeters used for monitoring the flow of liquid hydrogen in cryogenic systems. Full-scale calibration factors can be obtained to an accuracy of 0.4 percent.

B68-10147

DEFLECTION CIRCUIT MONITORS FORCE ON OBJECT UNDER WATER

SELLER, G. J. /WESTINGHOUSE ASTRONUCL. LAB./ /DATE- MAY 1968

- Capsule containing samples for radiation testing is guided under a reactor to an exact position within a nuclear reactor. A Linear Variable Differential Transformer /LVDT/ flopplate deflection circuit monitors the force on the capsule as it is positioned within the reactor.

B68-10148

SILICON SOLAR CELL MONITORS HIGH TEMPERATURE PIPING SYSTEM REMOTELY INSPECTS, MEASURES, AND RECORDS INTERNAL IRREGULARITIES IN PIPING


- Silicon solar cell, attached to each viewpoint, monitors that incandescent emission from the hot interior of a furnace without interfering with the test assembly or optical pyrometry during the test. This technique can provide continuous indication of hot spots and provide warning of excessive temperatures in cooler regions.

B68-10149

SYSTEM REMOTELY INSPECTS, MEASURES, AND RECORDS INTERNAL IRREGULARITIES IN PIPING


- Video electromechanical probe visually inspects and measures internal offset and peaking of welds in relatively large piping. Irregularity dimensions are recorded on peripheral equipment consisting of video tape and X-Y plotter. The probe is used for inspecting of vacuum-jacketed liquid lines that cannot be inspected externally.

61
Prototype precision bolometer calibration bridge is manually balanced device for indicating dc bias and balance with either dc or ac power. An external galvanometer is used with the bridge for null indication, and the circuitry monitors voltage and current simultaneously without adapters in testing 100 and 200 ohm thin film bolometers.

Thermal resistances of solder-boss/putting compound combinations

Sodium niobate, formed by high vacuum, flash, and reactive evaporations, has a high dielectric constant and is used as a thin file dielectric in microelectronic capacitors. High purity films are formed from relatively inexpensive, pure starting materials. Crystalline sodium niobate films can be formed on amorphous or crystalline materials.

Multichannel system employing a radiisotope radiation source, strontium-90, radiation detector, and a silicon surface barrier detector, measures the local density of liquid hydrogen at various levels in a storage tank. The instrument contains electronic equipment for collecting the density information, and a data handling system for processing this information.
Respiration-rate transducers in the form of pneumotachometers measure respiration rates of pilots operating high performance research aircraft. In each low pressure or high pressure oxygen system a sensor is placed in series with the pilots oxygen supply line to detect gas flow accompanying respiration.

B68-10202
FAST-RESPONSE CUP ANEMOMETER FEATURES
COSINE GENERATING PAST-RESPONSE CUP
868-10202
ABG-90193
ELECTROCARDIOGRAPH TRANSMITTED BY RP AND TELEPHONE LINKS FROM THE EMERGENCY SCENE, TO THE HOSPITAL ANGEBRA, J. DATE- JUL. 1968
B68-10224
LIGHTWEIGHT HEATER GENERATES HIGH TEMPERATURES FROM LOW CURRENT HANSEN, E. L. DATE- JUL. 1968
SRN-10004
Double spiral molybdenum heater element uses low current, needs no insulation, and requires support only at the ends which are also the power input points. Because there is no insulation or internal support necessary, the heater is lightweight. Its temperature potential will vary with its size and environment.

B68-10225
MULTILAYER PLATED WIRE SHOWS PROMISE AS MEMORY DEVICE
KAMINS, D. /MIT/ DATE- JUN. 1968
MSC-11587
Multilayer plated wire memory system surpasses planar thin film memories because of its high speed, simplicity, and high output. The device consists of 5 si al Mo-Cu wire plated with a Fe-6Fe alloy about 1 micron thick crossed orthogonally by word lines.

B68-10207
FACSIMILE VIDEO ENHANCEMENT DEVICE
VERMILLION, C.-H. DATE- JUN. 1968
GSPC-10185
Video modulation unit enhances facsimile transmission using an amplitude-modulated 2400-Hz carrier. The unit demodulates the signal and then remodulates it, using the same carrier. By using the unit controls, modulation can be set to levels that compensate for picture in-transit degradation.

B68-10210
ACTIVE RC NETWORKS OF LOW SENSITIVITY FOR INTEGRATED CIRCUIT TRANSFER FUNCTION SYNTHESIS
ARC-10186
Active RC network is capable of extremely high Q performance with exceptional stability and has independently adjustable zeros and poles. The circuit consists of two integrators and two summers that are interconnected to produce a complete second-order numerator and a second-order denominator.

B68-10213
TECHNIQUE INCREASES STORAGE CAPACITY IN CAMERA TUBE TARGET
BOLL, K. F. DE VRIES, H. N. /WESTINGHOUSE ELECTRIC. CORP./ DATE- JUN. 1968
MSC-11599
Technique increases the signal current, where direct beam readout is used, in Secondary Electron Conduction /SEC/ camera tubes. Increasing the storage capacity and therefore the dynamic range of the SEC target permits satisfactory operation at reduced frame rates.

B68-10226
ZINC-OXYGEN PRIMARY CELL YIELDS HIGH ENERGY DENSITY
GAPF, C. B. DATE- JUN. 1968
8-PS-14631
Zinc-oxygen primary cell yields high energy density for battery used as an auxiliary power source in space vehicle systems. Maximum reliability and minimum battery weight is achieved by using a stacking configuration of 23 series-connected modules with 6 parallel-connected cells per module.

B68-10222
NEW ELECTRICAL PLETHYSMOGRAPH MONITORS CARDIAC OUTPUT KUDICKE, W. B. PATTERSON, R. P. WITSOE, D. A. /MINNESOTA UNIV./ DATE- JUN. 1968
MSC-11447
Four-electrode impedance plethysmograph measures ventricular stroke volume of cardiac output of humans. The instrument is automatic, operates with only one recording channel, and minimizes patient discomfort.

B68-10233
ELECTROCARDIOGRAPH TRANSMITTED BY RP AND TELEPHONE LINKS TO EMERGENCY SITUATIONS CARPENTER, L. E. LEWIS, C. E. JR. RC DONALD, E. T. DATE- JUL. 1968
FRC-10031
Electrocardiograph of an injured human subject is transmitted by RP and telephone links from the ambulance at the emergency scene, to the hospital emergency facilities. This system eliminates delay in the diagnosis of required therapy, thereby enhancing emergency and rescue operations.

B68-10237
ASTRONAUT SPACE SUIT COMMUNICATION ANTENNA LINDSEY, J. P., III NASON, G. H. DATE- JUL. 1968
Astronaut space suit communication antenna consists of a spring steel monopole in a blade-type configuration. This antenna is mounted in a copper cup filled with a penetrating compound that is recessed in the center to facilitate bending the blade flat for stowing when not in use.

**B68-10241**

**PARALLEL-TO-SERIAL BIPHASE-DATA CONVERTER**

**THULOVE, E. D. / M. AM. AVIATION/ DATE- JUL. 1968**

Data converter produces a serial biphase output signal from parallel input data. Alternate bits are loaded into a shift register in complement form so that the bits appear at the end of the shift register in a true-complement form sequence.

**B68-10262**

**WELDER ANALYZER**

**MILLER, L. L. / GEN. MOTORS CORP./ DATE- JUL. 1968**

Welding analyzer circuit evaluates and certifies resistance welding machines. The analyzer measures peak current, peak voltage, peak power, total energy, and first-pulse energy. It is used as an energy monitor while welding is being performed, or as a precision shunt load for a pure electrical evaluation of the weld machine.

**B68-10244**

**IMPROVED TRAVELING WAVE NASER AMPLIFIER**

**CLARK, B. C. DATE- JUL. 1968**

**W-360548**

Traveling Wave Naser /SW/ that operates at S-band frequencies is characterized by a greatly improved gain-bandwidth product with relatively low equivalent-noise temperature. Tests indicate that its performance exceeds that of any other type of S-band amplifier.

**B68-10264**

**MINIATURE PRESSURE TRANSDUCER FOR STRESSED MEMBER APPLICATION**

**WALKER, R. E. WICKHAM, C. G. / M. AM. AVIATION/ DATE- JUL. 1968**

**MSC-11660**

Miniature pressure transducer responds to static or dynamic pressures acting against a structural surface without introducing errors caused by stress on the structural surface. This is accomplished by a thin stainless steel pressure sensing diaphragm with an attached foil strain gage.

**B68-10254**

**HARMONIC DISTORTION ANALYZER SPEEDS SETUP OF MAGNETIC TAPE RECORDERS**

**TIMARL, D. P. DATE- JUL. 1968**

**GCSP-10190**

Harmonic distortion analyzer effects rapid and accurate setup and calibration of magnetic tape instrumentation recorders. The analyzer is portable, requires no warmup period and need not be calibrated for normal usage. Average setup time with this analyzer is approximately 30 seconds per track.

**B68-10258**

**ACQUISITION OF PSUEDONOISE SIGNALS BY SEQUENTIAL ESTIMATION**

**WAD, R. R. / LORD AEROSPACE MISSILES AND SPACE CO./ DATE- JUL. 1968**

**M-PS-10696**

Rapid acquisition by Sequential Estimation /VASE/ system is used in the receivers of tracking and communications systems to bring identical locally generated pseudonoise digital modulation signal into time synchronization with the incoming pseudonoise signal. This acquisition system is particularly suited for medium input signal-to-noise ratios.

**B68-10262**

**SILICON STRAIN SENSORS ENABLE PRESSURE MEASUREMENT AT CHOCORIC TEMPERATURES**

**BOWAH, R. BURH, J. MC LELLAN, W. / ELECTRO-OPTICAL SYSTEM/ DATE- JUL. 1968**

**M-PS-14703**

Miniature pressure transducers with diffused, heavily doped silicon strain-gage sensor elements, operates over a wide temperature range. Small thermal mass combined with close coupling between a metallic diaphragm and sensor elements minimizes sensitivity to temperature transients.

**B68-10263**

**IMPROVED FUEL-CELL-TYPE HYDROGEN SENSOR**

**BODEK, F. P. BUTOWSKI, M. D. / GR/ DATE- JUL. 1968**

**M-PS-14656**

Modified hydrogen sensor replaces oxygen cathode with a cathode consisting of a sealed paste of gold hydroxide and a pure gold current collector. The net reaction which occurs during cell operation is the reduction of the gold hydroxide to gold and water, with a half-cell potential of 1.4 volts.

**B68-10264**

**CONCEPTUAL DEAD WEIGHT DEVICE TO PROVIDE PRESSURE CALIBRATION**

**KARCHER, G. OLSON, G. / CHRYSLER CORP./ DATE- JUL. 1968**

**M-PS-14672**

Dead weight testing device uses a common force plane piston manometer to set accurate gage pressure in pounds per square inch. An additional piston adapts the device for absolute pressure calibration.

**B68-10267**

**MOEBIUS RESISTORS ARE NONINDUCTIVE AND NONREACTIVE**

**DAVIS, R. L. DATE- JUL. 1968**

**SAN-10020**

Moebius strip made of insulated resistive materials with electrical leads attached directly opposite one another provides a noninductive, nonreactive resistor which is simple, inexpensive, and flexible in usage, and can be made to almost any desired size and shape.

**B68-10268**

**VIBRATION TESTING AND DYNAMIC STUDIES OF RELAYS**

**SPO- INNOVATOR NOT GIVEN / OKLAHOMA STATE UNIV./ DATE- JUL. 1968**

**M-PS-14542**

Study has been undertaken to determine the separation criteria for a preloaded, idealized set of contacts when they are subjected to a steady-state sinusoidal excitation and when the elasticity of one contact is nonlinear. The study consists of two phases, theoretical and experimental.

**B68-10269**

**LOW ENERGY GERMET CAN BE USED TO TEST SENSITIVE CIRCUITS, OTHER RECEPTS**

**PLATT, L. W. DATE- JUL. 1968**

**SAN-10013**

Hazardous circuit element is of sufficiently low energy output that it may be used to test extremely sensitive circuits safely, reliably, and accurately. A polyurethane-foam-lined aluminum case provided protection for the unit assembly.

**B68-10272**

**NOISE FIGURE MEASUREMENT CONCEPT FOR ACOUSTIC AMPLIFIERS**

**JOHNSON, V. R. YEAGER, J. E. / MICROE ELECTRON./ DATE- JUL. 1968**

**GCSP-10664**

Optimum length buffer crystals are used with an amplification section for measuring the noise figure of acoustic amplifiers. Measuring the time required to saturate with noise a signal, which is reflected back and forth in the circuit, gives a direct measurement of the amplifiers noise figure.

**B68-10273**

**RECHARGE UNIT PROVIDES FOR OPTIMUM RECHARGING OF BATTERY CELLS**
Percent recharge unit permits each cell of a rechargeable battery to be charged to a preset capacity of the cell. The unit automatically monitors and controls a rechargeable battery subjected to charge-discharge cycling tests.

Experiments determine the effect of alloying additives on the ignition of uranium. Data on oxidation rates, ignition temperatures, and burning curves are provided in the report.

Low-inductance, high-capacitance Marx pulse generator provides for minimization of internal inductance and suppression of external electromagnetic radiation. The spark gaps of the generator are enclosed in a pressurized nitrogen atmosphere which allows the charging voltage to be varied by changing the nitrogen pressure.

Deep space frequency modulation system permits transmission of data where the signal deviation is greater than 1/2 the predetection bandwidth. It provides satisfactory performance at great distances or in the presence of other turbulence to be observed throughout all the transition stages.

Universal probe, which contains a unique frequency discriminator, measures the static and dynamic levels of cryogenic liquids in a hydrogen bubble chamber. The probe allows boiling conditions or other turbulence to be observed throughout all the transition stages.

Universal probe, which contains a unique frequency discriminator, measures the static and dynamic levels of cryogenic liquids in a hydrogen bubble chamber. The probe allows boiling conditions or other turbulence to be observed throughout all the transition stages.

High-capacitance Marx pulse generator provides for minimization of internal inductance and suppression of external electromagnetic radiation. The spark gaps of the generator are enclosed in a pressurized nitrogen atmosphere which allows the charging voltage to be varied by changing the nitrogen pressure.

Deep space frequency modulation system permits transmission of data where the signal deviation is greater than 1/2 the predetection bandwidth. It provides satisfactory performance at great distances or with low signal levels.

Measurement technique involves frequency modulated discriminator which produces an error signal as two signals, one of known and one of unknown frequency. The signals are electronically switched to a discriminator input, allowing independent measuring of dynamic linearity in a frequency modulated subcarrier oscillator.

Universal probe, which contains a unique frequency discriminator, measures the static and dynamic levels of cryogenic liquids in a hydrogen bubble chamber. The probe allows boiling conditions or other turbulence to be observed throughout all the transition stages.

High-speed klystron cathode pulse generators require low voltage to generate high-voltage pulses. Broadband video transformers are wound in two configurations — 1/2 transmission line, multilayer toroids and 1/2 loop coupling toroids. The circuit adapts to generate high-speed, high-voltage, high-stability power pulses at megawatt levels.

High-speed klystron cathode pulse generators require low voltage to generate high-voltage pulses. Broadband video transformers are wound in two configurations — 1/2 transmission line, multilayer toroids and 1/2 loop coupling toroids. The circuit adapts to generate high-speed, high-voltage, high-stability power pulses at megawatt levels.

Research is conducted to develop a concept for a space communication system, which combines range acquisition system and time measurement system for tracking high-velocity aircraft and spacecraft. The range acquisition system uses a pseudonoise code to determine range and the time measurement system reduces uncontrolled phase variations in the despread signal.
ANALYSIS AND DESIGN OF A CLASS-D AMPLIFIER SYSTEM

System, containing cycle timer, and an image dissector photomultiplier. An electronic scanning transmitter and receiver follows rapid movements or accelerations of the target.

COLOR-TELEVISED MEDICAL MICROSCOPY

System, containing cycle timer, measures the energy dissipated at the contacts of a relay operating in an electric circuit. The system measures as well as records the energy for a large number of repetitive operations.

ANALYTIC DESIGN AND ASSEMBLY OF A CLASS-D AMPLIFIER

Analysis of a basic class-D amplifier circuit configuration shows its adaptability to a variety of applications. The feedback, input and output configuration and the frequency spectrum of the pulse-width-modulated signal are analyzed.

COLOR-TELEVISED MEDICAL MICROSCOPY

Color television microscopy used at laboratory range specifications, reproduces a slide image with sufficient fidelity for medical laboratory and instructional use. The system is used for instant pathological reporting between operating room and remotely located pathologist viewing a biopsy through this medium.

GIMBAL ANGLE SENSOR

Detector flake located parallel to a slotted mask mechanical differential, motions the rotation of a gimballed reaction wheel mounting. As the gimballed moves light passes through the mask and striking a section of the detector, the electrical output of which has been calibrated in terms of degrees of rotation.

OPTOMETRIC SYSTEM FACILITATES COLOMERIC AND FLUORESCENT MEASUREMENTS

Compact, unitary optometric systems uses a single device for colorimetric, fluorometric and spectral absorption measurements. The basic element of the unitary systems is a test cell containing filter elements with uniquely fabricated lenses.

METHOD OF REDUCING TIME BASE ERROR IN DIGITAL MAGNETIC RECORDERS

Apparatus reduces Time Base Error /TBE/ in the playback of digital data from magnetic recording equipment. The apparatus uses a magnet which employs a servo position control of the tape by which the playback data clock is phase locked with a fixed frequency reference signal.

ULTRASONIC TEMPERATURE MEASURING DEVICE

Pulse echo ultrasonic system automatically determines the temperature in the core of a nuclear rocket engine by measuring the transit time of an acoustic pulse in a wire sensor. The measurement is based on the fact that the speed of sound in the sensor material is a function of temperature.
infrared energy generated in the weld as the weld is made and compares this with various minimum and maximum limits of infrared energy values previously correlated with acceptable weld-strength tolerances.

B68-10336
FULLY AUTOMATIC TELEMETRY DATA PROCESSOR
Cox, F. B./BECKMAN INSTR. CO./ KEPFERT, F. A.
LEE, R. C./ DATE- SEP 1968 REAR- SEE ALSO NASA-TW-D-3961
GSFC-10576
Satellite Telemetry Automatic Reduction System
/STARS 2/, a fully automatic computer-controlled telemetry data processor, maximizes data recovery, reduces turnaround time, increases flexibility, and improves operational efficiency. The system incorporates a CDC 3200 computer as its central element.

B68-10337
TEMPERATURE B68-10336
LIQUID LEVEL SENSOR
Gilles, J. D./ /N. A. ROCKETEY CORP./ DATE- SEP. 1968
Lewis-10297
Silicon chip thermal sensor coupled into a solid state power source controls temperature or pressure in combustion research. The silicon chip sensing element is embedded in a ceramic support for insulation, and connected to a high resistance bridge which operates the solid state power amplifiers.

B68-10341
SUPERCONDUCTIVE FILM MAKES CONVENIENT LIQUID HELIUM LEVEL SENSOR
Beckes, H. H./ DATE- SEP. 1968
Langley-10026
Sensor consisting of superconductive film mounted on a dipstick measures the level of liquid helium in a Dewar flange. The sensor is made by depositing a thin film of niobium metal to a thickness of 2000 angstroms on a quartz substrate, which is then mounted on a graduated dipstick.

B68-10342
INDUCTION ADHESION PROVIDES QUANTITATIVE MEASURE OF SURFACE CLEANLINESS
San-10026
Indium tipped probe measures hydrophobic and hydrophilic contaminants on rough and smooth surfaces. The force needed to pull the indium tip, which adheres to a clean surface, away from the surface provides a quantitative measure of cleanliness.

B68-10350
FLUIDIC-THERMOCHEMICAL DISPLAY DEVICE
Grassmann, R. J/ILLINOIS, N. H./ DATE- SEP. 1968
B68-10026
Plugg decoder and display device has low-power requirements for temperature control of thermochromic materials. An electro-to-fluid converter translates incoming electrical signals into pneumatic signals of sufficient power to operate the fluidic logic elements.

B68-10357
CLOSED CIRCUIT TV SYSTEM AUTOMATICALLY GUIDES WELDING ARC
B68-10006
Closed circuit television /CCTV/ system automatically guides a welding torch to position the welding arc accurately along weld seams. Digital counting and logic techniques incorporated in the control circuitry, ensure performance reliability.

B68-10362
BLENDBING OF ELECTRICAL WIRES IN VACUUM ENVIRONMENTS
Scherer, J. L. /Svenson, F. C./ /N. A. ROCKETEY CORP./ DATE- OCT. 1968
B68-10016
10289
Electric conductors used in vacuum environments have smaller cross sections. This report provides data on the correct size wire for a required current load in free-air, low-pressure oxygen, and vacuum environments.

B68-10364
NONDESTRUCTIVE TEST DETERMINES OVERLOAD DESTRUCTION CHARACTERISTICS OF CURRENT LIMITER FUSES
Svenson, F. C./ /ELECTRA-MIDLAND CORP./ DATE- OCT. 1968
GSFC-10574
Nondestructive test determines the time required for current limiters to blow/open the circuit, when subjected to a given overload. The test method is based on an empirical relationship between the voltage rise across a current limiter for a fixed time interval and the time to blow.

B68-10365
AUTOMATIC PATIENT RESPIRATION FAILURE DETECTION SYSTEM WITH WIRELESS TRANSMISSION
Dime, J. /POPE, J. H./ DATE- OCT. 1968
ARC-10174
Automatic respiration failure detection system detects respiratory failure in patients with a surgically implanted tracheostomy tube, and actuates an audible and/or visual alarm. The system incorporates an automatic radio transmitter so that the patient is mecabused by wires yet can be monitored from a remote location.

B68-10367
DETECTION OF EFFECT OF DEPOSITS ON OPTICAL WINDOWS OF PROPELLER MEASUREMENTS
Cipollone, E./ DATE- OCT. 1968
Lewis-10366
Temperatures measurements in an enclosed test chamber are more accurate when the reflectivity of the inner coated surface is compared to the outer clean surface of an optical window. Temperature readings are corrected by calculating the reflectivity of the deposits with their effect on the temperature measurement.

B68-10370
COOLED MINIATURE PRESSURE TRANSDUCERS EFFECTIVE AT HIGH TEMPERATURES
Amehout, E. C./ DATE- OCT. 1968
Lewis-10401
Miniature pressure transducers in compact water-cooled mounts are placed in hotter and more confined environments than previously possible. It quantitatively measures high frequency pressure fluctuations resulting from rotating stall in an axial flow engine compressor.

B68-10379
AUTOMATIC SYSTEM NONDESTRUCTIVELY MONITORS AND RECORDS FATIGUE CRACK GROWTH
Hoppe, F. /Inman, B. S./ /FAIRCHILD HILLER CORP./ DATE- OCT. 1968
Langley-10026
Ultrasonic reflection system automatically and nondestructively detects and records the propagation of fatigue cracks in test specimens undergoing fatigue cycling. A reflector plate obtains a reference signal and monitors the location of the tip of a propagating fatigue crack.

B68-10382
SYSTEM MEASURES RESPONSE TIME OF MULTIPLIER TUBES
Lund, N./ DATE- OCT. 1968
Lewis-10437
Calibration system enables precise determination of rise time of photosensitive detectors. To perform a calibration, the time-voltage curve of the excitation voltage for a light source is compared with the time-voltage curve of the voltage output from a photosensitive detector which is responding to the light.

B68-10384
IMPROVED LIMITER FOR TURN-ON CURRENT TRANSIENT
Halleck, F. C./ DATE- OCT. 1968
GSFC-10413
Circuit limits the turn-on current transient to a
specified amplitude and provides a low-impedance path between supply voltage and load after a
prescribed time interval. The circuit offers a wide range of flexibility in adjusting peak
current and automatic control of the initial peak

B68-10386
LOW-COST, FAST-RESPONSE DRIVE CIRCUIT FOR
ELECTROMAGNETIC TORSION MOTORS
ZELLES, J. B. DATE- OCT. 1968

LEWIS-10143
Fast-response coil drive circuit, for
electromagnetic torque motors, reduces the
inductive coil time constant with a minimum of
circuit sophistication. The low-cost regulator
servoamplifier is used with a compatible
preamplifier stage which provides the servo-loop function of summing, adjustable gain and
compensation.

B68-10388
METHOD FOR REDUCING SNAP IN MAGNETIC
AMPLIFIERS
FISCHER, R. L. E. WORD, J. L. DATE- OCT. 1968

LEWIS-10388
Method of reducing snap in magnetic amplifiers
uses a degenerative feedback circuit consisting of
a resistor and a separate winding on a magnetic
core. The feedback circuit extends amplifier range by allowing it to be used at lower values of
output current.

B68-10389
METHOD FOR MAKING SMALL POINTED
THERMOCOUPLES
STOTT, C. H. DATE- OCT. 1968

SAN-10014
Contacts wire worked to a needle point and
covered with a copper coating produces a small,
concentric, fast-reaction thermocouple that has
the fast response time necessary to measure rapid
temperature changes accurately and only slightly
alters the environment being measured.

B68-10397
CHARTS DESIGNATE PROBABLE FUTURE
OCEANOGRAPHIC RESEARCH NEEDS
SPON- INNOVATORS NOT GIVEN /MCDOWELL DOUGLAS CO./
DATE- OCT. 1968

K-20020
Charts outline the questions and problems of
oceanographic research in the future. NASA uses
the charts to estimate the probable requirements for instrumentation carried by satellites engaged
in cooperative programs with other agencies
concerned with identification, analysis, and
solution of many of these problems.

B68-10399
AUTOMATIC SOLAR LAMP INTENSITY CONTROL
SYSTEM
LEVYEST, H. MANDELL, H. DATE- NOV. 1968

IEE-10017
System that substitutes solar cells directly in
the path of the radiation incident on the test
volume and uses a 5c bridge-null system was
developed. The solar cell is affixed to a heat
shield mounted on each of three arms for each solar
lamp. Control of the radiation from the solar
lamps is automatic.

B68-10400
LITHIUM-TELLURIUM BI METALIC CELL HAS
INCREASED VOLTAGE
CHIUKS, R. J. ROGERS, G. L. SHIMOTAKE, H. DATE-
NOV. 1968

ARG-10141
Lithium-tellurium secondary cell with a fused
lithium halide electrolyte, tested in the
temperature range 467 degrees to 500 degrees C,
showed improvement over the sodium bismuth cell.
The voltage of this bimetallic cell was increased by
using the more electropositive anode material,
lithium, and the more electronegative cathode
material, tellurium.

B68-10402
SYSTEMS FOR MEASURING SPATIAL DISTRIBUTION OF
JECTED DROPLETS, A CONCEPT
ATTAZAR, R. A. /N. A. ROCKWELL CORP./ DATE-
NOV. 1968

B68-10185
System measures the spatial distribution of
high-velocity droplets ejected from a or spray gun. The system employs an electrically resistive grid as the sensing screen, electrical leads, and a signal scanner such as a cathode ray
tube.

B68-10404
DESIGN CONCEPT FOR MONORAIL ELECTRICAL
CONNECTOR
BOLINGER, R. E. DOUGLAS AIRCRAFT CO./ DATE- NOV.
1968

M-FS-14037
Connector plug automatically minimizes arcing
during mating and demating. This plug uses a
high-resistivity outer sheath as an extension to
the regular pin contact. It is used in atmospheres containing explosive gases, and
reduces erosion at the contact surfaces where
arcing and demating are performed frequently.

B68-10411
INVERTED GROUNDING TECHNIQUE FOR ELECTRON
BEAM HEATING
JIBERG, R. J. DATE- DEC. 1968

LEWIS-10543
In the production of high temperature by electron
bombardment the cathode is held at ground
potential while the hot anode is raised to a high
potential. An annealing chamber using the
inverted grounding is constructed around a
commercially available stainless steel cross.

B68-10412
AUTOMATIC CALIBRATION SYSTEM FOR PRESSURE
TRANSUDERS
SPON- INNOVATORS NOT GIVEN /G. T. SCHJELDAHL CO./
DATE- DEC. 1968

M-FS-2017
Fifty-channel automatic pressure transducer
calibration system increases quantity and accuracy
for test evaluation calibration. The pressure
transducers are installed in an environmental
test chamber and manifolded to connect them to a
pressure balance which is uniform.

B68-10413
UV DETECTOR MONITORS ORGANIC CONTAMINATION
OF OPTICAL SURFACES
CERNER, G. S.KENNEDY, B. W. DATE- DEC. 1968

M-FS-20246
Silicon carbide, insensitive to visible light, is
used in photodetectors. System contamination can
be monitored during the normal operation without
interference to the operator, and without
shielding from ambient light.

B68-10415
NEW BIMETALLIC RFM CELL SHOWS PROMISE IN
DIRECT ENERGY CONVERSION
HEDSON, J. C. SHIMOTAKE, H. DATE- NOV. 1968

ARG-10183
Concentration cell, based upon a thermally
regenerative cell principle, produces electrical
energy from any large heat source. This
experimental bimetallic RFM cell uses a
sodium-bismuth alloy cathode and a pure liquid
sodium anode. The cell exhibits reliability,
corrosion resistance, and high current density
performance.

B68-10420
HIGH RESOLUTION GE/LZ SPECTROMETER
REDUCES RATE-DEPENDENT DISTORTIONS AT HIGH
COUNTING RATES
SHERMAN, R. LARSEN, R. W. MANN, H. M. SUDNICK,
S. J. SHEERAN, I. S. SPATIGS, M. G. DATE- NOV.
1968

ARG-10144
Modified spectrometer system with a low-noise
preamplifier reduces rate-dependent distortions at
high counting rates, 25,000 counts per second.
Pole-zero cancellation minimizes pulse
CONDITIONING FLAT CONDUCTORS FOR PLAT
CONDUCTOR
SYSTEI CONVERTS OPTICAL
LCIILOBETER,
BY
868-10431
LISTER,
HIGB-EFFICIENCY
GSPC-10487
I-IFS-20091
B68-10434
CORP./
SABOE,
WELLBIN,
868-10436
I-PS-20013
1968
BURNETT,
SET
ERC-10055
PEASE CEANGES
Combined
System converts phase changes at optical
COIILOBETER
Single-ended step-up regulator-chopper power
supply /employing conventional chopper circuitry/
interferometers.
B68-10431
CHANGE CONTROL OF NICKEL-Cadmium BATTERIES
BY COULOMETER AND THIRD ELECTRODE METHOD
FORD, F. PAULKOVITCH, J. DATE- SEP. 1968
GSPC-10487
Combined coulometer/third electrode central
circuit for a nickel-cadmium battery included at
least one cell of the third electrode type is
illustrated. The coulometer/third electrode
sensing circuit controls the series regulator as
necessary to maintain the sensing voltage at the
preset sensing level.
B68-10432
HIGH-EFFICIENCY STEP-UP REGULATORS
LISTER, L. R. /STURBY BAND CORP./ DATE- DEC. 1968
M-FS-20049
Single-ended step-up regulator-chopper power
supply /employing conventional chopper circuitry/
combin...
01 ELECTRICAL (ELECTRONIC)

B68-10513
METHOD FOR MEASURING ALTERNATOR VOLTAGE TRANSIENTS
PEZ, D. A. DATE- NOV. 1968
LEWIS-10373

B68-10516
AUTOMATIC CALIBRATION APPARATUS FOR
TELEMETRY SYSTEMS
ALLEN, W. W. DATE- NOV. 1968
NPG-10350 NPG-10754

HIGH-TEMPERATURE THERMIOMIC SCOPES
CAMPBELL, A. E., JR. HAMMERLINGER, R. W.
/ELECTRO-OPT. SYSTEMS/ DATE- NOV. 1968
NPG-10764

INTEGRATED METAL LEAD TRANSDUCERS
CARLBY, D. M. CASTLESHIRE, N. T. /SCA/ DATE-
JUL. 1968
GSPC-90536

DIGITAL LASER-BEAM DEFLECTION SENSOR
FOSTER, V. J. /GEN. TELEPHONE AND ELECTRON.
LABS/ DATE- NOV. 1968
NFC-14765

IMPROVED COMMUNICATION SYSTEM FOR LARGE
OPERATIONS CENTER
SHAPES, M. S. /BOEING CO/ DATE- NOV. 1968
NFC-15016

ACTIVE RC FILTER PERMITS EASY TRADE-OFF
OF AMPLIFIER GAIN AND SENSITIVITY TO GAIN
KERN, W. J. SHAPES, C. V. DATE- NOV. 1968
NRC-10542

FAILURE RATES FOR ACCELERATED ACCEPTANCE
TESTING OF SILICON TRANSISTORS
TOYER, C. R. DATE- NOV. 1968
NRC-10541

FORECAST TABLES for the control of silicon
transistor product reliability have been compiled.
The tables are based on a version of the
Arrhenius statistical relation and are intended
to be used for low- and medium-power silicon
transistors.

HIGH DIELECTRIC THICK FILMS FOR SCREENED
CIRCUIT CAPACITORS
ELSTEY, D. R. DATE- DEC. 1968

LANGLEY-10294

TECHNIQUES AND MATERIALS have recently been
developed to obtain high dielectric films of at
300 to 800/. High dielectric bariurn titanate
particles are mixed in a barium titanate glass.

B68-10543
TEMPERATURE CONTROLLED STRAIN GAGED
EXTENSOMETER
EAMOS, G. L. SEPLOW, S. /AEROJET GEN/ DATE-
DEC. 1968
NRE-10553

B68-10544
COOLING OF 2-KW H SUBSCRIPT 2-0 SUBSCRIPT
P SUBSCRIPT FUEL CELL
ALLAN, K. N. EJOKRAJIAN, D. C. EJOKRAJIAN, T. E.
KUBEL, J. R. /ALLIS-CHALMERS/ DATE- DEC. 1968
N-PJ-13737 N-PJ-13740 N-PJ-13749

An extensive research and development program has
been carried out to devise an improved method of
removing waste heat of reaction from a
devolvemental 2 kW hydrogen-oxygen fuel cell.

B68-10545
A 35 GE SOLID STATE TRANSMITTER/DRIVER
N-PJ-20152

B68-10547
OPERATIONAL INTEGRATOR
LOOI, E. S. DATE- NOV. 1968
NPG-10230

B68-10555
ELECTROLYTIC SILVER ION CELL STERILIZERS
WATER SUPPLY
ALLEN, C. F. NILLEMAN, J. S. /CARY CORP/ DATE-
DEC. 1968 READING SEE ALSO NAG-CR-41573
NAG-11827

Electrolytic water sterilizer controls microbial
contamination in manned spacecraft. Individual
sterilizer cells are self-contained and require no
external power or control. The sterilizer
generates silver ions which do not impart an
unpleasant taste to water.

B68-10558
COMBINATION PEECE FOR AIRFLOW MEASUREMENTS
JULIAN, T. J. GLANE, I. K. KLAUSE, L. N.
DATE- DEC. 1968
LEWIS-10281

Pree combines a high-recovery shielded
thermocouple for sensing total temperature, a
total pressure sensing tube, and a flow direction
sensing wedge having a 60 degree included angle.

B68-10559
ACCELERATION INSENSITIVE FLUID EXPANSION
COMPRESSOR
HUGHES, L. F. /MIT/ DATE- OCT. 1968
NRC-10512

Device compensate for temperature and
acceleration effects on a fluid-floated mass in a
sealed container of a high performance angular or
acceleration sensing instrument. It is used in
precision instruments for regulation of gasses or
liquids in a moving body.

B68-10562
RELIABLE METHOD FOR TESTING GROSS LEAKS IN
SEMICONDUCTOR COMPONENT PACKAGES
ALTSHUGER, T. L. DATE- DEC. 1968

70
ERC-10150

Simple, reliable, inexpensive method for gross-leak testing has been devised, based upon the conventional fine-leak technique. The sensitivity ranges from the detection of very large leaks down to leaks of 10 to the minus seven cc helium per sec.

B68-10563

PRESSURE-SENSITIVE BONDED JUNCTION TRANSDUCERS

IANNIUI, A. RIMMER, W. DATE- OCT. 1968

Miniature transducers involve the use of appropriate commercial epoxy resins. Design protects the sensitive semiconductor surface from abrasives and excludes an air space in the device capsule.

B68-10565

LOCATING **SNAKE PATHS** IN ELECTRICAL CIRCUITY

DANBACK, T. M. /BOEING CO./ DATE- DEC. 1968

Use of a matrix system wherein circuit pin connections are assigned arbitrary designators and these used in formation of the matrix is illustrated. The matrix is a format that shows the current paths.

B68-10566

WELDING SKATE WITH COMPUTERIZED CONTROLS

WALL, W. A., JR. DATE- NOV. 1968

New welding skate concept for automatic TIG welding of contoured or double-contoured parts combines lightweight welding apparatus with electrical circuitry which computes the desired torch angle and positions a torch and cold-wire guide angle manipulator.

B68-10572

DESIGN OF DISSIPATIVE LINEAR PHASE FILTERS

PHARES, R. L. /SFLC, INC./ DATE- DEC. 1968

Set of design curves eliminates work involved in designing linear phase filters by being normalized in such a way as to apply to low, band, and high-pass filters of any bandwidth. Similar curves for any number of poles are plotted by solving a system of simultaneous equations.

B69-10012

MICROWAVE INTERFEROMETER CONTROLS CUTTING DEPTH OF PLASTICS


Microwave interferometer system controls the cutting of plastic materials to a prescribed depth. The interferometer is mounted on a carriage with a spindle and cutting tool. A cross slide, mounted on the carriage, allows the interferometer and cutter to move toward or away from the plastic workplace.

B69-10013

DEVICE FOR DUTY TUNING IN A STRIPLINE VARACTOR HARMONIC MULTIPLIER

STREIT, K. F. /SYLVANIA ELECTRON. SYSTEMS/ DATE- FEB. 1969

Stripline varactor harmonic multiplier uses a device for positioning the varactor diode with respect to the stripline circuit to obtain series resonance. The device also reduces detuning effects due to thermal expansion, over a wide temperature range.

B69-10014

ISOLATED, MULTIPLE-OUTPUT VOLTAGE DC-TO-DC CONVERTER

SGSN- INNOVATOR NOT GIVE /HUBBELL UNIV./ DATE- FEB. 1969 /SEE ALSO NASA-DE-61737

Isolated, multiple output voltage dc-to-dc converter provides power for television transmitter used in space vehicles. The isolation is accomplished by using a single-end switching transformer circuit. The converter is completely solid state.

B69-10015

MILLIVOLT SIGNAL LIMITER

HANSEN, I. G. PETRUS, V. S. DATE- FEB. 1969

Low-voltage limiter circuit suppresses the output of platinum probes at temperatures beyond their operating range. The limiter circuit comprises an operational amplifier with a dual feedback loop. The signal limiter is useful in low-voltage instrumentation circuits normally operable or set for cryogenic temperatures.

B69-10027

MOSSBAUER-EFFECT DATA-COLLECTION SYSTEM

ASCHEEBENNE, K. A. VONDEBRO, R. H. DATE- FEB. 1969

A Data collection system which uses a small, general-purpose digital computer provides data acquisition from, and minor control of, four Mossbauer-effect experiments. This system is economical with no loss of versatility to the experimenter and is useful in handling large volumes of data from research experiments.

B69-10032

SIMPLE SWITCH ACTUATED BY FORCE APPLIED OVER WIDE SOLID ANGLE

NELSON, B./HUGIES AIRCRAFT CO./ DATE- FEB. 1969

XRF-05808

Electric switch can be actuated/ closed/ by a force applied from any direction within a hemispheric envelope. The switch is comprised of a flexible, electrically conductive reed holding a conductive contact disc, mounted concentrically within a conductive tube.

B69-10037

USE OF BOTH LINEAR AND LOGARITHMIC TRANSFER FUNCTIONS TO INCREASE DYNAMIC RANGE OF VISUAL CHANNEL

FEESETO, E. T. /SCA/ DATE- FEB. 1969

GSFC-10675

Using both linear and logarithmic transfer functions in the visual channels of a dual channel radiometer increases the dynamic range to better than 1 to 10,000 foot-lamberts.

B69-10045

THICK TRANSDUCERS USED FOR GENERATING SHORT-DURATION STRESS PULSES IN THIN SPECIMENS

PETRUS, W. G. ROSEN, M. DATE- FEB. 1969

ARG-10232

By generating short stress pulses with thick transducers, the pulse-echo method for determining sound velocities and acoustic attenuation can be applied to this specimen. The stress pulses enter a specimen where one pulse is reflected several times before a succeeding pulse enters the specimen.

B69-10050

FLOW ANGLE SENSOR AND READOUT SYSTEM

HANSEN, J. G. PETRUS, V. S. DATE- FEB. 1969

LEWIS-90298

Sensor determines fluid flow angles by means of a simple vane that positions itself in the direction of the flow. The vane rotates a small light-reflecting disc as it moves while the readout system uses two cyclically polarized light beams.

B69-10056

FRANGIBLE ELECTROCHEMICAL CELL AND SEALING TECHNIQUE

HUFFST, G. HAYNE, J. SHERFFY, J. DATE- MAR. 1969

XES-10010

Electrochemical cell assembly, which includes a positive electrode plate between two negative electrode plates, is both flexible and compact, and frangible under severe shock conditions. Leak-tight integrity of the housing is maintained by polymer-to-polymer fusion bonds through holes in the expanded metal electrode terminals.

71
Microelectronic oscillator uses a bipolar transistor to circumvent the problems of developing suitable inductors for lower frequencies. The oscillator is fabricated by hybrid thin-film techniques or by monolithic construction. Discrete microcircuit components may also be employed.

B69-10064
MICROELECTRONIC OSCILLATOR
KLEINBERG, L. L. DATE- MAR. 1969 BEAN- SEE ALSO
GSPC-10375
Dipolar transistor operated in a grounded base configuration is used as the inductor in a microelectronic oscillator. This configuration is employed using thin-film hybrid technology and is also applicable to monolithic technology.

B69-10070
ANALYSIS OF MAGNETICALLY-COERCE COUPLED PROCESSES IN PULSE-MODULATION SYSTEMS
VEILLETTE, L. J. DATE- MAR. 1969
GSP-10241
Investigation established analytic expressions for the design of pulse modulators with modulating signal control of the resonant level of film in a nonlinear magnetic core. Expressions derived are applicable to both pulse-width and pulse-rate modulator designs.

B69-10073
ELECTRONIC VISUALIZATION OF GAS BEARING BEHAVIOR
EVANS, E. C. KLASSEN, H. A. WONG, R. Y. DATE- MAR. 1969
LEWIS-10711
Visualization technique produces a visual simulation of gas bearing operation by electronically combining the outputs from the clearance probes used to monitor bearing component motion. Computerized recordings of the probe output are processed and displayed on an oscilloscope screen and recorded with a high-speed motion picture camera.

B69-10090
PERFORMANCE OF LOW-PRESSURE THERMIONIC CONVERTERS IN EVALUATED
RICHARDS, R. E. DATE- APR. 1969 BEAN- SEE ALSO
ANG-7377
ARG-10276
Experiments, evaluating the performance of low-pressure thermionic converters, were conducted with cesium, potassium, and rubidium metal vapors. The results of the investigation are useful in the selection of favorable conditions for the design of thermionic reactor fuel elements, including HP output for special applications.

B69-10093
STRUCTURAL ANALYSIS AND THEORY OF INTERPRETIVE SYSTEM /SAMS/ /SPOR- INVENTOR NOT GIVEN /PHILCO CORP./ DATE- APR. 1969 BEAN- SEE ALSO B67-10171
PO-10839
SAMS digital computer program simplifies automated structural analysis and eliminates reprogramming for problem changes. Program objectives are achieved by standardizing, by providing a modular program, and by programming for intermediate-size problems.

B69-10094
ON-LINE COMPUTER SYSTEM FOR USE WITH LOW-ENERGY NUCLEAR PHYSICS EXPERIMENTS IS REPORTED
GEMBELL, D. S. DATE- MAY 1969 BEAN- SEE ALSO
ANG-6933
ARG-10257
Computer program handles data from low-energy nuclear physics experiments, including the WD-160 pulse-height analyzer and the PHILICO computing system. The program allows experimenters to choose from about 50 different basic data-handling functions and to prescribe the order in which these functions will be performed.

B69-10095
SIMPLE DEMODULATOR FOR TELEMETRY PHASE-SHIFT KEYED SUBCARRIERS
COWILLON, L. A. DATE- MAY 1969
NPQ-11000
Circuit, suitable for operation at high signal-to-noise ratio environments, recovers pulse-code modulated data from digital telemetry systems which use phase-shift keyed subcarrier techniques. This demodulator is easily constructed from microcircuit elements and may be applied where low-cost, relatively high-level signal systems are used.

B69-10096
SILICON CARBIDE DIODE FOR INCREASED LIGHT OUTPUT
GRITZMANS, L. M. NORMANS, A. I. /TTCO LABS./ DATE- JUN. 1969
NPQ-20063
Transition metals improve the overall light output and the output in particular regions of the electroluminescent of a silicon carbide semiconductor device. These metals /impurities/ introduce levels that can be pumped electrically and affect the efficiency of the recombination process involved in emission of radiation.

B69-10097
MOUNTING METHOD IMPROVES ELECTRICAL AND VIBRATIONAL CHARACTERISTICS OF SCREEN ELECTRODES
MELSON, R. E. /WESTINGHOUSE ELECTRIC CORP./ DATE- JUN. 1969
NPQ-20169
Electrical characteristics of the mesh or screen electrodes used in electron tubes are improved by decreasing the shunt capacitance of the tube while retaining the close spacing needed for the required resolution. Vibrational characteristics are enhanced by raising the natural resonant frequency.

B69-10101
IMPROVED PHASE-SHIFT-KEYED DETECTOR
CHANDLER, J. /SHERRY RAND CORP./ DATE- MAY 1969
NPQ-20064
Improved phase-shift-keyed detector contains an active filter circuit which uses an operational amplifier and resistor-capacitor network. The detector is used in the Saturn space vehicle and Apollo telescope mount command systems to translate raw analog signals from the command receiver into digital information for the command decoder.

B69-10113
SURFACE TEMPERATURE MAPPING WITH INFRARED PHOTOGRAPHIC PYROMETRY
POLLACK, P. G. DATE- JUN. 1969
LEWIS-10763
Infrared photographic pyrometry method measures and maps the temperature distribution on a heated surface with accuracy and precision. This method involves the collection, detection and measurement of a narrow bandwidth of emitted infrared radiation. Standard commercially-available equipment is used, together with systematic procedures.

B69-10114
OPTICALLY INDUCED FREE CARRIER LIGHT MODULATOR
GRUBER, C. L. RICHARDS, W. E. DATE- APR. 1969
GSPC-10216
Signal carrier laser beam is optically modulated by a second laser beam of different frequency acting on a free carrier source to which the signal carrier laser is directed. The second laser beam affects the transmission characteristics of the free carrier source to light from the signal carrier laser, thus modulating it.
Tunnel diode circuit, capable of timing the zero crossing point of bipolar pulses, provides effective design for a fast crossing detector. It combines a nonlinear load line with the diode to detect the zero crossing of a wide range of input waveshapes.

B69-10117

REMOTE-LY-ACTUATED BIOMEDICAL SWITCH

LEE, R. D. DATE- APR. 1969

Remotely-actuated biomedical switching circuit using transistors consumes no power in the off position and can be actuated by a single-frequency telemetry pulse to control implanted instrumentation. Silicon controlled rectifiers permit the circuit design which imposes zero drain on supply batteries when not in use.

B69-10120

BOOTSTRAP UNLOADER

PFIFNER, H. J. /HUGHES AIRCRAFT CO./ DATE- MAY 1969

KNO-09768

Circuit can sample a number of transducers in sequence without drawing from them. This bootstrap unloader uses a differential amplifier with one input connected to a circuit which is the equivalent of the circuit to be unloaded, and the other input delivering the proper unloading currents.

B69-10121

CIRCUITRY SELECTIVELY LIMITS DATA

STORAGE IN GENERAL PURPOSE COMPUTER

SLIGHTER, D. K. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1969

GSPC-10605

Circuitry limits storage in the memory of a stored program general purpose digital computer by permitting storage or writing to certain, specified areas of memory. The limit register used in the computer is easily set under program control, and the memory block size and position is readily changed to suit each specific program.

B69-10125

ROSEBAUER VIBRATION CALIBRATION SYSTEMS

EVALUATED


K-PS-20014

Rosebaeur effect vibration calibrator measures the velocity of high frequency, low amplitude vibration at various velocity and frequency ranges. It contains a highly precise calibrations standard unit and a vibration measuring system and may be applied to ultrasound testing and calibrating presoelectric shakers and vibration transducers.

B69-10126

INTEGRATED CIRCUIT WITH MULTIPLE COLLECTOR CURRENT SOURCE

HELDSTROM, R. J. LIN, S. C. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1969

K-PS-20177

Integrated circuit with multiple collector current source achieves the equivalent of a large number of resistors in a small area. Functional equivalents of a transistor reduce the size requirement for low power integrated circuits, providing an efficient alternative to the conventional diffused resistor process in integrated circuit fabrication.

B69-10129

CONCEPT FOR A MULTIFUNCTIONAL OSCILLOSCOPE PROBE

STEINER, E. J. /ROCKETDYNE CORP./ DATE- MAY 1969

MSC-10724

Multifunctional oscilloscope probe incorporates required electronic components so that any one of three desired functions/demodulation, or low capacitance can be switched into the oscilloscope. The probe obviates the need for the three separate oscilloscope probes previously used in checking electronic equipment.

B69-10130

TUNABLE BANDPASS FILTER WITH VARIABLE SELECTIVITY

KERNIS, W. J. SHAPIRO, C. V. DATE- MAY 1969

REAN- SEE ALSO B68-10210

ARC-10191

Basic active RC networks constructed from stages that realize second-order transfer functions using two integrators offer excellent stability. Modifications of the basic network produce a highly stable bandpass filter having separate controls that independently adjust center frequency, Q, and center frequency gain.

B69-10131

HIGH-ENERGY, HIGH-POWER, LONG-LIFE BATTERY

ABERS, S. G. /HONEYWELL/LIVINGSTON ELECTRON. LAB./ DATE- MAY 1969

LEWIS-10724

High-energy-density primary battery achieves energy densities of up to 130 watt hrs./lb. The electrochemical couple consists of a lithium anode, a copper-fluoride cathode, and uses methyl formate/lithium hexafluoroarsenate for the electrolyte. Once activated, battery life is approximately 30 hours.

B69-10133

ONE HUNDRED MHz VOLTAGE-CONTROLLED OSCILLATOR ELECTRICAL POTENTIAL

SPARE, A. F., JR. DATE- MAY 1969

NF-11004

Voltage controlled oscillator (VCXO) generates a center frequency of 100 MHz with low phase noise. VCXOs at this and lower frequencies are applied to phase-lock-loop detection systems used in tracking receivers and telemetry systems.

B69-10135

ION TRANSPORT MECHANISM IN FOSSIL FUEL CELL ELECTRODES

JOHansson, I. LINDBORG, I. /ALLAMENNA SVENSKA ELEKTR. ARTSBEKLAGET/ DATE- MAY 1969

BL-10343

Results of experiments on hydrogen-oxygen fuel cells show that higher current densities are obtained with cell anodes having a 100 micron thick active layer of porous nickel containing silver electrocatalyst. Increase in current density is attributed to a convective mass transport mechanism.

B69-10140

FULL WAVE DC-TO-DC CONVERTER USING ENERGY STORAGE TRANSFORMERS

MOORE, E. T. WILSON, T. G. /WILMORE ELECTRON. CORP./ DATE- MAY 1969

LEWIS-10375

Full wave dc-to-dc converter, for an ion thruster, uses energy storage transformers to provide a method of dc-to-dc conversion and regulation. The converter has a high degree of physical simplicity, is lightweight and has high efficiency.

B69-10143

SCHMIT TRIGGER MULTIVIBRATOR

THURBER, R. P. DATE- MAY 1969

MSC-10955
Schmitt trigger multivibrator circuit, capable of
stable, repetitive or bistable operation. It
incorporates an input circuit in conjunction with
a Schmitt trigger circuit. The circuits form two
output signal levels, useful in switching
circuit applications, initiates oscillations, and
forms highly unsymmetrical wave forms.

B69-10149
CALIBRATION OF A RESISTANCE THERMOMETER
DOWN TO 0.04 DEGREES K
CULBERT, R. V. /SUNGAITL, Z. DATE- MAY 1969
ARG-10316
Method for calibrating germanium-resistance
thermometers in cryostats between 0.4 degrees K
and 4 degrees K involves extrapolating the
specific heat of a single metal to low
temperatures. This method is used when a
magnetic thermometer is not available.

B69-10151
POSITIVE AND NEGATIVE OUTPUT CIRCUITS
LEWIS-10715
Trigger circuit has a fixed positive output in the
on state and a fixed negative output in the off
state. The amplitude of the positive and
negative pulses may be independently chosen.

B69-10152
SURFACE IRREGULARITIES DETECTED BY FLARE
TELESCOPIC INSTRUMENT
ZOKES, H. R. /ETIHIO PHYS./ DATE- MAY 1969
M-P-20157
Portables fiber optics sensing device which detects
surface irregularities in a specific tube flare, is
taken, scanned and run out with only one setup.
Capabilities of the instrument can be expanded to
include surface inspection of various kinds of
tube flares.

B69-10153
PCB DETECTION WITH CORRECTION FOR
INTERSYMBOL INTERFERENCE
THOMAS, A. H. /NEW YORK UNIV./ DATE- MAY 1969
GSPC-10155
For pulse code modulation bits, received signals
are filtered by integrate and dump filter from
which samples are directed to end of PCB bit.
Threshold decision circuit determines level of
sample voltage. Effects of interference of known
past bit can be corrected by raising or lowering
threshold voltage value.

B69-10154
TECHNICAL REPORT ON GALVANIC CELLS WITH
FUSED-SALT ELECTROLYTES
CABRÉ, J. J. /COUGHARRELL, C. E. FISCHER, A. E.
FOSTER, H. S. /BESSON, J. C. JOHNSON, C. E.
BEN-SER ALSO ANL-7316
ARG-10297
Technical report is presented on sodium and
lithium cells using fused salt electrolytes. It
includes a discussion of the thermally
regenerative galvanic cell and the secondary
bi-metallic cell for storage of electricity.

B69-10155
VACUUM GAGE SYSTEM FOR RADIATION ENVIRONMENT
SUMMERS, R. L. DATE- MAY 1969
LEWIS-10730
Hot-cathode ionization gages used to measure
high-vacuum pressures are subject to error when
ionizing radiation is present. Because this
radiation creates additional ions, a second ion
gage is mounted near the pressure-measuring gage
to detect and measure the radiation induced error.

B69-10156
EXPERIMENTAL PRECISION OF PERFORMACE
BY SUPERCONDUCTING CABLES
BROoks, J. S. /FISCHER, J. H. DATE- JUN. 1969
ARG-10245
Broken superconductor method of short sample
testing makes possible the prediction of the
performance of well cooled, stabilized,
superconducting cable coils. It yields a
field-versus-current curve for a short sample of
cable. Plots are drawn for the superconductor
and copper currents at various magnetic field
strengths.

B69-10162
MAGNETOHYDRODYNAMIC GENERATORS USING
TWO-PHASE LIQUID-METAL FLOWS
PETRICK, R. DATE- JUN. 1969
ARG-10168
Two-phase flow generator cycle of a
magnetohydrodynamic /MHD/ generator uses a
working fluid which is compressible and treated as
an expanding gas. The two-phase mixture passes
from the heat source through the MHD generator,
where the expansion process takes place and the
electrical energy is extracted.

B69-10173
GAGE PROVIDES AUDIBLE SIGNAL TO FACILITATE
CHECKOUT OF CONNECTOR PINS
MORTON, R. J. /BOEING CO./ DATE- JUN. 1969
KSC-10135
Commercial push gage has been modified to enable
rapid, accurate testing of paddle pins in
distributors, bullet pins and patch boards. The
purpose of the gage is to ensure that the pins
will not break electrical contact when they are
subjected to a minus, preset pressure.

B69-10186
SPECTRAL ION SOURCE
JALL, L. G. /SDS DATA SYSTEMS/ DATE- JUN. 1969
IEEE-6898
Radial focusing of electrons in ion source
produces greater ion densities, resulting in
higher resolution and focus capability for a given
source volume. Electron beam is focused near
exit aperture by spherical fields. High density
ions allow focusing ion beam to high density at
echo, allowing high current through small
aperture.

B69-10191
LINEAR-LOG COUNTING-RATE METER USES
TRANSCONDUCTANCE CHARACTERISTICS OF A
SILICON PLANAR TRANSISTOR
EICHBLOZ, J. J. DATE- JUL. 1969 BRAN- SEE ALSO
ANL-6968
ARG-10158
Counting rate meter compresses a wide range of
data values, or decades of current. Silicon
planar transistor, operating in the zero
 collector-base voltage mode, is used as a feedback
element in an operational amplifier to obtain the
log response.

B69-10212
SINGLE-COMPONENT SCRATCH-GAGE FORCE TRANSDUCER
SCOTT, C. H. DATE- JUL. 1969
LANY-10496
Single-component scratch-gage transducer
incorporates a unique motion magnification scheme
to increase the magnitude of the load measuring
scratch approximately 15 times over that of
conventional models. It is small, load carrying
and high in natural frequency.

B69-10213
MAGNETICALLY COUPLED EMISISON REGULATOR
SPORE- INNOVATOR NOT GIVEN /CONSULTANTS AND
DESIGNERS/ DATE- JUL. 1969
GSPC-10056
Magnetic coupling between input and power handling
circuits isolates high voltage. A feedback
regulator samples the ion source bias current and
provides deviation signals to a magnetic amplifier
pulse modulator. The pulse modulator controls the
dc to ac power inverter which in turn, controls the
emission current.

B69-10215
TECHNIQUE FOR TUNING ANTENNA SYSTEMS
REED, E. /BOEING CO./ DATE- AUR. 1969
KSC-10060
Sweep and marker generators tune and match antenna
system in its operational environment. Sweep
generator simulates transmissions over entire
frequency range of the antenna receiving system. Marker generator identifies frequency points along the wave form displayed on oscilloscope.

B69-10216
COMPENSATION OF PULSE-REBALANCED INERTIAL INSTRUMENTS
LUND, C. E. DATE- JUL. 1969
MSC-12000
Study explains the basic concept of pulse-rebalanced inertial instruments in terms of an idealized model which performs the processes of integration, prediction and quantization. An analytical model of an actual pulse-rebalanced instrument was derived in a form comparable to the idealized system.

B69-10217
LOW-COST VOLTAGE-LEVEL DETECTOR
STUDMAN, J. C. DATE- JUN. 1969
LEWIS-10858
Integrated circuit senses when the voltage level has exceeded or is below a given reference level. The circuit, consisting of a differential amplifier, an SCR, and a pair of zener diodes, is useful for overload detection and monitoring power supplies.

B69-10218
PROTECTIVE CLOTHING FOR WORKERS WITH 5 KW AND 20 KW SHORT-ARC LAMPS
ARGOO, R. J. DATE- JUL. 1969
FDO-1155
Two suits of protective clothing reduce hazards to personnel working near short-arc lamps. One suit is worn during assembly or servicing of inoperative 5- and 20-kw lamps. The other suit is worn during adjustment or focusing of operating 5-kw lamps.

B69-10220
LINEAR VOLTAGE-TO-FREQUENCY CONVERTER
LORENSON, D. C. DATE- JUL. 1969
GSFC-10264
Voltage-to-frequency converter, with ultra-high input impedance and linear response, is used in analog to digital data conversion systems. Voltage-to-current converter, using MOSFET devices and a multivibrator, has ultra-linear voltage-to-frequency characteristics. It replaces voltage sensitive magnetic-core oscillators.

B69-10221
MULTIPLE-MASK CHEMICAL ETCHING
CANNON, D. L. /LOCKHEED ELECTRON CO./ DATE- AUG. 1969
MSC-13114
Multiple masking techniques use lateral etching to reduce the total area of the high etch-rate oxide exposed to the chemical etchant. One method uses a short-term etch to remove the top layer from the silicon oxide surface, another acts before the top layer is grown.

B69-10224
TWO DEVICES FOR ANALYSIS OF MYSTAGMUS
GUNDEY, P. J. /NAVAL AEROSPACE MED. INST./ TOEBPS, G. /NAVAL AEROSPACE MED. CENTER/ DATE- JUL. 1969
HC-10227
Electromechanical Slope Computer /ESC/ and Electronic Swatation Device /ESD/ facilitate rapid analysis of mystagmus records. The ESC reads out the slope and time of each mystagmus wave form. The ESD provides much faster analysis than the ESC. It provides an immediate analog display and digital display of analyzed mystagmus.

B69-10225
HIGH-SPEED BUFFER WITH A LOW-IMPEDANCE OUTPUT
AMBOY, G. D. DATE- JUL. 1969
MSC-12259
Technique using photodiode effect of semiconductor in high-Q superconductive cavity gives initial improvement of 2-4 db in signal-to-noise enhancement of conventional RF communication systems. Wide band signal plus noise can be transmitted through a narrow-band cavity due to parametric perturbation of the cavity frequency or phase.

B69-10228
COBALT IMPROVES NICKEL HYDROXIDE ELECTRODES FOR BATTERIES
LENNER, S. R. /GULTON IND./ SEIGER, H. N. DATE- JUL. 1969
LEW-10760
Positive nickel hydroxide electrodes containing 20 mole percent of cobalt hydroxide are more efficient than when impregnated to the same degree by weight with nickel hydroxide alone. Charge-acceptance and oxygen-evolution tests indicate cobalt electrodes are more efficient than plain positive nickel hydroxide electrodes at all rates of charge.

B69-10230
HIGHLY LINEAR, SENSITIVE ANALOG-TO-DIGITAL CONVERTER
COX, J. /GULTON IND./ FINLEY, W. R. DATE- JUL. 1969
MSC-13110
Analog-to-digital converter converts 10 volt full scale input signal into 13 bit digital output. Advantages include high sensitivity, linearity, low quantizing error, high resistance to mechanical shock and vibration loads, and temporary data storage capabilities.

B69-10233
SEGMENTED SIGE-PTE COUPLES
EGGERS, P. E. /BATTLELE RESEARCH INST./ MUELLER, J. DATE- JUL. 1969
GSFC-10746
New design of segmented couples incorporates an intermediate junction contacted by pressure, and eliminates transition layers that bond materials differing in thermal expansion. Development of a reproducible and reliable intermediate junction between PbTe and SiO2 will be applicable to direct conversion of energy.

B69-10244
CONCEPTUAL TECHNIQUES FOR REDUCING PARASITIC CURRENT GAIN OF LATERAL PNP TRANSISTORS
GALLAGHER, R. C. /WESTINGHOUSE BELL TELEPHONE LABS/ SCOTT, J. R. DATE- JUL. 1969
MSC-13199
Two techniques have been conceptually proposed as possible means of reducing parasitic beta in lateral p-n-p transistors. One method uses a degenerate substrate and high concentration P plus guard-ring diffusion, another places the base contact at the center of an annular ring structure.

B69-10246
NOVEL TERMINAL STRIPS FOR TRANSFORMERS
WILL, E. R. DATE- JUL. 1969
NPO-10842
Spacing tinned terminal leads between two tapes of woven glass fiber that are sandwich-bonded with pliable epoxy adhesive alleviates problems of taped leads pulling away from the transformer and shorting due to crossover of wires. Individual leads may or may not be enclosed in glass-fiber sleeves.

B69-10247
SIMPLIFIED SYSTEM DISPLAYS COMPLEX CURVES CORRESPONDING TO INPUT DATA
HERBONS, M. L. /MIT/ DATE- AUG. 1969
HC-10073
Cathode ray oscilloscope displays curves or contours of complex shapes corresponding to sets of x, y coordinates. It requires few storage facilities and produces a rapid display of complex curves with a fewer number of commands than previous systems.

B69-10251
LOW-LOSS *** BAND PARASITIC PHONES
CRIBB, R. E. DATE- JUL. 1969  
KSC-09348  
Low insertion-loss C band parasitic probe couples RF energy from a transmitting medium to a receiving medium with a minimum of interference in order to minimize power requirements.

B69-10253  
RADIATION TOLERANT SILICON NITRIDE INSULATED GATE FIELD EFFECT TRANSISTORS  
NEUMAN, P. A. DATE- JUL. 1969  
GSFC-10581  
Metal-Insulated-Semiconductor Field Effect Transistor (MISFET) device uses a silicon nitride passivation layer over a thin silicon oxide layer to enhance the radiation tolerance. It is useful in electronic systems exposed to space radiation environment or the effects of nuclear weapons.

B69-10259  
REDUCING QUANTIZER DEADBAND WITH A **RANGE SWITCHING** DIGITAL FILTER  
CARROLL, C. C. /AUBURN UNIV./ DATE- AUG. 1969  
M-PS-20419  
Range switching digital filter with three predetermined quantization levels decreases quantization deadband. Mathematical program forms the transfer function of the filter.

B69-10269  
MULTI-CONE FEED FOR CASSEGRAINIAN ANTENNA  
STELZRIED, C. T. DATE- AUG. 1969  
NPO-10539  
Multiple-cone feed horn system for a Cassegrainian antenna using a rotatable hyperboloid in conjunction with a multiple cone system is possible by moving hyperboloid relative to fixed multiple feeds and paraboloid. The hyperboloid can be adjusted so that, for each feed, it is in the best possible position.

B69-10270  
PRECISE GIMBALLING MECHANISM  
FERRERA, J. B. JOHNSON, G. B. PERKINS, G. S. DATE- AUG. 1969  
NPO-11057  
Prototype support mechanisms allow precise and repeatable gimbaling of engines with a minimum of lost motion and backlash. It also minimizes the use of gears and reduces lubrication requirements for long time space operations of several years duration.

B69-10271  
IMPROVED METHOD OF FABRICATING PLANAR GALIUM ARSENIDE DIODES  
ROY, Y. S. YEH, T. H. DATE- AUG. 1969  
TRW-04235  
Improved method fabricates electroluminescent planar P-W gallium arsenide diodes. Gallium is masked with silicon monoxide to allow N-type impurities to be diffused into unmasked portions of GaAs to form P-N junctions.

B69-10272  
NONDESTRUCTIVE EVALUATION OF PRINTED WIRING BOARDS BY MICROWAVE RESISTANCE MEASUREMENTS  
STIEFEL, R. DATE- AUG. 1969  
SAM-10034  
Application of the microk measuring circuit to data of printed through-hole resistances, when combined with appropriate probes, provides data that can be related to the quality of copper plating on printed wiring boards. Acceptance limits can be established and continuing inspection performed, with plating defects causing abnormal readings.

B69-10274  
RESONANT MICROWAVE DIELECTRIC SURFACE  
STEPH, H. /LOCKHEED ELECTRONICS CO./ SAKELLAROPOULOS, P. G. DATE- DEC. 1969  
GSFC-10568  
Dielectric surface has high stopband filter characteristics with a low stopband-to-passband frequency ratio. It utilizes two stagger-tuned, resonant artificial dielectric surfaces and is virtually polarization insensitive.

B69-10281  
PIEZOELECTRIC LOCK MECHANISM RESISTS LOCKPICKING  
STOETZER, O. M. DATE- AUG. 1969  
SAM-10037  
Electrically coded piezoelectric lock mechanisms are strong, have few moving parts, are restateable, and are relatively unaffected by high magnetic fields. Codes are extremely difficult to circumvent.

B69-10289  
SWEEP FREQUENCY DETECTOR  
CLAUD, R. C. DATE- AUG. 1969  
NPO-10669  
Sweep detector or passive spectrum analyzer provides a positive monitoring of the bandwidth of the input amplifier of a tracking receiver. Used with an oscilloscope, it provides a visual display of a microwave amplifier bandwidth.

B69-10299  
HIGH-POWER MICROWAVE POWER DIVIDER CONCEPT  
KOLLY, B. /CALIF. INST. OF TECHNOL./ DATE- AUG. 1969  
NPO-11031  
Variable power divider keeps microwave transmitter at full power. This preserves the bandwidth and modulation characteristics and proportions any amount of the full power from the normal antenna into a dissipative load.

B69-10297  
MAXIMUM RMS ERROR COMPARISON OF SEVERAL REDUNDANCY TECHNIQUES  
BERJUZ, N. W. /BOEING CO./ DATE- AUG. 1969  
M-FS-15075  
Paper presents mathematical comparison of several techniques with the limiting slope technique for data reduction and reconstruction. Limiting slope method results in maximum possible RMS error versus data compression ratio advantage of 2-to-1 over step and fan methods and 3-to-1 over the two point projection method.

B69-10306  
EVALUATION OF MAGNETIC MATERIALS FOR STATIC INVERTERS AND CONVERTERS  
FROST, R. E. /WESTINGHOUSE ELECTRIC CORP./ DATE- AUG. 1969  
SAM-10343  
Program studies materials for use in static inverters and converters. It gives suitable data on the behavior of commonly used materials when excited with square wave power.

B69-10307  
REMOTE CONTROL THERMAL ACTUATOR  
ENGLO, D. R. HARRIGILLA, W. T. DATE- AUG. 1969  
SAM-10873  
Thermal actuator makes precise changes in the position of one object with respect to another. Expansion of metal tubes located in the actuator changes the position of the mounting block. Capacitance probe measures the change in position of the block relative to the fixed target plate.

B69-10308  
SURVEY OF MAN-MADE ELECTRICAL NOISE AFFECTING RADIO BROADCASTING  
DISCHIANI, W. I. /BROADCAST OF AM./ DATE- AUG. 1969  
SAM-10290  
Survey, consisting of limited noise measurements, was made to augment and verify existing data at VHF and UHF and to obtain basic data at UHF. Exact frequencies were determined by the absence of intentionally generated signals around three selected frequencies.

B69-10312  
NEW PASSIVE TELEMETRY SYSTEM  
VISSCHER, J. /FAIRCILD HILLER CORP./ DATE- AUG. 1969  
SAM-10214  
Passive telemetry system enables the monitoring of vital biological functions from living organisms, without external connections or power sources.
The FM system, using a phase locked loop technique, keeps the information frequency and powering frequencies separate.

**B69-10313**

**CIRCUIT COUNTS PULSES AND INDICATES TIME OF OCCURRENCE OF SLOW PULSES**

BAUGH, W. E. /COMPUTER CONTROL CO./ TIMS, J. D.

DATE- AUG. 1969

NPO-06234

Counter includes one section which counts the first several pulses, and a second section which counts pulses from a clock between the beginning of a sampling interval and the receipt of the first pulse by the circuit. The number of clock pulses indicates receipt time of the first pulse.

**B69-10314**

**SELF-SHIELDING PRINTED CIRCUIT BOARDS FOR HIGH FREQUENCY AMPLIFIERS AND TRANSMITTERS**

DAWSON, E. /M/ DATE- Aug. 1969

NQ-10433

Printed circuit boards retaining as much copper as possible provide electromagnetic shielding between stages of the high frequency amplifiers and transmitters. Oscillation is prevented, spurious output signals are reduced, and multiple stages are kept isolated from each other, both thermally and electrically.

**B69-10315**

**SEPARATION SIMULATOR**


KSC-67-15

Separation simulator, consisting of a control panel and an electromechanical simulator unit, simulates electrical separation of space flight vehicle stages. Simulation is accomplished by electrically inserting the simulator between the normal interstage couplings of the vehicle. Actual separation is accomplished by energizing two solenoids.

**B69-10316**

**INTEGRATED SEQUENCE DISPLAY DEVICE**

ROBIN, S. B. /BOEING CO./ DATE- Aug. 1969

KSC-10681

Device integrates a planned test sequence with real-time changes indicated on a visual display which includes a record of both planned and unplanned events related to a time base. Motor driven paper chart can be advanced or reversed to display the time span of interest.

**B69-10318**

**IMPROVED ANODE DESIGN FOR METAL-CITIZEN CELLS**

ABRAHAM, F. C. /MC DONELL DOUGLAS CO./


LEWIS-10671

Method for returning electrolyte to the anode compartment in metal-oxygen second battery cells eliminates the problem of the anode drying out during charge-discharge cycling. Electrolyte forced out of the separator is returned to the anode by a microporous insert and wicking material.

**B69-10322**

**FIELD EFFECT TRANSISTOR /FET/ CIRCUIT FOR VARIABLE GAIN AMPLIFIERS**

SPAIK, G. N. /DATE- SEP. 1969

GSFC-10116

Amplifier circuit using two FETs combines improved input and output impedances with relatively large signal handling capability and an immunity from adverse effects of automatic gain control. Circuit has sources and drains in parallel plus a resistive divider for signal and bias to either of the gate terminals.

**B69-10323**

**SIMPLE, ACCURATE AUTOMATIC FREQUENCY CONTROL CIRCUITS**

BYERS, F. /DATE- DEC. 1969

KSC-10393

Automatic frequency control circuit is designed for use with voltage-controlled variable-frequency oscillators. The output frequency of the circuit is determined by a crystal oscillator.

**B69-10325**

**COMBINATION RANGING SYSTEM AND MAPPING RADIATION**

GOLDBERG, R. N. HORTON, R. L. /DATE- SEP. 1969

NPO-11001

Transmitter, radiating at a right angle to the spacecraft trajectory and intersecting the surface at a shallow angle, yields accurate radar maps of lunar or planetary surfaces. Earth based station receives the signal reflected from the planetary surface. Mapping coordinates and signal strength are produced by earth based transmitter.

**B69-10326**

**AN INTEGRATED CIRCUIT SWITCH**

BART, S. L. /TEXAS INSTRUMENTS INC./ /DATE- SEP. 1969

NPO-11073

Multi-chip integrated circuit switch consists of a GaAs photon-emitting diode in close proximity with Si phototransistor. A high current gain is obtained when the transistor has a high forward common-emitter current gain.

**B69-10327**

**AN IMPROVED METHOD FOR ELECTRICAL CABLE TERMINATIONS**

BAKER, C. [DATE- OCT. 1969

NPO-10694

Method utilizes a standard terminal lug, a braided wire passed through the barrel and overlapping the top of the lug, and a ferrule to clamp the end of the wire. Electrical connectors can be sterilized and visually inspected for reliability.

**B69-10329**

**TECHNIQUE FOR PREDICTING TEMPERATURE DISTRIBUTION IN GASES**

KASCH, A. RAGSDALE, R. /DATE- SEP. 1969

LWIT-10918

Simple algebraic equations enable calculation of the temperature distribution throughout a heat generating, radiation gas. They apply over the entire range of opacities, for any heat flux, for a temperature dependent absorption coefficient, and for a non-uniform distribution of volumetric heat sources.

**B69-10333**

**THE EFFECT OF MISMATCHED COMPONENTS ON MICROWAVE NOISE-TEMPERATURE CALIBRATIONS**

OTISIK, T. Y. /DATE- SEP. 1969

NPO-11163

Analysis of errors on microwave noise-temperature measurements is important due to development of very low-noise antennas receiving systems and in the absolute accuracies to which the noise temperatures of these systems can be calibrated. Scattering parameters describe properties of the microwave network connected between noise source and receiver.

**B69-10336**

**A METHOD FOR REDUCING SAMPLING JITTER IN DIGITAL CONTROL SYSTEMS**

ANDERSON, T. O. BURD W. J. /DATE- SEP. 1969

NPO-11092

Digital phase lock loop system is designed by smoothing the proportional control with a low pass filter. This method does not significantly affect the loop dynamics when the smoothing filter bandwidth is wide compared to loop bandwidth.

**B69-10340**

**HERMAL RECODER**


GSFC-10614

Tape recorder, using metallic tape, has a minimum of moving parts and no belts. It permits long-term bulk storage in extreme environments, and has less weight and bulk than present recording equipment.

**B69-10347**

**TRACKS OF ELECTRICAL CONDUIT OR PIPES**

77
Simplified solid-state circuit provides a closely regulated dc voltage from an unregulated dc source. It eliminates the undesirable loading effect of the emitter-base current of a transistor used in an error-sensing circuit of a regulated dc power supply.

B69-10376
HIGH-TEMPERATURE, GAS-FILLED CERAMIC RECTIFIERS, THYATRONS, AND VOLTAGE-REFERENCE TUBES
BAMS, L. A. /CE/ DATE- SEP. 1969
LWIS-90271
Thyratron, capable of being operated as a rectifier and a voltage-reference tube, was constructed and tested for 1000 hours at temperatures to 800 degrees C. With current levels at 15 amps and peak voltages of 2000 volts and frequencies at 6000 cps, tube efficiency was greater than 97 percent.

B69-10378
IMPROVED VHF DIRECTION FINDING SYSTEM
H-FS-20839
Direction finding device operating at very high frequencies requires a loop antenna, mechanical rotation, and large structures. The system is applicable to an unmanned configuration. Direction information is extracted in the form of a direction cosine analog.

B69-10380
ENERGY- STORAGE OF A PRESCRIBED IMPEDANCE
SEATON, A. F. /HUGHES AIRCRAFT CO./ DATE- SEP. 1969
NFO-10383
Reflective antenna of the parabolic type offers complete control of its aperture illumination function. The antennas beam width can be changed easily by excitation of various amounts of the line-source feed. The conical reflector collimates a beam when the field complies with certain geometric constraints.

B69-10381
PHASE MULTIPLYING ELECTRONIC SCANNING ARRAY
SEATON, A. F. /HUGHES AIRCRAFT CO./ DATE- SEP. 1969
NFO-10302
Scanning array was designed with properties of low RF loss and phase control. The array consists of a series of special waveguides, hybrids made up of two variable reactance branch arms for input signals, an edge slot for the difference port, and a sum arm for the unattended signal.

B69-10382
IMPROVED CIRCULARLY POLARIZED PLANAR-ARRAY ANTENNA
SEATON, A. F. /HUGHES AIRCRAFT CO./ DATE- SEP. 1969
NFO-10301
Slots sitting astride the virtual wall in a multimode wave guide can be used for generation of one component of a circularly polarized beam. There is a high degree of efficiency without the use of a slow-wave structure.

B69-10383
WIDE-BAND DOUBLER AND SINE WAVE QUADRATURE GENERATOR
CHOW, R. S. DATE- SEP. 1969
NFO-11133
Phase-locked loop with photosensitive control, which provides both sine and cosine outputs for subcarrier demodulation serves as a telemetry demodulator signal conditioner with a second harmonic signal for synchronization with the locally generated code.
Sensors measure the change in temperature and the flow rate of the coolant, while a multiplier computes the power dissipated in the RF load.

**B69-10385**

**IMPROVED PERCEPTUAL-MOTOR PERFORMANCE MEASUREMENT SYSTEM**

**PARKER, T. Jr. /BIOTECHNOLOGY, INC./ REILLY, F. E.**

**DATE- SEP. 1969**

**HQ-10123**

Battery of tests determines the primary dimensions of perceptual-motor performance. Eighteen basic measures range from simple tests to sophisticated electronic devices. Improved system has one unit for the subject containing test display and response elements, and one for the experimenter where test setups, programming, and scoring are accomplished.

**B69-10386**

**REAL-TIME OPERATING SYSTEM/360**

**HOPFEN, R. L. /IBM CORP./ KOPP, R. S. MUELLER, N. R. FOLLAN, W. S. VAN SANT, B. W. WELDNER, P. W.**

**DATE- SEP. 1969**

**MSC-12148**

RTOS has a cost savings advantage for real-time applications, such as those with card inputs requiring a flexible data routing facility, display systems simplified by a device independent interface language, and complex applications needing added storage protection and data queuing.

**B69-10390**

**A THIRTY-SIX ELEMENT ARRAY ANTENNA SYSTEM**

**GRIFF, R. R. /AUBURN UNIV./ DATE- SEP. 1969**

**UP-2-20435**

Thirty-six element square array, with mutual coupling between crossed slots for array elements. The system does not require the movement of the antenna or the presence of an operator.

**B69-10392**

**AN ELECTRONIC CIRCUIT FOR SENSING MALFUNCTIONS IN TEST INSTRUMENTATION**

**MILLER, W. S. Jr. /BOEING CO./ DATE- DEC. 1969**

**ESC-10209**

Monitoring device differentiates between malfunctions occurring in the system undergoing test and malfunctions within the test instrumentation itself. Electronic circuits in the monitor use transistors to compute silicon controlled rectifiers by removing the drive voltage, display circuits are then used to monitor multiple discrete lines.

**B69-10401**

**IMPROVED FERRUS SHIELDING FOR FLAT CABLES**

**BRECHER, R. J. /DOUGLAS AIRCRAFT CO./ DATE- SEP. 1969**

**UP-5F-14524**

To improve shielding of flat multicore cables, a thin, seamless ferrous shield around all cores optimizes low frequency magnetic shielding. Such shielding is covered with an ultrathin seamless coat of highly conductive nonferrous material.

**B69-10402**

**NONDESTRUCTIVE TESTING OF WELDS ON THIN-WALLED TUBING**

**KAGLER, D. J. /AM. ROCKWELL CORP./ ROSKONY, G. J.**

**DATE- SEP. 1969**

**UP-5F-18144**

Special ultrasonic search unit, or transducer assembly, reliably inspects the quality of melt-through welds of fusion welded tubing couplers for hydraulic lines. This instrumentation can also be used to detect faulty brazed bonds in thin-walled, small diameter joints and wall thickness of thin-walled metal tubing.

**B69-10407**

**A POSITIVE PAPER TRAVELING-WAVE TUBE**

**GRENCHER, H. W. /WATKINS-JOHNSON CO./ ROBERTS, L. A.**

**DATE- SEP. 1969**

**LANGLEY-10253**

Synchronization can be maintained between the RF beam current and the circuit electromagnetic waves over substantially the entire length of a traveling-wave tube by increasing the pitch of the last portion of the helical wave structure. There is no loss of linearity or beam conversion efficiency.

**B69-10410**

**FLOYD MULTIPURPOSE TIMER FOR LABORATORIES**

**EISLER, R. J. ELZIN, P. D.**

**DATE- SEP. 1969**

**ARG-10417**

Multipurpose digital delay timer simultaneously controls both a buffer pump and a fraction-collector. Timing and control may be in 30-second increments for up to 15 hours. Use of glassware and scintillation vials make it economical.

**B69-10416**

**PUNCH-MAGNET DELAY ELIMINATED BY MODIFICATION OF CIRCUIT**

**COR, C. R.**

**DATE- SEP. 1969**

**ARG-10333**

Reduction of retardation by diode-resistor networks of the current-delay time of a punch magnet by connection of a Tenser diode in series with the damping network increases the reliability of data on paper tape.

**B69-10418**

**RADIOGRAPHIC THRESHOLD DETECTION LEVELS OF ALUMINUM WELD DEFECTS**

**TISON, B. L. /UC. DYNARCS/ DATE- SEP. 1969**

**UP-2-20487**

Test program is used in the design and fabrication of special graduated aluminum penetrometers. The program evaluates the threshold detection capabilities of a fixed radiographic technique in detecting surface and subsurface cracks in one-quarter inch aluminum welds. The radiographic films were evaluated and the threshold detection capabilities defined.

**B69-10419**

**SERRAL CALIBRATION TARGET**

**MULLER, J. G. /SANTA BARBARA RES. CENTER/ DATE- SEP. 1969**

**N7S-11464**

Blackbody source calibrates the response of a medium resolution infrared radiometer used on a meteorological satellite. This approach controls the temperature of a thermal calibrating device over a wide range without the need for controlling a liquid nitrogen input to the device. The availability of liquid nitrogen achieves the required thermal control.

**B69-10427**

**A COMPACT ROTARY VANE ATTENUATOR**

**NIXON, D. L. CROSS, T. Y. STELHURD, C. T.**

**DATE- SEP. 1969**

**HP-10562**

Rotary vane attenuator, when used as a front end attenuator, introduces an insertion loss that is proportional to the angle of rotation. New technique allows the construction of a shortened compact unit suitable for most installations.

**B69-10429**

**ACCURATE NINE-DECade TEMPERATURE-COMPENSATED LOGARITHMIC AMPLIFIER**

**ROGHS, J. F. MC DOWELL, W. P. PAUL, V. R.**

**DATE- SEP. 1969**

**ARG-10480**

Transistor-driven temperature-stable amplifier with logarithmic operating characteristics permits presentation of the entire range of the reactor without range switching. This circuit is capable of monitoring ion chamber currents over spans of 8 or 9 decades and is used in nuclear reactor instrumentation. Application is found in materials under ultrahigh vacuum.

**B69-10436**

**LEADS INTEGRAL WITH THE INTERNAL INTERCONNECTION THAT PENETRATE THE MOLDED WALL OF A PACKAGE**

**WATER, J. /TIT FEDERAL LABS./ DATE- SEP. 1969**

**LANGLEY-10228**

Locality of external ribbon leads makes
possible connections to a sealed or encapsulated microassembly, the leads are integral with the internal connections on a single part that can be fabricated economically by fine-detail electroplating.

**B69-10438**

LEAKAGE MEASURING METHOD

CLAUSEN, H. J. /DOUGLAS AIRCRAFT CO./ DATE- SEP. 1969

M-PS-14722

Technique measures leakages of high pressure test specimens occurring on the input rather than the output side of a test specimen. Technique involves paralleling-off the pressure supply line and duplicating and measuring the leakage flowing into a specimen rather than attempting to measure the leakage flowing out of it.

**B69-10439**

SIMPLE QUASI-EXPOENTIAL SLOPE GENERATOR

ANDERSON, T. O. BURD, W. J. DATE- SEP. 1969

BPO-11130

Circuitry for digitally generating an exponentially decaying wave function permits discrete values to be mapped from the exponential waveform for comparison with a binary number of specified accuracy. This exponential-decay generator employs a single binary counter to count the sequence of exponential decay.

**B69-10440**

TEMPERATURE-CONTROLLED RESISTOR

FENNING, T. G. DATE- SEP. 1969

BPO-10713

Electrical resistance of a carbon-pile resistor is controlled by the compression or relaxation of a pile of carbon discs by a thermally actuated bimetallic spring. The concept is advantageous in that it is direct-acting, can cover a wide range of controllable characteristics, and can handle considerable power directly.

**B69-10441**

IMPROVED METHOD OF DICING INTEGRATED CIRCUIT WAFERS INTO CHIPS

LITAWY, J. SCALFUNCIO, A. J. DATE- SEP. 1969

ERC-10138

Method employing a pressure chamber is used for dicing semiconductor single-crystal wafers, containing integrated circuits, into small chips along pre-scribed lines. Uniform bending of the scribed wafer over the convex surface of a perforated hemisphere, breaks it cleanly into individual chips without damaging the circuits.

**B69-10443**

THE QUANTASYN, AN IMPROVED QUANTUM DETECTOR


ERC-10148

Quantasyon provides absolute measurement of radiation flux in the range 1000 A to 4500 A and into the vacuum ultraviolet. This radiation detector combines the high quantum efficiency and inherent linearity of the silicon solar cell with the constant quantum response of the fluorescent organic compound luminou.

**B69-10445**

CURRENT-SWITCHING TECHNIQUE FOR ANALOG PULSE CIRCUITS

LABURN, R. W. DATE- SEP. 1969

AI-10870

Circuit technique uses a signal diode as a series current-pass element. Technique is applied to the design of a biased amplifier circuit and a nanosecond-pulse stretcher circuit.

**B69-10452**

AUTOMATIC TUNING OF HYDROGEN MASERS

LEVINE, R. /EMELLEY-PACKER/ YESSOT, R. DATE- NOV. 1969

GSFC-10127

Varying the density of the atoms in the cavity changes the Q of the atom. When the cavity is mistuned, the density variation causes a frequency variation proportional to the degree of cavity mistuning.

**B69-10853**

MODULAR PACKAGING TECHNIQUE FOR COMBINING INTEGRATED CIRCUITS AND DISCRETE COMPONENTS

LACCHI, J. F. /ELECTRO-OPTICAL SYSTEMS, INC./ DATE- SEP. 1969

GSFC-10369

Technique for packaging electronic modules interconnects integrated circuits and discrete components by means of beryllium-copper strips in a molded diallylphthalate tray. Simple girder-like construction provides ease of assembly, high rigidity, excellent vibration resistance, and good heat dissipation characteristics.

**B69-10860**

OPTIMIZING SOLAR-CELL GRID GEOMETRY

CROSSLEY, A. P. DATE- OCT. 1969

EQ-10417

Trade-off analysis and mathematical expressions calculate optimum grid geometry in terms of various cell parameters. Determination of the grid geometry provides proper balance between grid resistance and cell output to optimize the energy conversion process.

**B69-10861**

SYNCHRONOUS CHARGE-CONSTRAINED ELECTROQUASISTATIC GENERATOR

MELCHEZ, J. R. DATE- SEP. 1969

EQ-10231

Electroquasistatic generator depends on electroquasistatic interactions to provide synchronous operation. The generator employs a moving insulating belt, with an ac electric potential source to establish positively and negatively charged regions on the belt. The field effect of the charges on the belt creates an ac output voltage.

**B69-10865**

TECHNIQUE FOR DICOATING SUBMICRON PARTICLES IN THE ELECTRON MICROSCOPE

MILLER, E. L. /MC DONELL DOUGLAS/ PHILLIPS, A. DATE- SEP. 1969

EQ-10643

Series of electron micrographs at successively lower magnifications can localize the substrate area sufficiently for a particle to be picked up by the beam of the electron microscope. This approach could be modified to apply to xerographic studies, particularly of oxidation products stripped from fractures.

**B69-10870**

PREPARATION OF SUPERCONDUCTING THIN FILMS OF TRANSITION- METAL INTERSTITIAL COMPOUNDS

CAVANAR, J. R. /WESTINGHOUSE ELEC. CORP./ DATE- OCT. 1969

HQ-10485

Spattering technique forms transition-metal interstitial compounds into superconducting thin films having transition temperatures similar to those of the bulk materials. Since the magnetic-field and current-carrying properties of the films exceed those of the bulk materials, they may have applications other than in tunneling devices.

**B69-10872**

ELECTRONIC ANALOG EQUALIZATION FOR VIBRATIONAL TESTING

TUGBOOZ, R. F. DATE- DEC. 1969

NRC-10548

Method of real time equalization involving use of an analog computer achieves effective qualification testing by realistically simulating the effects of the vibrational forces which will actually be experienced in powered flight.

**B69-10874**

BREAKAWAY ELECTRICAL CONNECTOR

KAZZIEZ, L. DATE- SEP. 1969

NPO-11140

One-shot, breakaway multiwire cable connector is fabricated by bending a number of interconnecting wires, each of which, differ from increments in length, is welded to neighboring pin and cable terminations. This design
eliminates frictional binding and provides highly reliable cable interconnections until the connector is disengaged.

B69-10476  MAGNETIC FIELD MAPPER
MASON, R. N. /ZENGHER, P. J. /DATE- SEP. 1969
LEWIS-10782
Magnetic field mapper locates imperfections in cadmium sulfide solar cells by detecting and displaying the variations of the normal component of the magnetic field resulting from current density variations. It can also inspect for nonuniformities in other electrically conductive materials.

B69-10477  DEVICE FOR OBTAINING SEPARATION OF OXYGEN
GLECKERT, A. J. /GEN. A. TRANSPORTATION/
LEWIS-10783
LANGLEY-11007
Permeation membrane of a magnesium-nickel alloy of silver has the ability to permeate oxygen at high temperatures for an extended period of operation without failure. The measured rates of oxygen permeation in a tubular configuration of this alloy are higher than any previous rates published.

B69-10479  LITERAL READOUT OF IDENTIFICATION SIGNALS IN MORSE CODE
WEISNER, C. R. /JE. /DATE- OCT. 1969
LANGLEY-10222
Instrument, designed for mounting in aircraft instrument panels, decodes identification signals received in Morse from VOR or ILS transmitters as they are received and displays the literal equivalent. Without elaboration it cannot decode numbers.

B69-10480  AN UNCONVENTIONALLY MAGNETICALLY-COUPLING MULTIVIBRATOR
MOWRE, R. Z. /DUKE UNIV./ YU, Y. /DATE- SEP. 1969
HQ-10226
Multivibrator circuit provides a low-frequency sine wave output without using a low-frequency power transformer or filter components. This circuit, utilizing two transistors and a magnetic core, represents a reduction in complexity, size, and weight over similar units.

B69-10481  IMPROVED PULSE SHAPE DISCRIMINATOR FOR FAST NEUTRON-GAMMA RAY DETECTION SYSTEM
LOCKWOOD, J. A. /NAMESHIRE UNIV./ /DATE- SEP. 1969
HQ-10151
Discriminator in nuclear particle detection system distinguishes nuclear particle type and energy among many different nuclear particles. Discriminator incorporates passive, linear circuit elements so that it will operate over a wide dynamic range.

B69-10488  ADJUSTABLE THERMAL *TERM*
HSC-15556
Tree mounts 10 thermocouples on extensible arms to provide a reliable heat profile of conditions within heat treating devices, such as ovens and autoclaves, and within environmental test chambers.

B69-10487  PHASE-LOCKED-LOOP PHASE MODULATOR WITH HIGH MODULATION INDEX, LOW DISTORTION
BAHATTIN HAN, L. G. /CRC/ /DATE- OCT. 1969
NISC-12247
Phase-locked-loop phase modulator has the capability of generating a 6.8 MHz carrier at modulation indexes as high as 2, with a distortion of the modulated signal of less than 5 percent. These characteristics are obtained without the use of multipliers.

B69-10490  PROTECTS CIRCUIT FROM VOLTAGE AND CURRENT OVERLOADS
CASEY, L. O. /DATE- OCT. 1969
ISC-11196
Low-melting resistor connected in series with the load protects the circuit against current overloads. It protects test subjects and patients being monitored by electronic instrumentation from inadvertent overloads of current, and sensitive electronic equipment against high-voltage damage.

B69-10498  EPITAXIAL CRYSTALLINE GROWTH UPON COLD SUBSTRATES
LEBODUSKA, R. L. /PHYSICS TECHNOL. LAB., INC./ /DATE- OCT. 1969
NISC-12247
By sputtering a material with a high-energy ion-beam bombardment, the molecules of the target can be dislodged and ejected for subsequent deposition on a cold substrate of the desired crystallographic type and orientation.

B69-10497  STEREO TV ENHANCEMENT STUDY
SRO- INNOVATOR NOT GIVEN /KOLLMAN INSTRUMENT CORP./ /DATE- SEP. 1969
NPS-14805
Setting up an artificial situation using photographs of laser-type terrain on a dual TV-type projection system determines the effectiveness of stereo TV presentations in allowing an operator to remotely control an extra-terrestrial vehicle.

B69-10498  FOLDED STICK MODULE
FATZIN, L. /DATE- OCT. 1969
NPP-10584
Integrated circuit modules can be compactly assembled into short-run complex electronic assemblies by mounting them on a Stick module. This module provides a method of high-density packaging for industrial operations that require the fabrication of compact circuitry configurations.

B69-10502  ROTARY ANTENNA ATTENUATOR
DICKINSON, E. W. /HARDY, J. C. /DATE- OCT. 1969
NPP-10548
Radio frequency attenuator, having negligible insertion loss at minimum attenuation, can be used for making precise antenna gain measurements. It is small in size compared to a rotary-vane attenuator.

B69-10503  SIMPLIFIED, RELIABLE CIRCUIT SORTS BINARY NUMBERS IN ORDER OF MAGNITUDE
ANDERSON, R. O. /DATE- OCT. 1969
NPP-10112
Circuit includes a single-word input/output register and a multword serial memory which are circulated in synchronism. It puts out data at a rate compatible with relatively slow-speed electromechanical devices.

B69-10507  RADIOMETRIC TEMPERATURE REFERENCE
MORRIS, L. G. /DATE- OCT. 1969
NPP-13276
Radiometric Temperature Reference uses a thermistor as both a heating and sensing element to maintain its resistance at a preselected level to continuously control the power supplying it. The fixed infrared radiation level must be simple, rugged, and capable of high temperature operation.

B69-10502  CONSTANT-FREQUENCY, VARIABLE-DUTY-CYCLE MULTIVIBRATOR
JOHNSON, J. E. /MICHIGAN UNIV./ /DATE- OCT. 1969
JGS-10033

Circuit provides a pulse source of constant frequency with a duty cycle that is adjustable by an external input signal. It could serve as a switching node voltage regulator or as a switching source for control systems.

B69-10513
IMPROVED SYSTEM FOR DOCUMENTING MEASUREMENT DATA
PETRSON, R. H. /N. AM. ROCKWELL CORP./ DATE- OCT. 1969
M-FS-10269

New documentation method reduces each system record to the basic system data card, one system recorder card, and a form-fill-in type system diagram. All recorder data cards are of identical format, requiring only one line of keypunch data input to prepare recorder listing cards for a system.

B69-10516
DATE OF HEAT EXTRACTION CONTROLLER FOR ENVIRONMENTAL CONTROL
ANNIS, J. F. /WEBB ASSOCIATES/ TROUTMAN, J. M. WEBB, F. DATE- SEP. 1969
HQ-10918

Automatic control device measures a physiological parameter related to heat production and conditions to control the heat removal capacity of a watercooled environmental control suit.

B69-10523
AN INTERFEROMETER TRACKING RADAR SYSTEM
HODEZICK, R. F. DATE- OCT. 1969
MSC-10536

Fine tuning acquisition and tracking interferometer radar system uses a first antenna array of at least three receiving antennas. Array includes a reference antenna, a coarse tuning antenna, and a fine tuning antenna aligned on a receiving axis. Short range rendezvous system provides increased position accuracy.

B69-10526
COVER PROTECTS CRITICAL ELECTRICAL CONNECTORS AGAINST DAMAGE DURING HANDLING
CARPOT, A. E. /N. AM. ROCKWELL CORP./ DATE- OCT. 1969
MSC-15662

Split-half cover eliminates the surface marring and dirt penetration problems previously encountered during handling and cable assembly. Metal retaining ring slips over the two plastic halves to hold them in place.

B69-10533
GAS METAL ARC /GMA/ WELD TORCH PROPIETY CONTROL
HODGES, N. B. /N. AM. ROCKWELL CORP./ DATE- NOV. 1969
M-FS-16327

Adjustable transducer probe, which is attached to a welding torch and maintains a preset torch-to-work distance, accurately follows irregular surfaces, is less sensitive to heat and static interference, and has more positive response because of electro-mechanical control.

B69-10537
IMPROVED CAMERA FOR BETTER X-RAY POWDER PHOTOGRAPHS
PARRISH, W. /N. AM. PHILIPS CO./ VAJDA, I. R. DATE- NOV. 1969
HQ-10428

Camera obtains powder-type photographs of single crystals or polycrystalline powder specimens. X-ray diffraction photographs of a powder specimen are characterized by improved resolution and greater intensity. A reasonably good powder pattern of small samples can be produced for identification purposes.

B69-10538
DESIGN FOR A RAPID AUTOMATIC SYNC ACQUISITION SYSTEM
ANDERSON, G. C. GALLO, A. J. DATE- OCT. 1969
NPO-10214

System provides rapid command sync acquisition between widely separated transmitter-receivers.

It is based on a rapid, automatic range-adjustive approach rather than the time-consuming cycle slipping or stepping techniques of conventional phase-locked loops.

B69-10539
CIRCUIT BOARD HOLE COORDINATE LOCATOR CONCEPT
SUNBELT, L. W. /BOEING CO./ DATE- NOV. 1969
M-FS-14237

Fixed light source registers the x and y coordinates of holes in a fixed opaque template. A first surface parabolic mirror and a set of phototubes are used to detect the passage of light through the individual holes.

B69-10546
SYNCHRONIZING REDUNDANT POWER OSCILLATORS
JENSEN, K. J. /HONEYWELL, INC./ DATE- NOV. 1969
XGS-03577

Outputs of oscillators are synchronized by summing the power transformer phase voltages, the summed voltages are applied to the frequency determining inductors of the individual voltage-controlled power oscillators. The best frequency is eliminated when synchronization is achieved.

B69-10548
HIGH VOLTAGE PULSE GENERATOR
PIPPEN, D. L. DATE- OCT. 1969
MSC-12179

Generator has an improved circuit for generating a controllable, high voltage spark having a constant known energy output. It can be used for testing the flash and ignition characteristics of nonmetallic materials in a controlled gas environment.

B69-10550
MULTICANAL SPECTROSCOPY GUIDE
BOWE, R. R. /CORNELL AERONAUTICAL LAB., INC./ DATE- NOV. 1969
HQ-10481

System makes use of diverging duct walls for conducting the light from entrance slits to the conductors by means of multiple reflectors. This system simultaneously records, photoelectrically, the intensities of several closely spaced narrow wavelengths in the ultraviolet and infrared areas of the spectrum.

B69-10553
USE OF MEDICAL AND DENTAL X-RAY EQUIPMENT FOR NONDESTRUCTIVE TESTING
SPOON- INNOVATOR NOT GIVEN /TRAWNK SPACECRAFT CORP./ DATE- OCT. 1969
MSC-13839

Industrial X-ray equipment is used for nondestructive testing to detect defects in metal joints, electrical terminal blocks, sealed assemblies, and other hardware. Medical and dental X-ray equipment is also used for hardware troubleshooting.

B69-10557
ESTIMATION OF SIGNAL-TO-NOISE RATIOS
XRE-05254

Statistical method estimates signal-to-noise ratio in an observed random voltage, such as the output of a telemetry receiver. Signals from a distant transmitting source, overlaid by noise signals, are monitored continuously.

B69-10568
ELECTROOPTICAL SCANNING OF FILM
BILLINGSLEY, P. C. VOLKOF, J. J. DATE- OCT. 1969
NPO-11106

Scan-in scan-out flying spot scanning system recognizes three different levels of transmissivity within a frame. It selectively acts on these levels either to intensify the illumination or to extend the duration of the illuminating spot to each picture element. Thus it improves the ratio of signal to tube noise in the cameras output.
B69-10569
AUTOMATIC FREQUENCY CONTROL OF VOLTAGE-CONTROLLED OSCILLATORS
KOLBLY, E. B. DATE- OCT. 1969
WPO-11184

Optical-capacitive coupling is used for isolation of control voltages, such as the high-voltage level of a klystron control electrode that is not referenced to ground, to serve as error voltages referenced to system ground so that the magnitude and sense of correction may be transferred.

B69-10570
AUTOMATED PLOTTING OF EQUIPOTENTIALS
HUMER, E. B. JR. DATE- NOV. 1969
WPO-11134

By substitution of resistance paper for normal plotting paper, an x-y plotter can be used to draw automatically the equipotential lines between components represented in planar form on the paper. This technique is used for high voltage electronic components of complex configuration for the prediction of stress in the intervening insulation.

B69-10576
LOAD CURRENT SENSOR FOR A PULSE WIDTH MODULATOR POWER REGULATOR
HEON, B. J. /HONEYWELL, INC./ DATE- DEC. 1969
SFS-10656

Circuit, using a pulse transformer, enables a sensor to operate for a short portion of the duty cycle. Current drawn from the load is minimized and high impedance is reflected to the load.

B69-10584
CIRCUIT-WAVE ATMOSPHERIC LOSS PREDICTION METHOD
STHELLE, C. T. DATE- NOV. 1969
WPO-11054

Relationship between atmospheric attenuation and the ground temperature and humidity provides a reference from which changes in temperature and humidity will produce a corresponding atmospheric loss figure. Computer programs computes atmospheric loss due to water content, given the measured short and ground temperature and humidity.

B69-10585
BALLON BATTERIES, CHARGED AND HEATED BY SOLAR ENERGY
SPX- INNOVATOR NOT GIVEN /HELPAR, INC./ DATE- NOV. 1969
GSC-10769

Shielded heat-cf-fusion material envelope collects and stores solar heat to maintain temperature during the light cycle at 30,000 feet. Spiral-wound fluoroplastic film structure has low density to avoid damage to aircraft in case of impact.

B69-10597
AUTOMATIC STAR-HORIZON ANGLE MEASUREMENT SYSTEM
KOSBER, K. KOSO, D. A. BARDELLA, P. C. DATE- NOV. 1969
MSC-11585

Automatic star horizontal angle measuring aid for general navigational use incorporates an Apollo type sextant. The eyepiece of the sextant is replaced with two light detectors and appropriate circuitry. The device automatically determines the angle between a navigational star and a unique point on the earths horizon as seen on a spacecraft.

B69-10601
CRYOGENIC PRESSURE TRANSDUCER
HENDRICK, J. B. DATE- NOV. 1969
M-FS-14909

Cryogenic pressure transducer utilizes a diaphragm which is electron beam welded to a fitting. This assembly is then heiligard welded to the main body of the transducer. The transducer requires no damping oil and thus is capable of operating at both cryogenic and high temperatures.

B69-10603
FLEXIBLE HIGH-VOLTAGE SUPPLY FOR EXPERIMENTAL ELECTRON MICROSCOPE
ARG-10462

Scanning microscope uses a field-emission tip for the electron source, an electron gun that simultaneously accelerates and focuses electrons from the source, and one auxiliary lens to produce a final probe size at the specimen on the order of angstroms.

B69-10607
SPRAYED SHIELDING OF PLASTIC-ENCAPSULATED ELECTRONIC MODULES
ULLOM, A. N. /DOUGLAS AIRCRAFT CO./ DATE- NOV. 1969
M-FS-13570

Metallic coating directly sprayed on electronic modules provides simple and reliable lightweight protection against radio frequency interference. A plasma arc may be used. Alumina and copper are the most effective metals.

B69-10612
LIVE-TIMER METHOD OF AUTOMATIC DEAD-TIME CORRECTION FOR PRECISION COUNTING
FORGES, K. G. RUDNICK, S. J. DATE- OCT. 1969
ARG-10478

Automatic correction for dead time losses in nuclear counting experiments is implemented by a simple live timer arrangement in which each counting interval is extended for compensation for the dead time during that interval. This method eliminates repetitive manual calculations, source of error, and dependence upon paralysis shifts.

B69-10613
ANALYSIS OF SECONDARY CELLS WITH LITHIUM ANODES AND IMMOBILIZED FUSED-SALT ELECTROLYTES
ARG-10452

Secondary cells with liquid lithium anodes, liquid bromide or tellurium cathodes, and fused lithium halide electrolytes immobilized as rigid pastes operate between 380 and 485 degrees. Applications include power sources in space, military vehicle propulsion and special commercial vehicle propulsion.

B69-10614
HIGHLY STABLE HIGH-RATE DISCRIMINATOR FOR NUCLEAR COUNTING
ARG-10483

Pulse amplitude discriminator is specially designed for nuclear counting applications. At very high rates, the threshold is stable. The output-pulse width and the dead time change negligibly. The unit incorporates a provision for automatic dead-time correction.

B69-10618
IBM-1620 MONITOR 11-D DISK-Storage SUBROUTINES
KELLCY, E. F. DATE- OCT. 1969
ARG-10376

Set of subroutines provides the FORTRAN user with protected, permanent, disk storage of data on an IBM 1620 monitor 11-D system. The program consists of a set of four subroutines and a utility program. It allows block data to be transferred directly between assigned core locations and disk storage.

B69-10621
MANGANESE-56 COINCIDENCE-COUNTING FACILITY
PRECISELY MEASURES NEUTRON-SOURCE STRENGTH
ARG-90261

Precise measurement of neutron-source strength is provided by a manganese 56 coincidence-counting facility using the manganese-bath technique. This facility combines nuclear instrumentation with coincidence-counting techniques to handle a wide variety of radioisotope-counting
requirements.

B69-10630
STORAGE OF ELECTRIC AND MAGNETIC ENERGY
IN PASSIVE NONRECIPROCAL NETWORKS
SCHUY, W. E. DATE- NOV. 1969
AMC-10360
Examination of the relation of stored electric and magnetic energy within a system to the terminal behavior of nonreciprocal passive networks shows both similarities and important differences between wholly reciprocal systems and systems containing nonreciprocal elements.

B69-10631
SELF-DISCHARGE IN BIMETALLIC CELLS
CONTAINING ALKALI METAL
FOSTER, R. S. HESSON, J. C. SHIROM, H. DATE-
NOV. 1969
AMC-10367
Theoretical analysis of thermally regenerative bimetallic cells with alkali metal anodes shows a relation between the current drawn and the rate of discharge under open-circuit conditions. The self-discharge rate of the cell is due to the disintegration and ionization of alkali metal atoms in the fused-salt electrolyte

B69-10639
DATA PROCESSING METHOD FOR A WEAK, MOVING
TELEMETRY SIGNAL
KENDALL, W. B. LAY, G. S. HDOR, D. L. PANSO,
F. L. DATE- NOV. 1969
AMC-10503
Method of processing data from a spacecraft, where the carrier has a low signal-to-noise ratio and wide unpredictable frequency shifts, consists of analog recording of the noisy signal along with a high-frequency tone that is used as a clock to trigger a digitizer.

B69-10640
PULSE-HEIGHT ANALYZER WITH DIGITAL READOUT
GOLDSWORTHY, W. W. /LAURENCE RADIATION LAB./
DATE- NOV. 1969
AMC-10504
Feedback-controlled pulse-amplitude integrator and amplifier is used as an analog-to-digital converter that converts event-liberated charges, emanating from a nuclear-particle detector, directly to numbers rather than to analog-dependent voltages.

B69-10652
NEW TYPE PRESSURE TRANSDUCER FOR SEVERE
THERMAL ENVIRONMENTS
SPON- INOVIATOR NOT GIVEN /BATTLE RES. INST./
DATE- NOV. 1969
N-PS-20208
Pressure transducer used in a rocket motor chamber to measure the amplitudes and frequencies of dynamic pressures exceeding 2000 psi occurring during unstable combustion. The transducer utilizes a transpiration-cooled porous beryllium plug and pressure transmitting column.

B69-10653
WIND TOWER INFLUENCE STUDY
HATHORN, J. W. /BOEING CO./ DATE- DEC. 1969
N-PS-20239
Set of correction factors is applied to measured mean wind speed and direction so that close approximations of the mean speed and direction of the free stream wind can be obtained from a wind tower. A wind director sensor is employed to determine which sensor is windward of the tower and to engage it for monitoring the wind.

B69-10655
VERSATILE TELEMONITORING SYSTEM
PERGUS, W. H. DATE- NOV. 1969
AMC-10339
Small scale versatile multichannel telemonitoring system can be installed economically with considerable expansion capabilities. The system contains a data transmission, control transmitter, control receiver, display of readout units, a sync generator, and some remote control features.

B69-10665
DESIGN OF PRINTED CIRCUIT COILS
HIGINS, W. T. /MIT/ DATE- DEC. 1969
N-PS-10431
Spiral-like coil is printed with several extra turns which increase the realizable coil inductance. Included are shorting connections which not only short the extra turns, but also short out several turns of the main body. Coil tuning is accomplished by removing the shorts until the desired inductance is obtained.

B69-10666
MONOPOLAR MASS SPECTROMETER WITH IMPROVED
SENSITIVITY AND REDUCED BACKGROUND
HEDBERG, B. F. /GCA CORP./ DATE- DEC. 1969
N-PS-10476
Monopolar mass spectrometer is increased by nearly an order of magnitude when a weak external magnetic field is applied so that the ion beam is deflected towards the rod. This magnetic field eliminates background noise at the low end of the mass scale.

B69-10670
DEVICE FOR REFLUXING ELECTRODEPOSITED SOLID
ON TERMINALS
JOHNSON, W. C. /W. R. ROCKWELL CORP./ DATE-
DEC. 1969
N-PS-13821
Terminals are refluxed in a hot strata and solidified in a cooler strata, without physical contact with each other, any fixturing, or the container. Terminals are passed through the upper portion of a reflow flask containing hot peanut oil, and then through the lower portion containing oil at ambient temperatures.

B69-10671
CONTROL JET PLACEMENT OF SPACECRAFT
CRAWFORD, E. S. /MIT/ DATE- DEC. 1969
N-PS-13365
For efficient operation and configuration design of multijet spacecraft control systems methods of linear programming are used to select combinations of individual jet-burn times which produce the desired impulse. Minimum-fuel and fuel-time solutions are found.

B69-10673
DISCRIMINATION OF FISH OIL AND MINERAL
OIL SLICKS ON SEA WATER
MAC DONALL, J. /BARBINGER RES., LTD./ DATE-
DEC. 1969
N-PS-10412
Fish oil and mineral oil slicks on sea water can be discriminated by their different spreading characteristics and by their reflectivities and color variations over a range of wavelengths. Reflectivities of oil and oil films are determined using a dual beam reflectance apparatus.

B69-10676
TECHNIQUE FOR IMPROVING SOLID STATE
MOSAIC IMAGES
SAKOA, J. H. /WESTINGHOUSE ELECTRIC CORP./
DATE- DEC. 1969
N-PS-20532
Method identifies and corrects mosaic image faults in solid state visual displays and opto-electronic presentation systems. Composite video signals containing faults due to defective sensing elements are corrected by a memory unit that contains the stored fault pattern and supplies the appropriate fault word to the blanking circuit.

B69-10677
MEASUREMENT TECHNIQUE FOR THE DETERMINATION
OF ANTENNA DIRECTIVITY
LEFROY, E. /SPERRY RAND CORP./ DATE- DEC. 1969
N-PS-12799
Measurement of great circle patterns requires a system with discrete rotation in elevation. This technique eliminates a set of slip-rings and rotary joints and permits the use of larger models since only continuous azimuth rotation is required.
Handbook provides general guidance to the
etchant
chloroplatinic acid greatly reduces contact
resistance between metallic surfaces. Etching
results in a monolayer plating of platinum on the
wafer surface, preventing oxide growth.

B69-10689

Reducing contact resistance at semiconductor
to metal or aluminum to metal interfaces
KELLE, R. E. / RCA/ DATE- DEC. 1969
ERC-10254
Etchant containing chloroplatinous or
chloroplatinic acid greatly reduces contact
resistance between metallic surfaces. Etching
results in a monolayer plating of platinum on the
wafer surface, preventing oxide growth.

B69-10690

Miniature backward-diode pressure sensors
Features stability and low power consumption
GARFINKEL, A. RINDNER, W. DATE- DEC. 1969
ERC-10229
Backward-diode pressure transducer retains the
advantages of a tunneling mechanism, requires no
shunting resistors, operates at a low voltage
level, and consumes little power.

B69-10691

Conditioning of pulses from aerosol-particle
detectors
BOWIE, J. E., MARTIN, C. T. DATE- DEC. 1969
ERC-10250
Pulse-conditioner translates pulses generated by
aerosol-particle detectors to a form acceptable by
commercially available pulse height analyzers
designed for nuclear-energy spectroscopy.

B69-10695

Pcm synchronization by word stuffing
PUTMAN, S. DATE- DEC. 1969
WFO-10688
When a transmitted word, consisting of a number of
pulses, is detected and removed from the data
stream, the space left by the removal is
eliminated by a memory buffer. This eliminates
the need for a clock synchronizer thereby removing
instability problems.

B69-10697

A sterilizable high-impact antenna
WOO, K. H. DATE- DEC. 1969
NFO-10231
Rectangular cup antenna withstands indirect
impacts up to 10,000g and direct impacts up to 250
ft/sec of impact velocity and provides radiation of
selected polarization and beam shape. It has
high radiating efficiency, and relatively broad
bandwidth.

B69-10699

Pulsed high-voltage DC RF sputtering
PRZYBIESEWSKI, J. S., JR. SHALTERS, R. K. DATE- DEC. 1969
LEWIS-10920
Sputtering technique uses pulsed high voltage
direct current to the object to be plated and a
radio frequency sputtered film source. Resultant
film has excellent adhesion, and objects can be
plated uniformly on all sides.

B69-10713

Vacuum gage calibration system for 10 to the
minus 5th power to 10 torr
HOLANDA, R. DATE- DEC. 1969
LCB-17032
Calibration system consists of a gas source, a
source pressure gage, source volume, transfer
volume and test chamber, plus appropriate piping,
valves and vacuum source. It has been modified
to cover a broad range as possible while still
providing accuracy and convenience.

B69-10722

Deposition monitor and control
SALISBURY, S. S. DATE- DEC. 1969
NFO-10706
Two quartz crystal oscillators monitor and control
the thickness and the rate of thin film
deposition. The output of both oscillators, one
exposed to mass and heat and the other exposed
only to heat, were mixed and the difference
frequency was used as the indication of film
thickness.

B69-10725

Pocket-sized toroid-modulated Fm transmitter
COUVILLON, L. A. DATE- DEC. 1969
GSPC-10569
Pressure of a button on a crystal-controlled
transmitter causes generation of a tone. The
tone modulates the Fm transmitter which in turn
radiates by way of the enclosed loop antenna,
through the radio-frequency-transparent wall of
the transmitters case to the receiver.

B69-10731

Application of cryoplastic techniques to
the analysis of microporous batteries
EPSTEIN, S. / NAUCHLY ASSOCIATES, INC. / NAUCHLY,
J. WATTS, J. DATE- DEC. 1969
GSPC-10568
By using bi-gram and tri-gram tables, a pattern
can be formed to determine failure modes and
mechanisms. Computer programs provide accurate
predictions of cell failure several thousand
cycles before actual failure.

B69-10732

Coppered substrate cooling improves
reproducibility of vapor deposited
semiconductor composites
CLOUGH, R. / RCA/ EICHER, D. TIETJEN, J. DATE- DEC. 1969
ERC-10161
Improved substrate holder preferentially provides
more uniform substrate cooling and increases the
proportion of vapor flowing over the substrate
during growth. Nitrogen gas is constricted in the
substrate holder to cool the substrate.

B69-10734

A simple electrometer for measuring small
photocurrents
SPON- INNOVATOR NOT GIVEN / BM. MACHINE AND
FOUNDRY CO./ DATE- DEC. 1969
GSPC-10603
Quartz-fiber direct-indicating pocket dosimeter is
a small-current integrating electrometer. By
attaching the photocathode to the quartz fiber
terimal and the photocell collector to the
barrel of the dosimeter and by charging the device
to 150 V, a small-current measuring device can be
achieved.

B69-10736

Photomechanometry
YOUNG, F. L. / TV. AM. ROCKWELL CORP./ DATE- DEC.
1969
NFO-10556
Photomechanometry combines photomicrography with
standard measuring techniques. The negative of a
photograph taken through a microscope at a
predetermined level of magnification is overlayed
on an optical scale of the same magnification.
This technique is successful in measurements to
25 micrometres.

B69-10741

Laterale PNP bipolar transistor with
02 PHYSICAL SCIENCES (ENERGY SOURCES)

AIDING FIELD DIFFUSIONS
CICCIANTI, A. / WESTERN ELECTRIC CORP./ MC
CANN, D. E. DATE- DEC. 1969
MC-13268
Fabrication technique produces field aided lateral
PNP transistors compatible with micropower
switching circuits. The sub-collector diffusion
is performed with phosphorus as the dopant and the
epitaxy is grown using the higher temperature
silicon tetrachloride process.

B-69-10742
AN ELECTRICAL CONNECTOR PIN PROTECTOR
MC WILLIAMS, H. B. /W. AM. ROCKWELL CORP./ MSC-15660
Spring loaded insert protects electrical connector
pins from being bent due to improper rating, or
probing the pins with a screwdriver. This device
modifies existing electrical connectors using only
springs and retaining pins.

B-69-10746
OPTICAL FREQUENCY WAVEGUIDE AND DEMODULATION
TRANSMISSION SYSTEM
CHEN, K. H. /AT&T/ TOWERS, C. H. DATE- DEC. 1969
B-69-10517
Electromagnetically generated, high-dielectric
impedance waveguide forms a waveguide which retains the
electromagnetic energy within the beam, the trapped beam establishes an optical frequency
waveguide appropriate for its own conduction with
minimum diffusion loss.

B-69-10747
BATTERY CHARGE-DISCHARGE CONTROLLER
CICCIANTI, A. D. /BOEING CO./ DATE- DEC. 1969
MSC-11836
ChARGE-discharge controller contains punched-tape
programmer capable of controlling 305 discrete steps in the battery load. The indicating
instrumentation includes meters for ampere-hours,
volts, voltage, current, and internal
temperature and pressure. It also generates
analog signals for recording the displayed data.

B-69-10748
SYSTEM CONVERTS SLOW-SCAN TO STANDARD
FAST-SCAN TV SIGNALS
LIDOMA, P. C. /LOCHHEID ELECTRONICS CORP./ TE
POEL, B. E. DATE- DEC. 1969 EWUN- SEE ALSO B-67-10676
MSC-90534
Signal conversion system converts slow-scan video
signals into standard fast-scan television signals that are required for reproduction of television pictures on American TV sets. This system
performs conversion of 720 pictures produced in
accordance with the standards of one country into
the standards of another country.

B-69-10750
PULSE-CODE-MODULATION BASELINE CORRECTION
FOR LOW SIGNAL-TO-NOISE RATIOS
STEWART, T. J. /TEV SYSTEMS GROUP/ DATE- DEC. 1969
MSC-13268
Time-shared integrate-hold-dump circuits separate the
dc level due to the signal /bit information/
from the dc signal due to the baseline error. The
system detects the baseline error, filters it, and
then algebraically adds enough voltage to a servo
loop to reduce the error to zero.

B-69-10756
SEISMOGRAPHIC RECORDING OF LARGE ROCKET
ENGINE OPERATION
DALINS, D. M. DATE- DEC. 1969
M-PS-20545
Recording equipment for rocket engine vibration is adaptable to determining the structural strength of
building materials. This seismographic system
is portable and is capable of measuring
displacements in the direction of three mutually
perpendicular axes.

B-69-10764
DYNAMIC CALIBRATION OF TURBINE FLOWMETERS
channels that form the rocket casing wall.

**B63-10421**

**MIRROR DEVICE ALIGNS MACHINE SURFACE PERPENDICULAR TO SIGHT LINES**

KISSLER, E. H. / RCA/ DATE- MAY 1964

A sight alignment device is used to align two machines so that an axis of the first machine is parallel to a flat surface on the second. This sighting device depends on the reflection of a light beam from the surface to be aligned.

**B65-10016**

**IONIZATION VACUUM GAGE STARTS QUICKLY, IS UNAFFEC TED BY SPURIOUS CURRENTS**

GAWOOD, R. C. DATE- FEB. 1965

JPL-304

Ionization vacuum gage with a switch-operated starting device and a microammeter begins functioning quickly in a high vacuum. The microammeter is also protected by its circuit design from spurious currents.

**B65-10086**

**WIDE-APERTURE SOLAR ENERGY COLLECTOR IS LIGHT IN WEIGHT**

SPON- INNOVATOR NOT GIVEN / BECKMAN INSTRUMENTS./ DATE- FEB. 1965

JPL-SC-055

By mounting the Fresnel lens in eight steps above three paraboloidal reflector rings of epoxy resin with aluminized surfaces, a light weight, wide-aperture solar energy collector is devised.

**B65-10071**

**SIMPLE OPTICAL SYSTEM USED TO ALIGN SPECTROGRAPH**

EXTON, R. J. DATE - MAR. 1965

LANGLEY-92

Optically fast, portable spectrograph incorporates auxiliary optics in a boresight technique to use the zero order of the grating for visual alignment. This device obtains moderately resolved spectra of a multitude of light sources.

**B65-10061**

**MAGNETIC FIELD TEST COILS ARE TEMPERATURE COMPENSATED**

SPON- INNOVATOR NOT GIVEN / SPECTRA PHYS./ DATE- APR. 1965

GSFC-286

Magnetic field test coils with auxiliary winding wound opposite to main coil winding eliminates changes in field configurations due to temperature changes. The auxiliary coil is made with aluminum wire.

**B65-10062**

**MULTIPLE ELEMENT SOFT X-RAY SOURCE PRODUCES WIDE RANGE OF RADIATION**

CABROD, A. J. / NIPPERT, W. B. DATE- MAR. 1965

GSFC-286

A rotating mount with target elements positioned independently for direct electron bombardment produces soft X-ray radiation with a wide range of characteristics. The device may be used to study solar radiation from a satellite.

**B65-10004**

**MODIFIED CONFOCUS PROJECTOR MAKES EXCELLENT CONTOUR DENSITOMETER**

EXTON, R. J. DATE- MAR. 1965

LANGLEY-92

Thin glass beam splitter, densitometer head, and densitometer electronics are incorporated in a standard confocal projector. The density contour of small areas of photographic film can be read. This instrument can be used as a research tool in process engineering.

**B65-10010**

**ROTATING FILTERS PERMIT WIDE RANGE OF OPTICAL PHOTOMETRY**

EXTON, R. J. SIVITTE, J. H., JR. / STRASS, R. H. DATE- APR. 1965

LANGLEY-33

Gear-driven dual filter disks of graduated density vary linearly with respect to rotation, allowing a wide range of photographic photometry. This technique is applicable in metallurgy, glass, plastics and refractory research, and crystallography.

**B65-10122**

**MICROWAVE TECHNIQUE MEASURES PLASMA CHARACTERISTICS**

LEONARD, W. P. DATE- APR. 1965

LANGLEY-134

Plasma electron density and temperature distribution are measured by passing a high frequency millimeter wave through plasma. Variations in density and temperature are determined by measuring insertion loss as the plasma travels between the microwave transmitting and receiving antennas.
B65-10188
REFRACTORY METAL SHIELDING / INSULATION /
INCREASES OPERATING RANGE OF INDUCTION FURNACE
SUNIARA, R. T. DATE- JUN. 1965
LSNW-202
Thermal radiation shield contains escaping heat
from an induction furnace. The shield consists of a
sheet of refractory metal foil and a loosely
packed mat of refractory metal fibers in a
concentric pattern. This shielding technique can
be used for high temperature ovens, high
temperature fluid lines, and chemical reaction
vessels.

B65-10211
LIGHT RAY MODULATION CONTROLS OPTICAL SYSTEM
ALIGNMENT
SPON- INNOVATOR NOT GIVEN / KOLLMAN INSRR. CORP./
DATE- JUL. 1965
GSFC-171
Light ray modulator maintains focus in optical
system subject to severe thermal gradients,
vibration and shock. The modulated signals drive
a servo system that aligns the system optics.

B65-10224
HEATER DECOMPOSES OIL BACKSTREAMING FROM
HIGH-VACUUM PUMPS
SHAPIRO, H. DATE- AUG. 1965
GSFC-356
Heater placed between an oil diffusion pump and a
vacuum chamber prevents backstreaming of oil
molecules into the work area of the chamber. It
breaks the oil molecules into basic constituents
that can be pumped away.

B65-10239
ION PUMP PROVIDES INCREASED VACUUM PUMPING
SPEED
SPON- INNOVATOR NOT GIVEN / GEOPHYS. CORP. OF AM./
DATE- AUG. 1965
N30-13
Multiple-cell ion pumps with increased vacuum
pumping speed are used for producing ultrahigh
vacuum in vacuum tubes and mass spectrometers.
The pump has eight cathode-anode magnetron cells
arranged in a cylinder which increase the surface
area of the cathode.

B65-10240
INSULATION ACCELERATES RATE OF COOLING WITH
CHLORFURIC ACID FLUID
ALLEN, L. D. DATE- AUG. 1965
MSC-161
Thermal insulating material increases the rate of
heat transfer from the interior of a chamber to a
liquid nitrogen-filled metal jacket. A thin film
of the material is bonded to the surface of the
metal wall facing the liquid nitrogen.

B65-10252
DISTANCE OBJECTS DETECTED VISUALLY WITH
OPTICAL FILTERS
SPON- INNOVATOR NOT GIVEN / LANGLEY/ DATE- AUG.
1965
LANGLEY-166
Fluorescent coating aids visual daylight detection
and identification of distant objects. An object
appears as a blinking light when the area is
alternately scanned with transmitting and
obscuring filters. This method can be effective
in search and rescue operations.

B65-10253
OIL-DAMPED MERCURY POOL MAKES PRECISE
OPTICAL ALIGNMENT TOOL
THOMASBAR, M. F. DATE- AUG. 1965
GSFC-353
Mercury pool with a cover layer of high viscosity
oil provides a reference reflector for precise
alignment of optical instruments. The cover
layer effectively damps any ripples in the mercury
from support structure vibrations.

B65-10272
INFRARED SHIELD FACILITATES OPTICAL PYROMETER
MEASUREMENTS
EICHENBRUNNER, F. P. ILLG, W. DATE- SEP. 1965
LANGLEY-133
Water-cooled shield facilitates optical pyrometer
high temperature measurements of small sheet metal
specimens subjected to tensile stress in fatigue
tests. The shield excludes direct or reflected
radiation from one face of the specimen and
permits viewing of the infrared radiation only.

B65-10280
ELECTRON BOMBARDMENT IMPROVES VACUUM CHAMBER
EFFICIENCY
PFEITZENHOLTZ, J. SWIKER, M. A. WATSON, J.
DATE- SEP. 1965
LENWN-160
Bombardment of vacuum chamber walls by an electron
gun within the chamber achieves greater efficiency
with less cost. The ultimate vacuum reached
using the gun is greater than the system design
level.

B65-10283
ELECTRON-BEAM DEFLECTION CONTROLLED BY DIGITAL
SIGNALS
CHERRY, J. R. DATE- SEP. 1965
GSFC-385
Electron-beam deflection in electronic image
converters is controlled by a tapped magnetic
deflection yoke and a series of current
generators. The generators supply equal current
to each tap through digitally controlled switches,
thereby increasing the inherent accuracy of the
system.

B65-10291
SPIRALED CHANNELS IMPROVE HEAT TRANSFER BETWEEN
FLUIDS
EIGA, W. WIEBI, R. R. DATE- OCT. 1965
JFL-694
Spiral flow channels increase heat transfer
between two fluids in a countercurrent heat
exchanger of given volume. The heat exchanger is
constructed by connecting a spiraled
bellows-shaped ducting between two concentric
cylindrical tubes.

B65-10292
INTERFEROMETER CONSTRUCTION ASSURES PARALLELISM OF CRITICAL COMPONENTS
CRESSEY, P. DATE- OCT. 1965
JFL-704
Interferometer with rigidly mounted components
assures parallelism of critical components. The
interferometer is constructed for effective
operation even if the total instrument is
subjected to mechanical stress.

B65-10295
UNIQUE CONSTRUCTION MAKES INTERFERENCE
SENSITIVE TO MECHANICAL STRESSES
BEER, R. DATE- OCT. 1965
JFL-725
Michelson-type interferometer with a cat-eye
reflector operates effectively even in the
presence of random mechanical stresses. A
cubical beamsplitter in infrared or visible light
permits operation in infrared or visible light.

B65-10296
COAXIAL CAPACITOR USED TO DETERMINE FLUID
DENSITY
ATKISSON, E. A. DATE- OCT. 1965
JGW-232
Sensing device measures directly the density of
compressible fluid existing simultaneously in both
liquid and gaseous phases. The device is
comprised of a capacitor connected as one leg of
a bridge circuit, a power source, and an indicator
calibrated to indicate density as a direct
measurement.

B65-10297
SUPERCONDUCTOR SHIELDS TEST CHAMBER FROM
AMBIENT MAGNETIC FIELDS
MILDREDHARST, A. F. DATE- OCT. 1965
JFL-627
Shielding a test chamber for magnetic components
enables it to maintain a constant, low magnetic
field. The chamber is shielded from ambient
magnetic fields by a lead foil cylinder maintained
in a superconducting state by liquid helium.
CLOSED FLUID SYSTEM WITHOUT MOVING PARTS CONTROLS TEMPERATURE
STEIGEL, J. A. / DATE- NOV. 1965
LEWIS-222
Closed fluid system maintains a constant temperature in an insulated region without the use of any moving parts. Within the system, the energy for the thermodynamic cycling of two-phase heat transfer fluid and a hydraulic fluid is entirely supplied by the heat generated in the thermally insulated region.

VACUUM CHAMBER PROVIDES IMPROVED INSULATION AND SUPPORT FOR CRYOSTAT
SPON- INNOVATOR NOT GIVEN / N. AM. AVIATION/ DATE- DEC. 1965
B66-10060
- Taut wires in an evacuated cylinder minimize heat transfer through the walls and junctions of a liquid-helium-filled cryostat by suspending the cryostat.

MODIFIED PROCEDURE SPEEPS CAMERA COPY LAYOUT
SMITH, L. F. / DATE- DEC. 1965
GSPC-028
Projecting a grid pattern on a steel layout board facilitates the alignment of camera copy for photo-offset reproduction. Small flat bar magnets fasten the copy to the board.

OPTICAL OUTPUT ENHANCES FLOWMETER ACCURACY
WOLFE, J. C. / DATE- DEC. 1965
B66-10087
M-PS-482
Magnetic flowmeter with a direct-coupled optical output increases accuracy and operates independently of other system inputs. The design includes simple external adjustment and signal amplitude control.

COPPER FOIL PROVIDES UNIFORM HEAT SINK PATH
PHILLIPS, I., J. / DATE- JAN. 1966
B66-10096
K-PS-262
Thermal path prevents voids and discontinuities which make heat sinks in electronic equipment inefficient. The thermal path combines the high thermal conductivity of copper with the resiliency of silicone rubber.

AUTOMATIC FLUID SEPARATOR SUPPLIES OWN DRIVING POWER
DUCKER, J. S. / DATE- JAN. 1966
B66-10100
Woo-085
Centrifugal separator suspended in the fuel tank of a space vehicle selects and vents gas vapor at zero gravity. Escaping vapor is used to drive an expansion turbine that is magnetically coupled to the separator.
Specimen holder for X-ray diffraction analysis prevents the specimen to the incident X rays in a curve. This permits the use of an X-ray beam having a larger divergence angle, the beam intensity is increased, and the statistical accuracy of analysis is improved.

**B66-10079**

**HIGH-PRESSURE, LOW TEMPERATURE ELECTRICAL CONNECTOR MAKES NO-LEAK SEAL**

Weekley, J. F. /N. AM. AVIATION/ DATE- MAR. 1966

MSC-276

Flow control of cryogenic liquids is achieved through use of an electrical feed-through connector with a molten-glass-type valve. To prevent gas leakage, the connector is designed and structured so that extremely high pressure and low temperatures contribute to its sealing properties.

**B66-10086**

**SCREEN OF CYLINDRICAL LENSES PRODUCES STEREOSCOPIC TELEVISION PICTURES**

Kohn, C. L. /SPACO, INC./ DATE- MAR. 1966

N-FS-273

Steroscopic television pictures are produced by placing a colorless, transparent screen of adjacent parallel cylindrical lenses before a raster from two synchronized TV cameras. Alternate frames from alternate cameras are displayed. The viewers' sensory perception fuses the two images into one three-dimensional picture.

**B66-10095**

**ULTRAVIOLET PHOTOGRAPHIC PYROMETER USED IN ROCKET EXHAUST ANALYSIS**

Levin, B. R. /N. AM. AVIATION/ DATE- MAR. 1966

N-FS-499

Ultraviolet photographic pyrometer investigates the role of carbon as a thermal radiator and determines the geometry, location, and progress of afterburning phenomena in the exhaust plume of rocket engines using liquid oxygen/JP-4 as propellant.

**B66-10096**

**INEXPENSIVE INFRARED SOURCE IMPROVED FROM FLASHLIGHT**

Sprow- Innovator Not Given /FAIRCCHILD HILLER CORP./ DATE- MAR. 1966

N-FS-498

Inexpensive hand-held source of infrared energy is provided by a flashlight bulb coated with a paint which filters out the visible light emitted by the bulb and transmits only infrared radiation. This device can be used for checking infrared sensors and for experimental purposes.

**B66-10098**

**NEW ENERGY STORAGE CONCEPT USES TAPES**

Gubbis, A. Kapellas, R. B. /Monsanto Res. CORP./ DATE- MAR. 1966

Lewis-239

Energy storage system uses movable permeable tapes with cathode and electrolyte material that is drawn across an anode to produce electric power. The system features long shelf life, high efficiency, and flexible operation.

**B66-10108**

**PLASTIC SCINTILLATOR CONVERTS STANDARD PHOTOMULTIPLIER TO ULTRAVIOLET RANGE**

Sprow- Innovator Not Given /GEOPHYS. CORP. OF AM./ DATE- MAR. 1966

ECC-10

Commerically available plastic scintillators are attached to the glass windows of standard photomultiplier tubes for detection of ultraviolet radiation.

**B66-10114**

**HIGHLY SENSITIVE SOLIDS MASS SPECTROMETER USES INERT-GAS ION SOURCE**

Sprow- Innovator Not Given /GEOPHYS. CORP. OF AM./ DATE- MAR. 1966

ECC-11

Mass spectrometer provides a recorded analysis of solid material surfaces and bulk. A beam of high-energy inert-gas ions bombards the surface atoms of a sample and converts a percentage into an ionized vapor. The mass spectrum analyzer separates the vapor ionic constituents by mass-to-charge ratio.

**B66-10121**

**COMPOUND IMPROVES THERMAL INTERFACE BETWEEN THERMOCOUPLE AND SENSED SURFACE**

Fallin, I. M. /WESTINGHOUSE ASTRONUC. LAB./ DATE- MAR. 1966

EUC-0028

Thermocouples and brittle materials are joined without welding by an epoxy resin cement mixer with a conducting material. This mixture does not form thermal barriers at cryogenic temperatures.

**B66-10122**

**FIBRUM THIN FILMS ARE SUPERCONDUCTIVE IN STRONG MAGNETIC FIELDS AT LOW TEMPERATURES**

Clough, F. J. /NATL. RES. CORP./ MEN, P. DATE- MAR. 1966

JPL-SC-174

Niobium film superconductor carries high currents in strong magnetic fields. The thin niobium film is formed on an inert substrate through evaporation in a vacuum environment. Control of temperature and vacuum results in rejection of gaseous impurities so that the film is of very high purity.

**B66-10143**

**SEXTANT MEASURES SPACECRAFT ALTITUDE WITHOUT GRAVITATIONAL REFERENCE**

Sprow- Innovator Not Given /GEONAUTICS, INC./ DATE- APR. 1966

MSC-200

Horizon-sensing sextant measures the altitude of an orbiting spacecraft without gravitational reference by optically measuring the dip angle to the horizon along a line of sight in each of two planes. The sextant scans over a relatively limited field of view.

**B66-10153**

**ARGON PEBBLE GAS COOLED BY CHILL BOX**

Firing, L. W. /N. AM. AVIATION/ DATE- APR. 1966

N-FS-568

Cooling argon purge gas by routing it through a shop-fabricated chill box reduces charring of tungsten inert gas torch head components. The argon gas is in a cooled state as it enters the torch and prevents buildup of char caused by the high concentrations of heat in the weld area during welding operations.

**B66-10156**

**CIRCULAR, EXPLOSION-PROOF LAMP PROVIDES UNIFORM ILLUMINATION**

Sprow- Innovator Not Given /N. AM. AVIATION/ DATE- APR. 1966

MSC-382

Circular explosion-proof fluorescent lamp is fitted around a TV camera lens to provide shadowless illumination with a low radiant heat flux. The lamp is mounted in a transparent acrylic housing sealed with clear silicone rubber.

**B66-10157**

**CRYOGENIC LIQUID TRANSFER SYSTEM REDUCES RESIDUAL BOILOFF**

Skaggs, D. E. DATE- APR. 1966

Lewis-274

System for transferring cryogenic liquids to a dewar prevents boiloff of residual liquid by venting the boiloff to the atmosphere during the transfer tube cooling period. The system is most useful with liquids having very small heat of vaporization.

**B66-10173**

**OFFSET LENSES AND VERSATILITY TO PHOTOTYPESetting MACHINE**

Jakes, A. E. /DOCUMENTATION, INC./ DATE- APR. 1966

Eo-9

Offset lenses facilitate the composition of inputs of other than straight baseline characters on the Photon phototypesetting machine. A number of lenses in the turret are mounted in an offset
pattern that causes characters projected through them to fail the photographic paper in the magazine above and below the baseline.

B66-10178

**FATIGUE CRACKS DETECTED AND MEASURSED WITHOUT TEST INTERRUPTION**
FRECHER, J. C. KLIMA, S. J. LESCO, D. J. DATE-
MAY 1966

**LEWIS-266**

Ultrasonic flaw detector records cracks in materials undergoing fatigue tests, without interfering with test progress. The detector contains modified transducers clamped to the specimen, and an oscillograph readout.

B66-10181

**ALUMINIUM DOING IMPROVES SILICON SOLAR CELLS**
SPON- INNOVATOR NOT GIVEN /LEWIS/ DATE-
MAY 1966

**LEWIS-206**

Aluminium doped silicon solar cells with resistivities in the 10- to 20-ohm centimeter range have broad spectral response, high efficiency and long lifetimes in nuclear radiation environments. Production advantages include low material rejection and increased production yields, and close tolerance control.

B66-10182

**INSULATION FOR CRYOGENIC TANKS HAS REDUCED THICKNESS AND WEIGHT**
DUNN, R. D. MIDDLETON, R. L. SCHELL, J. T.
STURCT, J. R. DATE- MAY 1966

**LEWIS-206**

Dual seal insulation, consisting of an inner layer of scaled-cell teflon honeycomb core and an outer helium purge channel of fiberglass reinforced phenolic honeycomb core, is used as a thin, lightweight insulation for external surfaces of cryogenic-propellant tanks.

B66-10186

**RADIATION USED TO TEMPERATURE COMPENSATES SEMICONDUCTOR STRAIN GAGES**
GREEN, C. DATE- MAY 1966

**LANGLEY-207**

Exposure to high energy electron radiation reduces the temperature coefficients of resistance and gage factor of a range of resistivities of n- and p-type semiconductor silicon strain gages. After irradiation, the gages are heated to a high temperature for a 24-hour period to stabilize their temperature coefficients.

B66-10187

**RUBBER-COATED BELLOWS IMPROVES VIBRATION DAMPING IN VACUUM LINES**
ENGLEND, D. E. SMITH, R. J. DATE- MAY 1966

**LEWIS-273**

Compact-vibration damping systems, consisting of rubber-coated metal bellows with a sliding o-ring connector, are used in vacuum lines. The device presents a metallic surface to the vacuum system and combines flexibility with the necessary stiffness. It protects against physical damage, reduces fatigue failure, and provides easy mating of nonparallel lines.

B66-10199

**MOUNT ENABLES PRECISION ADJUSTMENT OF OPTICAL-INSTRUMENTATION MIRROR**
SPON- INNOVATOR NOT GIVEN /ALTM/ DATE-
MAY 1966

**MSC-194**

Mirror mount assembly allows the plane of a mirror to be adjusted through small angles about two orthogonal axes. The assembly, which has a mirror mount with two independently adjustable flexure links, allows independent precise adjustment of the mirror mount with respect to each axis.

B66-10231

**SOLAR CELL SUBMODULE DESIGN FACILITATES ASSEMBLY OF LARGE AREAS**
YASUI, R. K. DATE- MAY 1966

**JPL-728**

Solar cell submodules with bus bars that leave tabs along one end of the submodule and wires with raised portions along the other end and are assembled by interlocking the tabs and wires of adjacent submodules. This structural design is lightweight and reliable and requires no metallic substructure.

B66-10257

**FREEZE PROVIDES HEAT TRANSFER FOR SOLID CO2 CALIBRATION STANDARD**
SPON- INNOVATOR NOT GIVEN /LEWIS AND NORTHROP CO./ DATE- JUN. 1966

**MSP-646**

Acetone and Freon as liquid heat transfer media bring a dry ice bath to, and keep it at, the temperature required when using solid carbon dioxide as a calibration standard. Although acetone gives better results, Freon TP is preferred since acetone reacts violently in the presence of liquid oxygen.

B66-10263

**OPTICAL DEVICE ENABLES SMALL DETECTOR TO SEE LARGE FIELD OF VIEW**
ABEOT, J. E./NAM SPACE TECHNOL. LAB./ DATE-
JUN. 1966

**W00-253**

Optical device images the sun on a mask that transmits it or prevents its transmission to a photodetector behind the mask depending on image position on the mask. The device uses a pinhole as the image former to provide a large field of view and diffraction-resolution limited.

B66-10268

**HIGH-SPEED FUSION USES INFRARED RADIATION FOR CONTROLLED BRAZING**
MCLLLES, P. W. /AUGUST-GEN. CORP./ DATE-
JUN. 1966

**H0-0047**

Furnace produces controlled heat for brazing and heat treating metals over a wide range of temperatures by using a near-infrared heat source positioned at one focus of an elliptical reflector mounted below a cylindrical quartz chamber. This furnace maintains a pure atmosphere, has rapid heatup and cooldown, and permits visual observation.

B66-10289

**ULTRASONIC HAND TOOL ALLOWS CONVENIENT SCANNING OF SPOT WELDS**
MITCHELL, D. K. /BOEING CO./ DATE- JUL. 1966

**MPS-539**

Small, portable, electrically powered hand tool, coupled with auxiliary ultrasonic equipment, allows convenient scanning of spot welds for discontinuities.

B66-10290

**MODIFIED McLEOD GAGE RECORDS AUTOMATICALLY**
PATHE, P. A. DATE- JUL. 1966

**LEWIS-290**

Modified McLeod gage records pressure measurements automatically. The measurements can be programmed in advance by means of an automatic timer.

B66-10307

**COMMERCIAL FILM PRODUCES POSITIVE X-RAY PHOTO IN TEN SECONDS**
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- JUL. 1966

**MPS-521**

Type 52 Polaroid Land Film Packet provides a rapid, inexpensive method of producing positive X-ray photographs of various objects.

B66-10316

**LEGIBILITY OF ELECTROLUMINESCENT INSTRUMENT PANEL INVESTIGATED**

**MSC-494**

Legibility studies of several EL/electroluminescent displays correlate reading time and accuracy with number size, stroke/width ratio, indicia size, pointer width, contrast, ambient illumination, and color background and and
contrast. Human factor criteria established on non-EL displays may not apply to EL displays.

B66-10340
INTEGRAL DEVICES HELP MAINTAIN CONSTANT
HEATING FORCES DURING THERMAL PRESSURE TESTING
F. D. FISCHER
DATE - JUL. 1966

Portable adapter assembly prevents damage to tubing and injury to personnel when pressurizing a system or during high pressure tests. The assembly is capable of withstanding high pressure. It is securely attached to the tubing stub end and may be removed without brazing, cutting or cleaning the tube.

B66-10507
CIRCUIT PROVIDES ACCURATE FOUR-QUADRANT
MULTIPLICATION

Solid state circuit provides four-quadrant multiplication at frequencies ranging from 1 to 100 hertz using pulse-width and height multiplication techniques. The circuit consumes little power and has an accuracy of approximately one percent.

B66-10380
INSULATION EFFECTIVE FOR
CRYOGENIC TRANSFER LINES

Solid state circuit provides four-quadrant multiplication at frequencies ranging from 1 to 100 hertz using pulse-width and height multiplication techniques. The circuit consumes little power and has an accuracy of approximately one percent.

B66-10694
GAS PRESSURE FEEDS FILM INTO CAMERA AT HIGH
SPEED

Corporate interest is not given /LEWIS/ DATE - NOV. 1966

A bright light beam blown a loop of unexposed film as a wave across a vacuum plate to feed film smoothly into a camera so that 2 successive lengths can be exposed within 50 milliseconds. This technique can be readily applied to multiple aperture cameras as well as to various types of films.

B66-10499
CRYOGENIC COOLING REDUCES HIGH VOLTAGE ARCING
BETWEEN ELECTRODES OPERATING IN A VACUUM

DATE - OCT. 1966

Cooling to a temperature of approximately liquid nitrogen or lower, reduces arcing, or high voltage breakdown, between two closely spaced electrodes operating in a vacuum. This cooling technique can be applied to electrodes having other than hemispherical shapes.

B66-10509
PANELS ILLUMINATED BY EDGE-LIGHTED LENS

DATE - NOV. 1966

Electroluminescent lamps used to edge-light a specially ground lens provide nonglare, reduced eye strain panel illumination. There is no noticeable fall off in brightness along the lens edge. Light intensity diminishes toward the lens center. A slight halo, observed along the lens edge, has no detrimental effect.

B66-10511
EXPERIMENTAL INVESTIGATION OF ELEPHANT DC
ARC HEATING OF NITROGEN

DATE - DEC. 1966

Four types of arc heaters, each with the capability of providing arc power levels in excess of 1 megawatt in nitrogen, were tested over a range of power levels and nitrogen flow rates to determine their value as heaters for hypersonic tunnels. The data derived should be useful in the design of high energy heaters for various industrial processes.

B66-10532
LIGHT-INTENSITY MODULATOR WITHSTANDS HIGH
HEAT FLUXES

DATE - NOV. 1966

Mechanical scabulars and controls the intensity of luminous radiation in light beams associated with high-intensity heat flux. This scabular incorporates two fluid-cooled, externally grooved, contracting metal cylinders which when rotated about their longitudinal axes present a circular aperture of varying size depending on the degree of rotation.
CAPABLE OF SUSTAINED OPERATION

GRIDSHAN, W. A.; MULLER, K. /TEXTRON ELECTRONICS/

DATE- NOV. 1966

ARC-61

Water cooled, high intensity radiation source rated at 125 kw, with an efficiency of 31 to 34 percent is used in the evaluation of ablative materials under simulated conditions of high velocity entry into planetary atmospheres. The source operates repeatedly at maximum power for periods of 10 to 20 minutes.

B66-10558

CALCULATION OF INFRARED SPECTRAL TRANSMITTANCES OF INHOMOGENEOUS GASES

HUFFAKER, R. R. / DATE- DEC. 1966

R-FS-1598

Calculation of spectral transmittance for a particular inhomogeneous gas path is made by combining known data on gases at constant temperature, pressure, and concentration. The spectral transmittances of the inhomogeneous gaseous gases is needed to calculate the heat radiated from the exhaust plume to the rocket base of a multiple engine rocket.

B66-10560

LASER MEASURING SYSTEM ACCURATELY LOCATES POINT COORDINATED ON PHOTOGRAPH

DOERZ, J. H.; LINDENMEYER, C. W.; VONDERHEIDE, R. R. / DATE- DEC. 1966

N-FS-74

Laser activated ultraprecision ranging apparatus interfaced with a computer determines point coordinates on a photograph. A helium-neon gas CW laser provides collimated light for a null balancing optical system. This system has no mechanical connection between the ranging apparatus and the photograph.

B66-10565

MIXED CONDITIONS TEMPERATURE OF LIQUIFIED GAS STREAMS

TALMOR, E. / /M. AVIATION/ DATE- DEC. 1966

M-FS-1784

Room temperature gaseous hydrogen mixed with liquid hydrogen in a venturi produces a two-phase liquid hydrogen stream at a stable temperature. This technique is useful in laboratory testing where presently, temperature control is maintained by a calibrated heat leak that results in considerable expenditure of cryogenic refrigerants.

B66-10583

NEON ISOTOPES CANCEL ERRORS IN GAS LASER


M-FS-1876

Neon isotope cancel frequency pushing errors arising from unequal gain in the two contrarotating beams of a helium-neon filled discharge tube used in a ring laser.

B66-10596

OPTICAL AUTOMATIC GAIN CHANNEL

MRUS, G.; ZUKOWSKY, W. / BERRIN-ELMER CORP. /

DATE- DEC. 1966

N-FS-1550

Automatic Gain Control /AGC/ channel automatically compensates for gain changes in the azimuth error channel due to time varying optical sight degrading effects. This system is useful in remote television monitors, automatic navigation systems, and surveying and mapping instrumentation.

B66-10602

EXPOSURE VALVE /B/ SYSTEM EXPANDED TO INCLUDE FILTERS AND TRANSMITTANCE

LINDSEY, W. F. / DATE- DEC. 1966

LANGLY-190

Application of the exposure valve system requires that the system be expanded to high brightness level and expanded to include filter factors. A minimum of four photographic factors are involved in the evaluation of an exposure which, when determined from tables of 1-stop interval, could introduce noticeable error.

B66-10615

FEED-THRU FLANGE IS USEFUL IN VACUUM

APPLICATIONS TO CRYOGENIC TEMPERATURES

MAGER, S. F. / DATE- DEC. 1966

JPL-846

Feed-thru flange seals inner and outer walls of high vacuum test chambers. It is used in vacuum applications at both cryogenic and higher than cryogenic temperatures. A damaged flange can still be used for partial vacuum, noncryogenic applications in conjunction with an appropriate rubber seal.

B66-10630

TECHNIQUE FOR MEASURING ABSORPTION AND EMISSIVITY BY USING CYCLIC INCIDENT RADIATION


LEWIS-281

Cyclic radiation technique has been developed for determining absorptance and emittance of metal surfaces. Using this technique both absorptance and emittance can be determined from one set of data, and variable and controlled temperature levels are possible.

B66-10638

TWIN SIREN SYSTEM PRODUCES FAST SCAN IN INFRARED DETECTOR

VANZETTI, R. / /M. AVIATION/ DATE- DEC. 1966

M-FS-1596

Two rotating wheels in orthogonal relationship with helicoidal reflecting surfaces mounted on their outer rims achieve a linear speed without normal tire loss in their return motion. The pitch of the helicoidal surfaces equals the displacement that the mirrors must traverse.

B66-10652

ROCKET ENGINE VIBRATION ACCURATELY MEASURED BY PHOTOGRAPHY

CRAIG, K. A. / /M. AVIATION/ DATE- DEC. 1966

M-FS-1910

High speed instrumentation camera focused on a partially masked light bulb which is securely mounted to the test fixture permits measurement of engine performance parameters when usual electronic vibration instrumentation is unavailable. Vibration is recorded as a light trace deviating from the light rays photographed in the static hardware condition.

B66-10654

CRYOGENIC FLUID SAMPLING DEVICE PERMITS TESTING UNDER HAZARDOUS CONDITIONS

MITCHELL, J. A. / /M. AVIATION/ DATE- DEC. 1966

M-FS-1927

Remotely controlled sampling device obtains timed sample of flowing cryogenic liquid propellants in remote or hazardous testing conditions. The device consists of a calibrated container, a dewar, a solenoid valve, a pressure gage, and a manual bleed valve.

B66-10657

SIMPLE TECHNIQUE DETERMINES AC PROPERTIES OF HARD SUPERCONDUCTIVE MATERIALS

HARPER, C. M. / HARRIOT/ DATE- DEC. 1966

M-FS-1818

Critical current density of neodymium-titanium alloy samples is analyzed from magnetization curves to determine the ac properties of hard superconductive materials. A complete family of magnetization curves is obtained, each curve representing performance at a different temperature.

B66-10660

PROCESS PRODUCES ACCURATE REGISTRY BETWEEN CIRCUIT BOARD PRINTS

SPAND- INNOVATOR NOT GIVEN /BENDIX CORP./ DATE- DEC. 1966

LANGLY-286

Tapes and quick-score circles of contrasting colors aid in obtaining precise registry between the two circuits of two-sided printed circuit boards. The tapes and circles are mounted on opposite sides of transparent plastic film to
Define the conductive path and feed-through hole locations.

B66-10682
PETRARCH CELLS UTILIZE HALOGEN-ORGANIC CHARGE TRANSFER COMPLEXES
GUTMAN, F. /HARRAN, A. M. /REBAUM, A. /DATE- DEC. 1966
JPL-926
Electrochemical cells with solid state components employ charge transfer complexes or donor-acceptor complexes, in which the donor component is an organic compound and the acceptor component is a halogen. A minor proportion of graphite added to these compositions helps reduce the resistivity.

B66-10693
LASER DOPPLER FLOWMETER MEASURES GAS VELOCITY
FUERMAN, R. /BROW EDGE CORP./ BUDDEREE, R. E. /DATE- DEC. 1966
MFS-1786
Utilizing the large magnitudes of Doppler shifts obtainable from a CW gas laser, local velocity vectors are measured by using the visible light from the laser. This technique is applicable for the measurement of velocity of any moving surface.

B66-10700
PROBLEM OF OSCILLATING CORE IN SUPERSONIC FLOW IS SOLVED BY SMALL PERTURBATION TECHNIQUES
PAO, T. K. /MT/ /DATE- DEC. 1966
MFS-860
Small perturbation technique solves the problem of an oscillating core in supersonic flow. The logic of the program is straightforward, as reflected in the actual instructions for solving the problem.

B67-10008
POLAROID FILM HELPS LOCATE OBJECTS IN INACCESSIBLE AREAS QUICKLY
MSC-950
Polaroid film is used with conventional portable X-ray equipment to locate and shoot items or objects in difficult areas. Polaroid film development time is about 20 seconds.

B67-10021
POLARIZER PROVIDES TRANSIENT RESPONSE IN HANGGROUN D RANGE
JOHNSTON, A. R. /DATE- FEB. 1967
JPL-990
Conventional polarimeter with a Semarant compensator improves transient response and eliminates manual manipulation. A sampled photocell amplifier output is fed to a low pass filter, resulting in a signal representing the optical state existing at the instant of sampling. With this technique, an unknown transient-induced retardation can be measured.

B67-10024
PLASMA JET ELECTRODE HAS LONGER OPERATING LIFE
GRACEY, C. M. /AEROJET GEN. CORP./ /DATE- FEB. 1967
N0-0098
Water-cooled, silver-infiltrated tungsten electrode has twice the operating lifetime of the pure tungsten electrode used in plasma jet generators. This electrode reduces the erosion rate, ensures excellent heat transfer, and reduces thermal stresses.

B67-10036
NEWDON ACTIVATION ANALYSIS TRACES COPPER ARTIFACTS TO GEOGRAPHICAL POINT OF ORIGIN
ARG-119
Impurities remaining in the metallic copper are identified and quantified by spectrographic and neutron activation analysis. Determination of the type of ore used for the copper artifact places the geographic point of origin of the artifact.

B67-10037
CORRELATION ESTABLISHED BETWEEN HEAT TRANSFER AND ULTRASONIC TRANSMISSION PROPERTIES OF COPPER BRAZED BONDS
DI NERI, R. A. /DATE- MAR. 1967
ERL-7074
Measuring and correlating the thermal conductivity and ultrasonic transmission of seven hot-brazed-bonded copper plates established a relationship between heat transfer and ultrasonic transmission properties of the bonds. This relationship permits the prediction of heat transfer characteristics from ultrasonic transmission tests.

B67-10054
METHOD ACCURATELY MEASURES MEAN PARTICLE DIAMETERS OF MONODISPERSE POLYSTYRENE LATEXES
KSchRITZIKH, J. H. /DATE- MAR. 1967
ARG-207
Photomicrographic method determines mean particle diameters of monodisperse polystyrene latexes. Many diameters are measured simultaneously by measuring row lengths of particles in a triangular array at a glass-oil interface. The method provides size standards for electronic particle counters and prevents distortions, softening, and flattening.

B67-10057
MECHANISMS OF SUPERCONDUCTIVITY INVESTIGATED BY NUCLEAR RADIATION
MFS-694
Investigation focused on the behavior of superconducting magnet and its constituent materials during and after exposure to nuclear radiation. The results will indicate the feasibility of their use in diverse applications and various environments.

B67-10068
STUDY MADE OF INTERACTION BETWEEN SOUND FIELDS AND STRUCTURAL VIBRATIONS
LITON, E. S. /SMITH, F. W., JR. /COMM. BROWN, JR. /BOLT, BERANEK, AND NEWMAN/ /DATE- APR. 1967
HQ-26
Study analyzes structural vibrations and the interactions between them and sound fields. It outlines a conceptual framework to analyze the vibrations of systems and their interactions, incorporating the results of earlier studies and establishing a unified basis for continuing research.

B67-10071
ELECTRONIC FILTER DISCRIMINATES BETWEEN TRUE AND FALSE REFLECTIONS
MERCHANT, J. /HONEYWELL INC./ /DATE- APR. 1967
BG-55
Electronic filtering system discriminates between true corneal and false reflections, solving the problem of spurious reflections of the CRT light in newly designed ocularimeter.

B67-10072
AN IMPROVED SOFT X-RAY PHOTOIONIZATION DETECTOR
STOKES, A. K. /YOUNG, R. E. /DATE- APR. 1967
DS-240
Photoionization detector with an alumina shell, a beryllium foil window, and a xenon gas fill measures small incident photon fluxes from soft X-rays. It has high spectral selectivity and quantum efficiencies, and a long shelf life. It eliminates electrical leakage and recontamination, and will hold a high vacuum.

B67-10075
STUDY MADE OF FAR INFRARED SPECTRA OF SILICATE MINERALS
SCHAFER, M. R. /INNOVATOR NOT GIVEN/ /DATE- APR. 1967
NFS-1611
94
Study of mineral in the far infrared region of the spectrum examines the problems and feasibility of remote sensing of the composition of the moon or tenuous atmosphere planets. Most of the work described utilized reflection techniques.

B67-10082
FATIGUE ZONES IN METALS IDENTIFIED BY POLARIZED LIGHT PHOTOGRAPHY
VEST, T. B. /BOEING CO./ DATE- APR. 1967
W00-266
Polarized light technique clearly defines the fatigue zones in metal for measuring and photographing. White light is passed through a vertical polarizing filter and then is reflected onto the surface of the fracture specimens.

B67-10088
EXPERIMENTAL SCALING STUDY OF FLUID AMPLIFIER ELEMENTS
ABLEE, J. GEEBEE, T. TAP?, C. /CASE INST. OF TECH./ DATE- APR. 1967
N-FS-1862
Study examines scaling parameters of three fluid amplifier elements - a bistable device, a boundary layer control device, and a vortex device. Variations in performance due to size, fluid, and other conditions are studied. Even with restricted examples the large number of variables impedes the establishment of these scaling laws.

B67-10109
SPECIAL PURPOSE REFLECTOMETER USES MODIFIED ULLBRICH SPHERE GORES?, N. D./ DATE- MAY 1967
M-1135
Modified Ullbrich sphere measures stray radiation caused by irregularities in the reflective surface of an optical test specimen. The test specimen is positioned between a light source and exit port and all diffusely scattered radiation is measured by a photomultiplier tube in the sphere.

B67-10110
STAR/HORIZON SIMULACR USED TO TEST SPACE GUIDANCE SYSTEM SCHMIDT, W. C. /MIT/ DATE- MAY 1967
M-847
Star/horizon simulator is usually used for alignment and optical plus photodetector tests of the sextant for the Apollo guidance and navigation system optical unit assembly. The unit is basically a refractive collimator with a two inch objective lens system and a twenty-four inch focal length.

B67-10120
M-647
Active vehicle optical alignment aid and a passive vehicle three-dimensional alignment target ensure proper orientation and alignment plus control of the closure range and rate between two bodies, one is controlled motion and one at rest.

B67-10126
HIGH-ENERGY-RATE MAGNETOHYDRAULIC METAL FORGING SYSTEM SPK- INSUFFICIENT DATE GIVEN /ADVAN. KINET./ DATE- MAY 1967
R-2162
In the magnetohydraulic metal forging system, a sonic shock wave is generated in a liquid medium by a coil energized by an electrical discharge. These wave transfer energy from a metal diaphragm, actuated by a pulsed magnetic field, to a metal workpiece. In the development a study was made of the pressure pulse phenomenon in a liquid medium.

B67-10128
IMPROVED CYROGENIC REFRIGERATION SYSTEM SIGEL, W. H. DATE- MAY 1967
JPL-731
Two-position shuttle valve simplifies valving arrangement and crank-shaft configuration in gas-balancing and Stirling-cycle refrigeration systems used to produce temperatures below 173 degrees K. It connects the displacer and regenerator alternately to the supply line or the return line of the compressor, and establishes constant pressure on the drive pistons.

B67-10131
NEUTRON DIFFRACTOMETER ALLOWS BOTH MAGNETIC AND CRYSTALLOGRAPHIC ANALYSES ANGEL, A. DATE- JUN. 1967 BEAN- SEE ALSO ARL-6920
ARG-191
Automatic double-crystal neutron diffractometer performs both crystal and magnetic structural analyses. This shielded installation has a goniometric turntable and electronic controls, and auxiliary equipment including a goniometer, diffraction electromagnet, two cryogenic dewars, and two diffraction furnaces.

B67-10134
CRYOGENIC SEAL REMAINS LEAKTIGHT DURING THERMAL DISPLACEMENT FIELDS, T. H. MARTIN, K. B. PEWIT, E. G. DATE- MAY 1967
ARG-96
Cryogenic seals protect the surfaces of a plastic member in a low-pressure system subjected to extreme temperature changes. The outer seal is an aluminum expansion ring bonded to the lens outer surface and the inner seal consists of a reman-filled aluminum O-ring bonded to the inner surface.

B67-10164
SOLAR X-RAY SPECTRUM REPRODUCED IN VACUUM STEELE, C. A. KIRCHNER, L. P. /MIT RES. INST./ DATE- JUN. 1967
NMSC-228 MSC-1168
Desired low energy X rays are produced by modifying commercial ion tubes and combining them with standard power supplies and control circuitry. These X rays have less deviation from the solar X-ray spectrum in energy and intensity.

B67-10216
ELECTRON BEAM WELDER USES OWN WELDS BODEN, W. A. /GEN. ENGR./CORVAIR DIV./ DATE- JUN. 1967
LWIS-10111
Beam of an electron beam welder X rays its own welds, enabling rapid weld quality checks to be made without removing the work from the vacuum chamber. A tungsten target produces X rays when hit by the beam. They are directed at the weld specimen and recorded on polaroid film.

B67-10218
X-RAY SOURCE USES INTERCHANGEABLE TARGET ANODES TO VARY X-RAY WAVELENGTH SHIELDS, R. A. DATE- JUL. 1967
NPO-10036
Compact laboratory X ray tube generates X rays of various wavelengths by using interchangeable target anodes. The wavelength of the X rays depends on the metal from which the anode is made.

B67-10247
WATER COOLED ANODE INCREASES LIFE OF HIGH TEMPERATURE ARC LAMP RHINE, H. N. DATE- NOV. 1967
NPO-10186
Water cooling system increases the life of the anode of a high temperature compact arc lamp. A shaped water passage is provided through the tip or hottest point of the anode so that water will flow through it at a relatively high velocity.

B67-10264
INEXPENSIVE CYROGENIC INSULATION REPLACES VACUUM JACKETED LINE RUSCHE, C. E. /WESTINGHOUSE ASTRONAUTICAL LAB./ DATE- JUL. 1967
NDC-10661
Commercially available aluminum Mylar, cork and fiber glass form a multilayered sealed system and provide rugged and economical field installed insulation for cryogenic/liquid nitrogen or
oxygene/ pipe lines in an exposed environment.

B67-10288
LASEB SYSTEM GENERATES SINGLE-FREQUENCY LIGHT
TANG, R. /SILLANIA ELECTRON. SYSTEMS/ DATE- AUG. 1967
M-PS-2556
Program eliminates major sources of noise in the laser output, with minimum sacrifice of total laser output power. Results include the design and development of a laser system which features high power single-frequency output in the S-20 photocathode response region.

B67-10295
IMPROVED ULTRASONIC TV IMAGES ACHIEVED BY USE OF LAND-F&AE ORIENTATION TECHNIQUE
BERGER, E. DATE- AUG. 1967 READ- SEE ALSO ANL-7042 ARG-203

Leak-wave sample orientation technique minimizes the interference from standing waves in continuous wave ultrasonic television imaging techniques used with thin metallic samples. The sample under investigation is oriented such that the wave incident upon it is not normal, but slightly angled.

B67-10296
THERMAL NEUTRON IMAGE INTENSIFIER TUBE PROVIDES HIGHLY VISIBLE RADIOGRAPHIC PATTERN

Vacuum-type neutron image intensifier tube improves image detection in thermal neutron radiographic inspection. This system converts images to an electron image, and with electron acceleration and demagnification between the input target and output screen, produces a bright image viewed through a closed circuit television system.

B67-10297
FRESNEL DIFFRACTION PLATES ARE SIMPLE AND INEXPENSIVE
HOFFER, R. E. DATE- AUG. 1967 M-PS-12731

Fresnel plate demonstrates diffraction phenomena simply and inexpensively. A large number of identical diffracting apertures are made in random orientation on photographic film. When a small source of light is viewed through the plate, the diffraction pattern typical of the diffracting aperture is readily seen.

B67-10316
RADIATION COUNTING TECHNIQUE ALLOWS DENSITY MEASUREMENT IN HIGH-PRESSURE/ HIGH-TEMPERATURE ENVIRONMENT

Radioactive tracers induced by neutron irradiation provide a gamma ray flux proportional to the density of a metal, allowing density measurement of these metals in extreme high-temperature and high-pressure environments. This concept is applicable to most metals, as well as other substances.

B67-10326
PORTABLE SPECTROMETER MONITORS INERT GAS SHIELD IN WELDING PROCESS
GROE, E. L. /IVY RES. INST./ DATE- SEP. 1967 M-PS-12144

Portable spectrometer using photosensitive readouts monitors the amount of oxygen and hydrogen in the inert gas shield of a tungsten-inert gas welding process. A fiber optic bundle transmits the light from the welding arc to the spectrometer.

B67-10337
LOW-ENERGY GAMMA RAY INSPECTION OF BRAZED ALUMINUM JOINTS
BROWN, J. A. /N. AM. AVIATION/ DATE- SEP. 1967 MSC-1189

Americium 241 serves as a suitable radioisotope /gamma ray source/ and exposure probe for radiographic inspection of brazed aluminum joints in areas of limited accessibility. The powdered isotope is contained in a sealed capsule mounted at the end of a spring-loaded pushrod in the probe assembly.

B67-10342
SIMPLIFIED TECHNIQUE DEMONSTRATES MAGNETIC DOMAIN SWITCHING
HAPOV- INNOVATIONS NOT GIVEN /SPERRY RAND CORP./ DATE- OCT. 1967 M-PS-13153

Light from a conventional photographic light source is polarized and projected through thin samples of gadolinium iron garnet and then observed with a conventional polarizing microscope. A distinctive change in color from red to yellow is observed as the magnetic domains are switched.

B67-10352
PRACTICAL NEW METHOD OF MEASURING THERMAL-NEUTRON FLUENCE
STUBOLD, J. R. /SILLANIA GEN. CORP./ WARMAN, E. DATE- OCT. 1967 M-PS-10856

Thermoluminescence dosimeter technique measures thermal-neutron fluence by encapsulating lithium fluoride phosphor powder and exposing it to a neutron environment. The capsule is heated in a dosimeter reader, which results in light emission proportional to the neutron fluence.

B67-10371
MEASURING COPLANARITY OF SURFACES
WEBB, E. M. /KOLLMAN INST. CORP./ DATE- OCT. 1967 M-PS-12044

Interferometric technique is used to measure the coplanarity and flatness of lapped surfaces on which a high-precision mirror is to be mounted. The measurement of minute height variations of several small discrete surfaces is accomplished simultaneously.

B67-10372
ELECTRON BEAM PARALLEL X-RAY GENERATOR
PATE, P. /AM. SCI. AND ENG./ DATE- OCT. 1967 M-PS-11022

Broad X ray source produces a highly collimated beam of low energy X rays - a beam with 2 to 5 arc minutes of divergence at energies between 1 and 6 keV in less than 5 feet. The X ray beam is generated by electron bombardment of a target from a large area electron gun.

B67-10388
MODIFIED BLACKBODY DEVICE EMITS HIGH-DENSITY RADIATION
SCHMUCKER, P. E. /N. AM. AVIATION/ DATE- OCT. 1967 M-PS-12744

Modified device provides a versatile, precisely controllable source of blackbody radiation to calibrate radiometers used for spectrometric analysis of large rocket engine plumes.

B67-10391
METHOD PREVENTS SECONDARY RADIATION IN RADIOGRAPHIC INSPECTION
STUCKER, A. A. /N. AM. AVIATION/ DATE- OCT. 1967 M-PS-13383

Thin-walled neoprene containers prevent secondary radiation, scatter, and undercut during radiographic inspection. The containers are filled with a mixture of barium sulfate, red lead, and petroleum jelly that achieves the required absorption rate.

B67-10394
EXPERIMENTS TO INVESTIGATE PARTICULATE MATERIALS IN REDUCED GRAVITY FIELDS
HODGINS, M. /ARMS D. LITTLE/ NEM, H. P. DATE- OCT. 1967 M-PS-13308

96
Study investigates agglomeration and macroscopic behavior in reduced gravity fields of particulate materials and predicts agglomeration and macroscopic properties of particulate materials. Experiments evaluate the basis for a particle behavior theory and measure bulk properties of particulate materials in reduced gravity.

Polaroid Land camera with an illuminated 7-power magnifier adapted to the lens, photographs weld flaws. The flaws are located by inspection with a 10-power magnifier adapted to the lens, photographs weld flaws. The flaws are located by inspection with a 10-power magnifying glass and then photographed with this device, thus providing immediate pictorial data for use in remedial procedures.

Standard print-out proofing paper, preprinted with an identifying code, serves as convenient densitometer. Exposure to light darkens the paper and gives a measure of the density of the resultant photographic image or the total amount of exposure sustained by the paper.
GLANCING-INCIDENCE TELESCOPE FOR PAR ULTRAVIOLET AND SOFT X-RAYS
NEUFF, W. M. UNDERWOOD, J. H. DATE- DEC. 1967
GSPC-10532
Glancing-incidence telescope makes observations of distant celestial radiant bodies at wavelengths in the spectral region between 3 and 500 angstroms. The device can be used as a fore-optics system for a laboratory extreme ultraviolet spectrometer, or for the collection or imaging of thermal neutrons.

NOISE STUDY OF SINGLE STAGE COMPRESSOR
ROTOR-STATOR INTERACTION
COPELAND, A. C. CROSS-WBR. J. L. DATE- DEC. 1967
LANGLEY-137
Study made of noise radiation from rotor-stator interaction in axial-flow compressors. The collected data were reduced to the form of radiation patterns and frequency spectra. These data show how the radiation patterns are affected by the relative number of rotor blades and stator vanes.

PLASTIC SHOE FACILITATES ULTRASONIC INSPECTION OF THIN WALL METAL TUBING
LAMBERSTER, D. J. ANGUS-GEN. CORP./PETERS, R. M. DATE- DEC. 1967
NUC-10010
Plastic shoe aids inspection of thin walled stainless steel welded tubing to locate voids or other material defects in critical component equipment. Incorporated in available ultrasonic inspection equipment, it couples the transducer to the tube at desired incident angles.

MECHANIZED X-RAY INSPECTION SYSTEM FOR LARGE TANKS
OCCHIPIETI, G. C. BOEING CO./ DATE- DEC. 1967
MPS-12867 R-PS-12868 R-PS-13065 R-PS-13815
Mechanized x-ray equipment provides nondestructive inspection of structural weldments at various positions on very large tanks. It mechanizes the placement of thefills, automates the identification process, adheres to safety requirements, and eliminates all the usual time-consuming manual operations in industrial radiography.

NEUTRON DETECTOR SIMULTANEOUSLY MEASURES FLUENCE AND FIELDS
DVORAK, R. F. DYE, N. C. DATE- DEC. 1967 REAN- SEE ALSO ANL-7085
ARM-10071
Neutron detector acts as both an area monitoring instrument and a criticality dosimeter by simultaneously measuring dose equivalent and fluence. The fluence is determined by activation of six foils one inch below the surface of the moderator. Dose equivalent is determined from activation of three interlocked foils at the center of the moderator.

ANALYTICAL DRAFTING CURVES PROVIDE EXACT EQUATIONS FOR PLOTTED DATA
STENBERT, R. B. DATE- DEC. 1967
LANGLEY-285
Analytical drafting curves provide explicit mathematical expressions for any numerical data that appears in the form of graphical plots. The curves each have a reference coordinate axis system indicated on the curve as well as the mathematical equation from which the curve was generated.

NEW TECHNIQUE FOR DETERMINATION OF CROSS POWER SPECTRAL DENSITY WITH DAMPED OSCILLATORS
MPS-14022
New cross-power spectral density computation technique has been developed, as well as a technique for discrimination between periodic and random signals. This development is applicable to analysis of any stationary random process, and can be used in the aerospace and transportation fields.

LAB WAVE INCREASE SENSITIVITY IN NONDESTRUCTIVE TESTING
DI NOVI, B. DATE- DEC. 1967 REAN- SEE ALSO ANL-6630 ANL-6329
ARG-10009
Lab waves improve sensitivity and resolution in the detection of small defects in thin plates and small diameter, thin-walled tubing. This improvement over shear waves applies to both longitudinal and transverse flaws in the specimen.

GINBALED-MIRROR SCANNING SYSTEM CAPABLE OF SPINAL PATTERN
HAERTSCH, G. C. WILSON, R. W. DATE- DEC. 1967
GSPC-10170
Gimbaled-mirror infrared radiation scanner, with a lightweight torque motor direct coupled to each axis, is capable of scanning in a highly efficient spiral pattern. The scanner is lightweight and can be remotely positioned in previously inaccessible areas because the radiometer head and the gimbaled-mirror scanner can be separated.

HANDBOOK OF CRYOGENIC DATA IN GRAPHIC FORM
LOBB, R. B. CO/ DATE- DEC. 1967
KSC-10009
Handbook of Cryogenic Data is written in graphic form and concentrates extensive data on common materials of construction and properties of fluids frequently encountered in designing cryogenic systems. All data are presented in the British system of units.

POLYSTYRENE CRYOSTAT FACILITATES TESTING TENSILE SPECIMENS SUBMERGED IN LIQUID NITROGEN
SHEER, R. P. WESTINGHOUSE ASTRONUC. LAB./SAXELA, R. J. DATE- DEC. 1967
NUC-10521
Lightweight cryostat made of expanded polystyrene reduces eccentricity in a tensile system being tested under liquid nitrogen. The cryostat is attached directly to the tensile system by a special seal, reducing misalignment effects due to cryostat weight, and facilitates viewing and loading of the specimen.

TEST SYSTEM ACCURATELY DETERMINES TENSILE PROPERTIES OF IRRADIATED METALS AT CRYOGENIC TEMPERATURES
LYSTINE, P. J. WESTINGHOUSE ASTRONUC. LAB./ SAXELA, R. J. VANDERGRIFT, R. F. DATE- DEC. 1967
NUC-10523
Modified testing system determines tensile properties of irradiated brittle-type metals at cryogenic temperatures. The system includes a lightweight cryostat, split-screw grips, a universal joint, and a special temperature control system.

ENVIRONMENTAL CONTROL SYSTEM FOR CRYOGENIC TESTING OF TENSILE SPECIMENS
VANDERGRIFT, R. F. WESTINGHOUSE ASTRONUC. LAB./ TAYLOR, G. O. DATE- DEC. 1967
NUC-10523
Environmental control system uses a special coil to permit the tensile testing of specimens which may be subjected to temperatures anywhere between liquid nitrogen and room temperature. The test specimen zone is surrounded by the coil which permits the selective flooding of the specimen with warm or cold gas.
Adaptive control circuit prevents amplifier saturation.

Adaptive control circuit prevents saturation of push-pull output amplifiers used in low-power, low-torque suspension system. The adaptive control circuit senses how near the output amplifiers are to saturation and sets the B voltage in such a way as to keep them just clear of saturation.

Nonreciprocal gain control is used in a ring laser where the two counter-circulating beams may have differing intensities because of the residual Faraday rotation and other secondary nonreciprocal effects.
Infrared spectroradiometer measures high-resolution spectral absorption, emission, temperature, and concentration of chemical species in radially symmetric zones of the exhaust plumes of large rocket engines undergoing static firing tests. Measurements are made along predetermined lines of sight through the plume.

Baffle configuration provides a more efficient shield against interfering sources of illumination outside the desired field of view of optical imaging systems. It consists of a semi-ellipsoidal revolution about the minor axis with black specular reflecting surface and an aperture defined by the locus of the foci of the generating ellipse.

Superconducting cable for a cryogenic electromagnet with improved mechanical and thermal properties consists of a rectangular cross-sectioned combination of superconductor and normal conductor. The conductor cable has superconductors embedded in a metallic coating with high electrical and mechanical conductivity at liquid helium temperatures.

Study of thermodynamic phenomena occurring during transfer of cryogenic liquids from dewar to receiver tank reveals that the basic cause of liquid implosion is evaporation rate of droplets entering the tank in the early transfer phase. Analysis of the thermodynamics involved and implosion prevention techniques are included.

Protective enclosure for a camera, located on the exhaust stream of a rocket engine, permits continuous recording of evaporation processes of materials used in nozzle throat structures. The system uses a standard camera in a water-cooled, pressurized enclosure having a unique, inert gas-swept viewing duct.

Thermal insulation technique permits low and high power electronic chips to operate in the same package without thermal cross-coupling. An alumina glass shield thermally isolates the low power chip from the high power chip while Kovar substrate acts as a heat sink to remove heat from the high power chip.

An optical integrating sphere with a faceted reflective lining on the inside surface will provide light randomization/mixing of diffusely and specularly reflected light, with relatively few reflections. The improved sphere has a sufficiently high reflectivity for both visible and infrared radiation.

Combination of photographic and drafting techniques has been developed to simplify the preparation of three dimensional and dimetric engineering drawings. Conventional photographs can be converted to line drawings by making copy negatives on high contrast film.

Antechamber facilitates the use of a furnace in which materials are heat treated in a high vacuum or a gas atmosphere. It has a high vacuum pumping system, a means for backfilling with a selected gas, an access door, glove ports, and a motor driven platform.

This X square statistic is a useful measure of the discrepancy between the actual distribution of a set of data points and the theoretical distribution of a random variable of which the data points supposedly are values. Thus the X square statistic is frequently used in goodness of fit tests.

Adequate importance function and sampling scheme facilitates the application of the Monte Carlo method to problems involving the deep penetration of radiation.

Tool aids in graphic determination of input values for any first order lag system of known gain and time constant where the corresponding output function is displayed graphically and can be described by a first order differential equation. This tool permits a rapid reconstruction of input points.

Tool aids in graphic determination of input values for any first order lag system of known gain and time constant where the corresponding output function is displayed graphically and can be described by a first order differential equation. This tool permits a rapid reconstruction of input points.

Adequate importance function and sampling scheme facilitates the application of the Monte Carlo method to problems involving the deep penetration of radiation.

Tool aids in graphic determination of input values for any first order lag system of known gain and time constant where the corresponding output function is displayed graphically and can be described by a first order differential equation. This tool permits a rapid reconstruction of input points.

Adequate importance function and sampling scheme facilites the application of the Monte Carlo method to problems involving the deep penetration of radiation.

Adequate importance function and sampling scheme facilites the application of the Monte Carlo method to problems involving the deep penetration of radiation.

Tool aids in graphic determination of input values for any first order lag system of known gain and time constant where the corresponding output function is displayed graphically and can be described by a first order differential equation. This tool permits a rapid reconstruction of input points.
MSC-11560
Study of dynamic behavior of the liquid-vapor interface of an inviscid fluid in an accelerating cylindrical container includes an analytical-numerical method for determining large amplitude motion. The method is based on the expansion of the velocity potential in a series of harmonic functions with time dependent coefficients.

B68-10174
LOW SCATTER LIGHTWEIGHT FISSION SPECTROMETER
CONSTRUCTED FOR BIOLOGICAL RESEARCH
FRIGERIO, R. A. DATE–JUN. 1968
ARC-10039
Low scatter, lightweight fission spectrometer provides a simple, reliable method for determining absolute neutron fluxes in a fixed neutron. It minimizes neutron scatter and energy degradation effects, and has a counting volume large enough to intercept the most energetic fission fragments, yet small enough to be discriminating.

B68-10178
CONCEPT TO COMFORT-CONDITION SUBJECTS
WEARING RESTRICTIVE CLOTHING
TUCKER, E. M. DATE–JUN. 1968
MSC-10964
Neat exchanger maintains a desirable thermal balance in a subject wearing restrictive clothing. A grid of high thermal conductance fibers, in contact with the skin, transfers heat to or from the skin surface by means of a system of ducts carrying the transfer fluid which is maintained at a controlled temperature.

B68-10179
APPLICATION OF A TRUNCATED NORMAL FAILURE DISTRIBUTION IN RELIABILITY TESTING
GROVES, C., JR. /M. AM. ROCKWELL CORP./ DATE–JUN. 1968
N–FS–14328
Statistical truncated normal distribution function is applied as a time-to-failure distribution function in equipment reliability estimations. Age-dependent characteristics of the truncated function provide a basis for formulating a system of high-reliability testing that effectively merges statistical, engineering, and cost considerations.

B68-10181
STUDY OF CONVECTIVE MAGNETOHYDRODYNAMIC CHANNELED FLOW
SINGH, R. M. DATE–JUN. 1968 REAR–SFF ALSO
ANL-6937
ARG-1012
Study involves the effects of the interactions of an electric, magnetic, velocity, and temperature fields to aid in the design of a magnetohydrodynamic device. It concerns a theoretical analysis of the convective flow of an electrically conducting gas in a channel composed of conducting walls.

B68-10186
MAGNETIC FORGING STUDIES
M–FS–14217
Investigation of the tensile strength dependency on the characteristic time over which a pressure pulse is applied to a metal workpiece shows that the mechanical properties of these materials are functions of the rate at which the material is undergoing strain. These results and techniques are used in magnetostatic metal forming.

B68-10190
PROCEDURE DEVELOPED FOR REPORTING FAST-NEUTRON EXPOSURE
ROSSIN, A. F. DATE–JUN. 1968 REAR–SFF ALSO
ANL-6826
ARG-10035
Procedure for reporting fast-neutron exposure involves determination of the spectrum shape and absolute magnitude, selection of an energy weighting for the neutrons, and definition of a unit for reporting exposure. Using this method, comparisons of irradiation data from different reactors will be free from errors resulting from differences between the spectra.

B68-10228
THEORY OF A REFINED EARTH MODEL
KINSB, H. G. L. DATE–JUN. 1968
S–FS–14679
Revised equations are derived relating the variations of the earth’s gravity and radius as functions of longitude and latitude. They particularly relate the oblateness coefficients of the old harmonics and the difference of the polar radii respectively, ellipticities and polar gravity accelerations in the Northern and Southern Hemispheres.

B68-10238
DESIGN TECHNIQUES – STOCHASTIC CONTROLLERS
VINOALL, W. S. /KIT/ DATE–JUL. 1968
MSC-11554
Analytic techniques aid in the design of nearly optimal linear time-varying sampled-data stochastic controllers. The techniques also aid in the simplification and automation of program design for control computers.

B68-10240
PROPERTIES OF OPTICS AT HIGH TEMPERATURE AND THEIR MEASUREMENT, A STUDY
GATES, D. N. DATE–JUL. 1968
N–FS–14696
Bibliography lists the sources containing emissivity and absorptivity data on materials at extremely high temperatures. The experimental techniques, equipment and efforts of the experimenters to characterize the materials used and methods to evaluate the errors are given in the sources in this bibliography.

B68-10243
PORTABLE, HIGH INTENSITY ISOPEUTIC NEUTRON SOURCE PROVIDES INCREASED EXPERIMENTAL ACCURACY
ARG-90250
Small portable, high intensity isotopic neutron source combines twelve curium-berkelium beams. This high intensity of neutrons, with a flux which slowly decreases at a known rate, provides for increased experimental accuracy.

B68-10245
IMPROVED RELAY OPTICAL ELEMENT FOR SPECTROMETER USING CRYOGENICALLY COOLED DETECTOR
PFAHRE, R. E. /LOHREY MISSILES AND SPACE CO./ DATE–JUL. 1968
MSC-11890
By coating half of one element in the relay optical system of a spectroradiometer with a very high emissivity paint, the effect of the reflected radiation from the back of the filter wheel is eliminated optically. This causes the detector to view a constant level of radiation, regardless of how the reflectivity of the back of the filter wheel changes.

B68-10252
NEW METHOD FOR CRITICAL FAILURE PREDICTION OF COMPLEX SYSTEMS
S–FS–14133
Rigorous analytical technique, called criticality determination methodology, or CD technique, determines the probability that a given complex system will successfully achieve stated objectives. The CD technique identifies critical elements of the system by a failure mode and effects analysis.

B68-10255
ELECTRO-OPTIC MODULATOR FOR INFRARED LASER USING GALLIUM ARSENIDE CRYSTAL
WALSH, T. E. /NASA/ DATE–JUL. 1968
Fluorescent particles enable visualization of the flow patterns of gases at slow velocities. Through a transparent section in the gas line, a camera views the visible light emitted by the particles carried by the gas stream. Fine definition of the particle tracks are obtained at slow camera shutter speeds.

Technique Developed for Measuring Transmittance of Optical Birefringent Networks

Gallium arsenide electro-optic modulator used for infrared lasers has a nica quarter-wave plate and two calcite polarizers to amplitude or phase modulate an infrared laser light source in the wavelength range from 1 to 3 microns. The large single crystal has uniformly high resistivities, is strain free and, and comparable in quality to good optical glass.

Study of Radiation Effects on Mammalian Cells

Gallium arsenide electro-optic modulator used for infrared lasers has a nica quarter-wave plate and two calcite polarizers to amplitude or phase modulate an infrared laser light source in the wavelength range from 1 to 3 microns. The large single crystal has uniformly high resistivities, is strain free and, and comparable in quality to good optical glass.

Study of Radiation Sensitivities of 73 Radioactive Elements Using Fast Unmoderated Neutrons Includes Experiments for Irradiation, Cooling and Counting Conditions. The gamma ray emission spectra is used to identify the unknown material.

Improved Gas Ring Laser

Gallium arsenide electro-optic modulator used for infrared lasers has a nica quarter-wave plate and two calcite polarizers to amplitude or phase modulate an infrared laser light source in the wavelength range from 1 to 3 microns. The large single crystal has uniformly high resistivities, is strain free and, and comparable in quality to good optical glass.

Study of Radiation Effects on Mammalian Cells

Gallium arsenide electro-optic modulator used for infrared lasers has a nica quarter-wave plate and two calcite polarizers to amplitude or phase modulate an infrared laser light source in the wavelength range from 1 to 3 microns. The large single crystal has uniformly high resistivities, is strain free and, and comparable in quality to good optical glass.

Improved Gas Ring Laser

Gallium arsenide electro-optic modulator used for infrared lasers has a nica quarter-wave plate and two calcite polarizers to amplitude or phase modulate an infrared laser light source in the wavelength range from 1 to 3 microns. The large single crystal has uniformly high resistivities, is strain free and, and comparable in quality to good optical glass.
pulsed command, and a binary encoder.

B68-10339

DYNAMICS OF MOVING BUBBLES IN SINGLE AND BINARY COMPONENT SYSTEMS

CLARK, J. A. /MICHIGAN UNIV./ DATE- SEP. 1968

M-PS-14865

Dynamical analysis of a single bubble moving in a quiescent liquid is analyzed for single and binary component systems. The transport of energy and/or mass at the dynamic-phase equilibrium governs the dynamics of the bubble at its interface.

B68-10345

INDEPENDENT DOUBLY TRUNCATED GAMMA VARIABLES

LAVENDER, B. /MCDONNELL DOUGLAS CORP./ DATE- SEP. 1968

M-PS-20414

Density and distribution functions of the sum of independent variables, each having a truncated gamma density function, were derived for use in the measurement of complex physical phenomena.

B68-10346

CONTROLLABILITY OF DISTRIBUTED-PARAMETER SYSTEMS

HEROZ, C. J. /CALIF. UNIV./ DATE- SEP. 1968

M-PS-14929

Controllability of distributed-parameter control systems is mathematically studied. A general theory for control systems includes those that cannot be described by ordinary differential equations.

B68-10347

IMPROVEMENT IN RECORDING AND READING HOLOGRAMS

HALLOCK, J. N. DATE- SEP. 1968

ERC-10151

Three-beam technique superimposes a number of patterns in the same plane of a hologram and then uniquely identifies each pattern by a suitable readout process. The developed readout process does not require any movement of parts.

B68-10348

STUDY OF OPTIMUM DISCRETE ESTIMATORS IN MEASUREMENT ANALYSIS

HUNING, J. C. DATE- SEP. 1968

ERC-10175

Study of statistical techniques for obtaining estimates of true data parameters uses discrete measured quantities containing random error. These techniques develop estimation procedures as an iterative algorithm for digital computation in real-time.

B68-10349

LASER-DOPPLER GAS VELOCITY INSTRUMENT

HOOPER, S. /BAYSHORE CO./ DATE- SEP. 1968

REVIEW-SEE ALSO B66-10693

M-PS-20039

Three-D instrument using a laser light source measures both turbulence and mean velocity of subsonic and supersonic gas flows. The instrument is based on the measurement of the Doppler frequency shift of light waves scattered by moving particles in the gas stream.

B68-10363

IMPROVED RADIOGRAPHIC IMAGE AMPLIFIER PANEL

BROWN, B. L. DATE- OCT. 1968

M-PS-16522

Layered image amplifier for radiographic/E ray and gamma ray applications combines very high radiation sensitivity with fast image build-up and erase capabilities by adding a layer of material that is both photoconductive and light-emitting to basic image amplifier and cascading this assembly with a modified Phene panel.

B68-10396

EVALUATION OF SUPERCONDUCTING MAGNETS, A STUDY

DI SALVO, F. /AVCO EVERETT RES. LAB./ DATE- OCT. 1966

B68-10406

STUDY ANALYTICALLY DEVELOPS AND EXPERIMENTALLY VERIFIES THE STEADY STATE BEHAVIOR CHARACTERISTICS OF COOLANT SUPERCONDUCTORS. ZERO-DIMENSIONAL, ONE-DIMENSIONAL, AND THREE-DIMENSIONAL ANALYSES WERE PERFORMED.

B68-10406

FIBER GLASS PREVENTS CRACKING OF POLYURETHANE FOAM INSULATION ON CRYOGENIC VESSELS

FORGE, D. A. /MCDONNELL DOUGLAS CORP./ DATE- NOV. 1968

M-PS-20058

Fiber glass material, placed between polyurethane foam and the outer surfaces of cryogenic vessels, retains its resilience at cryogenic temperatures and provides an expansion layer between the metal surfaces and the polyurethane foam, preventing cracking of the latter.

B68-10418

MINIATURIZED KING FURNACE PERTS

ABSORPTION SPECTROSCOPY OF SMALL SABLES

ERCOLI, R. DATE- NOV. 1968

ARG-10177

Miniature King-type furnace, consisting of an inductively heated, small diameter tantalum tube supported in a radiation shield eliminates the disadvantages of the conventional furnace in obtaining absorption spectra of metal vapors.

B68-10426

CREW AND FERGUS DOSEMETERS SHOW PRECISION FOR 50-5000 RAD RANGE

FRIEGER, R. A. /RAYTHEON, P. S. DATE- NOV. 1968

ARG-10173

Ammonium thiocyanate, added to the usual ferrous sulfate dosimeter solution, yielded a very stable, precise and temperature-independent system eight times as sensitive as the classical Frick's system in the 50 to 5000 rad range. The cemic dosimeters, promising for use in mixed radiation fields, respond nearly independently of LET.

B68-10504

SOLVING NONLINEAR HEAT TRANSFER CONSTANT AREA FIN PROBLEMS

SPER- INNOVATOR NOT Given /MARSHALL/ DATE- NOV. 1968

M-PS-14851

Tables and graphs were compiled for solving nonlinear heat transfer constant area fin problems. The differential equation describing one-dimensional steady-state temperature distribution and heat flow under three modes of heat transfer with heat generation was investigated.

B68-10506

DUAL PURPOSE CHAMBER-COOlNG SYSTEM

PARK, B. E. DATE- NOV. 1968

NRC-10607

Inexpensive, portable system was designed for cooling small environmental test chambers with a temperature-controlled gas stream evaporated from a cryogenic liquid. The system reduces the temperature of a chamber to any desired point in a fraction of the time required by previous systems.

B68-10508

COOLANTS WITH SELECTIVE OPTICAL FILTERING

CHARACTERISTICS FOR RUBY LASER APPLICATIONS


M-PS-20188

Coolant-filtering medium developed consists of a solution of copper sulfate in a 4-1 volumetric mixture of ethanol and methanol. This solution should be a useful addition to ruby laser systems, particularly in large pulse or Q switching applications.
aluminum plate with a contact surface equal in dimensions and configuration to those of the electronic installation. The method controls thermal output to simulate actual electronic component thermal output.

B68-10517
HEAT TRANSFER COEFFICIENTS FOR LIQUID HYDROGEN TURBOPUMPS
M-PS-10845
Empirical equations were derived to establish the appropriate heat transfer coefficients as functions of the temperature drops and heat transfer rates for a wide range of convective and boiling conditions at different locations in a liquid hydrogen turbopump.

B68-10519
HIGH CONDUCTANCE VAPOR THERMAL SWITCH
HUMAN, W. L. DATE- SEP. 1968
GSPC-10109
High conductance vapor thermal switch was produced to maintain heat dissipating component temperatures within acceptable limits. The switch is a self-actuating, automatic device that regulates the rate of heat flow to control.

B68-10521
TELESCOPE DOME CONTROL SYSTEM AUTOMATICALLY TRACKS SUN
CASSON, K. D. DATE- NOV. 1968
KSC-10666
Automatic control system is designed to rotate a dome so that a telescope, or other instrument, within the dome will continuously view the sun as the earth rotates.

B68-10533
A MASS FLOW PROBE FOR MEASUREMENT IN A SUPERSONIC STREAM
GLAVE, C. R. KEARSE, L. M. DATE- DEC. 1968
LEWIS-10665
Probe consists essentially of a tube with a supersonic inlet pointed into the gas stream. The mass flow rate through the tube is determined at a flow measuring station.

B68-10566
IMAGING SLITLESS SPECTROMETER FOR X-RAY ASTRONOMY
GURNEY, R. SHEPHERD, T. / ARN. SCI. AND ENG. / DATE- NOV. 1968
M-PS-14309
Imaging slitless spectrometer, a combination of an x ray transmission/ or reflection/ grating and image-forming x ray telescope, is capable of obtaining simultaneous spatial and spectral information about celestial x ray sources.

B68-10568
ONE-DIMENSIONAL COULOMB-DAMPED WAVE MOTION IN PRISMATIC BARS
TOLAND, D. B. / DATE- DEC. 1968
M-PS-14815
Study analyzes wave motions in prismatic bars with Coulomb damping, using Laplace transform as an aid in solving the partial differential equations. The results are detailed.

B68-10556
ELECTRON BEAM RECISTALIZATION OF AMORPHOUS SEMICONDUCTOR MATERIALS
SIMPSON, J. C. JR. DATE- DEC. 1968
LEWIS-10443
Nucleation and growth of crystalline films of silicon, germanium, and cadmium sulfide on substrates of plastic and glass were investigated. Amorphous films of germanium, silicon, and cadmium sulfide on amorphous substrates of glass and plastic were converted to the crystalline condition by electron bombardment.

B68-10560
SHORTENED PROCEDURE FOR OBTAINING REPRODUCIBLE COPIES OF 35 MM COLOR SLIDES
LEVINE, F. / BOEING CO. / DATE- DEC. 1968
KSC-09957
Technique to reduce the steps required to obtain reproducible copies of 35 mm color slides has been developed. A 35 mm slide is projected directly onto a xerox plate, eliminating the necessity to produce a film positive of the slide.

B68-10564
REFLECTIVELY PULSED, WAVELENGTH-SELECTIVE CARBON DIOXIDE LASER
HANST, P. L. DATE- NOV. 1968
M-PS-10178
Carbon dioxide laser as a simple portable unit generates coherent light pulses at selected infrared wavelengths. The improved laser was designed for the detection of air pollutants but can be applied to optical communications.

B68-10569
ACCURATE DIGITAL TECHNIQUE SIMULATES FLIGHT CONTROL SYSTEM
HAYES, R. / BOEING CO. / DATE- NOV. 1968
M-PS-14788
Fast, accurate technique for simulating the Saturn Flight Control System was devised. The technique is simple to implement and can be readily substituted for slower or less accurate techniques. This technique can be applied to a large class of problems that require a rapid accurate calculation of the response of linear differential equations to a continuous input.

B68-10570
IMPROVED TECHNIQUE FOR DIGITAL SIMULATION OF BENDING AND SLOSH PHENOMENA
STAFFORD, R. / BOEING CO. / DATE- NOV. 1968
N-PS-14788
Mathematical model representation of bending and slosh phenomena in the Saturn vehicle results in linear second order differential equations. Improved technique was developed to provide a real-time digital solution of the equations. The technique may also be applied to nonlinear digital simulations, resulting in savings of digital computer time.

B68-10571
CORRECTION FOR LOSSES IN OPTICAL BIREFRINGENT NETWORKS. A CONCEPT
ARMAN, E. O. / SYLVANIA ELECTRIC PROD. / DATE- NOV. 1968
M-PS-12060 AND B68-10275
Technique determines the effects of losses upon the performance of a birefringent network and shows how the desired amplitude transmission of the network may be corrected /or predistorted/, prior to synthesizing the birefringent network, to prevent the effects of crystal losses.

B68-10574
TRAINING MANUAL ON OPTICAL ALIGNMENT INSTRUMENTS
SPOER- INNOVATOR NOT GIVEN / MARSHALL / DATE- DEC. 1968
N-PS-20292
Training Manual E045/5 provides a basic course of instruction in the use of optical instruments for precise dimensional control and alignment of structural elements and assemblies, such as associated with space vehicles, aircraft, ships, and buildings.

B69-10001
SHORTENED PROCESSING TIRE TECHNIQUE FOR COLOR INDUSTRIAL RADIOGRAPHY
LAFRANCE, N. F. DATE- JAN. 1969
ARG-10235
Improved processing method reduces time required to generate a color radiograph. Prior to, or after exposure to penetrating radiation, the emulsion side of the film is flashed to a colored light which produces the hue changes in the processed radiograph. Agitation of the film during processing assures uniformity of results.

B69-10002
ISOHERMAL DROE CALORIMETER PROVIDES MEASUREMENTS FOR ALPHA ACTIVE, PYROPHORIC MATERIALS
SAYLOR, H. DATE- JAN. 1969
ARG-10186
Isothermal drop calorimeter measures the heat content of intensely alpha active and pyrophoric materials in inert atmospheres. It consists of a furnace, calorimeter, and aluminum isothermal jacket contained within an inert-atmosphere glove box, which permits the use of unencapsulated materials without exposing personnel to alpha contamination.

B69-10003
DAUGHTER GROWTH IN FRESHLY SEPARATED
BA-226, AC-227 AND U-232
BASIL, L. J. MACHL, E. S. MILSTEAD, J.
STEWART, D. C. DATE- JAN. 1969 REAN- SEE ALSO
ANL-7205
ARG-10226
Report provides computer-calculated curves and tables for the daughter buildup of Ra-226, Ac-227 and B-232 chains. Data are presented as a function of time beginning with pure samples of each parent. The information may be of interest to those using decay chains as isotopic alpha sources or neutron sources.

B69-10005
GE-DIODE DETECTOR COMBINED WITH
CRYSTAL-DIFFRACTION SPECTROMETER FIXTURES
HIGH-RESOLUTION GAMMA RAY SPECTROSCOPY
NAMESO, A. I. SMIEH, R. K. DATE- JAN. 1969
ARG-10190
Crystal-diffraction spectrometer, combined with a lithium-drifted Ge-diode detector, performs high-resolution gamma spectroscopy on the complicated neutron-capture gamma ray spectra. The system is most useful in the 1-3 MeV energy range and improves the signal to background ratio.

B69-10011
NONDISPERSE X-RAY EMISSION MEASUREMENTS FOR
GEOCHEMICAL EXPLORATION
ADLER, I. LAMOTHE, E. S. SCHMACHECK, E. TROMBA, J. L. /LAB. FOR THEORET. STUDIES/ SCHMACHECK, E. /BELAR, INC./ DATE- JAN. 1969
GSP-10568
Non-dispersive X ray emission technique uses lightweight, and rugged X ray fluorescence units. The X ray pulse-height spectra is excited by radioactive isotopic sources. The technique is applicable for quantitative and qualitative analyses on complex chemical systems, and satisfies the goals for a lunar geochemical exploration device.

B69-10017
VARIABLE-BASED METHOD OF SOLVING
DIFFERENTIAL EQUATIONS
VAN WYK, R. /NA. ROCKWELL CORP./ DATE- FEB. 1969
NFO-10515
Multistep predictor-corrector method for numerical solution of ordinary differential equations retains high local accuracy and convergence properties. In addition, the method was developed in a form conducive to the generation of effective criteria for the selection of subsequent step sizes in step-by-step solution of differential equations.

B69-10020
METHOD OF MAKING CONICAL FIBER OPTICAL
COMPONENTS
BAILEY, J. M. CAPPELLA, D. P. /OPTICS
TECHNOL./ DATE- FEB. 1969
XMP-09745
Improved method for producing fused-fiber optical components is described. These components have a frustrum-conical shape and provide high-quality light transmission with high resolution capabilities. Fiber optical components can be used in precision optical systems, such as in certain camera applications.

B69-10024
BEAM PROFILES MEASURED WITH
THEROLUMINESCENCE DOSEMETERS
LUCS, E. MACOMITZ, S. M. WHEELER, R. W. DATE- FEB. 1969 REAN- SEE ALSO ANL-7196
ARG-10229
Beam profilerometer, using theroluminescent dosimeters, gives a quantitative and qualitative representation of the focus of an external proton beam of a synchrotron. The total number of particles in the beam, particle distribution, and the shape of the beam are determined.

B69-10028
GAGE MEASURES TOTAL RADIATION, INCLUDING
VACUUM UV, FROM IONIZED HIGH-TEMPERATURE
GASES
WOOD, A. D. /LOCKHEED MISSILES AND SPACE CO./ DATE- JUL. 1963
XMP-09602
Transient-heat transfer gage measures the total radiation intensity from vacuum ultraviolet and ionized high temperature gases. The gage includes a sensitive piezoelectric crystal that is completely isolated from any ionized flow and vacuum ultraviolet irradiation.

B69-10042
INSTABILITIES ENCOUNTERED DURING HEAT
TRANSFER TO A SUPERCRITICAL FLUID
BASINS, C. DATE- FEB. 1969 REAN- SEE ALSO
ANL-7053
ARG-10260
Investigation was made of the unstable behavior of a heat-transfer loop operating at a supercritical pressure. Natural convection operation of the loop, with observations on acoustic and slow oscillatory behavior, was emphasized during testing. The basic cause of both types of behavior appeared to originate in the heated boundary layer.

B69-10043
PROPAGATION OF DENSITY DISTURBANCES IN
AIR-WATER FLOW
BASINS, C. DATE- FEB. 1969 REAN- SEE ALSO
ANL-7053
ARG-10260
Study investigated the behavior of density waves propagating vertically in an atmospheric pressure air-water system using a technique based on the correlation between density change and electric resistivity. This information is of interest to industries working with heat transfer systems and fluid power and control systems.

B69-10047
ANALYSIS OF TRANSIENT THERMAL STRESS IN
HEAT-GENERATING PLATES AND HOLLOW CYLINDERS
CAUSED BY SUDDEN ENVIRONMENTAL TEMPERATURE
CHANGES
ROOGBERG, G. S. SCHULCH, E. D. F. VALENT, R. A. DATE- FEB. 1969 REAN- SEE ALSO ANL-7294
ARG-10274
Analysis and solution are presented for transient thermal stresses in a free heat-generating flat plate and a free, hollow-generating cylinder as a result of sudden environmental temperature changes. The technique used and graphical results obtained are of interest to the heat transfer industry.

B69-10057
DEWPPOINT TEMPERATURE INVERSIONS ANALYZED
BEANB, W. C. /SOUTHERN ILLINOIS UNIV./ BOSSB, R. A. MOSES, R. DATE- MAR. 1969
ARG-10316
Depletion temperature inversion, with regard to other simultaneous meteorological conditions, was examined to establish the influence of meteorological variables on the variation of dewpoint temperature with height. This report covers instrumentation and available data, all the climatological features of dewpoint inversions, and specific special cases.

B69-10060
OPTICALLY EXCITING A MAGNETIC MEMORY - A
FEASIBILITY STUDY
HURSHE, F. L. BROS, J. E. /GEORGIA INST. OF
TECH./ DATE- MAR. 1969
IF-SI-19858
Rare earth iron garnets were used in experiments to determine the feasibility of optically pumping a magnetic material to effect the switching process. It was found that these garnets are limited by an absorption edge, only terbium

02 PHYSICAL SCIENCES (ENERGY SOURCES)
and dysprosium offer a possibility of pumping at energies below the conduction band edge.

B69-10075
SELECTIVE VIGNETTING OF TYPE 1 X-RAY TELESCOPES
RANGS, J. DATE- MAR. 1969
GSFC-10262
Selective vignetting technique optimizes the performance of a Type 1 x-ray telescope. The average quality of the telescope system is improved by matching the detector to the optimum focal surface and by vignetting rays which formerly contributed to the flare in cosmic images.

B69-10077
ROCKET SONDE MEASUREMENTS OF OZONE IN THE UPPER ATMOSPHERE
EILLENBAH, R. DATE- MAR. 1969
GSFC-10508
Rocket sonde measurement of ozone content in the mesosphere and stratosphere is accomplished by an in situ determination of the ozone mixing ratios as a function of altitude from approximately 65 km to 20 km. A chemiluminescent detector is used as an ozone sensor.

B69-10078
STUDY OF LATTICE DEFECT VIBRATION
ELLIOTT, R. J. DATE- MAR. 1969 REAN- SEE ALSO
ANL-7257
ARG-10221
Report on the vibrations of defects in crystals relates low defects, well localized in a crystal but interacting strongly with the other atoms, change the properties of a perfect crystal. The methods used to solve defect problems relate the properties of an imperfect lattice to the properties of a perfect lattice.

B69-10080
THE RESPONSE OF NONENERGETIC GAMMA RAYS IN FINITE MEDIA ARE INVESTIGATED
SMOK, W. J. DATE- MAR. 1969 REAN- SEE ALSO
ANL-7114
ARG-10295
In a study of the transport of radiation in matter, the response parameters of nonenergetic gamma rays incident on various materials with finite geometries were calculated on a CDC 3600 computer. The report includes results for gamma rays normal to cylindrical germanium and silicon detectors.

B69-10082
AN ULTRASONIC METHOD FOR STUDYING ELASTIC MODULI AS A FUNCTION OF TEMPERATURE
PETHESON, R. G. DATE- MAR. 1969 REAN- SEE ALSO
ANL-7126
ARG-10167
Ultrasonic method is used to determine the elastic moduli of materials used in components of high-temperature nuclear reactors. An ultrasonic, pulse-echo technique determines the velocity of sound waves propagating in a heated region of rod-shaped specimens. From these velocities, the elastic moduli are calculated.

B69-10089
NUMERICAL INTEGRATION OF ORDINARY DIFFERENTIAL EQUATIONS OF VARIOUS ORDERS
GEAR, C. W. /ILLINOIS UNIV./ DATE- APR. 1969
REAN- SEE ALSO ANL-7126
ARG-10267
Report describes techniques for the numerical integration of differential equations of various orders. Modified multistep predictor-corrector methods for general initial-value problems are discussed and new methods are introduced.

B69-10091
LIQUID-METAL HEAT TRANSFER IN A COCURRENT-FLOW, DOUBLE-PIPE HEAT EXCHANGER IS INVESTIGATED
HERREBR, R. L. DATE- APR. 1969 REAN- SEE ALSO
ANL-7056
ARG-10261
Analysis of liquid-metal heat transfer in cocurrent-flow, double-pipe heat exchangers shows that heat-transfer coefficients depend upon the operating conditions of the heat exchanger and that use of the customary design equation to predict heat-exchanger performance leads to significant errors.

B69-10099
ACTIVE FREQUENCY CONTROL SYSTEM FOR ARGON FM LASER
SPOR- INNOVATOR NOT GIVEN /SYLVANIA BLEC.
PRODUCTS/ DATE- JUN. 1969
N-PS-14988
Frequency control system positions mirrors at either end of the laser cavity so the mirror separation is independent of thermal and acoustical fluctuations. A small portion of the laser output is split and directed upon a photodetector /photodiode/.

B69-10102
FAST FRAMING CAMERAS PROVIDE HIGH-SPEED MULTI-CHANNEL DATA RECORDING
DE VOLP, A. DATE- APR. 1969
ARG-10252
Fast-framing cameras record data obtained by a multichannel hodoscope which monitors reactor physics experiments. The cameras provide high rates of data acquisition at low equipment cost.

B69-10107
OCCULTING-FILTER METHOD FOR OBTAINING FLASHING-LIGHT VISIBILITY DATA
HARD, A. C. ZAPF, K. /EIT/ DATE- APR. 1969
MSC-13097
Oculting-filter technique allows several types of flashing-light visibility data necessary for rendezvous and docking maneuvers, to be obtained for studying the perception of flashes at the visual threshold. The indications are that the method can be used to compare sources of radically different spectral composition.

B69-10112
PREDICTION OF FRICTION COEFFICIENTS FOR GASES
TAYLOR, S. F. DATE- MAY 1969 REAN- SEE ALSO
NASA-TB-3-267
LEWIS-10774
Empirical relations are used for correlating laminar and turbulent friction coefficients for gases, with large variations in the physical properties, flowing through smooth tubes. These relations have been used to correlate friction coefficients for hydrogen, helium, nitrogen, carbon dioxide and air.

B69-10122
FLOURESCENT PHOTOGRAPHY OF SPRAY DROPLETS USING A LASER LIGHT SOURCE
GREENHUG, J. /WISCONSIN UNIV./ BIBYASH, M.
DATE- MAY 1969
LEWIS-10777
Monochromatic laser emission transformed by a fluoroscopic process into droplet emission over a wavelength band provides high light intensities for obtaining adequate time resolution to stop droplet action in photographic spray studies. Experiments showed that the Q switched laser-optical harmonics generator combination produced sharp, well-exposed droplet images.

B69-10142
IMPROVED COMBUSTION CHAMBER OPTICAL PROBE
WALKER, J. /TV AEROSPACE CORP./ DATE- MAY 1969
MSC-10953
Optical inspection probe permits remote inspection of combustion chambers through 360 degrees, and is fully controllable in terms of elevation, focus, and sweep. It eliminates the hazards of physically entering combustion chamber interiors and threats of rocket engines for inspection.

B69-10165
LASER MICROPROBE FACILITY USED IN THE ELEMENTAL ANALYSIS OF SMALL FEATURE OF A SAMPLE
BALDWIN, J. M. /IDAHO NUCL. CORP./ DATE- JUN. 1969
REAN- SEE ALSO CS-1121
ARG-10359

106
Laser microprobe facility is effective in the elemental analysis of small areas of heterogeneous samples. The instrument uses the focused beam of a pulsed laser to evaporate a small volume of material from a relatively massive sample.

**02 PHYSICAL SCIENCES (ENERGY SOURCES)**

**B69-10166**

**ION-RETARDING LENS IMPROVES THE ABUNDANCE SENSITIVITY OF TANDEM MASS SPECTROMETERS**

KAISER, K. A. STEVENS, C. M. DATE: JUN. 1969

BEAN- SEE ALSO ANL-7393

B69-10365

Ion-retarding lens which increases the abundance sensitivity of tandem magnetic-analyzer mass spectrometers measures isotopes of low abundance in mass positions adjacent to isotopes of high abundance. The lens increases the abundance sensitivity for isotopes lying farther from high abundance isotopes than the energy cutoff of the lens.

**B69-10167**

**PRIMARY RADICAL YIELDS IN PULSE IRRADIATED ALKALINE AQUEOUS SOLUTION**

FIELDEN, E. M. HART, E. J. DATE: JUN. 1969

ARG-10322

Primary radical yields of hydrated electrons, H atoms, and OH radicals are determined by measuring hydrated electron formation following a 4 microsecond pulse of X rays. The pH dependence of free radical yields beyond pH 12 is determined by observation of the hydrated electrons.

**B69-10172**

**DETECTION OF MOLECULAR INFRARED SPECTRA**

SWANSON, L. W. /FIELD EMISSION CORP./ DATE: JUN. 1969

NC-10377

Total Energy Distribution/TED/measurements of field emitted electrons detect molecular infrared spectra of adsorbed molecules. Tunneling electron gives up energy to excite various modes of adsorbed molecule. These electrons, when energy-analyzed, show up on the collector and exhibit the spectra of various modes excited by tunneling electrons.

**B69-10198**

**PLASMA-HEATING BY INDUCTION**

HARRINGTON, K. HUMPHREYS CORP./ THORPE, N. L.

DATE- JUL. 1969

LEWS-10528

Induction-heated plasma torch operates with an input of 1 MW of direct current of which 71 percent is transferred to the plasma and the remainder is consumed by electrical losses in the system. Continuous operation of the torch should be possible for as long as 5,000 hours.

**B69-10199**

**A PROTOTYPE HIGH POWER PORTABLE LAMP**

SAMIS, J. A. /KICHTOOL, INC./ DATE: JUN. 1969

F-PS-25229

Portable lighting system serves the combined work and photographic needs of manned spacecraft efforts. This system enables the lamp to be momentarily brightened while the camera shutter is opened. The brightness is adequate for black and white or color photography and yet the increased heat load is nil.

**B69-10193**

**RECTANGULAR-BORE, HIGH-GAIN LASER PLASMA TUBE**

MOLOO, E. A. / PENNSYLVANIA STATE UNIV./ DATE: JUN. 1969

B-P-10234

Rectangular-bore tube improves population inversion obtained from upper and terminal laser states, resulting in a significant increase in unsaturated gain factor. Radial field produces efficient pumping of upper laser state. Narrow tube dimensions cause increase in electrical flow of neon in metastable states to tube walls.

**B69-10194**

**STUDIES OF CYCLES FOR LIQUID- METAL MAGNETOHYDRODYNAMIC GENERATION OF POWER**

LEE, K. PETRICK, M. DATE: JUN. 1969 BEAM- SEE ALSO ANL-6954

B69-10250

Studies of liquid-metal magnetohydrodynamic power cycles indicate that the overall efficiency of a binary cycle, employing a liquid-metal topping cycle and a bottoming steam cycle, may reach 60 percent. Details of analyses and data on cycles are presented, and the commercial potential of the binary cycle is discussed.

**B69-10201**

**ULTRA-HIGH-FLOW HEAT EXCHANGER**

TREES, D. /BN. AN. ROCKWELL CORP./ DATE: JUN. 1969

MT-PS-18135

Spherical depressions on the wall of the inner tube increase the heat flux in a concentric tube heat exchanger. Regularly spaced patterns of precisely formed depressions on the inner wall alleviate the film-binding phenomenon without significantly degrading the flow characteristics.

**B69-10204**

**SOME NUMERICAL METHODS FOR INTEGRATING SYSTEMS OF FIRST-ORDER ORDINARY DIFFERENTIAL EQUATIONS**

CLARK, W. W. DATE: JUN. 1969 BEAM- SEE ALSO

ARG-7428

B69-10328

Report on numerical methods of integration includes the extrapolation methods of Bulirsch-Stoer and Neville. A comparison is made with the Runge-Kutta and Adams-Moulton methods, and circumstances are discussed under which the extrapolation method may be preferred.

**B69-10210**

**IMPROVED LIQUID-LEVEL SENSOR FOR CRYOGENICS**

HYMAN, L. G. SHEPPARD, J. F. SPITKA, M. DATE: JUN. 1969

ARG-10162

Liquid-level indicator, consisting of a diode heated by a resistor, allows simultaneous use of two or three of the liquids nitrogen, hydrogen, and helium. Operation depends on strong temperature-dependence of the forward resistance of a germanium diode and the difference between liquid and vapor in heat-transfer properties.

**B69-10211**

**ANALYSES OF SILICON DIOXIDE, MAGNESIUM OXIDE, LEAD FLUORIDE, BISMUTH AS LOW-PASS VELOCITY FILTERS FOR NEUTRONS**

HOLLAND, P. DATE: JUN. 1969

ARG-10220

Transmission measurement of neutrons by filter materials for low energy neutrons is important for the study of structure and dynamics of condensed matter. Since only thermal neutrons are useful for such experiments, filter materials that transmit thermal neutrons while attenuating fast neutrons and gamma rays are of considerable interest.

**B69-10214**

**MULTICHANNEL ANALYZERS AT HIGH RATES OF INPUT**

BUDICK, S. J. STRAUS, M. G. DATE: JUN. 1969

ARG-10355

Multichannel analyzer, used with a gating system incorporating pole-zero compensation, pile-up rejection, and baseline-restoration, achieves good resolution at high rates of input. It improves resolution, reduces tailing and rate-contributed continuuim, and eliminates spectral shift.

**B69-10226**

**CAMERA MOUNT FOR CLOSE-UP STEREO PHOTOGRAPHS**

CLAUDE, P. H. DATE: JUN. 1969

LANGLEY-10682

Camera mount, adaptable to any camera, facilitates obtaining close-up stereo pairs of photographs. The basic mount can be used with an standard camera, or with a stereo camera. The design of the camera adapter can be varied to meet mounting requirements of the particular camera used.

107
Liquid Laser Cavities

Bjorcklund, S. /Lockheed Electron./ Filippescu, N. /GEO. Washington Uniy./ Kellerman, G. L. SC
Avot, N. /Date- Jul. 1969
GSFC-10592

Liquid laser cavities have plenum chambers at the ends of the capillary cell which are terminated in transparent optical flats. By use of these cavities, several new europium chelates and a terbium chelate can provide laser action in solution at room temperature.

Dual-Mode Operation of a Neutron Source, A Concept

Givens, W. W. /Michl, W. R., Jr. /Shell Oil Corp./ /Date- Jul. 1968
BQ-1016

Pulsed neutron source operates in conjunction with a photomultiplier tube coupled to a gamma ray scintillation crystal. This allows measurements of gamma radiation from both inelastic scattering and thermal neutron capture in a single experiment.

Tungsten Thermal Neutron Dosimeter

Ball, L. L. /Richardson, P. J. /Scheib, D. W.
Date- Aug. 1969
Lewis-10860

Tungsten-185 activity, which is produced by neutron activation of tungsten-184, determines thermal neutron flux. Radiochemical separation methods and counting techniques for irradiated tungsten provide accurate determination of the radiation exposure.

Channel-Wall Limitations in the Magnetohydrodynamic Induction Generator

Jackson, W. D. /mit/ Pierson, E. S. /Date- Jul. 1969
NSR- See also ANL-7148
ABG-10128

Discussion of magnetohydrodynamic induction generator examines the machine in detail and materials problems influencing its design. The higher upper-temperature limit of the MSD system promises to be more efficient than present turbine systems for generating electricity.

Concentrations of the Naturally Occurring Holtsman, R. B. /Date- Jul. 1969
ABG-10345

Study reveals naturally occurring radionuclides are ubiquitous and constitute a substantial fraction of the natural radiation dose to humans and various biota. Measurements may be useful in ecological and other biological problems such as tracing food chains of animals and study of the metabolism of these elements.

Multilayer Infrared Beamsplitter Film System

Bastien, R. C. /Perkin-Elmer Corp./ Heinrich, P. L.
Date- Aug. 1969
XGS-11036

Multilayer infrared beamsplitter film system on a potassium bromide crystal substrate is operational over a wavelength range of 2.5 to 25 microns with nearly equal broadband reflectance and transmission. It is useful in optical coating, vacuum deposition, radiometry, interferometry, and spectroscopy.

A Concept for Magazine Ekmat Processor

Park, C. H. /Boeing Co./ /Date- Aug. 1969
KSC-0676

Concept utilizes existing film magazines to process photographic film as the film is exposed. A standard magazine can be converted to a Bimat processor by adding three stainless steel rollers. All chemicals required for processing and fixing the negative are contained in the Bimat film.

Pneumatic Analog-to-Pulse Frequency Converter

Dustin, R. O. /Date- Aug. 1969
Lewis-10345

Pneumatic analog-to-pulse frequency converter circuit has output pulse frequency proportional to the pressure level of the input signal. Converter circuit drives a pneumatic stepping motor and is part of a pneumatic control system for nuclear powered spacecraft.

Automatic Bird Watcher

Fisler, J. J. /Frigerio, N. A. /Date- Aug. 1969
ARG-10362

Radioactive-nuclide system automatically monitors animals in the field, using radioactive tracers affixed to the animals, Geiger-Muller tube radiation detectors, and event-recorders. Four animals can be monitored simultaneously within a 32-m circle, with each animal as far as 1 m from its associated detector.

Improved First Order Interpolator

Andrews, C. A. /IBM Corp./ /Date- Aug. 1969
KSC-11085

Data compression method enables first order interpolator to operate at higher speeds. Method requires same number of additions and subtractions but fewer multiplications than the conventional method.

SemiAutomatic Inspection of Microfilm Records

Kletz, E. L. /RCA Service Co./ /Date- Aug. 1969
MeTs-20240

Semiautomatic machine inspects microfilm for deficiencies. Advantages of microfilm inspector are uniformity of inspection method, increased speed of inspection, and improved quality through elimination of scratches and finger marks.

Multipurpose Biocular Scanning Apparatus

Camelekin, P. R. /Parker, G. L. /Date- Aug. 1969
NFO-11002

Optical glimballing apparatus directs narrow fields of view throughout solid angle approaching 4 pi steradians. Image rotation produced by scanning can be eliminated or altered by gear trains directly linked to the scanning drive assembly. It provides the basis for a biocular scanning capability.

A Method for Predicting Interfacial Freezing of a Liquid Flowing over a Cold Surface

Saying, J. M. /Siegel, R. /Date- Aug. 1969
Lewis-10813

Instantaneous thickness of a frozen layer is a function of specific heat, heat of fusion, temperatures, the frozen layer thickness at equilibrium, the thermal conductivity, and heat transfer coefficient. The equation can be evaluated on a desk calculator.

Laser Action from a Terbium Beta-Ketochelate at Room Temperature

Bjorklund, S. /Lockheed Electronics Co./ Filippescu, N. /GEO. Washington Uniy./ Hurnt, C. J. /Kellerman, G. M. Avoy, N. /Date- Sep. 1969
GSFC-10592

Laser activity is achieved in a solution of terbium tris at room temperature in a liquid solvent of acetonitrile or p-dioxone. After precipitation, the microcrystals of hydrated tris chelate are filtered, washed in distilled water, and dried. They show no signs of deterioration after storage.

Restricted-Flow Junction between Liquids

Vango, S. P. /Date- Sep. 1969
NFO-16682

108
Allowing a liquid to seep through a long crack in glass provides means for restricting its flow for long periods without attention. The length of the crack prevents the plugging to which capillaries are susceptible.

B69-10336

PREFFERRED-ORIENTATION ANALYSIS OF POLYCRYSTALLINE MATERIALS

B69-10336

B69-10344

AN IMPROVED ATOMIC HYDROGEN FREQUENCY AND TIME STANDARD

RC GUNNAL, T. E. PETERS, H. E. DATE- SEP. 1969

USE OF A LARGE BULB, LONG-MULTIPOLE MAGNET, AUTOMATIC TUNER AND ALUMINUM CAVITY PROVIDES AN IMPROVED HYDROGEN MASER WHICH IS ACCURATE OVER LONG PERIODS OF TIME AND SUITABLE FOR TRACKING STATION ENVIRONMENTS.

B69-10356

IMPROVED VACUUM DEPOSITION APPARATUS

KESSENBACH, H. DATE- SEP. 1969

IMPROVED APPARATUS ENABLES VACUUM DEPOSITION OF THICK METAL FILMS ON THE INSIDE SURFACE OF A CYLINDER. THE EVAPORANT IS DEPOSITED TO A UNIFORM THICKNESS AND DISTRIBUTION ON THE INSIDE SURFACE OF THE SUBSTRATE WITHOUT IMPERFECTIONS THAT WOULD OTHERWISE RESULT FROM DROPLET FORMATION.

B69-10371

PREDICTION OF THERMAL RADIATION FROM A ROCKET'S EXHAUST PLUME

LUNDIG, C. B. /GENERAL DYNAMICS CORP./ DATE- SEP. 1969

DATA FROM ABSORPTION COEFFICIENTS AND FINE-STRUCTURE PARAMETERS MEASURED FOR WATER VAPOR HAVE BEEN INTEGRATED IN AN ANALYTIC PROGRAM USEFUL IN EVALUATING HEATING BY RADIATION FROM THE EXHAUST PLUME OF A LARGE ROCKET.

B69-10387

DIELECTRIC MATERIALS FOR USE IN THIN-FILM CAPACITORS


INVESTIGATION REPORT PRESENTS DETAILS OF DIELECTRIC PROPERTIES OF VARIOUS MATERIALS MEASURED AT 300 DEGREES K FOR THERMALLY EVAPORATED OXIDES FROM 300 TO 6000 A IN THICKNESS. IT IS RELEVANT TO THE DESIGN OF INTEGRATED CIRCUITRY.

B69-10405

IMPROVED METHOD OF OPTICAL DESIGN

HOWELL, R. J. /SPATIVI BAND CORP./ DATE- SEP. 1969

OPTICAL SYSTEM DESIGNED BY THIRD ORDER ABBERRATION THEORY IS SIGNIFICANTLY IMPROVED BY PLACING IT INTO A RAY DERIVATION DESIGN PROGRAM COPIED OF TWO DISTINCT COMPUTER PROGRAMS. TESTS WERE CONDUCTED ON TELESCOPE SYSTEMS, AN ULTRAVIOLET RELAY LENS, AND A FOUR-LENS CORRECTOR SYSTEM.

B69-10411

HYDROGEN FLASH LAMPS STUDIED

BENSON, M. J. BEERMAN, I. B. STEINMAGEN, G. J. DATE- SEP. 1969

PARAMETERS OF GAS PRESSURE, TYPE OF GAS, TUBE VOLUME, AND ELECTRODE GAP ARE TESTED ON THE INTENSITY AND SHAPE OF A RADIATION PULSE FROM A HYDROGEN-FILLED LAMP.

B69-10415

NUMERICAL INVERSION OF FINITE TOEPLITZ MATRICES AND VECTOR TOEPLITZ MATRICES

RAEISSI, E. H. DATE- SEP. 1969

NUMERICAL TECHNIQUE INCREASES THE EFFICIENCY OF THE NUMERICAL METHODS INVOLVING TOEPLITZ MATRICES BY REDUCING THE NUMBER OF MULTIPLICATIONS REQUIRED BY AN N-ORDER TOEPLITZ MATRIX FROM N-CUBED TO N-SQUARED MULTIPLICATIONS. SOME EFFICIENT ALGORITHMS ARE GIVEN.

B69-10421

CONCEPT FOR IMPROVED VACUUM MEASURING DEVICE

SLIFER, D. R. /ELECTRO-OPTICAL SYSTEMS, INC./ DATE- SEP. 1969

TO MEASURE VACUUM PRESSURES IN THE RANGE OF 5 TIMES 10 TO THE MINUS 7 TO 5 TIMES 10 TO THE MINUS 16, A SEMICONDUCTOR RESISTOR COMPOSED OF SINTERED ZINC OXIDE IS USED. THROUGH THE EFFECT OF SURFACE ABSORBED GASES ON THE RESISTANCE OF THE SEMICONDUCTOR MATERIAL, VERY LOW PRESSURES ARE MEASURED.

B69-10428

BOOT-CURING AND GENERAL ROOT-POWERING METHODS FOR FINDING THE ZEROS OF POLYNOMIALS

RAEISSI, E. H. DATE- SEP. 1969

MATHEMATICAL ANALYSIS TECHNIQUE GENERALIZES A ROOT SQUARING AND ROOT CUBING METHOD INTO A GENERAL ROOT POWERING METHOD. THE INTRODUCTION OF PARTITIONED POLYNOMIALS INTO THIS GENERAL ROOT POWERING METHOD SIMPLIFIES THE CODING OF THE POLYNOMIAL TRANSFORMATIONS INTO INPUT DATA SUITABLE FOR PROCESSING BY COMPUTER. THE METHOD INCLUDES ANALYTIC FUNCTIONS.

B69-10429

WALL-THICKNESS CHANGES PREDICTED IN HOLLOW-DRAWN TUBING

FISK, J. H. RUBA, T. /NORTHWESTERN UNIV./ DATE- SEP. 1969

HOLLOW-TUBE DRAWING OR TUBE SINKING THEORY IS BASED ON THE CONCEPT OF CONTINUOUS DISTRIBUTION OF DISLOCATIONS. MATERIAL COMPOSITION, PARAMETER INFLUENCE, AND DIE-ANGLE ARE DETERMINING FACTORS IN DERIVATION OF THE THEORETICAL MODEL.

B69-10431

ENERGY- STORAGE OF A PRESCRIBED IMPEDANCE

SMITH, W. B. DATE- SEP. 1969

GENERAL MATHEMATICAL EXPRESSION FOUND FOR ENERGY STORAGE SHOWS THAT FOR LINEAR, PASSIVE NETWORKS THERE IS A MINIMUM POSSIBLE ENERGY STORAGE CORRESPONDING TO A PRESCRIBED IMPEDANCE. THE ELECTROMAGNETIC ENERGY STORAGE IS DETERMINED AT DIFFERENT EXCITATION FREQUENCIES THROUGH ANALYSIS OF THE NETWORKS TERMINAL AND REACTANCE CHARACTERISTICS.

B69-10444

OCULOMETERS FOR REMOTE TRACKING OF EYE MOVEMENT

RASON, K. A. /HYDROTELL, INC./ MERCURY, J. DATE- MARCH 1969

Prototype oculometer which tracks lateral eye position and measures the direction of the eyes optical axis, pupil size, and blink occurrence performs measurements on the subject on a
real-time basis from a remote location.

B69-10446

METHOD FOR PREDICTING PUMP CAVITATION PERFORMANCE

MOORE, R. EUGGER, R. DATE- SEP. 1969

LEWIS-10916

Method requires the availability of two sets of appropriate data for each pump to be analyzed. At least one set of the data must provide measurable thermodynamic effects of cavitation.

B69-10447

CROSSED-BEAM TECHNIQUE FOR MEASURING HORIZONTAL WINDS

HARTBY, W. B. /AERO-ASTRODYNAMICS Lab./ DATE- SEP. 1969

R-FS-20160

Three ground-based single-beam detectors determine wind vectors present within a given volume. Winds approximately constant near a selected height, blowing into or out of a 90 degree arc can be calculated with reasonably small error.

B69-10462

METHOD FOR DETERMINING PROPERTIES OF MICROWAVE STABILITIES OF A MAGNETIZED PLASMA

CALLEN, J. B. /MIT/ MC CUNE, J. E. DATE- DEC. 1969

 strengths of a magnetized plasma

B69-10466

PROBED ACcouSTO-OPTIC FILTER

HARRIS, S. E. /STANFORD UNIV./ DATE- SEP. 1969

R-FS-20460

Narrow band optical filter is electronically tunable over a large wavelength region. The filter utilizes collinear acousto-optic diffraction in an optically anisotropic media.

B69-10467

DAMPING OF THERMOELASTIC STRUCTURES

GILLIS, W. R. DATE- SEP. 1969

R-FS-20002

Report ascertains the effects of thermoelastic damping on the propagation of longitudinal waves in cylindrical rod. Results of results of wave propagation in unbounded elastic solids and in elastic cylinders precede consideration of thermal modification of elastic properties.

B69-10469

PIEZOELECTRIC LINEAR ACTUATOR

LEHNER, S. /ASTROSYSTEMS INTERNATIONAL INC./ DATE- OCT. 1969

M-SC-13194

It actuator exerts linear force that is controllable and reproducible to micron-inch tolerance. It is constructed for extremely accurate control of a valve but can also be used as a variable venturi meter, micropositioner, microthruster, and in fluidics and reaction-control systems.

B69-10504

REPORT ON A CRYOGENIC CYTROSCOPE

NARDING, J. T. DATE- OCT. 1969

M-PC-11200

Report summarizes the principal problems encountered in sphere fabrication, magnetic field lossless in superconductors, configurations for supporting field, damping oscillations, refrigeration, techniques for accelerating the sphere, read-out, and testing the stability of the gyro.

B69-10508

METHOD OF DIRECTING A LASER BEAN WITH VERY HIGH ACCURACY

ALLEN, L. S. SHIENATE, M. S. WESTPHAL, J. A. DATE- OCT. 1969

NPG-11087

System will collimate and direct an argon laser beam with high angular tracking accuracy at objects on the moon's surface. It can be adapted to missile and satellite tracking.

B69-10510

ION MASS SPECTROMETER FOR SPECIAL USES

ABBASON, E. H. /TRW, INC./ FREEDRICKS, R. W. DATE- OCT. 1969

R-10416

Prototype of curved-electrode, Paul-type, quadrupole, electron-mass filter has the mass-resolution and transmission-factor properties expected from both theoretical considerations and results of experiments using linear quadrupole features.

B69-10520

A NEW METHOD FOR THE DETERMINATION OF PARTICULATE CONTAMINATION LEVELS FOR SURFACE CLEANLINESS OF FLUID SYSTEMS

SPON- INNOVATOR NOT GIVEN /HARTYS INTERN. CORP./ DATE- NOV. 1969

M-SC-10267

Levels of contamination in fluid systems can be determined by a definition of a particle by a mathematical model, a method for calculating the tolerance limits of contamination, and an estimation of the probability that the contamination on the surface will migrate with the fluid in the system.

B69-10528

DESIGN AND SPARING TECHNIQUES TO MET SPECIFIED PERFORMANCE LIFE

HOLSTAD, A. J., JR. /GE/ DATE- OCT. 1969

R-10200

Specified performance life technique starts with the general description of what is wanted, defines in block diagrams the operational needs, and then defines the functional systems required. The technique is similar to a truncated reliability model, but the calculation is simplified by use of a Poisson distribution approach to failure probability.

B69-10529

A NEW METHOD FOR PRODUCING OPTICAL MIRRORS

NABIL, D. A. /PERKIN-ELMER CORP./ VRABEL, J. DATE- OCT. 1969

R-10227

Pure siliccon improves optical mirrors for use in telescopes and high resolution optical systems. Pure silicon is used in both mirror and substrate in environments where large thermal changes occur. It has applicability in astronomical devices.

B69-10541

CRYOGENIC FLUID FLOW INSTABILITIES IN HEAT EXCHANGERS

SHEPP, R. B. /GE/ STAUB, F. W. DATE- OCT. 1969

M-PC-20438

Analytical and experimental investigation determines the nature of oscillations and instabilities that occur in the flow of two-phase cryogenic fluids at both subcritical and supercritical pressures in heat exchangers. Test results with varying system parameters suggest certain design approaches with regard to heat exchanger geometry.

B69-10554

MINIATURIZED HIGH-RESOLUTION MASS/CHARGE SPECTROGRAPH /DESIGN STUDY/

TAYLOR, E. L. /ELECTRO-OPTICAL SYSTEMS/ DATE- OCT. 1969

M-SC-13270

Use of a double-focusing mass/charge spectrograph weighing less than 25 pounds is feasible for solar wind experiments. Instrument has a parallel-plate energy filter between the ion source and the double focusing units which stabilizes the problems of designing an ion source of small energy spread.

B69-10556

MODIFIED CRYOGENIC STORAGE TANK SUBSYSTEM

BURNS, W. J. /BOIXING CO./ ROBERTS, B. H. DATE- OCT. 1969

110
External spray distribution header is put into a liquid hydrogen vaporizer. When connected to the cryogenic material, it equalizes cooling around the circumference of the inlet header.

KSC-10380

A THEORETICAL STUDY OF RADAR BACKSCATTER FROM DISTRIBUTED TARGETS WITH EMPHASIS ON POLARIZATION DEPENDENCE

HOUTEN, J. P. /LOCKHEED MISSILE AND SPACE CO./

DATE- NOV. 1969

Mathematical framework for the electromagnetic scattering from random extended targets, such as terrain and sea surface, encompasses both power scattering and signal depolarization. It incorporates specular treatment of electromagnetic scattering as well as the electrical properties represented by surface impedance and polarization dependence.

B69-10562

MOLECULAR RADIATION - ITS APPLICATION IN PHYSICAL MEASUREMENTS AND ANALYSES

SPCR- INNOVATOR NOT GIVEN /MARRS ALL SPACE FLIGHT CENTER/

DATE- OCT. 1969

Specialists Conference held at Marshall Space Flight Center reviewed work in molecular radiation to evaluate research possibilities in this field. Topics included spectral-line studies in the laboratory, application to practical heat transfer calculations of radiative transfer models, and use of measured radiation properties of gases.

B69-10563

WATER-GLYCOL SYSTEM VOLUME CALCULATION

LILLEY, B. /N. AM. ROCKWELL CORP./ SCHAEDLE, G. C.

DATE- OCT. 1969

Two methods calculate the volume of a thermodynamic system. Integral method uses an iterative solution to determine volume based on constants of liquid mass and gas mass. Differential method approximates volume by its initial values plus first-order differential changes in volume as functions of temperature and pressure.

B69-10577

FREQUENCY DOMAIN ANALYSIS AND SYNTHESIS OF LUMPED PARAMETER SYSTEMS USING NONLINEAR LEAST SQUARES TECHNIQUES

HAYS, C. E. /BOEING CO./

DATE- DEC. 1969

Lumped parametric system models are simplified and computationally advantageous in the frequency domain of linear systems. Nonlinear least squares computer program finds the least square best estimate for any number of parameters in an arbitrarily complicated model.

B69-10591

A POLAR GRAPHIC METHOD FOR DETERMINING THE ATTITUDE OF ROCKET VEHICLES

MILLER, C. F., JR. /AM. DOE./

DATE- OCT. 1969

Graphic method of determining rocket attitudes by plotting data obtained by fluxgate magnetometers and solar aspect sensors utilizes polar coordinates. Polar graph paper is used to represent either the horizon system of altitude and azimuth or the celestial system of declination and right ascensions.

B69-10598

AIRBORNE STEINHELM LINE DISCRIMINATOR

GABRIEL, R. C. /PERKIN-ELMER CORP./ MARELE, D. A.

DATE- NOV. 1969

Airborne Steinhelm Line Discriminator enables prospecting for fluorescent materials, hydrography with fluorescent dyes, and plant studies based on fluorescence of chlorophyll. Optical unit design is the coincidence of Steinhelm lines in the solar spectrum occurring at the characteristic wavelengths of some fluorescent materials.

B69-10604

EXPERIMENTAL DESIGN FOR RESEARCH ON SHOCK-TURBULENCE INTERACTION

BADCLIFFE, S. M. /WLY Labs./

DATE- NOV. 1969

Report investigates the production of acoustic waves in the interaction of a supersonic shock and a turbulence environment. The few stages of the investigation are apparatus design, development of instrumentation, preliminary experiment, turbulence generator selection, and main experiments.
B69-10663
FINE-LINE SENSITIVITY FOR HOLOGRAPHIC INTERFEROMETERS
REBLINGER, L. O. /TRW SYSTEMS GROUP/ DATE- NOV. 1969

Improvement in sensitivity of holography, the technique of lensless interferometry, is obtained by enhancing the higher-order structure in the interferograms. By using the light diffracted into higher orders than the first, phase sensitivity is increased over the first order sensitivity by a factor equal to the order number used.

B69-10678
ELECTRON INTERACTION IN MATTER
DANCE, W. E. /ATT RES. CENTERS/ DATE- DEC. 1969

Data on the scattering of 1-Mev electrons in aluminum for the case of non-normal incidence, electron-bremsstrahlung cross-sections in thin targets, and the production of bremsstrahlung by electron interaction in thick targets, are presented both in tabular and graphic form. These results may interest physicists and radiologists.

B69-10673
LONG RANGE HOLOGRAPHIC CONTOUR MAPPING CONCEPT
BROOKS, R. B. /TW SYSTEMS GROUP/ DATE- DEC. 1969

Plan for generating a two dimensional contour map of a distant object with range contour intervals of a few millimeters to a few inches is accomplished by using a laser light source which has a periodically varying coherence function to form a hologram of the object.

B69-10670
HANDGUIDE HIGHLIGHTING THE FUNDAMENTALS OF NUCLEAR AND ATOMIC PHYSICS
BAILEY, D. F. /WESTINGHOUSE ASTROPHYSL. LAB./ DATE- DEC. 1969

Indoctrination document presents nuclear, reactor, and atomic physics in an easy, straightforward manner. The entire subject of nuclear physics, including atomic structure, ionization, isotopes, radioactivity, and reactor dynamics is discussed.

B69-10707
TECHNIQUE FOR PREDICTING THE THERMAL EXPANSION COEFFICIENTS OF CHROMIUM-NICKEL ALLOYS
CLARK, A. P. /INSTR. FOR BASIC STANDARDS, NBS/ DATE- DEC. 1969

Series of measurements on the thermal expansion coefficients of several aerospace alloys and standard materials establish relationships between related alloys that would aid in predicting their thermal expansion reliability. Thermal expansion data are also necessary for the reduction of electrical resistivity measurements of those same materials.

B69-10672
NATURAL GAS FLOW THROUGH CRITICAL NOZZLES
JOHNSON, R. C. /DATE- NOV. 1969

Empirical method for calculating the flow rate and upstream volume flow rate through critical flow nozzles is determined. Method requires knowledge of the composition of natural gas, and of the upstream pressure and temperature.

B69-10714
FLOW DIRECTION MEASUREMENT WITH FIXED PROBES
DUDEKINSKI, T. J. /KRAUSZ, L. N. DATE- DEC. 1969

Fixed-position probes for determination of flow direction in one and two planes are tested over a wide range of Reynolds numbers and Mach numbers. The work is limited to tests of a single probe design for two dimensional flow and a single design for three dimensional flow.

B69-10716
CHROMATOGRAPHIC DETECTION AND ANALYSIS OF TRACES OF HYDROCARBONS
FICKET, E. W. /BENDIX CORP./ DATE- DEC. 1969

Special analytical column having in series two separate absorption sections charged with beads of porous polymer and a sample of gas detects traces of hydrocarbons. New method requires only 15 minutes for execution.

B69-10773
GAMMA RADIATION CHARACTERISTICS OF PLUTONIUM DIOXIDE FUEL
GINGO, J. P. DATE- DEC. 1969

Investigation of plutonium dioxide as an isotopic fuel for Radioisotope Thermoelectric Generators yielded the isotopic composition of production-grade plutonium dioxide fuel, sources of gamma radiation produced by plutonium isotopes, and the gamma flux at the surface.

B69-10767
PULSE-HEIGHT DEFECTS DUE TO ELECTRON INTERACTION IN DEAD LAYERS OF GE/LI/GAMMA-RAY DETECTORS
LARDNER, W. M. STRAUSS, H. E. DATE- DEC. 1969

Magnetohydrodynamic generator uses a slug or piston of liquid potassium as the working fluid. An expanding vapor of the metal is allowed to recirculate the liquid-metal-piston through a magnetic field and the expansion energy is converted directly into electrical energy.

B69-10771
LIQUID-METAL-PISTON AND GENERATOR
FALK, J. P. /ASSOCIATED UNIVERSITIES, INC./ DATE- DEC. 1969

Magnetohydrodynamic generator uses a slug or piston of liquid potassium as the working fluid. An expanding vapor of the metal is allowed to recirculate the liquid-metal-piston through a magnetic field and the expansion energy is converted directly into electrical energy.

B69-10772
NATURAL GAS FLOW THROUGH CRITICAL NOZZLES
JOHNSON, R. C. /DATE- NOV. 1969

Empirical method for calculating the flow rate and upstream volume flow rate through critical flow nozzles is determined. Method requires knowledge of the composition of natural gas, and of the upstream pressure and temperature.

B69-10714
FLOW DIRECTION MEASUREMENT WITH FIXED PROBES
DUDEKINSKI, T. J. /KRAUSZ, L. N. DATE- DEC. 1969

Fixed-position probes for determination of flow direction in one and two planes are tested over a wide range of Reynolds numbers and Mach numbers. The work is limited to tests of a single probe design for two dimensional flow and a single design for three dimensional flow.

B69-10716
CHROMATOGRAPHIC DETECTION AND ANALYSIS OF TRACES OF HYDROCARBONS
FICKET, E. W. /BENDIX CORP./ DATE- DEC. 1969

Special analytical column having in series two separate absorption sections charged with beads of porous polymer and a sample of gas detects traces of hydrocarbons. New method requires only 15 minutes for execution.

B69-10773
GAMMA RADIATION CHARACTERISTICS OF PLUTONIUM DIOXIDE FUEL
GINGO, J. P. DATE- DEC. 1969

Investigation of plutonium dioxide as an isotopic fuel for Radioisotope Thermoelectric Generators yielded the isotopic composition of production-grade plutonium dioxide fuel, sources of gamma radiation produced by plutonium isotopes, and the gamma flux at the surface.

B69-10767
PULSE-HEIGHT DEFECTS DUE TO ELECTRON INTERACTION IN DEAD LAYERS OF GE/LI/GAMMA-RAY DETECTORS
LARDNER, W. M. STRAUSS, H. E. DATE- DEC. 1969

Magnetohydrodynamic generator uses a slug or piston of liquid potassium as the working fluid. An expanding vapor of the metal is allowed to recirculate the liquid-metal-piston through a magnetic field and the expansion energy is converted directly into electrical energy.

B69-10771
LIQUID-METAL-PISTON AND GENERATOR
FALK, J. P. /ASSOCIATED UNIVERSITIES, INC./ DATE- DEC. 1969

Magnetohydrodynamic generator uses a slug or piston of liquid potassium as the working fluid. An expanding vapor of the metal is allowed to recirculate the liquid-metal-piston through a magnetic field and the expansion energy is converted directly into electrical energy.

B69-10772
SURFACE-RENEWED FIBER PENETRATION MODELS FOR HEAT-TRANSFER BETWEEN WALLS AND FLUIDIZED BEDS
PAULER, R. D. DATE- DEC. 1969

Two surface-renewed film penetration models describe transient heat-transfer between a wall and a fluidized bed. Methods are presented for estimation of mean residence times of particles at the transporting surface, their age densities and the average transport coefficients.

B69-10779
NUMERICAL SOLUTIONS OF DIFFERENTIAL EQUATIONS
WEISS, J. R. /VANDERBILT UNIV./ DATE- DEC. 1969

Various numerical methods for solving differential equations were analyzed and refined in an effort to develop a method which was adaptable to a large class of problems. The prime capabilities of the method included accuracy, numerical stability, and economic use of computer time. In multistep processes the correcting was changed at each step.

B69-10781
AERODYNAMIC FORCES OF FLUTTERING CYLINDRICAL AND/OR PLANE STRUCTURES
FAYES, J. E. /RESEARCH RES. ENTER, F. E. PORTER PLATE, INC./ DATE- DEC. 1969

Complexity of the phenomena of panel flutter instability has resulted in the necessity of developing separate design criteria for a variety of flow conditions and panel configurations. Vehicle panel configurations with low aspect ratios are of interest in low supersonic flow, where boundary layer effects are important.
TRAJECTORY OPTIMIZATION

Regularized equations for a particular optimal trajectory are compared with unregularized techniques. The regularized equations yield a significant reduction in computer time.

REPRESENTATION

Regularized equations for a particular optimal trajectory are compared with unregularized equations with respect to computational characteristics, using perturbation type numerical optimization. In the case of the three dimensional, low thrust, Earth-Jupiter rendezvous, the regularized equations yield a significant reduction in computer time.

VARIABLES

Regularized equations for a particular optimal trajectory are compared with unregularized equations with respect to computational characteristics, using perturbation type numerical optimization. In the case of the three dimensional, low thrust, Earth-Jupiter rendezvous, the regularized equations yield a significant reduction in computer time.

Preliminary design calculations for a proposed fine guidance experiment telescope containing a four-sided pyramidal reflector indicate that 0.01 arc sec pointing, at 0.03 arc sec sensing resolution, could be achieved by viewing a +10.0 magnitude star where the total collected light energy would be applied for fine error detection.

ESTIMATING RELIABILITY BY APPLICATION OF MATRIX REPRESENTATION

Technique based upon matrix representation and matrix collapsing calculates the probability of successfully completing anned missions and of returning the spacecraft safely to earth. This technique provides analytic expressions for each subsystem, making it possible to relate changes in subsystem reliability directly to mission success and crew safety.

TRAJECTORY OPTIMIZATION USING REGULARIZED VARIABLES

Regularized equations for a particular optimal trajectory are compared with unregularized equations with respect to computational characteristics, using perturbation type numerical optimization. In the case of the three dimensional, low thrust, Earth-Jupiter rendezvous, the regularized equations yield a significant reduction in computer time.

DETERMINATION OF PERMISSIBLE APPLIED LOAD STRESS IN STRUCTURAL ELEMENTS

Graphic method is used to select allowable stresses in thermally loaded structures. Equations are used for determining the mode of failure for specific materials in order to plot a range of stress curves. Linear assumption and iterative calculations are eliminated resulting in comparatively high accuracy.

03 MATERIALS (CHEMISTRY)

REFERENCE BLACK BODY IS COMPACT, CONVENIENT TO USE

To replace the classical hollow sphere, a compact reference black body has been constructed from stacked razor blades. Treated with a deposit of black oxide on the surfaces or notches between the upper edges of the blades, the device is useful over a wide range of incident angles.

THERMALLY CONDUCTIVE METAL WOOL-SILICONE RUBBER MOLDING CAN BE USED AS SHOCK AND VIBRATION DAMPER

Bronze wool pads, impregnated with silicon rubber, meet the requirement for a thermally conductive, shock and vibration absorbing material. They serve as spacers in equipment mounting and are resistant to high temperatures.

FILTER FOR HIGH-PRESSURE GASES HAS EASY TAKE-OUT, ASSEMBLY

MAC GLASBAER, W. P. DATE- FEB. 1964 JPL-373
A small metal filter body, for use in tubing supplying sterilization gases, has an inlet port that can be unscrewed. Inside, the high pressure filter is supported on both sides and sealed by an o ring. Design facilitates assembly and disassembly of parts.

CRYOSTATIC FILTER METHOD PRODUCES SUPER-PURE HELIUM AND HELIUM ISOTOPES

Hill, T. D. DATE- MAR. 1964 JPL-376
Helium is purified when cooled in a low pressure environment until it becomes superfluid. The liquid helium is then filtered through iron oxide particles. Heating, cooling and filtering processes continue until the purified liquid helium is heated to a gas.

FRESNEL CUP REFLECTOR DIRECTS MAXIMUM ENERGY FROM LIGHT SOURCE

Lavoie, E. G. YOUNGBERG, C. L. DATE- MAY 1964 JPL-520
To minimize shielding and overheating, a composite Fresnel cup reflector design directs the maximum energy from a light source. It consists of a uniformly ellipsoidal end surface and an extension comprising a series of confocal ellipsoidal and conicosectric spherical surfaces.

OIL-SHEARED MODELS AID WIND TUNNEL MEASUREMENTS

KATCOFF, S. LOVING, D. K. DATE- APR. 1964 JPL-379
For visualizing flow characteristics in wind tunnel tests, model surfaces are coated with a common petroleum-base oil. These fluoresce readily under ultraviolet light and the flow patterns are readily visualized.

QUICK-HARDENING PROBLEMS ARE ELIMINATED WITH SPRAY GUN MODIFICATION WHICH MIXES RESIN AND ACCELERATOR LIQUIDS DURING APPLICATION

JOHNSON, G. W. DATE- May 1964 JPL-380 SEE ALSO U.S. PATENT NO. 2,930,532 LANGLEY-4
A modified spray gun, with separate containers for resin and additive components, solves the problems of quick hardening and nozzle clogging. At application, separate atomizers spray the liquids in front of the nozzle face where they blend.

GALLIUM USEFUL BEARING LUBRICANT IN HIGH-VACUUM ENVIRONMENT

BUCHEY, D. B. DATE- May 1964 JPL-381 SEE ALSO U.S. PATENT NO. 3,072,574 LEWIS-12
Solid gallium is used as a lubricant on bearings made of compatible materials. Such lubricants perform well in a high vacuuum and under low temperature.

APPARATUS FACILITATES HIGH-TEMPERATURE TENSILE TESTING IN VACUUM

Sikora, F. F. DATE- JULY 1964 LEWIS-52
An apparatus for heating refractory materials to high temperatures during tensile testing includes a water-cooled, stainless steel vacuum chamber. This contains a resistance heater consisting of a slit tube of tantalum or tungsten to enclose the tensile test rod.

NEW COBALT ALLOYS HAVE HIGH-TEMPERATURE STRENGTH AND LONG LIFE IN VACUUM ENVIRONMENTS

Cobalt refractory metal alloys combine
In order to eliminate the hazard caused by residual air trapped between the concentric shells of a cryostat, these annular spaces are pressurized with helium gas. This system is more economical than the use of powdered insulation maintained at low vacuums.

**B63-10378**

**LIQUID-LEVEL METER HAS NO MOVING PARTS**

ESCOE, W. T. /BENDIX CORP./ DATE- JUN. 1964

M-FS-3

An electro-optical system, without moving parts, reliably indicates liquid levels at cryogenic temperatures. Glass prisms, which act as liquid level probes inside the tank, extend from optically aligned photoelectric assemblies mounted on the outside.

**B63-10389**

**LIGHTWEIGHT MAGNESIUM-LITHIUM ALLOYS SHOW PROMISE**

ADAMS, W. T. CATALDO, C. F. DATE- JUN. 1964

M-FS-17

Evaluation tests show that magnesium-lithium alloys are lighter and more ductile than other magnesium alloys. They are being used for packaging, housings, containers, where light weight is more important than strength.

**B63-10424**

**VARIABLE LIGHT SOURCE WITH A MILLION-TO-ONE INTENSITY RATIO**

S KiN, W. B. SNOB, W. B. /SPACE TECHNOL. LAB./ DATE- MAY 1964

JPL-WC-008

A wide range, variable intensity light source of constant color characteristics has been developed for testing and calibrating photomultiplier tubes. A light attenuator first diffuses light from a constant source, then permits variable attenuation through a series of chambers and adjustable apertures.

**B63-10429**

**WELDED PRESSURE TRANSDUCER MADE AS SMALL AS 1/8-INCH IN DIAMETER**

COON, G. W. DATE- BAR. 1964 HEAN- SEE ALSO D. S. PATENT NO. 3,627,769

ARC-11

A special spot welding technique is used to make miniature capacitance transducers for placing in a wind tunnel model. Rugged and relatively low in cost, they have a flat response up to one-third of the resonant frequency.

**B63-10453**

**POLYBENZEN DISULFIDE MIXTURES MAKE EFFECTIVE HIGH-VACUUM LUBRICANTS**

SPON- INNOVATOR NOT GIVEN /MIDWEST RES. INST./ DATE- NOV. 1964 HEAN- SEE ALSO B63-10337, B63-10562, AND B64-10116

M-FS-58

Five different mixtures of polybenzene disulfide are found to be effective bearing lubricants when tested at very low pressures and high temperatures.

**B63-10476**

**CEMENTS IODIDE CRYSTALS FUSED TO VACUUM TUBE FACELATES**

PLACE, H. G. /ELECTRO-MECHANICAL RES./ DATE- MAY 1964 GSFC-67

A cesium iodide crystal is fused to the lithium chloride faceplate of a phonocarotograph image tube. The conventional silver chloride solder is then used to attach the faceplate to the metal support.

**B63-10479**

**IMPLOVES POLYBENZEN DISULFIDE-SILVER MOTORS**

BRUSHES HAVE EXTENDED LIFESPANS

HOCTOR, J. C. KING, H. N. DATE- MAY 1964

M-FS-64

Motor brushes of proper quantities of polybenzene disulfide and copper or silver are manufactured by sintering techniques. Graphite molds are used. These brushes operate satisfactorily for long periods in normal atmosphere or in a high-vacuum environment.

**B63-10564**

**REFRACTORY CERAMIC HAS WIDE USAGE, LOW FABRICATION COST**

SPON- INNOVATOR NOT GIVEN /MARS/ DATE- APR. 1964

M-FS-67

Particulate, fused amorphous silica is formed into complex shapes by casting in plaster molds. High temperature firing is not required. This ceramic is resistant to thermal shock and exhibits good strength properties.

**B63-10528**

**VARIABLE-TRANSPARENCY WALL REGULATES TEMPERATURE OF STRUCTURES**

OSULLIVAN, W. J., JR. DATE- JUN. 1964

LANGLEY-25

An effective temperature regulating wall consists of one layer of an organic film which, being relatively opaque to thermal radiation in the solid state and transparent to it in the molten state and placed between two transparent layers. A mirror coating is applied to back layer.

**B63-10546**

**TEST DEVICE PREVENTS MOLECULAR BOUNCE-BACK**

HARDGROVE, W. F. SHAPIRO, H. DATE- JULY 1964

GSFC-62

A test device, which consists of six pyramidal reflectors joined together, acts as a baffle to impede the free path of the molecule to the test item by interposing a slanted surface which imparts an angular vector to the molecule and bounces it back to the chamber wall.

**B63-10557**

**RAPID HELIUM-AIR ANALYSER CAN MEASURE OTHER BINARY GAS MIXTURES**

BELF, L. T. WOOD, G. M. YEAGER, P. R. DATE- FEB. 1964

LANGLEY-16

Instrument comprised of an ionization pressure gage and a diaphragm pressure gage consisting of strain gages to make a four-arm bridge, and a ratiometer is constructed for analyzing gas mixtures. The ratio of the outputs of the two gages is proportional to the mixture composition.

**B63-10562**

**GATE VALUE WITH CERAMIC-COATED BASE OPERATES AT HIGH TEMPERATURES**

BRASS, A. DATE- JUL. 1964

ARC-23

A copper base insert coated with a layer of aluminum oxide ceramic prevents frictional binding between the gate and base surfaces of a gate valve which are subject to rapid sliding action and high temperatures.

**B63-10612**

**METALS PLATED ON FLUOROCARBON POLYMERS**

FORD, H. KRASINSKY, J. B. VANGO, S. P. DATE- OCT. 1964

JPL-546

Electroplating lead on fluorocarbon polymer parts is accomplished by etching the parts to be plated with sodium, followed by successive depositions of silver and lead from ultrasonically agitated plating solutions. Metals other than lead may be electroplated on the silvered parts.

**B64-10068**

**MECHANICAL PROPERTIES OF PLASTICS PREDETERMINED BY EMPIRICAL METHOD**

LONE, J. J. PARKER, J. A. DATE- JUL. 1964

ARC-28

To predetermine the mechanical properties of rigid plastics as a function of plasticizer content and composition, a set of equations has been derived.

**B64-10081**

**DURABLE CERAMIC HAS WIDE USAGE, LOW FABRICATION COST**

SPON- INNOVATOR NOT GIVEN /MARS/ DATE- APR. 1964

M-FS-67

Particulate, fused amorphous silica is formed into complex shapes by casting in plaster molds. High temperature firing is not required. This ceramic is resistant to thermal shock and exhibits good strength properties.

**B64-10528**

**VARIABLE-TRANSPARENCY WALL REGULATES TEMPERATURE OF STRUCTURES**

OSULLIVAN, W. J., JR. DATE- JUN. 1964

LANGLEY-25

An effective temperature regulating wall consists of one layer of an organic film which, being relatively opaque to thermal radiation in the solid state and transparent to it in the molten state and placed between two transparent layers. A mirror coating is applied to back layer.

**B64-10546**

**TEST DEVICE PREVENTS MOLECULAR BOUNCE-BACK**

HARDGROVE, W. F. SHAPIRO, H. DATE- JULY 1964

GSFC-62

A test device, which consists of six pyramidal reflectors joined together, acts as a baffle to impede the free path of the molecule to the test item by interposing a slanted surface which imparts an angular vector to the molecule and bounces it back to the chamber wall.

**B64-10557**

**RAPID HELIUM-AIR ANALYSER CAN MEASURE OTHER BINARY GAS MIXTURES**

BELF, L. T. WOOD, G. M. YEAGER, P. R. DATE- FEB. 1964

LANGLEY-16

Instrument comprised of an ionization pressure gage and a diaphragm pressure gage consisting of strain gages to make a four-arm bridge, and a ratiometer is constructed for analyzing gas mixtures. The ratio of the outputs of the two gages is proportional to the mixture composition.

**B64-10562**

**GATE VALUE WITH CERAMIC-COATED BASE OPERATES AT HIGH TEMPERATURES**

BRASS, A. DATE- JUL. 1964

ARC-23

A copper base insert coated with a layer of aluminum oxide ceramic prevents frictional binding between the gate and base surfaces of a gate valve which are subject to rapid sliding action and high temperatures.

**B64-10612**

**METALS PLATED ON FLUOROCARBON POLYMERS**

FORD, H. KRASINSKY, J. B. VANGO, S. P. DATE- OCT. 1964

JPL-546

Electroplating lead on fluorocarbon polymer parts is accomplished by etching the parts to be plated with sodium, followed by successive depositions of silver and lead from ultrasonically agitated plating solutions. Metals other than lead may be electroplated on the silvered parts.

**B64-10068**

**MECHANICAL PROPERTIES OF PLASTICS PREDETERMINED BY EMPIRICAL METHOD**

LONE, J. J. PARKER, J. A. DATE- JUL. 1964

ARC-28

To predetermine the mechanical properties of rigid plastics as a function of plasticizer content and composition, a set of equations has been derived.
ELASTOMERS BONDED TO METAL SURFACES SEAL
LEAD OXIDE CERAMIC MAKES EXCELLENT B64-10113
M-FS-160
To protect rocket metal surfaces from engine exhaust heat, a refractory thermal insulation mixture, which adheres to smooth metals, has been developed. Insulation protection over a wide temperature range can be controlled by thickness of the applied mixture.

B64-10113 ELASTOMERS BONDED TO METAL SURFACES SEAL ELECTROCHEMICAL CELLS SHEFFIT, J. M. DATE- AUG. 1964 G5C-168
A leakproof seal secondary cell containing alkaline electrolytes was developed by bonding an alkali-resistant elastomer, such as neoprene, to metal contact surfaces. Test results of several different elastomers strongly indicate the feasibility of this sealing method.

B64-10116 LEAD OXIDE CERAMIC MAKES EXCELLENT HIGH-TEMPERATURE LUBRICANT JOHNSON, R. E. SILEY, R. E. DATE- AUG. 1964 LW15-164
A dry lubricant coating in ceramic form consisting of 95 percent lead monoxide and 5 percent silicon dioxide withstood a temperature of 1200 deg F, with a bearing operating at various atmospheric pressures. From this testing, there was no galling or metal transfer of the bearing.

B64-10130 NOVEL SHOCK ABSORBING FRUSTRES VARYING YIELD STRENGTHS GIESE, D. J. DATE- JUL. 1964 MSC-63A
A shock absorbing webbing of partially drawn synthetic strands is arranged in sections of varying density related to the varying mass of the human body. This is contoured to protect the body at points of contact, when subjected to large acceleration or deceleration forces.

B64-10142 STRONGST CLEANING TECHNIQUE ASSURES RELIABLE EPOXY BOND SPON- INNOVATOR NOT GIVEN /HCA/ DATE- JUN. 1964 G5C-161
For reliable aluminum bonding to withstand stress, the mating surfaces are carefully cleaned, etched, rinsed and dried. An epoxy and hardener designed for metal-to-metal bonding is then used for a rigid assembly.

B64-10151 PLASTIC FILMS FOR REFLECTING SURFACES REPRODUCED FROM MASTERS SPON- INNOVATOR NOT GIVEN /MINNEAPOLIS HONEYWELL/ DATE- OCT. 1964 G5C-166
Accurate reproduction in plastic of the surface of the optical master to which a reflective finish may be applied is done by using backing from any suitable material to which cured plastic will adhere tightly. Plastic used for reflectors should be of the thermosetting or catalytically hardened type.

B64-10166 FILLER DEVICE FOR HANDLING HOT CORROSIVE MATERIALS SPON- INNOVATOR NOT GIVEN /PRATT AND WHITNEY AIRCRAFT/ DATE- OCT. 1964 MSC-85
A bellows-type bag with its own heating element is developed for safe handling and injection of hot corrosive liquids into modules.

B64-10206 SOLDER FLUX LEAVES CORROSION-RESISTANT COATING ON METAL BACMAN, A. J. DATE- OCT. 1964 JPL-611
A soldering flux consisting of perfluoro-octanoic acid hydrazine provides a corrosion resistant film on metal surface, particularly copper. It is ineffective for soldering aluminum.

B64-10270 PRESSURE HOLDING OF POWDERED MATERIALS IMPROVED BY RUBBER MOLD INSERT SPON- INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS CORP./ DATE- NOV. 1964 W00-100
Pressure holding tungsten microspheres is accomplished by applying hydraulic pressure to a silicone rubber mold insert with several barrel shaped chambers which is placed in a steel die cavity. This technique eliminates castings containing shear fractures.

B64-10282 FIRE-RESISTANT SCREEN MADE BY SIMPLIFIED METHOD SPON- INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ DATE- DEC. 1964 W00-104
Strong fine-mesh screens are fabricated by a method involving uniform distribution of fine ferromagnetic particles on a nonmagnetic substrate. Such screens are commonly used for grids in electron tubes and ion devices.

B64-10319 GAS DIFFUSION CELL REMOVES CARBON DIOXIDE FROM OCCUPIED AIRRIGHT ENCLOSURES SPON- INNOVATOR NOT GIVEN /IOWA UNIV./ DATE- DEC. 1964 MSC-118
Sail, lightweight permeable cell package separates and removes carbon dioxide from respiratory gas mixtures. The cell is regenerative while chemically inert in the presence of carbon dioxide so that only adsorption takes place.

B65-10004 SCREENING TECHNIQUE MAKES RELIABLE BOND AT ROOM TEMPERATURE SPON- INNOVATOR NOT GIVEN /IBM/ DATE- JAN. 1965 H-227
Stainless-steel screen used to lay room temperature curing epoxy adhesive permits reliable bonding of electronic circuits boards. This technique would be useful with thin-walled structures that warp during conventional bonding operations.

B65-10015 IMPROVED CONDUCTIVE PASTE SECURES BIOMEDICAL ELECTRODES SPON- INNOVATOR NOT GIVEN /BAYLOB/ DATE- JAN. 1965 SEE ALSO B64-10025 MSC-107
Nontoxic paste consisting of a dispersion of graphite or silver granules in a mixture of polyvinylpyrrolidone and dilute glycerol secures biomedical electrodes to human skin. Silver paste has a high electrical conductivity and forms a bond between metal and moist or dry skin.

B65-10016 ADHESIVE FOR VACUUM ENVIRONMENTS RESISTS SHOCK AND VIBRATION SPON- INNOVATOR NOT GIVEN /WESTINGHOUSE ELECTRIC CORP./ DATE- FEB. 1965 MSC-56
A mixture of a polynalde, an epoxy resin, and fine silica or glass microballoons provides an adhesive which is flexible, resistant to shock and vibration, and has improved heat-transfer characteristics.

B65-10024 FLUID PRESSURE USED TO TEST TURBOPUMP BEARINGS SPON- INNOVATOR NOT GIVEN /AMERICAN GEN. CORP./ DATE- FEB. 1965 N0-0001

115
Testing of turbopump bearings operating in an intense radiation field is accomplished by the use of a fluid bearing tester providing radial and axial loading.

B65-10032
WIDE WINDING INCREASES LIFETIME OF OXIDE-COATED CATHODES
KERSLAKE, W. VARGO, D. DATE- FEB. 1965 REAR-
SEE ALSO AIAA PAPER-64-683
LEVEL-154
Refractory-metal heater base wound with a thin refractory metal wire increases the longevity of oxide-coated cathodes. The wire-wound unit is impregnated with the required thickness of metal oxide. This cathode is useful in magnetohydrodynamic systems and in electron tubes.

B65-10034
CAGE MEASURES ELECTRICAL CONNECTOR PIN RETENTION FORCE
SPOR- INNOVATOR NOT GIVEN /BCA/ DATE- FEB. 1965
JEL-SC-071
The retention force of a female connector pin is measured by observing the action of a calibrated spring in a cage consisting of housing, a plunger terminating in a male subminiature connector pin, and the tension spring.

B65-10043
NOUGT PIECE ADAPTER FOR PIPESTES PROTECTS MOUTH FROM HARMFUL LIQUIDS
Mc SHAIN, D. G. DATE- FEB. 1965
LANGLEY-47
To prevent the laboratory technicians south from contacting harmful liquids, a device with a hermetically sealed elastic bellows is attached to a standard pipette.

B65-10048
FLEXIBLE CURTAIN SHIELDS EQUIPMENT FROM INVERSE HEAT FLUXES
SPOR- INNOVATOR NOT GIVEN /ARROWHEAD PROD./ DATE- FEB. 1965
N-PS-48
Flexible, high strength curtain made of fiber glass silicone elastomer laminate provides thermal shielding for equipment.

B65-10065
SPHERICAL MODEL PROVIDES VISUAL AID FOR CURVIC CRYSTAL STUDY
BAULISI, E. J. SPIEGEL, A. L. DATE- MAR. 1965
LEVEL-108
Transparent sphere of polymethylmethacrylate with major zones and poles of cubic crystals is used to make crystallographic visualizations and to interpret the X-ray diffraction of single cubic crystals.

B65-10083
BIXITAXUM COMPOUND IMPROVES NICKEL-CADMIUM CELL
SPOR- INNOVATOR NOT GIVEN /GZ/ DATE- MAR. 1965
GSFC-295
Nickel electrodes impregnated with an additive solution of didymium hydrate and nitric acid mixed with nickel nitrate increases ampere-hour capacity of cells and does not affect the voltage characteristics.

B65-10088
FIBER GLASS PAPER CHED DURING FILAMENT WINDING ELIMINATES OVER, SAVES TIME
CARRUT, R. J. DATE- APR. 1965
N-PS-14
Resistance wire layer is introduced during winding of the fiber glass filament with simultaneous heating. Emission of heat from the wire layer cures second fiber glass layer.

B65-10092
LIGHTWEIGHT ALUMINUM CASTING ALLOY IS USEFUL AT CRYOGENIC TEMPERATURES
SPOR- INNOVATOR NOT GIVEN /A-464-4 M LAB./ DATE- APR. 1965
N-PS-267
N-45, a lightweight, high purity aluminum alloy has superior tensile properties for use at cryogenic temperatures.

B65-10095
CARBON-ARC ROB HOLDER HAS LONG LIFE, REDUCES ARC SPLATTER
SPOR- INNOVATOR NOT GIVEN /BCA/ DATE- APR. 1965
NEC-144
Carbon-arc rod holder with front end of beryllium oxide, a high electrical resistor and good thermal conductor, prevents nonuniform burning of the positive carbon rod and corrosion of the rod holder.

B65-10106
MINIATURE BEARINGS LUBRICATED BY SONIC DISPERSION METHOD
SPOR- INNOVATOR NOT GIVEN /LITTON IND./ DATE- APR. 1965
N-PS-202
Evenly distributing a monomolecular film over the balls and tracks of miniature precision ball bearings by sonic dispersion results in precise lubrication which prevents lubricant bleed out to adjacent components. Varying the lubricant to solvent ratio of the mixture causes varying lubricant coating thicknesses.

B65-10107
CRACK DETECTION METHOD IS SAFE IN PRESENCE OF LIQUID GIBER
SPOR- INNOVATOR NOT GIVEN /BOOING CO./ DATE- APR. 1965
N-PS-236
Visual flaw detection method for metals utilizes color precipitate. This method can be used safely in the presence of liquid oxygen.

B65-10117
DOUBLE GLOVES REDUCE CORROSION OF DRY BOX ATMOSPHERE
HERSLE, T. P. QUANTZ, R. B. HEINRITZ, G. DATE- APR. 1965
LEVEL-211
Pair of enclosed low permeability hand gloves between which an inert gas circulates reduces dry box contamination. This innovation is applicable to dry boxes using radioactive and alkali metal compounds, subicron powders, and liquid metals.

B65-10136
VAPOR PRESSURE MEASURED WITH INFLATABLE PLASTIC BAG
SPOR- INNOVATOR NOT GIVEN /COPHYS. CORP. OF AM./ DATE- MAY 1965
GSFC-281
Deflated plastic bag in a vacuum chamber measures initial lcb vapor pressures of materials. The bag captures the test sample vapors and visual observation of the vapor-inflated bag under increasing external pressures yields pertinent data.

B65-10140
GALVANIC CORROSION REDUCED IN ALUMINUM FABRICATIONS
SPOR- INNOVATOR NOT GIVEN /MARSHALL/ DATE- MAY 1965
N-PS-272
Titanium alloy fasteners dipped at zinc chromate primer are installed while wet in protective coated aluminum panels to reduce galvanic corrosion. Moisture tight seals at fastener points are also provided.

B65-10156
INORGANIC PAINT IS DURABLE, FIREPROOF, EASY TO APPLY
SCHUTT, J. B. DATE- JUN. 1965
GSFC-366
Enorganic paint with a water-potassium silicate base is impervious to water. It is also fireproof and adheres to various surfaces exposed to wide temperature fluctuations.

B65-10162
ELECTROLESS NICKEL RESIST USED IN ALKALI ETCHING OF ALUMINUM
SPOR- INNOVATOR NOT GIVEN /SCHJELDAHL /N.Y./ CO./ DATE- JUN. 1965
Electroless nickel resist is unaffected by caustic soda applied as a milling or etching agent on aluminum.

B65-10164

INCREASED IMPROVES PROPERTIES OF AN AROMATIC POLYESTER

Below, V. L., JR. DATE- JUN. 1965

LANGLY-115

Aromatic polyester, PEN-2.6, is improved through cross-linking effected by radiation. Polymer retains properties of high tensile strength and toughness and stability at high temperatures.

B65-10167

REFRACTORY OXIDES EVALUATED FOR HIGH-TEMPERATURE USE

SPON- INVENTOR NOT GIVEN /LANGLY/ DATE- JUN. 1965

LANGLY-121

Partially calcia-stabilized zirconia used for insulation and heat-storage in high temperature /3000 deg to 4000 deg F/ cyclically operated pebble bed air heater.

B65-10172

ALUMINUM ALLOYS PROTECTED AGAINST STRESS-CORROSION CRACKING

SPON- INVENTOR NOT GIVEN /ALCOA RES. LABS./ DATE- JUN. 1965

B6PS-235

Topcoat of epoxy-polyamide paint is effective protection for aluminum alloys against stress corrosion cracking. The paint can be used on unplated surfaces.

B65-10173

PEEL RESISTANCE OF ADHESIVE BONDS ACCURATELY MEASURED

SPON- INVENTOR NOT GIVEN /BCA/ DATE- JUN. 1965

GSFC-320

Strength of adhesive bond between layers of laminated material is tested by peel force to the facing with a tensile testing machine. Testing jig has stainless steel rollers which constrain material to move horizontally while maintaining free end of facing at constant 90 deg angle.

B65-10175

TANTALUM CATHODE IMPROVES ELECTRON-BEAM EVAPORATION OF TANTALUM

SPON- INVENTOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/ DATE- JUN. 1965

JPL-WCO-021

Tantalum cathode is used in assembly for electron beam evaporation of tantalum onto a substrate. The cathode and anode are made of pure tantalum rather than tungsten to prevent contamination of the tantalum film deposited on the substrate.

B65-10179

REUSABLE NEOPRENE JACKET PROTECTS PARTS FOR CHEMICAL MILLING

SPON- INVENTOR NOT GIVEN /RAY AEROSPACE CO./ DATE- JUN. 1965

WCO-074

Reusable neoprene jacket is used to prepare metal part or panel for chemical milling. Jacket covers back and upper rim of part and is sealed before the milling solution is applied to surface to be milled. This reduces amount of masking material required for milling identical parts and increases production.

B65-10189

TESTING DEVICE SUBJECTS ELASTIC MATERIALS TO BIAXIAL DEFORMATIONS

BECKER, G. M. DATE- JUN. 1965

JPL-616

Testing device stretches elastic materials biaxially over large deformation ranges and varies strain ratios in two perpendicular directions. The device is used in conjunction with a tensile testing machine, which holds the specimen and permits control over the direction and magnitude of the stresses applied.

B65-10190

IR-TRANSMISSION GLASSES FORMED FROM OXIDES OF BISMUTH AND TELLURIUM

ULBRICH, D. R. DATE- JUN. 1965

MPS-279

Bismuth trioxide-tellurium dioxide glasses have improved infrared transmission characteristics.

B65-10214

EMERGENCY SOLAR STILL DESALTS SEAWATER

SPON- INVENTOR NOT GIVEN /SENFAR/ DATE- JUL. 1965

RSC-135

Solar energy apparatus distills seawater into fresh water. The inflatable buoyant still produces two pints of drinking water a day.

B65-10217

THIN TRANSPARENT FILMS FORMED FROM POWDERED GLASS

SPON- INVENTOR NOT GIVEN /HOFMAN ELECTRON./ DATE- JUL. 1965

GSFC-352

Glass film less than five mils thick is formed from powdered glass dispersed in an organic liquid, deposited on a substrate, and fused into place. The thin films can be cut and shaped for contact lenses, optical filters and insulating layers.

B65-10220

THERMALLY NICKEL BONDED BY SOLID-STATE DIFFUSION METHOD

BALES, T. T. DATING, R. C., JR. DATE- AUG. 1965

LANGLY-116

Solid-state diffusion bonding in an inert-gas atmosphere forms high-strength joints between butting or overlapping surfaces of thoriated nickel. This method eliminates inert-phase agglomeration.

B65-10250

COATING METHOD ENABLES LOW-TEMPERATURE BRAZING OF STAINLESS STEEL

SEARAH, F. D. /WESTINGHOUSE ELECTRIC CO./ DATE- AUG. 1965

MG-0030

Gold coated stainless steel tubes containing insulated electrical conductors are brazed at a low temperature to a copper coated stainless steel sealing block with a gold-copper eutectic. This produces an effective seal without using flux or damaging the electrical conductors.

B65-10251

BORON CARBIDE WHISHERS PRODUCED BY VAPOR DEPOSITION

SPON- INVENTOR NOT GIVEN /GE/ DATE- SEP. 1965

NIO-26

Boron carbide whiskers have an excellent combination of properties for use as a reinforcement material. They are produced by vaporizing boron carbide powder and condensing the vapors on a substrate. Certain catalysts promote the growth rate and size of the whiskers.

B65-10270

CERAMIC MATERIALS PURIFIED BY EXPERIMENTAL METHOD

SPON- INVENTOR NOT GIVEN /JIT RES. INST./ DATE- SEP. 1965

LEWIS-225

Crystalline ceramic materials are purified for use as high-temperature electrical insulators. Any impurities migrate to the cathode when a dc voltage is applied across the material while it is heated in an inert gas atmosphere.

B65-10288

ORGANIC REACTANTS RAPIDLY PRODUCE PLASTIC FOAM

록, G. F. DATE- SEP. 1965 /NRC/ SEE ALSO

B65-10090

LANGLY-37

Adding trichlorofluoromethane to polyether resin accelerates the reaction between the resin and toluene disocyanate. This accelerated reaction instantaneously produces a plastic foam of low density and uniform porosity needed to provide buoyancy for flotation recovery of instrument
package dropped into the sea from spacecraft.

B65-10294
ADHESIVE PROTECTIVE COATINGS PLATED ON MAGNESIUM-LITHIUM ALLOY
SPON- INNOVATOR NOT GIVEN /IBM/ DATE- OCT. - 1965
REAN- SEE ALSO B65-10389
M-PS-385
Zinc is plated on a magnesium-lithium alloy by using a modification of the standard zinc-plate immersion bath. Further protection is given the alloy by applying a light plating of copper on the zinc plating. Other metals are plated on the copper by using conventional plating baths.

B65-10302
BURNISHING TECHNIQUE IMPROVES LUBRICATION OF THREADED FASTENERS
GRUPPER, J. L. /LOCKHEED MISSILES AND SPACE CO./ DATE- OCT. 1965
LEWIS-217
Burring a solid zincmide coating into the thread surfaces of fasteners eliminates the need for binders and vehicles which ensure coverage and retention of the lubricant during fastening. The coating may be applied by any convenient method.

B65-10303
NICKEL SOLUTION PREPARED FOR PRECISION ELECTROFORMING
SPON- INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/ DATE- OCT. 1965
Woo-070
Lightweight, precision optical reflectors are made by electroforming nickel onto masters. Steps for the plating bath preparation, process control testing, and bath composition adjustments are prescribed to avoid internal stresses and maintain dimensional accuracy of the electrodeposited metal.

B65-10316
REMOVABLE WELL IN REACTION FLASK FACILITATES CARBON DIOXIDE COLLECTION
SPON- INNOVATOR NOT GIVEN /AMES/ DATE- OCT. 1965
ARE-47
Removable plastic well with a flange that seats on the rim of an Erlenmeyer screwcap flask aids quantitative collection of carbon dioxide liberated in the flask. The well can be removed without danger of cross-contamination. It can collect other gases using appropriate absorbents.

B65-10321
PLATED NICKEL WIRE MESH MAKES SUPERIOR CATALYST BED
STILL, R. /BELL AEROSYSTEMS CO./ DATE- OCT. 1965
MSC-216
Perforated nickel mesh screen catalyst bed produced gas evolution in hydrogen peroxide throttle chambers used for attitude control of space vehicles. The nickel wire mesh disks in the catalyst bed are plated in pyrene form with a silver-gold coating.

B65-10335
MAGNETIC FLUID EASILY CONTROLLED IN ZERO GRAVITY ENVIRONMENT
PAPELL, S. S. DATE- NOV. 1965
LEWIS-126
Colloid composed of finely ground iron oxide in a fluid such as heptane, is controlled and directed magnetically in a zero gravity environment. It will not separate on standing for long periods or after exposure to magnetic or centrifugal forces. Because of its low density and low viscosity, it is easily pumped.

B65-10336
ANODIZATION PROCESS PRODUCES OPAQUE, REFLECTIVE COATINGS ON ALUMINUM
SPON- INNOVATOR NOT GIVEN /LOCKHEED MISSILES AND SPACE CO./ DATE- NOV. 1965
R-PS-185
Opaque, reflective coatings are produced on aluminum articles by an anodizing process wherein the anodizing bath contains an aqueous dispersion of finely divided insoluble inorganic compounds. These particles appear as uniformly distributed occlusions in the anodic deposit on the aluminum.

B65-10337
SPECIAL COATINGS CONTROL TEMPERATURE OF STRUCTURES
FULK, R. E. /BALL BROTHERS RES. CORP./ DATE- NOV. 1965
GSFC-844
Special coatings in the form of paints that exhibit controlled ratios of sunlight absorbivity to gray-body emissivity control the temperature of structures in space flight. These finishes exhibit good resistance to ultraviolet radiation and do not discolor.

B65-10341
LIGHTWEIGHT HINGED BELLOWS RESTRAINT HAS HIGH LOAD CAPACITY
TODD, E. E. /BALL BROTHERS RES. CORP./ DATE- NOV. 1965
Woo-151
High angular stresses in fluid-handling ducts are accommodated by a lightweight hinged bellows restraint. This device transmits angular stress to points close to the axis center and spreads it over a rigid configuration.

B65-10344
SOLUBLE UNDERCOATING FACILITATES REMOVAL OF FOAMED-IN-PLACE INSULATION
DUNGAN, A. C. HILL, C. L., JR. DATE- NOV. 1965
LEWIS-193
Foamed-in-place insulation can be removed and reused by coating the surface with a soluble peel coat before applying the foam mixture. Removal of the insulation is effected by slitting it and pouring a solvent in the slit to dissolve the peel coat. The insulation can then be stripped off intact.

B65-10354
PIGMENTED COATING RESISTS THERMAL SHOCK
HARADA, Y. /IIT RES. INST./ DATE- NOV. 1965
JPL-SC-083
Coating pigment composed of zinc oxide and potassium silicate resists the effects of thermal shock and long exposure to direct sunlight.

B65-10357
AIR-CURED CERAMIC COATING INSULATES AGAINST HIGH HEAT FLUXES
KOZIKOWSKY, V. P. DATE- NOV. 1965
R-PS-150
Reflective insulating ceramic coating protects supporting structures in area adjacent to rocket engines from the intense heat fluxes in the rocket exhaust plumes.

B65-10364
POROUS GLASS MAKES EFFECTIVE SUBSTRATE FOR OZONE-SENSING REAGENTS
SPON- INNOVATOR NOT GIVEN /PARABETRICS/ DATE- DEC. 1965
GSFC-308
Porous-glass substrate is used for absorption of a dye used in measuring the concentration of atmospheric ozone at high altitudes. This measurement is based on the chemiluminescence produced in the reaction between ozone and the dye, rhodamine B. The porous glass provides a large interstitial surface area which promotes this reaction.

B65-10366
UNIQUE GEAR DESIGN PROVIDES SELF-LUBRICATION
WINANSKI, F. J. /SPACE TECHNOL. LAB./ DATE- DEC. 1965
JPL-SC-079
Composite gear configuration provides a reliable automatic means for replenishing gear mechanism lubricants that dissipate in the harsh environment of space. The center or hub section of the gear consists of a porous, oil impregnated material, and the outer or toothed section has radially drilled passages to cause the oil to gradually flow to the gear teeth surface.

B65-10372
WIRE BUNDLE FORMED INTO GEARS WITH MINUTE INTERSTICES
TODD, R. E. /ELECTRO-OPTICAL SYSTEMS/ DATE- DEC.
1965
W00-089
Defoaming the ends of a bundle of closely packed parallel wires to restrict the interstices to substantially uniform and intimate dimensions produces grids or filters for ion engines. Porous metal structures made by this process are also used as fuel cell electrodes, diffusion membranes, and catalysts.

B65-10374
PLASTIC PLUG STAINLESS-STEEL FIBERS MAKE RESILIENT, INHERENTLY STABLE MATERIAL
SKIRBA, J. R. /THOMPSON RAMO WOOLBRIDGE/ DATE- DEC. 1965
W00-246
Plastic material combined with stainless-steel fibers and molded under heat and pressure into a desired configuration is both soft enough to deform under a load and resilient enough to return to its original shape when the load is removed.

B65-10384
PROBE SAMPLES COMPONENTS OF ROCKET ENGINE EXHAUST SCHUMACHER, P. E. /N. AM. AVIATION/ DATE- DEC. 1965
W-FS-485
Water-cooled, castellated probe samples the exhaust plume of rocket engines to recover particles for examination. The probe withstands the stresses of a rocket exhaust plume environment for a sufficient period to obtain a useful sample of the exhaust components.

B65-10390
TEST STRIPS DETECT DIFFERENT CO2 CONCENTRATIONS IN CLOSED COMPARTMENTS SPON- INNOVATOR NOT GIVEN /HELPER/ DATE- DEC. 1965
MSC-210
Four different test strips, using crystal violet for one pair of strips and basic fuchsin as a dye for the second pair, give unambiguous colorimetric indications of four different concentrations of carbon dioxide in the atmosphere of a closed compartment. Tetraethylene pentamine is used as a dye decoloring agent.

B65-10397
NEW BRAZING ALLOY ELIMINATES METAL-STRESS CRACKING BUSCHLER, E., JR. /N. AM. AVIATION/ ROEDER, E. B. DATE- DEC. 1965
W00-249
Silver 15 zinc brazing alloy avoids the liquid-metal stress cracking of base metals when applied to 304, 316, and 410 stainless steels and certain other alloys.

B65-10398
NICKEL-METAL COATING PROTECTS THREADS FASTENERS IN CORROSIVE ENVIRONMENT CHARLES, J. VEEDE, L. VEEDE, L DATE- DEC. 1965
MSC-253
Threaded fasteners used in corrosive environments are plated with electoless nickel and electroplated, over the nickel, with tin. This provides a corrosion-resistant coating for the fasteners.

B66-10005
FLUORIDE COATINGS MAKE EFFECTIVE LUBRICANTS IN MOLTEN SODIUM ENVIRONMENT SPON- INNOVATOR NOT GIVEN /LEWIS/ DATE- JAN. 1966
BEAN- SEE ALSO NASA-TH-1-2348 LEWIS-229
Coating bearing surfaces with calcium fluoride-barium fluoride film provides effective lubrication against sliding friction in molten sodium and other severe environments at high and low temperatures.

B66-10009
COILED SHEET METAL STRIP OPENS INTO TUBULAR CONFIGURATION PARK, J. J. DATE- JAN. 1966 BEAN- SEE ALSO B64-10011
GSFC-425
Copper alloy is converted into a spring material that can be rolled into a compact coil which will spontaneously open to form a tube in the long direction of the strip. The copper alloy is passed through a furnace at a prescribed temperature while restraining the strip in the desired tubular configuration.

B66-10024
ALUMINIZED FIBER GLASS INSULATION CONFORMS TO CURVED SURFACES SPON- INNOVATOR NOT GIVEN /N. E. AVIATION/ DATE- JAN. 1966
M-FS-477
Layers of fiber glass with outer reflective films of vacuum-deposited aluminum or other reflective metal, provide thermal insulation which conforms to curved surfaces. This insulation has good potential for cryogenic systems.

B66-10027
FLEXIBLE PROTECTIVE COATINGS MADE FROM SILICON-NITROGEN MATERIALS SPON- INNOVATOR NOT GIVEN /SOUTHERN RESEARCH/ DATE- JAN. 1966
M-FS-528
Flexible protective coatings formed from either of two polymers exhibit high temperatures for long periods. One polymer is a byproduct in hexaphenylcyclotrisilazane preparation, the other is obtained by heating bis/methylene/diphenylsilane.

B66-10029
EPOXY BLANKET PROTECTS MILLED PART DURING EXPLOSIVE FORMING SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- JAN. 1966
M-FS-307
Epoxy blanket protects chemically milled or machined sections of large, complex structural parts during explosive forming. The blanket uniformly covers all exposed surfaces and fills any voids to support and protect the entire part.

B66-10033
M-FS-562
Porous tungsten plugs provide even airflow for frictionless bearings used in air bearing supported gyro. The plugs have their outer cylindrical surface sealed by an electron beam process to ensure unidirectional airflow through their exit ends.

B66-10037
PROCESS REDUCES SPORE DIAMETERS TO PRODUCE SUPERIOR FILTERS TODD, H. R. /ELECTRO-OPTICAL SYSTEMS/ DATE- FEB. 1966
W00-093
Porous metal structure with very small pore diameters is produced by heating the structure in oxygen for an oxidized surface layer, cooling it, and heating it in hydrogen to decoxidize the oxidized portion. Such structures are superior catalytic beds and filters.

B66-10043
POLYMER FILM EXHIBITS THERMAL AND RADIATION STABILITY BELL, A. L., JR. DATE- FEB. 1966
LANGLEY-100
Aromatic/heterocyclic polymers /pyroxene/ have the ability to absorb large quantities of photolytic, thermal and radiolytic energies while retaining their useful properties. They are prepared from the room temperature reaction of tetranitrides and tetraacids.

B66-10044
PROTECTIVE COATING WITHSTANDS HIGH TEMPERATURE IN OXIDIZING ATMOSPHERE HELLOR, C. H. /FENWAL, INC./ DATE- FEB. 1966
M-PS-529
Protective coating containing a plasma arc sprayed mixture of hafnium oxide and zirconium diboride will withstand high temperatures in an oxygen rich atmosphere. Used on a homogenous tungsten thermocouple, it does not flake or crack on subsequent cooling and reheating, and does not degrade the thermocouple response time.

B66-10053
SPRAY-ON TECHNIQUE SIMPLIFYING FABRICATION OF COMPLEX THERMAL INSULATION BLANKET
BOND, W. E. G. BAYARD, R. /NASA/ DATE- FEB. 1966 M-P-5-497
Spray-on process constructs molds used in forming sections of thermal insulation blankets. The process simplifies the fabrication of blankets by eliminating much of the equipment formerly required and decreasing the time involved.

B66-10070
REFLECTIVE INSULATOR LAYERS SEPARATED BY BONDED SILICA BEADS
ZUVE, N. T., JR. /GRUHMAN AIRCRAFT CORP./ DATE- FEB. 1966 M-PS-215
Nonconductive silica beads are bonded to metallic reflecting insulation sheets prior to fabrication of multilayer reflectors. This eliminates the need for separate nonconductive sheets and simplifies the fabrication process.

B66-10081
POLYTRIFLUOROETHYLENE LUBRICATES BALL BEARINGS IN VACUUM ENVIRONMENT
SPON- INNOVATORS NOT GIVEN /GOODYEAR/ DATE- MAR. 1966 M-P-3-379
Polytetrafluoroethylene /PTFE/ balls are interspersed among steel ball bearings to provide a dry lubricant in a high vacuum environment. The steel balls are lubricated by the film worn off the PTFE balls.

B66-10083
CRYOSTAT MODIFIED TO AID ROTATING BEAM FATIGUE TEST
DUBRAV, T. F. /NASA/ DATE- MAR. 1966 M-P-4-35
Modified stainless steel Dewar side rotating beam fatigue test in a cryogenic environment. The Dewar is modified to receive extended specimens supporting members through specially designed rotary seals. The test set can be fully enclosed and pressurized with an inert gas to make the test explosion-proof.

B66-10087
SOLID-FILM LUBRICANT IS EFFECTIVE AT HIGH TEMPERATURES IN VACUUM
SLIGHT, R. Z. DATE- MAR. 1966 M-P-4-53 AND B63- LEWIS-228
Calcium fluoride with a suitable inorganic binder forms a stable solid-film lubricant when fused to the surface to be lubricated. It is effective in environments at elevated temperatures and gas pressures ranging from atmospheric to high vacuum. It is not stable in reducing atmospheres.

B66-10090
RADIONUCLIDE TRACER SYSTEM DETECTS OIL CONTAMINANTS IN FLUID LINES
BROOKE, D. E. /NASA/ DATE- MAR. 1966 M-P-5-52
Radioactive tracer system continuously detects and monitors lubricating oil contamination in high pressure fluid lines.

B66-10108
VAPOR CONDENSATION PROCESS PRODUCES SLURRY OF MAGNESIUM PARTICLES IN LIQUID HYDROCARBONS
POOK, G. W. WALKER, T. J. WITKES, W. E. DATE- MAR. 1966 LEWIS-263
Vapor condensation apparatus produces a physically stable, homogeneous slurry of finely divided magnesium and liquid hydrocarbons. The magnesium is vaporized and the resultant vapor is cooled rapidly with a liquid hydrocarbon spray, which also serves as the dispersing medium for the condensed magnesium particles.

B66-10110
ETCHING PROCESS BILLS PE 14-8 NO ALLOY STEEL TO PRECISE TOLERANCES
CHEPMA, B. L. /NASA/ DATE- MAY 1966 M-PS-270
Chemical milling process, which combines an aqua regia etchant with a sulfonate wetting agent, produces finishes on PE 14-8 molybdenum alloy steel to precise tolerances. This process permits precision removal of excess metal from the steel in annealed and/or aged conditions.

B66-10111
STORAGE-STABLE FOAMABLE POLYURETHANES IS ACTIVATED BY HEAT
SPON- INNOVATORS NOT GIVEN /GOODYEAR/ DATE- MAY 1966 LANGLEY-187
Polyurethane foamable mixture remains inert in storage unit activated to produce a rapid foaming reaction. The storage-stable foamable composition is spread as a paste on the surface of an expandable structure and, when heated, yields a rigid open-cell polyurethane foam that is self-bondable to the substrate.

B66-10120
OXYGEN-HYDROGEN TORCH IS A SMALL-SCALE STEAM GENERATOR
RAKE\\, C. E. /HEROJET-GEN. CORP./ DATE- MAY 1966 M-14-875
LOX insensitive solvent is blended into a mixture of commercially available surfactants to clean metal surfaces which are to be investigated by the dye-penetrant method. The surfactant mixture is applied before and after application of the dye.

B66-10131
SURFACTANT FOR DIE-PENETRANT INSPECTION IS INSENSITIVE TO LIQUID OXYGEN
SPON- INNOVATORS NOT GIVEN /NASA/ DATE- MAY 1966 M-PS-260
Bismuth alloy potting seals feedthrough electrical connector for instrumentation within a pressurized vessel filled with cryogenic liquids. The seal combines the transformation of high-bismuth content alloys with the thermal contraction of an external aluminum tube.

B66-10138
BISMUTH ALLOY POTTING SEALS ALUMINUM CONNECTOR IN CRYOGENIC APPLICATION
FLOWER, J. F. /DOUGLAS AIRCRAFT CO./ DATE- APR. 1966 NC-260
Bismuth alloy potting seals feedthrough electrical connector for instrumentation within a pressurized vessel filled with cryogenic liquids. The seal combines the transformation of high-bismuth content alloys with the thermal contraction of an external aluminum tube.

B66-10139
HOT-WIRE DETECTOR FOR CHEMICALLY ACTIVE MATERIALS USED IN GAS CHROMATOGRAPHY
SPON- INNOVATORS NOT GIVEN /NASA/ DATE- APR. 1966 M-PS-269
Hot-filament detector analyzes chemically active materials used in gas chromatography. The detector reacts chemically with the effluent vapors in the gas chromatographic apparatus to
change the electrical resistance of the filament as a function of the filament composition. Due to the changes produced by chemical action on the filament, the system is often calibrated.

**GALLIUM ALLOY FILMS INVESTIGATED FOR USE AS BOUNDARY LUBRICANTS**

**SPONSOR: INNOVATOR NOT GIVEN / LEWIS**  
**DATE:** APR. 1966  
**W-00041**

Corrosion of a large number of metal samples that have been exposed to controlled environment is accurately and rapidly measured. Wire samples of the metal are embedded in clear plastic and sectioned for microexamination. Unexposed wire can be included in the matrix as a reference.

**GALLIUM ALLOY FILMS INVESTIGATED FOR USE AS BOUNDARY LUBRICANTS**

**SPONSOR: INNOVATOR NOT GIVEN / LEWIS**  
**DATE:** APR. 1966  
**W-00041**

Gallium alloyed with other low melting point metals has excellent lubricant properties of fluidity and low vapor pressure for high temperature or vacuum environments. The addition of other soft metals reduces the corrosivity and formation of undesirable alloys normally found with gallium.

**DISPENSER LEAK-TESTS AND STERILIZES RUBBER GLOVES**

**SPONSOR: INNOVATOR NOT GIVEN / M. B. AVIATION**  
**DATE:** APR. 1966  
**MSC-285**

Portable vacuum-operated apparatus leak-tests and sterilizes rubber gloves. The gloves are fitted to the hands directly from the apparatus without external handling.

**IMPROVED ADHESIVE FOR CYROGENIC APPLICATIONS CURES AT ROOM TEMPERATURE**

**SPONSOR: KLEINER, H. J. SCHMITZ, M. B. / TELECOMING CORP.**  
**DATE:** MAY 1966  
**W-00-132**

Adhesive cured at room temperature provides an effective adhesive bond over the range from room temperature down to the temperature of liquid hydrogen. The adhesive consists of one part of 200-mesh powdered nylon filler to two parts of an epoxy-polyamine resin.

**FILZARANE POLYMERS SHOW PROMISE FOR HIGH-TEMPERATURE APPLICATION**

**SPONSOR: INNOVATOR NOT GIVEN / MARSHALL**  
**DATE:** JUN. 1966  
**M-FS-466**

Several silazane intermediate compounds and polymers have been prepared which are potentially useful as high temperature coatings and elastomers. These silazane polymers exhibit stability in a temperature range of 300 to 400 degrees C.

**FIBERS OF WEILY DEVELOPED REFRACTORY CERAMICS PRODUCED BY IMPROVED PROCESS**

**SPONSOR: INNOVATOR NOT GIVEN / HUGHES AIRCRAFT CO.**  
**DATE:** MAY 1966  
**W-00-169**

Rods of refractory ceramic material and glasses having relatively high fusion temperatures and tensile strengths are converted to fiber by subjected these rods to alternate fusion and gas-jet bursts. The refractory, high tensile strength fibers produced are combined with suitable binder to produce heat-resistant fabrics and rigid structures.

**WHITE PRIMER PERMITS A CORROSION-RESISTANT COATING OF KERNEX WIRE**

**SPONSOR: ALBERS, R. H. JENSEN, D. P. SCHNARF, P. / SHEWIN WILLIAMS CO.**  
**DATE:** MAY 1966  
**M-FS-300**

White primer for coating 2219 aluminum alloy supplies a base for a top coating of enamel. A formulation of pigments and vehicle results in a primer with high corrosion resistance and minimum film thickness.

**SUBSTITUTED SILANE-DIOL POLYMERS HAVE IMPROVED THERMAL STABILITY**

**SPONSOR: B. D. CUNY, J. E. DATE:** JUN. 1966  
**M-FS-669**

Organosilicon polymers were synthesized to produce improved physical and chemical properties, including high thermal stability. Of the polymers produced, poly/(4) prime-bis(p-xylo-hydrogen/4-methylphenyl)diethylene, formed from bis/bis[methylene)methylene-diethylene and P.
### Materials (Chemistry)

**B66-10273**

**Boron-Doped Copper Withstands Brazing Temperatures**

SCHINDT, A. R. /N. A. Aviation/ DATE- JULY 1966

Boron-doped copper is used for the brazing of heat transfer components that are brazed in a hydrogen atmosphere. This copper has high strength and ductility at elevated temperatures and does not exhibit massive intergranular failure.

**B66-10281**

**Vapor Diffusion Electrode Improves Fuel Cell Operation**

SMITH, J. O. /MONSANO Res. Corp./ DATE- JUN. 1966

Lewis-187 vapor diffusion type fuel cell electrode presents a nonwetting barrier to the liquid feedstocks so they may contact the electrolyte only in the vapor state. Thus, it effects feedstock mixing with the electrolyte/catalyst interface but prevents feedstock decomposition and catalyst poisoning from liquid mingling.

**B66-10288**

**Improved Thermal Insulation Materials Made of Foamed Refractory Oxides**


Foamed refractory oxides provide lightweight, reflective thermal insulation materials. The materials have a low bulk density and high thermal shock resistance.

**B66-10296**

**Apparatus Enables Accurate Determination of Alkali Oxides in Alkali Metals**


Evacuated apparatus determines the alkali oxide content of an alkali metal by separating the metal from the oxide by amalgamation with mercury. The apparatus prevents oxygen and moisture from inadvertently entering the system during the sampling and analytical procedure.

**B66-10298**

**Ultrasonic Cleaning Restores Depth-Type Filters**

SPON- INNOVATOR NOT GIVEN /LITTLE /ARTHUR D. INC./ DATE- JULY 1966

Cleaning process uses a nonionic surfactant and ultrasonic agitation to restore depth-type fibrous filters to maximum effectiveness.

**B66-10299**

**Electrolytic Etching Process Provides Effective Bonding Surface on Stainless Steel**

SPON- INNOVATOR NOT GIVEN /RCA/ DATE- JULY 1966

GSFC-464

Electrolytic etching process prepares surfaces of a stainless steel shell for reliable, high strength adhesive bonding to dielectric materials. The process uses a 25 percent aqueous solution of phosphoric acid.

**B66-10305**

**Simple, Nondestructive Test Identifies Metals**

DOODS, B. J. /N. A. Aviation/ DATE- JULY 1966

MUC-529

Simplified nondestructive test for identifying metals measures the characteristic potential difference produced by galvanic interaction between a reference electrode and the test metal. A drop of water is used as an electrolyte.

**B66-10312**

**Chemical Milling Solution Produces Smooth Surface Finish on Aluminum**

LHERWEN, H. C. /N. A. Aviation/ DATE- JULY 1966

GSFC-495

Elementary sulfur mixed into a solution of caustic soda and salts produces an etchant which will chemically mill end-grain surfaces on aluminum plate. This composition results in the least amount of thickness variation and pitting.

**B66-10313**

**Sea Dye Marker Provides Visibility for 20 Hours**

DS LAAT, P. /N. A. Aviation/ DATE- JULY 1966

MSC-714

Sea dye marker block releases a visible slick which lasts at least twelve hours. The dye marker uses a fluorescent dye in a heat cured binder which, when immersed in seawater, releases the dye at a controlled rate.

**B66-10322**

**Valve Seat Pores Sealed With Thermosetting Monomer**

GLORCE, A. B. /N. A. Aviation/ DATE- JULY 1966

MPS-900

Hard anodic coating provides a smooth wear resistant valve seating surface on a cast aluminum alloy valve body. Vacuum impregnation with a thermosetting monomer, diallyl phthalate, seals the pores on the coating to prevent galvanic corrosion.

**B66-10327**

**Inflatable Holding Fixture Permits X-Ray to Be Taken of Inner Weld Areas**


MPS-856

Inflatable rubber gland positions and holds X-ray film in positive contact with inner weld areas of manifolds to assemble for verifying the weld quality. The gland is constructed to conform to the inside diameter of the manifold torus.

**B66-10335**

**Semiautomatic Device Tests Components in Different Environments**

HENDRICKSON, D. R. /GE/ N. A. Aviation/ DATE- JUN. 1966

MPS-952

Semiautomatic device tests components in different environments when severe shock from an explosion or earthquake occurs. The valve uses a pendulum to support the valve closure plug in the open position. When jarred, the valve body is moved relative to the pendulum and the plug support is displaced, allowing the plug to seat and be held by spring pressure.

**B66-10336**

**Concealed Hinge Permits Flush Mounting of Doors and Hatches**

BOLLEN, E. V. /N. A. Aviation/ DATE- JULY 1966

MSC-523

Hinge assembly permits flush mounting of doors and hatches of considerable thickness so that the axis of instant rotation, produced by the hinge, lies outside the panel surface and beyond the perimeter adjacent to the hinge. In operation, motion of the assembly is initially parallel, changing to angular after clearing the panel perimeter.

**B66-10337**

**Semiautomatic Device Tests Components With Biaxial Leads**

MILLER, T. C. /N. A. Aviation/ DATE- AUG. 1966

MPS-652

Semiautomatic device with a four-terminal network tests quantities of components having biaxial leads. The four-terminal network permits the testing of components in different environments. This device is easily modified for completely automatic operation.

**B66-10340**

**Device Removes Hydrogen Gas From Enclosed Spaces**

CARSON, W. N. /RI/ DATE- JULY 1966

GSFC-495

Inflatable rubber gland positions and holds X-ray film in positive contact with inner weld areas of manifolds to assemble for verifying the weld quality. The gland is constructed to conform to the inside diameter of the manifold torus.
Hydrogen-oxidant galvanic cell removes small amounts of hydrogen gas continually released from equipment, such as vented silver-zinc batteries, in enclosed compartments where air venting is not feasible. These cells are used in satellite compartments.

B66-10358  ELECTROCHEMICAL MILLING REMOVES BURRS AND SOLDER FROM TUNGSTEN RODS  BURCHARD, J. O. / W. M. AVIATION/ DATE- AUG. 1966  M-PS-714  Electrochemically removing burrs and solder from the cut ends of stainless steel capillary tubing. An electrolyte consisting primarily of a solution of sulfuric and phosphoric acids is used.


B66-10380  SUBMICRON HOLES IN THIN FILMS INCREASE SAMPLING RANGE OF MASS SPECTROMETERS  WILLIAMS, R. B. / CONSOLIDATED SYSTEMS/ DATE- AUG. 1966  JPL-SC-927  Gold film is vapor deposited onto a glass slide containing submicron latex spheres which are removed, leaving submicron holes in the film. These thin-film apertures allow accurate mass spectrometer sampling of gas mixtures at pressures on the order of 100 torr.

B66-10387  SELF-SUPPORTED ALUMINUM THIN FILMS PRODUCED BY VACUUM DEPOSITION PROCESS  NEPP, J. E. / M. W. TINKER, R. W. / DATE- SEP. 1966  AEC-58  Self-supported aluminum thin film is produced by vacuum depositing the film on a polyvinyl formal resin film and then removing the resin by radiant heating in the vacuum. The aluminum film can be used as soon as the resin is eliminated.

B66-10395  COMPOSITE GASKETS ARE COMPATIBLE WITH LIQUID OXYGEN, RESIST COMPRESSION SET  GODFREY, W. B. / WHITTAKER CORP./ DATE- SEP. 1966  M-FS-455  Gaskets fabricated by laminating fluorocarbon polymers with fiber glass cloth have a low compression set. Their flexibility is not subject to drastic changes at the temperature of liquid oxygen with which they are used. The fabrication process is controlled so that the films are not impregnated with the polymer.

B66-10398  THIN-FILM FERRITES VAPOR DEPOSITED BY ONE-STEP PROCESS IN VACUUM  BACHMANN, J. / HELPER/ DATE- SEP. 1966  M-SC-259  Thin-film ferrites are formed by vapor deposition of a mixture of powdered ferrites and powdered boron oxide at controlled temperatures in a vacuum chamber. These films are used in memory devices for computers and as thin-film inductors in communications and telemetry systems.

B66-10400  SYSTEM FOR ETCHING THICK ALUMINUM LAYERS MINIMIZES BRIDGING AND UNDERCUTTING  SPORD- INNOVATOR NOT GIVEN / MENDIX CORP./ DATE- SEP. 1966  M-PS-1366  Four step photolithographic process for etching thick aluminum layers for semiconductor device contacts produces uniform contact surfaces, eliminates bridging, minimizes undercutting, and may be used on various materials of any thickness.

B66-10421  COPPER WIRE PLATED WITH NICKEL AND SILVER RESISTS CORROSION  SPORD- INNOVATOR NOT GIVEN / W. M. AVIATION/ DATE- SEP. 1966  M-PS-765  Copper wire for electrical harnesses, when plated with both nickel and silver, resists galvanic corrosion and high temperatures while maintaining electrical properties and solderability.

B66-10445  WELDABLE ALUMINUM ALLOY HAS IMPROVED MECHANICAL PROPERTIES  WESTERLOUND, R. W. / ALCOA RES. LABS./ DATE- OCT. 1966  M-FS-295  Weldable aluminum alloy has good resistance to stress-corrosion cracking, shows unchanged strength and formability after storage at room temperature, and can be pre-aged, stretched, and aged. Since toxic fumes of cadmium oxide are evolved when the new alloy is welded, adequate ventilation must be provided.

B66-10448  THERMAL STRESS-RELIEF TREATMENTS FOR 2219 ALUMINUM ALLOY ARE EVALUATED  SPORD- INNOVATOR NOT GIVEN / BOEING CO./ DATE- OCT. 1966  M-FS-1213  Evaluation of three thermal stress relief treatments for 2219 aluminum alloy in terms of their effect on residual stress, mechanical properties, and stress corrosion resistance. The treatments are post aging and stress relieving fullscale and subscale parts forced in the aged T81 condition, and aging subscale parts forced in the aged T41 condition.

B66-10451  REUSABLE CHELATING RESINS CONCENTRATE METAL IONS FROM HIGHLY DILUTE SOLUTIONS  BAHM, A. J. / W. M. TINKER, R. W. / DATE- OCT. 1966  JPL-758  Column chromatographic method uses new metal chelating resins for recovering heavy-metal ions from highly dilute solutions. The absorbed heavy-metal cations may be removed from the chelating resin by acid or base washes. The resins are reusable after the washes are completed.

B66-10453  THERMOPLASTIC RUBBERLIKE MATERIAL PRODUCED AT LOW COST  HENDEL, F. J. / DATE- OCT. 1966  JPL-793  Thermoplastic rubberlike material is prepared by blending a copolymer of ethylene and vinyl acetate with asphalt and a petroleum distillate. This low cost material is easily molded or extruded and is compatible with a variety of fillers.

B66-10454  GAGE OF 6.5 PSE CENT SI-PE SHEET IS CHEMICALLY REDUCED  GOLDMAR, A. / H. D. / WESTINGHOUSE ELEC. CORP./ DATE- OCT. 1966  M-SC-577  Chemical milling process aids the production of 6.5 percent silicon-iron soft magnetic alloy sheets to very thin gages. Following conventional rolling to safe gage limits, the material is chemically reduced to the desired gage.

B66-10458  HEAT TREATMENT STABILIZES WELDED ALUMINUM JOINTS AND TOOL STRUCTURES
Heat treatment processes, applied after welding but before machining, impart a normal stability to welded aluminum jigs and tool structures. Thus welding will be realized in these tools if rigidity equal to that of a comparable steel tool is required.

Experiments show that xenon and fluorine combine readily at 400 deg C to form xenon tetrafluoride, which is colorless, crystalline, chemically stable and solid at room temperature. This process can be used for the separation of xenon from mixtures with other noble gases.

Electroless nickel plating provides a hard surface coating on a high strength, corrosion resistant substrate. nickel plating is used for the separation of xenon from mixtures with other noble gases.

B66-10483
ADHESIVE FOR POLYESTER FILMS CURES AT ROOM TEMPERATURE, NO INITIAL CURE

Quick room-temperature-cure adhesive bonds polyester-insulated flat electrical cables to metal surfaces and various other substrates. The bond strength of the adhesive may be considerably increased by first applying a commercially available polyside primer to the polyester film.

Cold trap concentrates oxygen and argon to determine trace amounts as low as 0.1 ppm in helium by gas chromatography.

B66-10519
BRAZE ALLOY HOLDS BONDING STRENGTH OVER WIDE TEMPERATURE RANGE

Silicon-iron alloys containing cobalt and iron have the highest Curie point of all known magnetically soft materials. Their high permeability, low hysteresis loss, good saturation induction, and square loop characteristics recommend them for use in power transformers and rotating machinery.

B66-10538
TUNGSTEN INSULATED SUSCEPTOR CUP FOR HIGH TEMPERATURE INDUCTION FURNACE ELIMINATES CONTAMINATION

Tungsten-rhenium alloys with a substantially more dilute rhenium content have ductilities and other mechanical properties which compare favorably with the tungsten-rhenium alloys having much higher concentrations of the costly rhenium.

B66-10540
SILVER-BASE TERNARY ALLOY PROVES SUPERIOR FOR SLIP RING LEAD WIRES

Tungsten-rhenium alloys with a substantially more dilute rhenium content have ductilities and other mechanical properties which compare favorably with the tungsten-rhenium alloys having much higher concentrations of the costly rhenium.

B66-10551
NEW TUNGSTEN ALLOY HAS HIGH STRENGTH AT ELEVATED TEMPERATURES

Tungsten-hafnium-carbon alloy has tensile strengths of 88,200 psi at 3000 deg F and 62,500 psi at 3500 deg F. Possible industrial applications for this alloy would include electrical components such as switches and spark plugs, die materials for die casting steels, and heating elements.

B66-10558
TANTALUM ALLOYS RESIST CREEP DEFORMATION AT ELEVATED TEMPERATURES

Dispersion-strengthened tantalum-base alloys possess high strength and good resistance to creep deformation at elevated temperatures in high vacuum environments. They also have ease of fabrication, good weldability, and corrosion resistance to molten alkali metals.

B66-10572
TUNGSTEN FIBER-REINFORCED COPPER COMPOSITES FORM HIGH STRENGTH ELECTRICAL CONDUCTORS

Tungsten-fiber-reinforced copper composites have tensile strength, yield strength, and modulus of elasticity proportional to fiber content. The composites form high strength electrical conductors.

B66-10578
SPRAYABLE BIREFRINGENT COATING ENABLES
STRAIN MEASUREMENTS ON LARGE SURFACES
HUNDRY, F. T. /NC GEF, M. E. /LOCKHEED AIRCRAFT
CORP.  /  DATE-DEC. 1966
M-FS-1904
Highly refracting coating for strain measurements on large surfaces contains constituents that can be premixed and sprayed as a single component with conventional paint spray equipment. Elevated temperatures are not required for spraying or curing of the coating material which has long pot life.

B66-10586
GAS CHROMATOGRAPHIC COLUMN ENABLES ANALYSIS OF PROPELLANT HYDRAZINES
WILL, E. A., JR.  /  N. AR. AVIATION/  DATE- DEC. 1966
MSC-1161
Stainless steel column is used in gas chromatographic analysis of propellant-grade hydrazine. The column has also been found effective for the separation of other amines and alcohols and nitrites.

B66-10594
USE OF STEEL AND TANTALUM APPARATUS FOR BOLTED CD-BS-IN ALLOYS
BENNETT, G. A. /  AND URSITI, L. JR.  /  NST, N. L
NIKOLSON, R. A.  /  DATE- DEC. 1966
ARG-199  ARU-200
Steel and tantalum apparatus contains various ternary alloys of cadmium, zinc, and magnesium used in pyrochemical processes for the recovery of uranium-base reactor fuels. These materials exhibit good corrosion resistance at the high temperatures necessary for fuel separation in liquid metal-molten salt solvents.

B66-10609
FILM COATING PERMITS LOW-FORCE SCRIBING
WILLING, R.  /  N. AR. AVIATION/  DATE- DEC. 1966
MSc-990
Film coating requires low scribing force, is relatively unaffected by aging, and gives off a soft, fine scribe residue containing a proven lubricant.

B66-10616
HEAT-TREATMENT OF METAL PARTS FACILITATED BY SAND IMMERSION
BISCHER, G. C.  /  KELLEY, R. C. /BOEING CO./  DATE- DEC. 1966
M-FS-1031
Embedding metal parts of complex shape in sand contained in a steel box prevents straining and warping during heat treatment. The sand not only provides a simple, inexpensive support for the parts but also ensures more uniform distribution of heat to the parts.

B66-10631
SILVER-PALLADIUM BRAKE ALLOY RECOVERED FROM MASKING MATERIALS
M-FS-1085
Method for recovering powdered silver-palladium brake alloy from an acrylic spray binder and rubber masking adhesive used in spray brazing is devised. The process involves agitation and dissolution of masking materials and recovery of suspended precious metal particles on a filter.

B66-10639
PROCESS FOR PREPARING DISPERSIONS OF ALKALI METALS
LANGER, H. F.  /  BREDAKE, A.  /  DATE- DEC. 1966
JPL-734
Finely divided particles of alkali metals are produced by coining alkali metals with certain aromatic compounds in selected solvents to form low-temperature soluble complexes from which the pure alkali metals precipitate quantitatively when the solutions are warmed. All operations must be carried out in an inert gas atmosphere.

B66-10643
CONVECTION CHAMBER STRUTS CAN BE EFFECTIVELY TRANSPIRATION COOLED

PALMER, G. H.  /  N. AR. AVIATION/  DATE- DEC. 1966
M-FS-1630
Vapor-deposited sintering technique increases the feasible temperature range of transpiration-cooled structural members in combustion chambers. This technique produces a porous mass of refractory metal wires around a combustion chamber structural member. This mass acts as a transpiration-cooled surface for a thick-walled tube.

B66-10646
PROCESS PRODUCES CHLORINATED AROMATIC ISOCTANATE IN HIGH YIELD
TIESCHERLING, F.  /  WERTHEAKER CORP.  /  DATE- DEC. 1966
M-FS-1658
Tetrachloroteraphthaloyl chloride reacts with sodium azide in an atmosphere of nitrogen to form a high yield of tetrachloro-p-phenylene disiocyanate. The chlorinated disioocyanate should have application as an intermediate in the preparation of polyurethane foams. The high halogen content would impart added flame resistance to these foams.

B66-10651
INTERGRAINULAR METAL PHASE INCREASES THERMAL SHOCK RESISTANCE OF CERAMIC COATING
CARPENTER, R. W.  /  N. AR. AVIATION/  DATE- DEC. 1966
M-FS-1862  M-FS-1865
Dispersed copper phase increases the thermal shock resistance of plasma-arc-sprayed coating of zirconia used as a heat barrier on a metal substrate. A small amount of copper is deposited on the granules of the zirconia powder before arc-spraying the resultant powder composite onto the substrate.

B66-10666
WIRE MATERIAL REDUCES COMPRESSOR BLADE WEARATION
JOHNSON, R. L.  /  DATE- DEC. 1966
LEWIS-357
Wire material (inconel) having high friction and low wear characteristics, reduces vibratory stress and prevents compressor blade failure.

B66-10673
COLD SOLID PROPPELLANT MOTOR HAS STOP-RESTART CAPABILITY
HENDEL, F. J.  /  DATE- DEC. 1966
JPL-856
Solid propellant rocket is kept and fired at low temperatures in launch vehicles or spacecraft. The motor is capable of developing a specific impulse comparable to that of liquid propellant motors, is started, stopped, and restarted, and is stored in space without solar radiation causing hot spots on the motor casing.

B66-10681
THEM PLASTIC SHEET ELIMINATES NEED FOR EXPENSIVE PLATING
SCHPEL, R. L.  /  N. AR. AVIATION/  DATE- DEC. 1966
M-FS-1966
Gasket of a commercially available plastic material is interposed between the mating surfaces in axial joints where a hard and a soft metal are in intimate contact under stress conditions. This eliminates the fretting problem and is quicker and less expensive than the plating process.

B66-10684
IMPROVED METHOD OF EDGE COATING FLAT REBON WIRE
SPER- INNOVACO NOT GIVEN /SCHUEDELH /T. G.  /  DATE- DEC. 1966
M-FS-902
Method to coat the edges of flat ribbon wire is devised by using enamel with modified flow properties due to addition of 2 to 4 percent silicon. Coating material proceeds several edge coatings to minimize oxidation and additional conventional coats are applied after edge coating to build up thickness.

B66-10701
TRACE LEVELS OF METALLIC CORROSION IN WATER
DETERMINED BY EMISSION SPECTROGRAPHY
SHELL, E. R. /A. M. AVIATION/ DATE- DEC. 1966
MSC-1193
Emission spectrographic method determines trace
amounts of inorganic impurities in potable water.
The capability of this innovation should arouse
considerable interest among plant biologists,
chemists working in organic synthesis, and
pathologists.

B66-10705
GLASS FORMULATION HAS HIGH COEFFICIENT OF
THERMAL EXPANSION
DAVIES, R. E. SEIBEL, J. /WESTINGHOUSE ASTRONUCLE.
Lab./ DATE- DEC. 1966 REAR- SEE ALSO B66-10704
NU-0084
Glass formulation has a high coefficient of
thermal expansion. The glass makes a good
hermetic seal for the end of a stainless steel or
copper tube such as a sheath of an instrumentation
cable.

B66-10710
RADIIOTEC METHOD ENABLES DETERMINATION OF
SURFACE AREAS RAPIDLY AND ACCURATELY
ROGERS, J. ROLL, J. A. STERN, G. T. SUNDAY, J. /WESTINGHOUSE ASTRONUCLE.
Lab./ DATE- DEC. 1966
NU-0088
Radioactive krypton adsorption technique is used
to determine the surface area of more than one
sample of material simultaneously.

B67-10003
NEW ELECTROLYTE MAY INCREASE LIFE OF
POLAROGRAPHIC OXYGEN SENSORS
ABREIGHT, C. T. /GARRETT CORP./ DATE- JAN. 1967
MSC-1049
Electrolyte increases life on oxygen sensors in a
polarograph used for measuring the partial
pressure of oxygen in a gas mixture. It consists of
a solution of lithium chloride, dimethyl
acetamide and water.

B67-10007
COMPOSITES OF POROUS METAL AND SOLID
LUBRICANTS INCREASE BEARING LIFE
SLINN, R. E. DATE- JAN. 1967
LEWIS-397
Self-lubricating composites of porous nickel and
nickel-chromium alloy impregnated with a barium
fluoride-calcium fluoride eutectic, and a thin
film of solid lubricant increase wear life of load
bearing surfaces.

B67-10012
CRYSTAL MICROBALANCE MEASURES CONDENSABLE
MOLECULAR FLUIDS
STEPHENS, J. B. DATE- JAN. 1967
JFL-695
Quartz crystal quantitatively measures molecular
fluxes emanating from and condensing on spacecraft
surfaces. Vibrating in a thickness shear mode,
the crystal is frequency sensitive to changes in
mass on its surface and can measure a fractional
monolayer of a condensate.

B67-10014
ABRADED CATHODIC-PLATED CABLE CONNECTORS
REPAIRED BY CONVERSION COATING
SIMS, J. R. /BOEING CO./ DATE- JAN. 1967
N-PF-1246
Conversion coating procedure repairs scratched and
abraded cathodic-plated aluminum cable connectors
while they are in assembly.

B67-10016
DISPERSION OF BORAX IN PLASTIC IS EXCELLENT
FIRE-RETARDANT WAVE INSULATOR
EVANS, R. HUGHES, J. SCHMITZ, F. DATE- JAN. 1967
NBS-5
A mix of borax powder and a chlorinated anhydrous
polyester resin yields a plastic composition that
is fire-retardant, yields chlorine of toxic gases
when heated, and exhibits high thermal insulating
properties. This composition can be used as a
coating or can be converted into laminated or cast
shapes.

B67-10026
BERILLIUM FLUORIDE FILM PROTECTS BERILLIUM
AGAINST CORROSION
ODONNELL, P. E. O'DONNELL, P. M. DATE- FEB. 1967
LEWIS-363
Film of beryllium fluoride protects beryllium
against corrosion and stress corrosion cracking in
water containing chloride ion concentrations. The
film is formed by exposing the beryllium to
fluorine gas at 535 degrees C or higher and makes
beryllium suitable for space applications.

B67-10032
FLUID-BED FLUORIDE VOLATILITY PROCESS
RECOOKS URANIUM FROM SPENT URANIUM ALLOY
FUELS
BRUSH, J. J. CHILDEGAS, A. A. VANDERBERG, E.
BOLLMAN, J. T. JONES, A. A. RIVCA, J. E.
LETTUS, J. W. POTTS, G. L. RAMASWAMI, D.
STEIN, H. TURNER, F. S. DATES- MAR. 1967
REAR- SEE ALSO ANL-6579, ANL-6829, ANL-6830,
ANL-6973, ANL-6992, ANL-7004
ARG-232
Fluid-bed fluoride volatility process recovers
uranium from uranium fuels containing either
siccorsium or aluminous. The uranium is recovered
as uranium hexafluoride. The process requires
few operations in simple, compact equipment, and
eliminates aqueous radioactive wastes.

B67-10033
NEUTRALIZED BATH CATIONS ARE NEW CLASS
OF MOLITE SALT MIXTURES
ANGELL, C. A. DATE- MAR. 1967
ARG-211
Electrical conductance and activation energy
measurements on mixtures of calcium and potassium
nitrates show the hydrated form to be a new class
of molten salt salt. The theoretical glass transition
temperature of the hydrate varied in a manner
opposite to that of the anhydrous system.

B67-10034
TWO TECHNIQUES ENABLE SAMPLING OF FILTERED
AND UNFILTERED MOLY METALS
BURLIS, L. JR. PIERCE, B. D. TOBIAS, K. E.
WISCH, C. G. DATE- MAR. 1967 REAR- SEE ALSO
ANL-7088
ARG-150
Filtered samples of molybdenum are obtained by
filtering through a plug of porous material fitted
in the end of a nasal tube, and unfiltered
samples are obtained by using a capillary-tube
extension rod with a perforated bucket. With
these methods there are no sampling errors or loss
of liquid.

B67-10048
IRRADIATED GASES TRANSFERRED WITHOUT
CONTAMINATION OR DELAY
BOW, J. L. KENN, W. DATE- MAR. 1967
LEWIS-278
Vacuum chamber apparatus opens sealed canisters of
irradiated gases and transfers the contents
without contaminating the surrounding area, and
without diluting or polluting the contained gases.
The apparatus consists of the chamber, a valved
piping manifold, and a special drill and sealed
drilling access.

B67-10049
CRYOGENIC FATIGUE DATA DEVELOPED FOR INCONEL
718
SCHMITZ, E. B. /W. M. AVIATION/ DATE- MAR. 1967
N-FR-702
Data were obtained on the cryogenic fatigue
properties of Inconel 718 bar using axial loading
and rotating beam fatigue tests. Results also
disclosed the fatigue properties of Inconel 718
sheet materials.

B67-10050
ZIRCONIUM ALLOYS WITH SMALL AMOUNTS OF IRON
AND COPPER OR NICKEL SHOW IMPROVED CORROSION
RESISTANCE IN SUPERHEATED STEAM
GREENBERG, S. YOUNGERB, G. A. DATE- MAR. 1967
ARG-226
Heat treating various compositions of zirconium

126
alloys improve their corrosion resistance to superheated-steam at temperatures higher than 500 degrees C. This increases their potential as fuel cladding for superheated-steam nuclear-fueled reactors as well as in autoclaves operating at modest pressures.

B67-10051
STUDY MADE OF CORROSION RESISTANCE OF STAINLESS STEEL AND NICKEL ALLOYS IN NUCLEAR REACTOR SUPERHEATERS
Experiments performed under conditions found in nuclear reactor superheaters determine the corrosion rate of stainless steel and nickel alloys used in them. Electropolishing was the primary surface treatment before the corrosion test. Corrosion is determined by weight loss of specimens after desalting.

B67-10058
ADDITION OF SOLID OXIDIZER INCREASES LIQUID FUEL SPECIFIC IMPULSE
HANDEL, P. J. DATE= APR. 1967 JFP-861
Adding soluble solid oxidizers to hydrazine and similar fuels makes them useful in low temperature bipropellant systems. These oxidizers improve the low specific impulse, high freezing point, low boiling point, and low density of the fuels.

B67-10062
RECOMMENDED VALUES OF THE THERMOPHYSICAL PROPERTIES OF EIGHT ALLOYS, THEIR MAJOR CONSTITUENTS AND OXIDES
TOULOUKIAN, Y. S. /Purdue Univ./ DATE= MAR. 1967 NU-0095
Reference work provides in tabular and graphical form the thermophysical properties of basic alloys, their constituents and oxides. This is useful for personnel who deal with extreme temperature environments.

B67-10069
CONTROLLED FERRITE CONTENT IMPROVES WELDABILITY OF CORROSION-RESISTANT STEEL
Corrosion-resistant steel that adds restrictions on chemical composition to ensure sufficient ferrite content decreases the tendency of CRS to develop cracks during welding. The equations restricting composition are based on the Scheffler constitution diagram.

B67-10070
RADIAL FURNACE SHOWS PROMISE FOR GROWING STRAIGHT BORON CARBIDE WHISKERS
FEINGOLD, E. /GE/ DATE= APR. 1967 HG-50
Radial furnace, with a long graphite vaporization tube, maintains a uniform thermal gradient, favoring the growth of straight boron carbide whiskers. This concept seems to offer potential for both the quality and yield of whiskers.

B67-10078
PURIFICATION TRAIN PRODUCES ULTRAPURE HYDROGEN GAS
WALBRE, R. J. /N. Am. Aviation/ DATE= APR. 1967 M-FS-1913
Three-stage purification train produces ultrapure hydrogen gas at 1000 psi from K-bottles of high-purity hydrogen. The continuous process incorporates deoxygenation and dehydration units and a molecular sieve.

B67-10079
ARYLENESILAZIDE COPOLYMERS
BREED, L. W. ELLIOTT, R. L. /Midwest Res. Inst./ DATE= APR. 1967 M-FS-1812
Arylenesilazane copolymers with regularly ordered structures were discovered during efforts to develop organosilicon polymers. Arylenesilazane and siloxane monomers were both synthesized in these experiments.

B67-10083
EFFECTS OF HELIUM AND NITROGEN AS PRESSURANTS IN NITROGEN TETROXIDE TRANSFER
BIEZAK, F. SIEKIN, D. J. /N. Am. Aviation/ DATE= APR. 1967 M-SC-924 MSC-925
Study investigates effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer from one vessel to another at a higher elevation. Results may contribute to creation of new environmental systems and improved oxygen solubility in water to promote fisk life.

B67-10089
MATERIALS DATA HANDBOOKS PREPARED FOR ALUMINUM ALLOYS 2014, 2219, AND 5456, AND STAINLESS STEEL ALLOY 301
Materials data handbooks summarize all presently known properties of commercially available structural aluminum alloys 2014, 2219, and 5456 and structural stainless steel alloy 301. The information includes physical and mechanical property data and design data presented in tables, illustrations, and text.

B67-10095
IMPROVED CHLORATE CANDLE PROVIDES CONCENTRATED OXYGEN SOURCE
HAUG, R. D. MIDDLE, D. A. TARKAR, G. F. /GARRETT Corp./ DATE= MAR. 1967 M-SC-1137
Improved chlorate candle is used as a solid, portable source of oxygen in emergency situations. It contains sodium chlorate, iron, barium peroxide, and glass mixed in powdered form. The oxygen evolves from the decomposition of the sodium chlorate when an ignition pellet is electrically initiated.

B67-10100
SYNTHESIS OF VARIOUS HIGHLY HALOGENATED MONOMERS AND POLYMERS
Halogenated polyurethane and polycarbonate are synthesized and found to be LOX compatible but dependent upon the type nitrogen bonding.

B67-10102
SIMPLIFIED METHOD INTRODUCES DRIFT FIELDS INTO CELLS
GOTTESMAN, B. RAPPAPORT, F. WISOCKI, J. J. /ECA/ DATE= APR. 1967 GSFC-577
Drift fields are simply introduced into solar cells at low temperatures in short periods. This is done after their rectifying junctions and output contacts are applied.

B67-10112
THERMODYNAMIC PROPERTIES RELATED TO EXPANSION OF TWO-COMPONENT GAS
BIEZAK, F. /N. Am. Aviation/ DATE= APR. 1967 M-SC-1133
Theoretical equations were derived from basic thermodynamic equations to relate the thermodynamic properties of two-component gas mixture to the expansion of the gas during tank ullage blowdown.

B67-10113
NONWOVEN GLASS FIBER MAT REINFORCES POLYURETHANE ADHESIVE
ROSELAND, L. W. /DOUGLAS Aircraft Co./ DATE= MAY 1967 M-FS-2309
Nonwoven glass fiber mat reinforces the adhesive properties of a polyurethane adhesive that fastens hardware to exterior surfaces of aluminum tanks. The mat is embedded in the secured adhesive. It ensures good control of the bond line and increases the peel strength.

B67-10121
PORTABLE FIXTURE FACILITATES PRESSURE
TESTING OF INSTRUMENTATION FITTINGS

OLSON, G. A. /BOEING Co./ DATE- MAY 1967
M-FS-2032

A portable fixture facilitates pressure testing to detect possible leaks in instrumentation fittings mounted on tank bulkheads. It uses a vacuum cup which seals a pressure regulator adapter around one side of the fitting to be pressure tested. Leakage is detected with a gas sniffer.

B67-10122

EVALUATION OF HIGH TEMPERATURE STRANDED WOOD WIRE

DONELLY, J. H., MOORE, H. J., JR. DATE- MAY 1967
REAN- SEE ALSO NASA-TM-X-53522
M-FS-2478

Tests are performed on wire and insulation materials to determine selection for electronic space assemblies. Flexibility, conductivity, and general workability are tested. Knowledge of the advantages and limitations of these materials should prevent overspecification.

B67-10124

SILVER PLATING ENHANCES RELIABLE DIFFUSION BONDING OF DISSIMILAR METALS

SPON- INNOVATOR INC. /BOEING Co./ DATE- MAY 1967
M-FS-1975

Dissimilar metals are reliably joined by diffusion bonding when the surfaces are electroplated with silver. The process involves cleaning and etching, anodization, silver striking, and silver plating with a conventional plating bath. It minimizes the formation of detrimental intermetallic phases and provides greater tolerance of processing parameters.

B67-10132

STATIC ELECTRICITY OF POLYMERS REDUCED BY TREATMENT WITH IODINE

REMBAUM, R. H. LANDEL, R. F., REMBAUM, A. DATE- MAY 1967
N50-10062

Treating organic polymers with iodine improves the electrical conductivity. Diffusion enables products of desired properties to be custom formulated. This eliminates a buildup of static electricity and the need for fillers or bound metal salts.

B67-10133

XENON FLUORIDE SOLUTIONS EFFECTIVE AS FLUORESCENT AGENTS

HARRIS, R. H. QUARTERMAN, L. A. SHEFT, I. DATE- MAY 1967
AR-217

Solutions of xenon fluorides in anhydrous hydrogen fluoride have few disruptive effects and leave a residue consisting of gaseous xenon, which can be recovered and refluorinated. This mild agent can be used with materials which normally must be fluorinated with fluorine alone at high temperatures.

B67-10138

STATUS OF ULTRACHEMICAL ANALYSIS FOR SEMICONDUCTORS

DUTT, E. Y. HALL, L. C. /VANDEBIIT Univ./ DATE- MAY 1967
M-FS-2254

Status of ultrachemical analyses of materials for semiconductors was studied. This study covered atomic absorption spectroscopy, emission spectroscopy and activation analyses. It makes recommendations to improve sensitivity, reliability and versatility for ultrachemical analysis.

B67-10141

STUDY OF HYDROGEN EMbrittLING OF ULTRAHIGH-STRENGTH STEELS

ELSEA, S. T. FLETCHER, K. E. GROVENELL, T. P. /BATTELLE Inst./ DATE- MAY 1967
M-FS-2455

Hydrogen-stress cracking in high-strength steels is influenced by hydrogen content of the material and its hydrogen absorption tendency.

03 MATERIALS (CHEMISTRY)

B67-10147

DEHYDRATING OF TITANIUM TO MINIMIZE STRESS CORROSION

CAPPETTE, S. W. /GEN. Dynamics/ CONV. DATE- MAY 1967
LEWIS-382

Stress corrosion of titanium and its alloys at elevated temperatures is minimized by replacing trichloroethylene with methanol or methyl ethyl ketone as a degreasing agent. Wearing cotton gloves reduces stress corrosion from perspiration before the metal components are processed.

B67-10148

CRACKS IN GLASS ELECTRICAL CONNECTOR HEADERS REMOVED BY DRY BLASTING WITH FINE ABRASIVE

HARRIS, R. W. /GEN. Dynamics/ CONV. DATE- MAY 1967
LEWIS-381

Cracking that causes pressure leakage in glass connector heads can be alleviated by manipulating the pin bridgewire connectors. This initiates the surface and semicircular cracks. Dry blasting the header surface with a fine abrasive then removes the cracks.

B67-10149

COATING PROTECTS MAGNESIUM-LITHIUM ALLOYS AGAINST CORROSION

SPON- INNOVATOR INC. /MACH. and Foundry Co./ DATE- MAY 1967
REAN- SEE ALSO NASA-DE-50-68
M-FS-2446

Coating protects newly developed magnesium-lithium alloys against corrosion. The procedure includes heating the ingots in a salt bath and rolling them to the desired sheet thickness. The black coating, which is tough though thin and ductile, is derived mainly from chromium.

B67-10159

HEAT TREATMENT STUDY OF ALUMINUM CASTING ALLOY

DATE- N-45
LOVOT, C. Y. DATE- JUN. 1967 REAN- SEE ALSO
M-FS-2397

Study determines the heat treatment cycle of aluminum casting alloy N-45 which will increase the strength levels of the alloy while maintaining optimum stress corrosion resistance. Evidence indicates that present production castings are overaged too severely to take full advantage of the strength of the alloy.

B67-10163

EFFECTS OF HEAT INPUT RATES ON T-1 and T-1A STEEL WELDS

DATE- N-45
M-FS-2475

Technology of T-1 and T-1A steels is emphasized in investigation of their weld-fabrication. Welding heat input rate, production weldment circumstances, and standards of welding control are considered.

B67-10168

ISOSTATIC COMPRESSION PROCESS CONVEYS POLYMERICS INTO STRUCTURAL MATERIAL

DATE- N-45
M-FS-2475

Isostatic compression process compacts certain powdered aromatic polymers into homogeneous materials that can be machined to form useful components, such as bearings. It provides for complete removal of air in the interstitial spaces surrounding the granules of the powdered polymer before the powder is subjected to isostatic compression.

128
B67-10182  
**STRESS CALCULATOR SPEEDILY CONVERTS STRAIN DATA**  
COMBETZ, D. W. /BOEING CO./  
DATE- JUN. 1967  
E-FS-2021  
Stress calculator permits speedy conversion of strain data directly into maximum and minimum stresses and also determines stress direction. The calculator has a moveable slide with logarithmic and linear scales, and an information and grid board. Its size is flexible for easy manipulation.

B67-10184  
**NEW CLASS OF COMPOUNDS HAVE VERY LOW VAPOR PRESSURES**  
ANGELL, C. A. GRUEN, D. M.  
DATE- JUN. 1967  
ARG-113  
Magnesium hexahydrate tetrachlorometallates are 50-volume-percent water, have a high melting point and possess a low vapor pressure. These new compounds are relatively noncorrosive, thermally stable, and water soluble but not hygroscopic. They may have potential applications as cooling fluids.

B67-10185  
**XENON FLUORIDES SHOW POTENTIAL AS FLOODING AGENTS**  
CHERCICK, C. L. SHIH, T. C. YANG, K. C.  
DATE- JUN. 1967  
ARG-113  
Xenon fluorides permit the controlled addition of fluorene across an olefinic double bond. They provide a series of fluorinating agents that permit ready separation from the product at a high purity. The reactions may be carried out in the vapor phase.

B67-10186  
**ALPHA PARTICLE BACKSCATTERING MEASUREMENTS**  
PATHESON, J. H.  
DATE- JUN. 1967  
ARS-116  
Alpha particle backscattering performs a chemical analysis of surfaces. The apparatus uses a curium source and a semiconductor detector to determine the energy spectrum of the particles. This in turn determines the chemical composition of the surface after calibration to known samples.

B67-10187  
**OXIDE FILM ON METAL SUBSTRATE REDUCED TO FORM METAL-OXIDE-METAL LAYER STRUCTURE**  
YOUNGDELM, C. A.  
DATE- JUN. 1967  
ARG-48  
Electrically conductive layer of zirconium on a zirconium-oxide film residing on a zirconium substrate is formed by reducing the oxide in a sodium-calcium solution. The reduced metal remains on the oxide surface as an adherent layer and seems to form a barrier that inhibits further reaction.

B67-10189  
**IRON SERVES AS DIFFUSION BARRIER IN THERMALLY REGENERATIVE GALVANIC CELL**  
CROUTHAMEL, C. E.  
DATE- JUN. 1967  
ARG-29  
Pure iron or iron-coated diaphragms provide a hydrogen diffusion electrode for a thermally regenerative galvanic cell. It allows the gas to diffuse through its interatomic spaces and resists the corrosive action of the cell environment.

B67-10191  
**SOLUBILITY DATA ARE COMPILLED FOR METALS IN LIQUID ZINC**  
DILLON, I. G. JOHNSON, I.  
DATE- JUN. 1967  
SEE ALSO  
ARG-7083  
ARG-169  
Available data is compiled on the solubilities of various metals in liquid zinc. The temperature dependence of the solubility data is expressed using the empirical straight line relationship existing between the logarithm of the solubility and the reciprocal of the absolute temperature.

B67-10194  
**SEPARATION TECHNIQUE PROVIDES RAPID QUANTITATIVE DETERMINATION OF CESIUM-137 IN IRRADIATED NUCLEAR FUEL**  
ELLENBURG, E. J. MC COWN, J. J.  
WESTINGHOUSE ASTRONUCI. LAB.  
DATE- JUN. 1967  
NRC-10047  
Potassium cobalt ferrocyanide is used to determine cesium-137 activity in irradiated fuel samples. It preferentially removes cesium from an acid solution of the fuel material. The residue is filtered and analyzed with a gamma spectrometer.

B67-10197  
**NEW CLASS OF THERMOSETTING PLASTICS HAS IMPROVED STRENGTH, THERMAL AND CHEMICAL STABILITY**  
BURKS, R. A. DUBROW, R. LUBWITZ, R. S.  
DATE- JUN. 1967  
ARS-298  
A new class of thermosetting plastics has high hydrocarbons content, high stiffness, thermal stability, humidity resistance, and workability in the precured state. It is designated cyclized polydienes urethane, and is applicable as matrices to prepare chemically stable ablative materials for rocket nose cones of nozzles.

B67-10201  
**STUDY MADE OF RAYNO NYCEL TECHNOLOGY**  
LEE, W. B.  
MARQUARD CORP./  
DATE- JUN. 1967  
E-FS-2054  
Rayno nickel study indicates that its improved storage life is due to gaseous hydrogen and that the mechanism of its ignitions is catalytic and due to chemisorbed hydrogen atoms. It shows that reacted Rayno nickel powder can be reactivated and can introduce multiple ignitions in a hydrogen gas stress.

B67-10205  
**POROUS MANDRELS PROVIDE UNIFORM DEFORMATION IN HYDROSTATIC PRESSURE SYSTEMS**  
GRIPSHOVER, P. J. BANES, R. D.  
DATE- JUN. 1967  
B67-10225  
Porous copper mandrels prevent uneven deformation of beryllium machining blanks. The beryllium powder is arranged around these mandrels and hot isostatically pressed to form the blanks. The mandrels are then removed by leaching.

B67-10208  
**PHOTONIC FILLER MINIMIZES INTERNAL STRESSES IN EPOXY RESINS**  
LEWIS, 1.  
DATE- JUN. 1967  
ARS-298  
Photosensitive filler is added to curable epoxy resins to minimize stresses from internal shrinkage during curing or polymerization. Cinnamic acid resins and cinnamal ketones may be added in the amount of 1 to 3 percent by weight of the resin mixture.

B67-10227  
**SUBSTITUTING GOLD FOR SILVER IMPROVES ELECETRICAL CONNECTIONS**  
LOITZ, J. R. PICKARD, E. F.  
ASTRO-SHACE LABS./  
DATE- JUN. 1967  
E-FS-2390  
In attaching external leads to thin film sensors of platinum ribbon, liquid gold is applied to each end of the ribbon and the leads are soldered to the cured gold. The cured and soldered liquid gold shows no tendency to migrate and retains initial resistance characteristics when exposed to elevated temperatures.
Metal on the base metal. The resulting bond is a true metal-to-metal bond.

B67-10236
URANIUM ISOTOPES QUANTITATIVELY DETERMINED USING MODIFIED METHOD OF ATOMIC ABSORPTION SPECTROPHOTOMETRY LEE, G. H. DATE: JUL. 1967

 Hollow-cathode discharge tubes determine the quantities of uranium isotopes in a sample by using atomic absorption spectrophotometry. Dissociation of the uranium atoms allows a large number of ground state atoms to be produced, absorbing the incident radiation that is different for the two major isotopes.

B67-10243
ANALYTICAL TECHNIQUE CHARACTERIZES ALL TRACER CONTAMINANTS IN WATER POSTRE, J. W., LEVY, I., WELSON, K. H. /N. A. AVIATION/ DATE: JUL. 1967

 Properly programmed combination of advanced chemical and physical analytical techniques characterize critically all trace contaminants in both the potable and waste water from the Apollo Command Module. This methodology can also be applied to the investigation of the source of water pollution.

B67-10265
ALUMINUM-TITANIUM HYDROXY-BORON CARBIDE COMPOSITE PROVIDES LIGHTWEIGHT NEUTRON SHIELD MATERIAL POTTERYER, A. M. /WESTINGHOUSE ASTROGEC. LAB./ DATE: AUG. 1967

 Inexpensive lightweight neutron shield material has high strength and ductility and withstands high internal heat-generating rates without excessive thermal stress. This composite material combines structural and thermal properties of aluminum, neutron moderating properties of titanium hydride, and neutron absorbing characteristics of boron carbide.

B67-10266
SIMPLIFIED METHOD MEASURES CHANGES IN TEMPER Yield STRENGTH USING LEAST NUMBER OF SPECIMENS DIXON, C. E. /AEROJET-GEN. CORP./ DATE: AUG. 1967

 Simplified method determines yield strength due to heat treat, irradiation or mechanical treatment. Each specimen in a group of specimens is tested for yield stress point, subjected to heat treat or irradiation, and retested for new yield stress point which is a measure of change in material.

B67-10262
MATERIALS DATA HANDBOOK, INCONEL ALLOY 718 SESSLER, J. WEISS, V. /SYRACUSE UNIV. RES. INST./ DATE: AUG. 1967

 Materials data handbook on Inconel alloy 718 includes data on the properties of the alloy at cryogenic, ambient, and elevated temperatures, and other pertinent engineering information required for the design and fabrication of components and equipment utilizing this alloy.

B67-10266
LIQUID CRYSTALS DETECT VOIDS IN FIBER GLASS LAMINATES MOLLER, W. T. /GEN. DYN./CONVAIR/ DATE: AUG. 1967

 Liquid crystal solution nondestructively detects voids or poor bond lines in fiber glass laminates. A thin coating of the solution is applied by spray or brush to the test article surface, and when heated indicates the exact location of defects in color.

B67-10290
TRACE HYDRAZINES IN AQUEOUS SOLUTIONS ACCURATELY DETERMINED BY GAS CHROMATOGRAPHY LEWIS, E. A., JR. /N. A. AVIATION/ DATE: AUG. 1967

 Trace amounts of hydrazines in aqueous solutions can be determined by using polyethyleneimine/PEI/ in conjunction with the gas chromatographic column. The PEI specifically retains water without altering the separability or elution order of the hydrazine and associated constituents.

B67-10295
LIQUID OXYGEN OUTFLOCK CLEANED BY FALLING FILM METHOD PAUL, H. I. /BOEING CO./ DATE: AUG. 1967

 Principle of a vertical falling film is used to clean contaminated large diameter and length liquid oxygen/LOX/ cylindrical ducting. The cleaning cycle is performed by flowing trichloroethylene in a falling film down a vertically mounted duct for approximately one hour.

B67-10301
MATERIALS DATA HANDBOOK, ALUMINUM ALLOY 7075 SESSLER, J. WEISS, V. /SYRACUSE UNIV. RES. INST./ DATE: AUG. 1967

 Materials data handbook on aluminum alloy 7075 includes data on the properties of the alloy at cryogenic, ambient, and elevated temperatures, and other pertinent engineering information required for the design and fabrication of components and equipment utilizing this alloy.

B67-10302
IMPROVED COMPRESSION MOLDING PROCESS WEISS, W. C. DATE: JUL. 1967

 Improved compression molding process produces plastic molding compounds that are strong, homogeneous, free of residual stresses, and have improved ablative characteristics. The conventional method is modified by applying a vacuum to the mold during the molding cycle, using a volatile sink, and exercising precise control of the mold closure limits.

B67-10312
NEW ELECTRON MICROSCOPE EMPLOYS NEW VIDEO DISPLAY TECHNIQUE BROOKSHIRE, W. K. GILBOY, J. DATE: AUG. 1967

 Video display system for a scanning electron microscope provides slow scanning rates, a self-generated color gradient technique, and allows leisurely viewing of several hours. It also enables the viewing of areas where selected energy regions have relatively few electrons, and the changing of specimen position and magnification without adjustments.

B67-10315
TRITIATED ALUMINA SERVES AS REAGENT FOR SELF-LABELING ANALYSIS EIBEBECH, E. H. KLEIN, P. D. DATE: SEP. 1967

 Tritiated alumina, prepared by exchange of the surface hydroxyl groups with tritiated water, is a suitable reagent for exchange-labeling of specific compounds in low concentrations prior to chromatographic analysis. In a chromatographic column, it detects and measures submicrogram quantities of material.

B67-10320
EVAPORANT PEND DEVICE FACILITATES FLASH DEPOSITION PROCESS IN VACUUM SEEBRAN, W. A. STERN, R. J. DATE: SEP. 1967

 Mechanism using a helix sequentially feeds prescribed amounts of metal charges into an evaporator boat used for flash vapor deposition of the evaporants onto a substrate in a vacuum chamber. The helix is advanced by external manual controls extending through sealed feed-through devices into the chamber wall.
CHEMICAL MILLING SOLUTION REVEALS STRESS IN TITANIUM ALLOY
BRASKI, R. M. DATE- SEP. 1967
LANGLER-10077
Solution of hydrogen fluoride, hydrogen peroxide, and water reveals hot stress corrosion cracks in various titanium alloys. After the surface is rinsed in water, dried, and swabbed with the solution, it can be observed by the naked eye or at low magnification.

B67-10326
THERMODYNAMIC PROPERTIES OF SOLID PALLADIUM-SILVER ALLOYS AND OTHER ALLOYS ARE INVESTIGATED BY TORSION-EFFUSION TECHNIQUE
B67-10340
B67-10344
LINDSAY, K. M. DATE- SEP. 1967 BEAM- SEE ALSO
AH-6657
Vapor pressure data obtained by the torsion-effusion method provides the thermodynamic properties of several transition-metal alloy systems. The vapor pressure of silver over solid silver and over palladium-silver alloys was measured and the results were more accurate than those found previously by other techniques.

B67-10340
HIGH-STRENGTH TUNGSTEN ALLOY WITH IMPROVED DUCTILITY
LEWIS-10257
Alloy combines superior strength at elevated temperatures with improved ductility at lower temperatures relative to unalloyed tungsten. Composed of tungsten, rhenium, hafnium, and carbon, the alloy is prepared by consumable electrode vacuum arc-melting and can be fabricated into rod, plate, and sheet.

B67-10346
THERMODYNAMIC PROPERTIES OF SATURATED LIQUID PARAHYDROGEN CHARTED FOR IMPORTANT TEMPERATURE RANGE
SC CARY, R. D. /NATL. BUR. OF STD./ ECDER, R. M. DATE- SEP. 1967
NOC-10016
Six entropy diagrams for parahydrogen in or near the saturated liquid state cover the temperature range from 29.16 degrees to 42.48 degrees R with pressures to 100 psia and mixtures of the liquid and vapor phases to 0.003 quality. The diagrams are presented in color, are 19 by 30 inches in size, and are suitable for wall mounting.

B67-10349
EXCELLENT SPRING PROPERTIES DEVELOPED IN TWO NICHEL ALLOYS FOR USE AT CYCLOGIC TEMPERATURES
DESSAU, F. E. /AEROJET-GEN. CORP./ REEN, I. M. DATE- GEN. 1967
NOC-10086
Cold working and aging prepares nickel alloys for coiling into springs with properties acceptable in a cryogenic environment.

B67-10350
SOFT METAL PLATING ENABLES HARD METAL SEAL TO OPERATE SUCCESSFULLY IN LOW TEMPERATURE
HISATENSTEIN, D. J. /AEROJET-GEN. CORP./ DATE- SEPT. 1967
NOC-10082
Soft metal plating of hard metal lip seal enables successful operation of seal in a cryogenic fluid line under high pressure. The seal is coated with a thin film of 24 carat gold on the lip area to provide antifouling and seal properties.

B67-10351
METAL FLAME SPRAY COATING PROTECTS ELECTRICAL CABLES IN EXTREME ENVIRONMENT
B67-10351
NOC-10077
Metal flame spray coating prevents exit measurement error in sheathed instrumentations cables which are externally attached to cylinders which were cooled on the inside, but exposed to gamma radiation on the outside. The coating provides a thermally conductive path for radiation induced high temperatures within the cables.

B67-10354
CUT-THROUGH TESTER ACCURATELY MEASURES INSULATION FAILURE RATES
BAKER, R. N. /DOUGLAS AIRCRAFT/ DATE- OCT. 1967
M-FS-12506
Cut-through tests electronically measures the rate of failure of various wire and cable insulating materials both as to time and the amount of applied pressure. The force/length/acting on the penetrator can be applied through a near infinite range.

B67-10365
MAGNESIUM-LITHIUM ALLOYS DEVELOPED FOR LOW TEMPERATURE USE
M-FS-1547
Three new magnesium-lithium alloys have been developed for application at cryogenic temperatures. These lightweight alloys have approximately doubled the tensile and yield strengths at room temperature of previously described magnesium-lithium alloys.

B67-10366
STUDY MADE OF DIELECTRIC PROPERTIES OF PROMISING MATERIALS FOR CYCLOGIC EAPACITORS
MATHES, K. M. /NATL. MACHINERY AND MACHINERY CORP./ DATE- OCT. 1967
M-FS-13620
Experimental investigations were conducted to determine dielectric properties of promising materials for cryogenic capacitors to be used in energy storage and pulse applications. The three classes of materials investigated were inorganic bonded ferroelectric materials, amodic coatings on metal foils, and polar low temperature liquids.

B67-10374
HANDBOOK DESCRIBE EDDY CURRENT TECHNIQUES USED IN NONDESTRUCTIVE TESTING OF METAL PARTS AND COMPONENTS
SPENCER- INNOVATOR NOT GIVEN /GEN. DIS./ CONVAIR/ DATE- OCT. 1967
M-FS-13172
Handbooks describe eddy current techniques used in nondestructive testing of metal parts and components.

B67-10375
ANALYSIS OF STABILITY-CRITICAL ORTHOTROPIC CYLINDERS SUBJECTED TO AXIAL COMPRESSION
FINLEY, R. L. /BOEING CORP./ LEE, L. S. /YANG, P. B. DATE- OCT. 1967
M-FS-12869
Analytical procedure for determining critical buckling loads of orthotropic cylinders subjected to axial compression loading has been defined. Three modes of instability have been considered - general instability, local instability caused by panel and interframe buckling, and local instability caused by yielding and crippling in areas of stress concentration.

B67-10381
MACHINING HEAVY PLASTIC SECTIONS
STALGO, D. M. /N. AM. AVIATION/ DATE- OCT. 1967
M-FS-12720
Machining technique produces consistently satisfactory plane-parallel optical surfaces for pressure windows, made of plexiglas, required to support a photographic study of liquid rocket combustion processes. The surfaces are machined and polished to the required tolerances and show no degradation from stress relaxation over periods as long as 6 months.

B67-10383
POLARIZED LIGHT REVEALS STRESS IN MACHINED LAMINATED PLASTICS
FRANKOWSKI, J. /GEN. DIS./ CONVAIR/ DATE- OCT. 1967

131
Polarized light applied to drilled laminated plastic components exposes to the human eye the locked-in stresses that will result in fractures and delaminations when the soldering procedure takes place. The technique detects stresses early in the production cycle before appreciable man-hours are invested in an item destined for rejection.

Study of the relation between microstructure and mechanical properties of aluminum-silicon alloys determines the cause of the variations in properties resulting from differences in solidification rate. It was found that variations in strength are a consequence of variations in ductility and that ductility is inversely proportional to dendrite cell size.

Isotopic tracer experiments and scale-impingement experiments show fluorine to be the migrating species through the nickel fluoride scale formed during the fluorination of nickel. This is in contrast to nickel oxide scales, where nickel is the migrating species.

Scribable opaque coating for transparent plastic film tape is not affected by aging, vacuum, and moderate temperature extremes. It consists of titanium dioxide, a water-compatible acrylic polymer emulsion, and a detergent. The coating mixture is readily dispersed in water before it is dried.

Technique measures interlayer adhesion in spacecraft data storage tape to avoid blocking. An unwind force is exerted on the spool, and the displacement before breakaway of the weighted outer layer is used to calculate the peel-off force necessary. This technique also can have terrestrial applications.

Sodium peroxide permits rapid oxidation of manganese for easy spectroscopic determination. A solution is prepared by dissolving 200 mg of sodium peroxide in distilled water and diluting to 100 ml.

Polymer adhesive laminates polyamide-film flat conductive cable. It is obtained by reacting an appropriate diisocyanate with a diamine. The adhesive has also been used in the lamination of copper to copper for the preparation of multilayer circuit boards.
only a slight corrosive effect on the alloy.

B67-10451
STUDY MADE OF PROCEDURES FOR EXTERNALLY LOADING AND CORROSION TESTING SPECIMENS
Study was initiated to determine methods or test specimens for evaluating stresses corrosion cracking characteristics of common structural materials. It was found that the methods of externally loading and corrosion testing were reliable in yielding reproducible results for stress corrosion evaluation.

B67-10454
WARPAGE ELIMINATED IN COPPER-CLAD MICROWAVE CIRCUIT LAMINATES
BOONE, W. L., JR. /IBM/ DATE- NOV. 1967 K-FS-13892
Cryogenic treatment of laminated copper-clad microwave circuit boards eliminates stresses that cause warpage when a circuit is etched on one side of the board. After etching, the stresses may be eliminated to reduce warpage.

B67-10455
A METHOD OF DETERMINING CORROSION GAS FLOW
Zirconium oxide coating enhances the determination of hot gas flow patterns on liquid rocket injector face and baffle surfaces to indicate modifications that will increase performance and improve combustion stability. The coating withstands combustion temperatures and due to the coarse surface and coloring of the coating, shows the hot gas patterns.

B67-10463
ACID SPRAY TECHNIQUE MILLS ALUMINUM ALLOY MATERIALS WITHOUT IMMERSE
Acid spray machining technique chemically mills aluminum alloy panels without immersing them in an etchant. The spray does not require artificial heating to initiate the etching process.

B67-10484
METALLOGRAPHIC SAMPLES MOUNTED WITH BONC-TEMPERATURE, CURABLE, POLYESTER CASTING RESINS
Study of epoxies and polyester resins determines which type of resin would satisfy the desirable prerequisites of a metallographic mount. Investigated were Polylite 8063, Polylite 8173, PE-169, and PE-228. The results were compared to the standard thermosetting mounting material, Bakelite, and found to be favorable.

B67-10491
MATERIAL FATIGUE DATA OBTAINED BY CARD-PROGRAMMED HYDRAULIC LOADING SYSTEM
DAVIS, W. T. DATE- DEC. 1967 LAGLE-10042
Fatigue tests using load distributions from actual loading histories encountered in flight are programmed on punched electronic accounting machine cards. With this hydraulic loading system, airplane designers can apply up to 55 load levels to a test specimen.

B67-10501
WEIGHT IV RADIATION BY 242 EFFECTIVELY PRODUCE CURIE
ANDERSON, E. W. MILLSTAD, J. STEWART, D. C. DATE- DEC. 1967 REAN- SEE ALSO ANL-6932 ANL-6933 ARG-10030
Computer study was made on the production of multicycle amounts of highly alpha-active curie 242 from americium 241 irradiation. The information available includes curie 242 yields, curie composition, irradiation data, and production techniques and safeguards.

B67-10502
REACTION OF STEAM WITH POLYBENZENUM IS STUDIED
KILPATRICK, H. LOTT, S. DATE- DEC. 1967 REAN- SEE ALSO ANL-6257 ARG-695
Comprehensive report studies the reaction of flowing steam with refractory metals in particular polybenzenum, in the temperature range of 1100 degrees C. The reaction products are hydrogen gas and polybenzen oxide vapor.

B67-10527
QUANTUM MECHANICAL CALCULATIONS OF REACTIVE SCATTERING CROSS SECTIONS IN DIMERIC ENCOUNTERS
PAGE, J. C., JR. /GEORGIA INST. OF TECH./ DATE- DEC. 1967 K-FS-13954
Study applies the nonequilibrium collision theory of reaction rates to the estimation of rate constants for simple reactions. The complications in the quantum mechanical description of chemical reactions and the care needed in approximating the exact wave function for the collision are shown.

B67-10532
COUPPE AND NICKEL ADHERENTLY ELECTROPLATED ON TITANIUM ALLOY
BROWN, B. N. /BOEING CO./ DATE- DEC. 1967 K-FS-13952
Anodic treatment of titanium alloy enables electroplating of tightly adherent coatings of copper and nickel on the alloy. The alloy is treated in a solution of hydrofluoric and acetic acids, followed by the electroplating process.

B67-10533
STUDY OF STRESS CORROSION IN ALUMINUM ALLOYS
BRUNNER, S. B. /STCO LABS./ DATE- DEC. 1967 K-FS-13906
Mechanism of the stress corrosion cracking of high-strength aluminum alloys was investigated using electrochemical, mechanical, and electron microscopic techniques. The feasibility of detecting stress corrosion damage in fabricated aluminum alloy parts by nondestructive testing was investigated using ultrasonic surface waves and eddy currents.

B67-10551
GAS PRESSURE IN SEALED ELECTROCHEMICAL CELLS MEASURED EXTERNALLY
SHEFFIT, J. E. DATE- DEC. 1967 GSFC-10049
Piezoresistive transducer measures gas pressure inside sealed secondary electrochemical cells without breaking the seal. This method is based on the observed fact that the force exerted by the cell faces on the clamp tightening them against the transducer is a function of the gas pressure inside the cell.

B67-10570
RADIANT HEAT SOURCE, VACUUM BAG, PROVIDE PORTABLE BONDING OVEN
NICHOLS, A. H. /W. AM. AVIATION/ DATE- DEC. 1967 MSC-11342
Portable bonding oven is formed to any desired size or configuration to attach doublers and brackets to the surfaces of large structures. A radiant heat source is used in combination with a heat resistant transport vacuum bag and a black heat absorbing cloth.

B67-10573
SPECTROPHOTOMETRIC TECHNIQUE QUANTITATIVELY DETERMINES NICKEL IMPURITY IN NICKEL CHLORIDE-WATER SOLUTIONS
GARRARD, G. G. /W. AM. AVIATION/ DATE- DEC. 1967 MSC-11496
Spectrophotometric method, using a ratio-recording ultraviolet-absorption spectrophotometer, permits analysis of NaF in ethylene glycol-water solutions with high accuracy. It reduces analysis time, requires smaller samples, and is able to detect extremely small concentrations of mercaptobenzothiazole.

**B67-10577**

**PURE XENO FLUORIDE PREPARED FOR THERMAL PROPERTIES STUDIES**

**MART, J. G., CSOBINSKI, D. A., SCHEIBER, P. D.**

**DATE- Dec. 1967**

**ARC-10006**

Preparation of a xenon hexafluoride and sodium fluoride salt yields a sample of the highest possible purity for use in thermal measurements. The desired hexafluoride can easily be freed from the common contaminants, xenon tetra-fluoride, xenon difluoride, and xenon oxide tetrfluoride, because none of these compounds reacts with sodium fluoride.

**B67-10578**

**STUDY OF CORROSION OF 1100 ALUMINUM**

**DRALEY, J. E., LUCS, R. B., MORI, S.**

**DATE- Dec. 1967**

**ARC-10045**

Corrosion of 1100 aluminum in oxygen-saturated water at 70 degrees C under experimental conditions was studied, emphasizing effects of exposure interruption, the number of specimens, and the refreshment rate. A logarithmic equation was derived to express the corrosion rate.

**B67-10579**

**MAGNESIUM-ZINC REDUCTION IS EFFECTIVE IN PREPARATION OF METALS**

**KNOTTON, J. B., STEUERBERG, R. E.**

**DATE- Dec. 1967**

**ARC-10050**

Uranium, thorium, and plutonium are effectively prepared by magnesium-zinc reduction, using uranium oxides, thorium dioxide, and plutonium dioxide as starting materials. This technique is also useful in performing reductions of metals such as zirconium and titanium.

**B67-10580**

**SIMPLE COLOREMETRIC METHOD DETERMINES URANIUM IN TISSUE**

**Bennett, G. A.**

**DATE- Dec. 1967**

**ARG-10050**

Study of the corrosion resistance of several stainless steels to zinc vapor revealed that some stainless steels could be employed for use in zinc processing equipment housings or vapor lines.

**B67-10582**

**STUDY MADE OF RESISTANCE OF STAINLESS STEELS TO ZINC-VAPOR CORROSION**

**Bennett, G. A., BURRIS, L. J., NELSON, P. A.**

**DATE- Dec. 1967**

**ARG-10050**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Device measures the coefficient of static friction of magnetic tape over a range of temperatures and relative humidities. It uses a strain gage to measure the force of friction between a reference surface and the tape drawn at a constant velocity of approximately 0.0001 inch per second relative to the reference surface.

**B67-10589**

**EXPLOSIVE-TRAIN INITIATED THROUGH SOLID BULKHEAD BY PRESSURE CARTRIDGE**

**WINDSHEK, J. C., /W. A. AVIATION**

**DATE- Dec. 1967**

**BSC-11395**

Explosive-train initiated pressure cartridge transmits a shock wave igniting a main charge of explosive through a solid bulkhead without destroying or damaging the seal or the bulkhead. The main charge could be an explosive, a pyrotechnic, or a propellant.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Device measures the coefficient of static friction of magnetic tape over a range of temperatures and relative humidities. It uses a strain gage to measure the force of friction between a reference surface and the tape drawn at a constant velocity of approximately 0.0001 inch per second relative to the reference surface.

**B67-10589**

**EXPLOSIVE-TRAIN INITIATED THROUGH SOLID BULKHEAD BY PRESSURE CARTRIDGE**

**WINDSHEK, J. C., /W. A. AVIATION**

**DATE- Dec. 1967**

**BSC-11395**

Explosive-train initiated pressure cartridge transmits a shock wave igniting a main charge of explosive through a solid bulkhead without destroying or damaging the seal or the bulkhead. The main charge could be an explosive, a pyrotechnic, or a propellant.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.

**B67-10592**

**MATHEMATICAL RELATION PREDICTS ACHIEVABLE DENSITIES OF COMPACTED PARTICLES**

**AYER, J. E., SCIFET, P. E.**

**DATE- Dec. 1967**

**ARG-10062**

Series of mathematical relationships predicts compact densities of spherical shapes in a cylinder as a function of particle dimension, and compact density of angular shapes as a function of particle shape and absolute size.
DYNAMIC CAPTIVE PLASTIC SEAL
DEYER, R. O. /N. A. AVIATION/ DATE- DEC. 1967
N-FS-12930
Piezoplastic material held captive between valve sealing surfaces of 16 to 125 ram microcircumferences provides zero leakage at a high-pressure line at high cryogenic temperatures, when the plastic material is subjected to sufficient stress. This sealing technique makes unnecessary the use of superfinished valve sealing surfaces.

A CERAMIC COMPOSITE THERMAL INSULATION
SPONSOR-INVENTOR NOT GIVEN /MARSHALL/ DATE- DEC. 1967
REAR-SEE ALSO NASA-TR-X-53646
B67-10608
Ceramic composite thermal insulation comprised of alumina-silica fibers, pigmented potassium titanate, and asbestos fibers, bonded with a colloidal silica sol has improved insulating capabilities to both radiant and convective heat. Gelation of the colloidal silica sol prevents binder migration.

THORIATED TUNGSTEN TUBE PROVIDES IMPROVED HIGH TEMPERATURE THERMOCOUPLE SHEATH
SZELBERG, G. A. /WESTINGHOUSE AEROSOLS. LAB./ DATE- DEC. 1967
NNUC-10185
Thermocouple tubing of thoriated tungsten with a very fine grain structure produces a small-diameter sheath capable of operating up to 5000 degrees F. in a hydrogen and graphite environment. This tubing remains ductile and resists both grain growth and carbiding even after prolonged exposure to temperature.

PHOTOVOLTAIC EFFECT IN ORGANIC POLYMER-IODINE COMPLEX
HERNANDEZ, A. G. /BURLINGTON/ DATE- DEC. 1967
REAR-SEE ALSO B66-10682 AND B67-10132
NPO-10373
Certain charge transfer complexes formed from organic polymers and iodine generate appreciable voltages at relatively low impedances upon exposure to light. These films show promise in applications requiring chemically and electrically stable films as detectors of optical radiation and as energy converters in photovoltaic cells.

CONELATION OF DETECTION SENSITIVITIES IN THERMAL-NEUTRON ACTIVATION
WAGNER, M. A. /CREE./ DATE- DEC. 1967
REAR-SEE ALSO ANL-6953
ABO-10068
Detection sensitivities of the chemical elements following thermal-neutron activation have been compiled from the available experimental cross sections and nuclear properties and presented in a concise and usable form. The report also includes the equations and nuclear parameters used in the calculations.

EDDY CURRENT PROBE MEASURES SIZE OF CRACKS IN NONMETALLIC MATERIALS
MUESSER, C. W. /BOEING CO./ DATE- JAN. 1968
N-FS-14059
Nondestructive method uses powdered iron and eddy current probe to measure the depth/width ratio of cracks in electrically nonconductive materials. The eddy current probe determines the mass of metal in the crack after it has been filled with the powdered iron.

SYNTHESIS OF PURE AROMATIC GLYCIDYL ESTERS FOR USE AS ADHESIVES
SPONSOR-INVENTOR NOT GIVEN /BORDEN CERN. CO./ DATE- JAN. 1968
N-FS-12765
SPONSOR-INVENTOR NOT GIVEN
Laboratory study was conducted to synthesize pure glycidyl esters of aromatic acids and to convert the resultant glycidyl esters to polymers for use as adhesives over a range of temperatures down to minus 423 degrees F.

B67-10659
BUCKLING STRENGTH OF FILAMENT-WOUND CYLINDERS UNDER AXIAL COMPRESSION IS INVESTIGATED
SPONSOR-INVENTOR NOT GIVEN /NASA WASHINGTON/ DATE- DEC. 1967
BEAR-SEE ALSO NASA-CH-266
EQ-10032
Analytical study was made of the effects of axial compression on buckling strength of filament-wound cylinders having diameter-to-wall thickness ratios of 167 to 543. Analytical predictions for buckling loads were obtained by using linear anisotropic shell theory.

B67-10660
STUDY MADE OF MECHANICS OF DEFORMATION AND FRACTURE OF FIBERS COMPOSITES
ROSENBURG, W. /GE/ DATE- DEC. 1967
EQ-10035
Report summarizes the findings of studies made of the influence of both fiber and matrix characteristics upon the mechanics of deformation and fracture of fibrous composites. The major portion of the report is devoted to a study of the mechanics of tensile failure of a fibrous composite.

B68-10020
DISTILLATION DEVICE SUPPLIES CESIUM VAPOR AT CONSTANT PRESSURE
BASILUS, A. S. /BCA/ DATE- FEB. 1968
EQ-06124
Distillation apparatus in the form of a U tube supplies small amounts of pure cesium vapor at constant pressure to a thermionic converter. The upstream leg of the U tube is connected to a vacuum pump to withdraw noncondensable impurities, the bottom portion serves as a reservoir for the liquid cesium.

B68-10023
HASTELLLOY X PROPERTIES, DATA, AND METALLURGICAL CHARACTERISTICS
GLASSER, L. F., JR. /AMEROP-GEN. CORP./ DATE- FEB. 1968
NUC-10302
Literature survey and testing program were initiated to obtain pertinent information for Hastelloy X, a nickel-base alloy, through the temperature range of minus 223 to 1200 degrees F. A report has been prepared which includes the tensile properties, mechanical properties, and the manufacturing and fabrication processes.

B68-10029
HEAT TREATMENT PROCEDURE TO INCREASE DUCTILITY OF DEGRADCD NICKEL ALLOY
PEACO, R. /N. A. AVIATION/ DATE- FEB. 1968
N-FS-12421
Tests demonstrate the room temperature ductility of degraded type 41 can be increased to acceptable values by solution heat treatment at a temperature of 2050 degrees to 2150 degrees F for 1 to 2 hours/ and cooling through a controlled temperature range followed by normal aging in air /16 hours at 1400 degrees F/.

B68-10031
PANELIZED HIGH PERFORMANCE MULTILAYER INSULATION
DURLEY, R. A. /SHERVE/ DATE- FEB. 1968
EQ-06223
Multilayer insulation coverings with low conductivity foam spacers are interleaved with quarter mil aluminized polymer film radiation shields to cover flight type liquid hydrogen tankage of space vehicles with a removable, structurally compatible, lightweight, high performance cryogenic insulation capable of surviving extended space mission environments.

B68-10032
SURVEY MADE OF REFRACTORY METALS
ALST, G. A. DATE- FEB. 1968
LEWIS-10380
Survey reviews the structural applications of...
Continous Detonation Reaction Engine


N-PS-14019

Reaction engine operates on the principles of a controlled condensed detonation rather than on the principles of gas expansion. The detonation results in reaction products that are expelled at a much higher velocity.

B68-10043

Cure of Epoxy Resins Determined by Simple Tests


N-PS-13131 N-PS-13132

Rapid visual and simple quantitative tests indicate the degree of cure of particular epoxy resin binders in prepreg stock. It is possible that these tests may be extended to a number of different epoxy formulations.

B68-10046

Survey of Fracture Toughness Test Methods


AND ASTR-NASA-STP-410

Lewis-10379

Comprehensive survey presents current methods of fracture toughness testing that are based on linear elastic fracture mechanisms. General principles of the basic two dimensional crack stress field model are discussed in relation to real three dimensional specimens. Methods of test instrumentation and procedure are described.

B68-10048

Sting Test for Physical Stability of Cryogenic Tank Insulation

Rossello, D. /DOUGLAS AIRCRAFT CO./ DATE- MAR. 1968

N-PS-12567

Qualitative test determines the ability of insulation liners used on liquid hydrogen tanks to withstand stresses produced by the thermal shocks imparted to the insulation during tank filling and drainage. Test specimens are bonded to metal plates with a low thermal expansion coefficient and are immersed in liquid hydrogen.

B68-10049

Method of Maintaining Activity of Hydrogen-Sensing Platinum Electrode

Baran, J. M., III /BECKMAN INSTR./ DATE- MAR. 1968

N-PS-1822

Three-electrode hydrogen sensor containing a platinum electrode maintained in a highly catalytic state, operates with a minimal response time and axial sensitivity to the hydrogen gas being sensed. Electronic control and readout circuitry reacts the working electrode of the sensor to a state of axially catalytic activity.

B68-10062

Pyrotechnic Device Provides One-Shot Heat Source

Haller, R. C. Lalli, V. R. /TRW EQUIPMENT LABS./ DATE- MAR. 1968

Lewis-10131

Pyrotechnic heater provides a one-shot heat source capable of creating a predetermined temperature around sealed packages. It is composed of a blend of an active chemical cleavage and another compound which reacts exothermically when ignited and produces fixed quantities of heat.

B68-10066

Static Structural Analysis of Shell-Type Structures


MSE-11555

Shell analysis manual provides methods for determining static deflections and internal load and stress distributions in shells under various loading conditions, and methods of analyzing static instability of shell structures. Also included are methods for determining the lightest shell wall for various constructions.

B68-10085

Reinforced Thermal-Shock Resistant Ceramics

Chump, D. W. /THOMPSON BROS WOOLSEY/ DATE- MAY 1968

Lewis-10376

Composite material made by dispersing short tungsten-thermus fibers randomly throughout zirconium oxide, is highly resistant to oxidizing environments at temperatures above 2000 degrees F. This reinforced ceramic is also thermal stress resistant.

B68-10092

Molding a High-Density Liner

Habary, W. M. Heiser, W. C. King, C. E. DATE- MAR. 1968

Langley-10051

Molding press is used to form phenolic resin impregnated glass fiber cloth into a high-density, cylindrical-ring laminate. The press applies clamping pressure and heat to a mold containing the glass fiber cloth laminate, which has hydrostatic pressure applied to it by means of a specially designed pressure plug.

B68-10094

High Strength Nickel-Bull Alloy With Improved Oxidation Resistance Up to 2200 Degrees F

Pesch, J. C. Waters, W. J. DATE- APR. 1968

Lewis-10115

Modifying the chemistry of the NASA T-8 alloy and utilizing vacuum melting techniques provides a high strength, workable nickel base superalloy with improved oxidation resistance for use up to 2200 degrees F.

B68-10095

Cobalt-Tungsten, Ferromagnetic

High-Temperature Alloy


Read-See Also NASA-TH-D-4338

Lewis-10378

Cobalt-base alloy which combines high temperature strength and magnetic properties has a composition in weight percent of 7-1/2 percent tungsten, 2-1/2 iron, 1 titanium, 1/2 zirconium, 1/2 carbon, and the balance cobalt. It may be used as construction material for electric motors and generators operating at high temperatures.

B68-10101

Reaction Rates of Graphite With Ozone Measured by Etch Decoration

Bennis, G. R. Monette, G. L. DATE- APR. 1968

ABG-10086

Etch-decoration technique of detecting vacancies in graphite has been used to determine the reaction rates of graphite with ozone in the directions parallel and perpendicular to the layer planes. It consists essentially of peeling single atomic layers off graphite crystals without affecting the remainder of the crystal.

B68-10102

Analytical Techniques for Determining Boron in Graphite

Bennis, G. R. Monette, G. L. DATE- APR. 1968

ABG-10087

Two analytical techniques, a gold nucleation and an etch-decoration technique have been developed for determining the presence and mobility of boron in graphite.

B68-10103

Glassy Materials Investigated For Nuclear
LYNCH, R. E. D. DATE- APR. 1968 SEE ALSO ANL-7062
B66-10075
Studies determine the feasibility of preparing fuel-bearing glasses and glasses bearing neutron-absorbing materials for use as crystalline fuel and control rods for reactors. Properties investigated were devitrification resistance, urania solubility, and density.

B68-10104
DECOMPOSITION VESSEL
BERNAS, B. INL. ACAD. OF SCI./ DATE- MAR. 1968
GSFC-10343
Stainless steel crucible-shaped vessel permits rapid decomposition of silicates and other refractory compounds by acids at relatively low temperatures. The vessel is lined with tetrafluoroethylene fluorocarbon resin and sealed by a sheet of the same material retained in a stainless steel screw cap.

B66-10105
BLAST DEFLECTOR TRAPS SMOKE AND DEBRIS FROM EXPLOSIVE TRAINS
WILKOWSKI, J. C. N. AM. AVIATION/ DATE- MAR. 1968
NSC-11241
Blast deflector protects interior areas and personnel from the smoke and debris of explosive trains. It contains open-cell foam to absorb the pressure loads generated by explosive charges and controls the smoke and debris.

B66-10106
TUNGSTEN-RHENIUM ALLOY THERMOCOUPLES EFFECTIVE FOR HIGH-TEMPERATURE MEASUREMENT
BROOKS, E. J. KRAMER, W. C. DATE- APR. 1968
REAU- SEE ALSO ANL-6961
ARG-10059
Tungsten-rhenium alloy thermocouples, specifically, insulated, sheathed 86/ W plus 26 Re and W plus 5 Be/W plus 26 Re thermocouples, are effective for temperature measurement in excess of 2920 degrees C. These thermocouples have a high thermoelectric output and excellent relationship to temperatures up to 2760 degrees C.

B66-10107
BATTERY PROVIDES CONTROLLED GAS LEAKS
KATZ, S. E. KING, H. J. HUGHES AIRCRAFT CO./ DATE- APR. 1968
NPO-10929
Modified palladium leak device provides a controlled release of gas through very small quantities of gas at low or medium pressures. It has no moving parts, requires less than 5 watts to operate, and is capable of releasing the gas either continuously or in pulses at adjustable flow rates.

B68-10142
LAMINATED SHEET COMPOSITE REINFORCED WITH MODULAR FILAMENT SHEET
REEC, D. V. DATE- MAY 1968
NPS-14575
Aluminum and magnesium composite sheet laminates reinforced with low density, high strength modular filament sheets are produced by diffusion bonding and explosive bonding. Both processes are accomplished in normal atmosphere and require no special tooling or cleaning other than wire brushing the metal surfaces just prior to laminating.

B68-10153
STUDY OF CRACK INITIATION PHENOMENA ASSOCIATED WITH STRESS CORROSION OF ALUMINUM ALLOYS
WILKINSON, W. S. ALUMINUM CO. OF AM./ DATE- MAY 1968
NPS-14283
Study of stress corrosion cracks in aluminum alloys reveals that crack initiation is greatly influenced by boundary orientation and directionality of the structure. In all crack susceptible materials, intergranular corrosion and stress corrosion cracking started and progressed in boundaries oriented perpendicularly to the stressing direction.

B68-10167
EVALUATION OF IGNITION MECHANISMS IN SELECTED NONMETALLIC MATERIALS
GERSTEIN, M. B. LAIB, R. ROSS, W. ORDN. SCI./ DATE- MAY 1968
MSC-11645
MSC-11646
Test program evaluates thermal and electric ignition mechanisms in selected nonmetallic materials found in spacecraft with concentrated oxygen atmospheres. The phenomena evaluated were spontaneous ignition, ignition of flammable vapor by a spark, and ignition by an arc where the arc produces the combustible vapor and the ignition source.

B68-10172
STUDY REVEALS EFFECT OF ALUMINUM ON SATURATION MOMENT OF Fe-Ni ALLOYS
ASG-90295
Study of saturation magnetization, important in the investigation of the electronic structure of alloys, reveals the effect of aluminum on the saturation moments of iron-nickel alloys. The saturation magnetizations were extrapolated to the absolute zero of temperature for calculating average atomic moments.

B68-10177
SABRE FINE IS FIRE-RETARDANT IN OXYGEN ATMOSPHERE
MSC-11604
Saturn was tested for flammability as a wrapping of TFE-insulated electrical wire bundles in oxygen gas at pressures of 7.5 psia and 14.7 psia. It was found to be fire retardant or self-extinguishing in most instances.

B68-10184
STRESS-CORROSION CHARACTERISTICS OF ALUMINUM CASTING ALLOY 6-45
LOVOT, C. W. DATE- JUN. 1968
REAU- SEE ALSO ANL-6960
B65-10052 AND B67-10159
M-PS-14817
Evaluation of the stress-corrosion characteristics of aluminum alloy 6-45 shows that the most favorable artificial aging cycle for this alloy, with regard to optimum strength and stress-corrosion resistance, appears to be 400 degrees F for 12 hours.

B68-10185
EVALUATION OF NONDESTRUCTIVE METHODS OF TESTING FOR NONMETALLIC MATERIALS
KILPATRICK, M. LOTT, S. K. DATE- JUN. 1968
ARG-10051
Study reveals the kinetics of niobium and tantalum with steam at elevated temperatures to determine the suitability of high melting metals for fabrication of equipment for temperature steam environments. Niobium obeyed linear kinetics from 1050 degrees to 1500 degrees C but tantalum followed a parabolic rate law.

B68-10191
EVALUATION OF METHODS FOR NONDESTRUCTIVE TESTING OF BRAZED JOINTS
KAMRO, A. DATE- JUN. 1968 REAU- SEE ALSO ANL-692A
B68-10179
Evaluation of nondestructive methods of testing brazed joints reveals that ultrasonic testing is effective in the detection of nonbonds in diffusion bonded samples. Radiography provides excellent resolution of void or inclusion defects, and the neutron radiographic technique shows particular advantage for brazing materials containing cadmium.

B68-10192
WELDING OF COMMERCIAL BASE PLATES IS INVESTIGATED
Investigation of alloys containing rare earth elements and hydrogen revealed that the combination of metallic elements with hydrogen is not capable of producing weld porosity in these alloys, rather they tend to increase the amount of porosity only in the presence of arc contamination by water vapor.

B66-10194

SUSCEPTIBILITY OF IRRADIATED STEELS TO HYDROGEN EMBRITTLEMENT

KROOK, A. D. DATE- JUN. 1968 REAR- SEE ALSO ANL-7266

Investigation determined whether irradiated pressure-vessel steels 4340 and 212-B are susceptible to hydrogen embrittlement and to catastrophic failure. Hydrogen-charging conditions which completely embrittled 4340 steel had negligible effect on 212-B steel in tensile and delayed-failure tests.

B66-10195

ELEMENTARY REVIEW OF ELECTRON MICROPROBE TECHNIQUES AND CORRECTION REQUIREMENTS

HART, E. H. DATE- JUN. 1968 REAR- SEE ALSO ANL-7078

Report presents requirements for correction of measured data on the physical composition of a specimen, obtained by electron microprobe analysis. A condensed review of electron microprobe techniques is presented, including background material for obtaining X-ray intensity data corrections and absorption, atomic number, and fluorescence corrections.

B66-10196

FUNDAMENTAL ELECTRODE KINETICS

ELDER, J. P. DATE- JUN. 1968 REAR- SEE ALSO ANL-7072

Report presents the fundamentals of electrode kinetics and the methods used in evaluating the characteristic parameters of rapid-charge transfer processes at electrode-electrolyte interfaces. The concept of electrode kinetics is outlined, followed by the principles underlying the experimental techniques for the investigation of electrode kinetics.

B66-10197

STUDY OF MECHANICAL PROPERTIES OF URANIUM COMPOUNDS

BEALS, R. J. DATE- JUN. 1968 REAR- SEE ALSO ANL-7070

Study determines the mechanical properties, including brittleness and ductility of several uranium compounds. These include uranium dioxide, uranium sulfide, and uranium phosphide.

B66-10198

CRYSTAL STRUCTURE ANALYSIS OF INTERMETALLIC COMPOUNDS


Study concerns crystal structures and lattice parameters for a number of new intermetallic compounds. Crystal structure data have been collected on equiatomic compounds, formed between an element of the Sc, Ti, V, or Cr group and an element of the Co or Bi group. The data, obtained by conventional methods, are presented in an easily usable tabular form.

B66-10199

STUDIES IN ZIRCONIUM OXIDATION

DRAKE, J. E. DATE- JUN. 1968 REAR- SEE ALSO ANL-7252

Study provides insight into the oxidation mechanisms of zirconium by combining electrical measurements with oxidation data. The measurement of electrical potential across growing oxide scale on zirconium and the determination of conventional weight-change oxidation data were carried out at 550, 700, and 800 degrees C.

B66-10200

RESISTIVITY MEASUREMENTS OF NEUTRON-IRRADIATED PURE METALS AND AL-ZN ALLOYS

KORKE, J. A. DATE- JUN. 1968 REAR- SEE ALSO ANL-7185

Report presents resistivity measurements and their interpretation for neutron-irradiated pure metals and Al-Zn alloys. The influence of temperature, the role of point defects, and the aging behavior on resistivity are considered. The experimental procedures and results are discussed in detail.

B66-10201

TECHNOLOGICAL SURVEY OF TELLURIUM AND ITS COMPOUNDS

STREIBLER, W. J. DATE- JUN. 1968

Review includes data on the chemical and physical properties of tellurium, its oxides, and fluorides, pertinent to the process problem of handling fission product tellurium in fluoride form. The technology of tellurium handling in aqueous processing of nuclear fuels is also reviewed.

B66-10204

MANGANESE-ALUMINA-CERAMIC GLASS ELIMINATES RIGID CONTROLS NECESSARY IN BONDING METALS TO CERAMICS

HOILAB, R. L. DATE- JUN. 1968

Matrix of manganese-alumina silicate glass simplifies the processes of metallizing alumina ceramics. Because the manganese in the glass is preoxidized to the 2 plus state by firing in nitrogen, the ceramic can be metallized in dry hydrogen. Lengthening the firing time permits a lower metallizing temperature.
Calibration apparatus determines the operating temperature range/sensitivity of liquid crystals. The calibrator maintains a precisely controlled test surface temperature. It permits measurement of plus or minus 0.5 degrees F and a sensitivity of plus or minus 0.15 degrees F.

M-86-10251
WELD MICROSTRUCTURE IN INCONEL 718 MINIMIZED BY BORON ELEMENTS
MORRISON, T. J. /SOUTHERN CALIFORNIA INSTITUTE OF TECHNOLOGY/. /DATE- JUL. 1968 SEE ALSO REA-867-10049

M-86-10185
Manganese, silicon, and magnesium markedly reduce the tendency of Inconel 718 to weld microfissuring. By combining a manganese, 0.20 percent by content, with silicon, greater than 0.25 percent content, or by adding 20 ppm of magnesium, the weld microfissuring decreased in the standard alloy.

M-86-10253
HIGH TEMPERATURE ALLOY

LEWIS-10377
Molybdenum is substituted for tungsten on an atomic basis in a cobalt-based alloy, S-1, thus enabling the alloy to be formed into various mill products, such as tubing and steels. The alloy is weldable, has good high temperature strength and is not subject to embrittlement produced by aging.

M-86-10256
GRAPHITE CLOTH FACILITATES VACUUM EVAPORATION OF SILICON MONOXIDE
CABRECHES, M. B. /GEORGIA INST. OF TECH./ /DATE- JUL. 1968

M-86-10764
Woven graphite cloth facilitates the vacuum deposition of thin films of silicon monoxide on substrate surfaces. The cloth serves both as a container and electric heating element for the silicon monoxide. It minimizes and prevents the silicon monoxide particle ejection, provides uniform heat distribution, and cools rapidly by radiation.

M-86-10271
PREPARATION OF SILVER-ACTIVATED ZINC SULFIDE THIN FILMS
FIELD, C. S. / STORAGE ELECTRONICS/ /DATE- AUG. 1968

M-86-10687
Silver improves luminescence and reduces contamination of zinc sulfide phosphors. The silver is added after the zinc sulfide phosphors are deposited in thin films by vapor evaporation, but before calcining, by immersion in a solution of silver salt.

M-86-10278
VISCOITY AND DENSITY OF METHANOL/WATER MIXTURES AT LOW TEMPERATURES
AUSTIN, J. C. /SHERWOOD SHD./ /KANSAS UNIV./ /DATE- AUG. 1968

M-86-10991
Viscosity and density are measured at low temperatures for three methanol/water mixtures. Viscosity is determined by a modified falling cylinder method or a calibrated viscometer. Density is determined by the volume of each mixture contained in a calibrated glass cell placed in a constant-temperature bath.

M-86-10278
CHARACTERISTICS OF FLUIDIZED-PACKED BEDS
GAGE, J. D. /GEORGIA Inst. of Technology/. /DATE- AUG. 1968 REA-867-10049

M-86-10687
Study of fluidized-packed bed includes investigation of heat transfer, solids-gas mixing, and elutriation characteristics. Fluidized-packed bed is a system involving the fluidization of small particles in the voids of a packed bed of larger nonfluidized particles.

M-86-10279
A 100 ANGSTROM NIOBIUM WIRE
CLINE, A. E. /ROE, R. M. WULFF, J. /REU/. LEWIS-10128

M-86-10281
STUDY OF BEHAVIOR OF STEEL AT INTERFACES
KLEIN, D. R. /AMERICAN RIVET COMPANY/. /DATE- AUG. 1968

M-86-10055
Behavior of steels and steel acetates on various types of interfaces indicates that the function of a steel depends upon a surface orientation and surface energy of the interface.

M-86-10285
PRE-WELD HEAT TREATMENT IMPROVES WELDS IN STEEL 41
FRAGER, R. /AMERICAN RIVET COMPANY/. /DATE- AUG. 1968

M-86-13152
Cooling of Steel 41 prior to welding reduces the incidence of cracking during post-weld heat treatment. The microstructure formed during the slow cooling rate favors elevated temperature ductility. Some vestiges of this microstructure are apparently retained during welding and thus enhance strain-age crack resistance in air.

M-86-10302
EFFECTS OF SURFACE PREPARATION ON QUALITY OF ALUMINUM ALLOY WELDMENTS
KLEIN, D. /SHERWOOD S HD./ /DURABLE/ /DATE- AUG. 1968

M-86-13152
Study of surface preparations and surface contamination effects on the welding of 2014 aluminum involves several methods of surface analysis to identify surface properties conducive to weld defects. These methods are radioactive evaporation, spectral reflectance mass spectroscopy, gas chromatography and spark emission spectroscopy.

M-86-10334
MICROPROBE INVESTIGATION OF BRITTLE SEGSOLGAS IN ALUMINUM EIG AND TIG WELDS
LABBEER, P. A. MILLER, H. L. /MCDONNELL DOUGLAS CORP./ /DATE- SEP. 1968

M-86-14720
Quantitative microprobe analysis of segregated particles in aluminum EIG/Metal Isert Gas/ and TIG/Tungsten Inert Gas/welds indicated that there were about ten different kinds of particles, corresponding to ten different intermetallic compounds. Differences between EIG and TIG welds related to the individual cooling rates of these welds.

M-86-10340
APPLICATION OF THE SOLID LUBRICANT
MOLYBDENUM DISULFIDE BY SPUFFERING
PESTILENCE, J. /JOHNS HENRY/ /DATE- SEP. 1968

M-86-10544
Molybdenum disulfide lubricant film is deposited on two substrates, nickel and nickel-chromium alloys, by means of physical direct-current sputtering. The sputtering system uses a three-electrode /tube/ geometry - a thermionic cathode, an anode, and the target, all enclosed in a vacuum chamber.

M-86-10344
NICKEL BASE ALLOY WITH IMPROVED STRESS RUPTURE PROPERTIES
COLLINS, M. E. /QUIGG, R. J. /REU/. /DATE- SEP. 1968

M-86-10263
Nickel base superalloy with improved stress
rupture properties is used for jet aircraft turbine blades. This alloy is capable of maintaining its strength and its creep, oxidation, and thermal fatigue resistance at high temperature.

**B68-10351**

**THERMAL CONDUCTIVITY AND DIELECTRIC CONSTANT OF SILICATE MATERIALS**

**SINNO, I. WECHSLER, A. E. /ARTHUR D. LITTLE, INC./ DATE- SEP. 1968**

M-PS-14856

Report on the thermal conductivity and dielectric constant of nonmetallic materials evaluates the mechanism of heat transfer in evacuated silicate powders and establishes the complex dielectric constant of those materials. Experimental measurements and results are related to postulated lunar surface materials.

**B68-10355**

**EXPERIMENTS WITH CERAMIC COATINGS**

**LYNN, S. E. ROLLINS, C. T. /A. M. ROCKWELL CORP./ DATE- SEP. 1968**

M-PS-18150

Report describes the procedures and techniques used in the application of a ceramic coating and the evaluation of test parts through observation of the cracks that occur in this coating due to loading.

**B68-10358**

**FIRE RETARDANT FOAMS DEVELOPED TO SUPPRESS FUEL FIRES**

**FISCHER, R. GILKER, W. J. PARKER, J. A. /TPCCTIBELLO, S. R. DATE- SEP. 1968**

ARC-10098

Heat insulating polyurethane foam retards and suppresses fuel fires. Uniformly dispersed in the foam is a halogenated polymer capable of spilling off hydrogens halide upon heating and charring of the polyurethane.

**B68-10360**

**FIBER-GRADED MATERIALS FOR AEROSPACE APPLICATION**

**BARTLEY, J. H. HARTLEY, B. H. /BOEING CO./ DATE- SEP. 1968**

M-PS-16086

Evaluation of fiber glass reinforced plastic materials concludes that fiber glass construction is lighter than aluminum alloy construction. Low thermal conductivity and strength make the fiber glass material useful in cryogenic tank supports.

**B68-10365**

**CONSOLIDATION AND FABRICATION TECHNIQUES**

**FOR VANADIUM-20 % TITANIUM /Y-20/**

**BART, W. B. KABASK, P. J. KRAMER, W. C. /BARTFIELD, R. M. MC GOWAN, R. D. DATE- OCT. 1968**

REAN- SEE ALSO ANL-7127 AND ANL-6928

ARC-10148

Tests of the mechanical properties, fuel compatibility, sodium corrosion and irradiation behavior were made for vanadium and vanadium alloy. Improved methods for consolidation and fabrication of bar, rod, sheet, and high-quality, thin-wall tubing of vanadium-20 without titanium are reported.

**B68-10369**

**TUNGSTEN FIBER-REINFORCED NICKEL SUPERALLOY**


LEWIS-10424

Tungsten fiber-reinforced nickel superalloy combines the strength of refractory metals with the oxidation resistance of superalloys. Knowledge of the relationships between fabrication technique, matrix compositions and fiber sizes, and minimized fiber-matrix reaction. Potential application includes high temperature turbine components.

**B68-10373**

**PRODUCT IDENTIFICATION TECHNIQUES USED AS TRAINING AIDS FOR ANALYTICAL CHEMISTS**

**GRILLO, J. F. DATE- OCT. 1968**

SAN-10025

Laboratory staff assistants are trained to use data and observations of routine product analyses performed by experienced analytical chemists when analyzing compounds for potential toxic hazards. Commercial products are used as examples in teaching the analytical approach to unknowns.

**B68-10378**

**NONDESTRUCTIVE METHOD FOR MEASURING RESIDUAL STRESSES IN METALS, A CONCEPT**

**SCHRÖDEL, C. D./ BOEING CO./ DATE- OCT. 1968**

KSC-10227

Nondestructive direct measurement of residual surface stresses in metals can be made because metal under stress has a different electrochemical solution potential than in the unstressed condition. The method uses two matched electrolytic cells to cancel extraneous effects on the actual solution potential of the metal specimen.

**B68-10380**

**MAGNETIC PARTICLE DESTRUCTION ON METAL SUBSTRATES**

**ENGELSON, R. C. LURIA, W. L. WALKER, W. J. /DRAF AND WHITNEY AIRCRAFT CORP./ DATE- OCT. 1968**

LEWIS-10325

High-excitation coatings of iron, calcium, and zirconium titanates thermally sprayed on stainless steel, columbium-1 percent zirconium, and beryllium substrates promote and control radiative heat transfer from the metal substrates. Adherence, compatibility and emissivity stability at elevated temperature and high vacuum were evaluated.

**B68-10385**

**ELECTROMOTIVE SERIES ESTABLISHED FOR METALS USED IN AEROSPACE TECHNOLOGY**

**KUSTER, C. L. /A. M. ROCKWELL CORP./ DATE- OCT. 1968**

M-PS-18127

Electromotive series has been established for approximately 130 commonly used aerospace metals. For most metals an initial potential and a service related potential was obtained.

**B68-10390**

**IMPROVED PROCESS FOR EPITAXIAL DEPOSITION OF SILICON ON REDIFFUSED SUBSTRATES**

**CLARKS, M. G. SALSON, J. L. WORD, J. C. /WESTINGHOUSE ELEC. CORP./ DATE- OCT. 1968**

M-PS-14910

Process for fabricating integrated circuits uniformly deposits silicon epitaxially on prediffused substrates without affecting the sublayer diffusion pattern. Two silicon deposits from different sources, and deposited at different temperatures, protect the sublayer pattern from the silicon tetrachloride reaction.

**B68-10391**

**TRAINING MANUALS FOR NONDESTRUCTIVE TESTING USING MAGNETIC PARTICLES**

**SPOK. INNOVATOR NOT GIVEN /GEN. DTR. / CONVAIR/ DATE- OCT. 1968**

M-PS-20187

Training manuals containing the fundamentals of nondestructive testing using magnetic particle as detection media are used by metal parts inspectors and quality assurance specialists. Magnetic particle testing involves magnetization of the test specimen, application of the magnetic field.
Contamination Control Handbook provides technical information on avoiding contamination of physical, chemical or biological systems or products. The book includes control methods for product design, gases and liquids, airbornes and surface contamination, radiation, packaging, handling, storage and personnel.

B68-10394
NONDESTRUCTIVE TESTING OF BEADED ROCKET ENGINE COMPONENTS
ADAMS, C. J. MAGMAIER, D. J. METES, J. A. /m.
AM. ROCKWELL CORP./ DATE- OCT. 1968
R-PS-18191
Report details study made of nondestructive radiographic, ultrasonic, thermographic, and laser test methods used to inspect and evaluate the quality of the various brazed joints in liquid-propellant rocket engine components and assemblies. Descriptions of some of the unique equipment and methods developed are included.

B68-10408
THE THERMODYNAMIC PROPERTIES OF THE WUSTITE PHASE ARE STUDIED
ACKERHAN, F. J. SANDFORD, R. W., Jr. DATE- DEC. 1968 REN- SEE ALSO ANL-7250
ARG-10200
Study of the precise location of the wustite phase boundaries and the dependence of the partial pressure of oxygen on the temperature and composition of the solid phase was made. From the pressure of oxygen, the temperature and the composition thermodynamic quantities can be determined.

B68-10409
THE PREPARATION, IDENTIFICATION AND PROPERSITIES OF CHLOROPHYLL DERIVATIVES
KATZ, J. J. PENNINGTON, F. C. STRAIN, R. H.
SVEC, W. A. DATE- DEC. 1968
ARG-10201
In the investigation of 10-hydroxy chlorophylls a and b novel techniques included modification of chromatography and the use of fully-deuterated compounds isolated from fully-deuterated autotrophic algae to determine the molecular structure of the chlorophylls.

B68-10414
TITANIUM-NITROGEN REACTION INVESTIGATED FOR APPLICATION TO GATING SYSTEMS
ARMZGER, J. B. COLEMAN, L. F. KILE, R. L.
PIERCE, R. L. DATE- NOV. 1968 REN- SEE ALSO ANL-7167
ARG-10208
Titanium is one of several gating materials available for removing nitrogen from inert gases. The reaction rate of titanium-metal sponge and nitrogen in argon-nitrogen mixtures was studied at 900 degrees C. The rate was found to depend upon the partial pressure of nitrogen in the gas phase. Mathematical relationships simulate titanium systems.

B68-10419
CHEMISTRY LABORATORY SAFETY MANUAL
AVAILABLE
ELSBOCK, R. G. DATE- NOV. 1968
SAN-10030
Chemistry laboratory safety manual outlines safe practices for handling hazardous chemicals and chemistry laboratory equipment. Included are discussions of chemical hazards relating to fire, health, explosion, safety equipment and procedures for certain laboratory techniques and manipulations involving glassware, vacuum equipment, acids, bases, and volatile solvents.

B68-10425
NITRIC ACID-ORGANIC MIXTURES SURVEYED FOR USE IN SEPARATION BY ANION EXCHANGE METHODS
BLUM, C. A. A. FARRIS, D. F. STEWART, D. C.
DATE- NOV. 1968 REN- SEE ALSO ANL-6999
ARG-10065
Column elution-spectrographic analysis technique compares certain solvents directly to the methanol system, using inert rare earths instead of actinides. Distribution ratios for americium between 90 percent solvent, 10 percent 5 nitric acid and Dowex 1 nitrate form resin for a large group of organics miscible in water was determined.

B68-10433
AN ECONOMICAL METHOD FOR THE CONTINUOUS PRODUCTION OF IODINE-123
BLUE, J. W. SMITH, T. E. SODD, V. J. DATE- DEC. 1968
ARG-10518
Simple and inexpensive method produces iodine 123, in a conventional cyclotron. Tellurium 122, a stable isotope available in enrichments exceeding 95 percent, is held on a porous metal plate by a flowing stream of helium and bombarded with either alpha particles or helium 3.

B68-10454
HYDROGEN PEROXIDE ETCHING PROVES USEFUL FOR GERMANIUM
DAYAL, Y. /IIIT RES. INST./ FAMPRIESE, R.
PRIMA, V. DATE- DEC. 1968
ARG-10170
Influence of process variations in the etching of germanium with hydrogen peroxide has been studied, along with damage effects due to radiation. The work advances the knowledge of the etching process for germanium.

B68-10455
GRAIN-BOUNDARY MIGRATION IN KCL BICRYSTALS
GIBSON, C. F. DATE- DEC. 1968 REN- SEE ALSO ANL-7232
ARG-10181
Boundary migration in melt-grown bicrystals of KCl containing pure twist boundaries was investigated. The experiments involve the use of bicrystal specimens in the shape of right-triangular prisms with the boundary parallel to one side.

B68-10520
AMBIENT TEMPERATURE CATALYST FOR HYDROGEN IGNITION
ROBERTS, R. W. /m. AM. ROCKWELL CORP./ DATE- NOV. 1968
LEWIS-10551
Low cost, ambient temperature catalyst for reacting hydrogen gas with air in a catalytic cell near the point of evolution at a controlled rate is announced.

B68-10522
METHOD FOR REMOVING SURFACE-DAMAGED LAYERS FROM NICKEL ALLOYS
FAVELEY, R. W. /m. AM. ROCKWELL CORP./ DATE- NOV. 1968
FARIS, R. /m. DATE- DEC. 1968
I-FS-18151
Electrical discharge machining /EDM/ damaged layer can be effectively removed from Rene 41, Inconel 625, Inconel 718, and Moen K-500 by abrasive-grit blasting or electropolishing /at room temperature/ at a current density of 5A/inches squared in a water solution of phosphoric and sulfuric acids.

B68-10523
EVALUATION OF A FLUOROCARBON PLASTIC USED IN CYTHERINIC VALVE SEALS
CZERKIAK, R. E. LIBR, J. N. MOWERS, B. M. /m.
AM. ROCKWELL CORP./ DATE- NOV. 1968
R-PS-18189
Effects of strain rate, temperature, crystallinity, and surface finish /smoothness/ on the tensile strength of a commercial chlorotrifluoroethylene plastic /CTFE/ used for lipseals in very fast-acting liquid oxygen valves.

B68-10524
DISPENSING GRADUATE FOR BUTADIENE

141
LEWIS-10444 03 MATERIALS (CHEMISTRY)

LEWIS-10535

BABRETT, T. 868-10526

TODD, B. A. 68-10527

GRAIN GROWTH INHIBITOR MATERIALS

ALLOYS

A RAPID STRESS-CORROSION TEST

M-PS-1497

SHELL

1968

1968

B68-10526 PRECISE DOPING OF METALS BY SMALL GAS FLOWS

B68-10527 GRAIN GROWTH INHIBITOR FOR FERROUS TUNGSTEN MATERIALS

TODD, B. A. /ELECTRO-OPT. SYSTEMS/ DATE- NOV. 1968

LEWIS-10535

Boron, either uncombined or combined with nitrogen or carbon added to tungsten powder prior to processing, effectively inhibits grain growth. The tungsten material is stable up to 1800 degrees C.

B68-10528 METHOD FOR CONTROLLING DENSITY AND POROSITY OF SINTERED POWDERED METALS

TODD, B. A. /ELECTRO-OPT. SYSTEMS/ DATE- NOV. 1968

LEWIS-10535

Improved, relatively low-cost method has been developed to produce porous metals with predetermined pore size, pore spacing, and density, utilizing powder-metal processes. The method uses angular not spherical tungsten powder.

B68-10532 MASS LOADING EFFECTS ON VIBRATED RING AND SHELL STRUCTURES

LEE, S. Y. /R. M. ROCKWELL CORP./ DATE- NOV. 1968

M-PS-1497

Efficient methods for predicting the effects of attached masses on the vibration characteristics of ring and shell structures have been developed and substantiated with experimental data.

B68-10536 A RAPID STRESS-CORROSION TEST FOR ALUMINUM ALLOYS

HARDIN, W. J. /KAISER ALUMINUM AND CHEM. CORP./ DATE- DEC. 1968

M-PS-20785

Stressed alloy specimens are immersed in a salt-dichromate solution at 60 degrees C. Because of the minimal general corrosion of these alloys in this solution, stress corrosion failures are detected by low-power microscopic examination.

B68-10552 SIMULATED HAILSTORM FABRICATION AND USE IN TESTING WEATHERABILITY OF STRUCTURES

STOLLER, W. W. DATE- DEC. 1968

NPO-10763

Equipment fabricates and uses simulated hailstones to test the weatherability of exposed structures. The equipment projects the hailstones at velocities experienced in hailstorms.

B68-10553 STRUCTURAL THERMAL-CONTROL COATINGS

STOLLER, W. W. DATE- DEC. 1968

NPO-10785

Specifications have been formulated for application of thermal-control paints on large radar antenna structures exposed to solar radiation. The paint minimizes thermally induced mechanical deflections and glare of incident solar radiation.

B68-10557 SEPARATOR FOR ALKALINE BATTERIES

EHT, R. W. PFLEGER, H. L. /BORDEN CO./ DATE- DEC. 1968

GSFC-10173

Separator compositions have been tested as components of three-plate silver-zinc oxide cells in a standard cycling test. Six materials meet imposed requirements, giving cycling performance superior to celropsane.

B68-10561 WELD JOINT STRENGTH AND MECHANICAL PROPERTIES IN 2219-T81 ALUMINUM ALLOY


LEWIS-10479

Plate and sheet were welded using automatic TIG /Tungsten Inert Gas/ weld techniques and manual repair weld techniques. Yield strength of 2219-T61 sheet and plate decreases significantly when welded.

B68-10568 STRESS-CORROSION-INDUCED PROPERTY CHANGES IN ALUMINUM ALLOYS

BAKERST, B. P. CLOPFELTER, W. N. DATE- 1968

M-PS-20709

Measurements of electrical conductivity, ultrasonic surface wave attenuation, and internal friction loss were made on aluminum alloys 7079-76, 2219-T3, and 219-781 as a function of the onset of stress corrosion.

B68-10004 STUDY OF ACTINIDE CHEMISTRY IN SATURATED POTASSIUM FLUORIDE SOLUTION

COHEN, D. THALMIRE, C. E. DATE- JAN. 1969

ARG-10200

Study concerning the chemistry of actinides in saturated KF solution included work with neptunium, uranium, and americium. Solubilities, adsorption spectra, oxidation-reduction reactions, and solid compounds which can be produced in KF solution were examined. The information is used for preparation of various materials from salts of the actinides.

B68-10006 LEVITATION-MELTING TECHNIQUE FOR METALS AND ALLOYS

DOWNEY, J. W. DATE- JAN. 1969

ARG-10210

Experimentation resulted in an improved levitation-melting technique for metals and alloys which quickly produces a completely homogeneous melt. Also developed were two levitation coils that permit a wide variety of metals to be levitated in the molten state and a halogen quenching method which minimizes contamination and segregation.

B69-10010 SUPERCONDUCTIVITY IN ZIRCONIUM-RHODIUM ALLOYS

ZEGLER, S. T. DATE- JAN. 1969

ARG-10223

Metallographic studies and transition temperature measurements were made with isothermally annealed and water-quenched zirconium-rhodium alloys. The results clarify both the solid-state phase relations at the Zr-rich end of the Zr-Rh alloy system and the influence upon the superconducting transition temperature of structure and composition.

B69-10025 EVALUATION OF LUBRICANTS FOR BALL BEARINGS AT HIGH TEMPERATURES

JONSEN, W. L. SLINN, W. E. DATE- FEB. 1969

LEWIS-10578

Calcium fluoride-barium fluoride coating on ball bearing cages or as fillers in porous bearing cages lubricate bearings successfully for operations in air at temperatures of 1200 to 1500 degrees F.

B69-10026 TWO SYSTEMS DEVELOPED FOR PURIFYING INERT ATMOSPHERES

142
purification of transplutonium elements and plutonium, and separation of the transplutonium elements.

B69-10055

Thermal expansion properties of aerospace materials

GREEN, E. F. /& AM. ROCKWELL CORP. / DATE- MAR. 1969

M-F-18335

Thermal expansion properties of materials used in aerospace systems are compiled into a single handbook. The data, derived from experimental measurements supplemented by information from literature sources, are presented in charts and tables arranged in two sections, covering cryogenic and elevated temperatures.

B69-10058

Sifting characteristics and properties of PUS and PUP are determined

KRUGER, G. L. & ROSE, J. B. DATE- MAR. 1969

M-F-10228

Report on the preparation of plutonium monosulfide and plutonium monophosphide includes a description of the sifting characteristics and properties of these high-temperature compounds. Data on weight loss, microstructure, density, melting point, thermal expansion, microhardness, Seebeck coefficient, and thermal diffusion are included.

B69-10061

Insertion device for pressure testing

HOWLAND, B. T. & MAUER, A. L. /AM. ROCKWELL CORP. / DATE- MAR. 1969

M-F-15185

Test device which introduces either pressure or vacuum into a test pipe or tube, is insertable into the tested item where it secures itself into position and requires no external support. The unit has an operating range from zero to 25,000 psig and to any vacuum level that available equipment can reach.

B69-10065

Materials data handbook, aluminum alloy 6061

SESSLER, J. W. & WEISS, V. /Syracuse Univ. Res. INST. / DATE- MAR. 1969

M-F-20381

Comprehensive compilation of technical data on aluminum alloy 6061 is presented in handbook form. The text includes data on the properties of the alloy at cryogenic, ambient, and elevated temperatures and other pertinent information required for the design and fabrication of components and equipment utilizing this alloy.

B69-10066

Fractography can be used to analyze failure

BROW, J. L. DATE- MAR. 1969

M-F-20254

Fractographic principles used for analyzing failure in metals are applied to the analysis of the microstructure and fracture of polytetrafluoroethylene. This material is used as seals in cryogenic systems.

B69-10067

Diffusion of trace gases for leak detection - a study

BROWN, J. L. DATE- MAR. 1969

M-F-20254

Study reveals quantitative measurements of the diffusion of trace gases /Freon and helium/ injected into systems by different methods. Results show that uniform mixing does not always occur, thus evaluation of the system under test and establishment of the method of trace gas injection are mandatory.

B69-10068

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures


M-F-18192
Tests to determine the tensile and fatigue properties of Inconel 718 at cryogenic temperatures show that the alloy increases in strength at low temperatures, with very little change in toughness. The effect of surface finish and grain size on the fatigue properties was also determined.

B69-10072 REFRACOTORY-METAL COMPOUND IMPREGNATION OF POLYTETRAFLUOROCARBONYL LETHLEK, D. P. DATE- MAR. 1969 LEWIS-10732 Process impregnates polytetrafluoroethylene (PTFE) with thorium or polyethylene compounds. The refractory metals impregnated PTFE combines chemical inertness with electrical conductivity. They are useful for electrochemical cells, chemical processing equipment, catalysts, electrostatic charge removal, RF gaskets, and cable shielding.

B69-10074 ADHESIVE FOR CRITICAL TEMPERATURE APPLICATIONS DOYLE, R. M. /MC DONOUGH DOUGLAS CORP./ DATE- MAY 1969 LEWIS-10264 Adhesive, which bonds a metal liner to a filament wound composite structure used for cryogenic pressure vessels, prevents the metal liner from buckling under depressurization. The adhesive consists of adducts of urethane and epoxy resins.

B69-10079 PREPARATION OF THORIUM MAGNESIUM-ZINC REDUCTION HAMHAR, A. V. KNIGHTON, J. D. STEUENBERG, R. K. DATE- MAR. 1969 REAAS- SEE ALSO ANL-7058 ARG-10245 Magnesium-zinc reduction of thorium dioxide is used for the preparation of thorium metal. Potential economic advantages of this technique include use of relatively inexpensive reagents for the metal and flux phases, and production of metal of acceptable quality in good yield.

B69-10081 SPECTROGRAPHIC ANALYSIS OF BISMUTH-YIN HETERTACT ALLOYS BY SPARK-IGNITED, LOW-VOLTAGE AC-ARC EXCITATION BUDD, R. A. RUPA, S. J. DATE- APR. 1969 REAAS- SEE ALSO ANL-7331 ARG-10288 Spectrographic method determines individual stainless steel components in solten bismuth-x/2 w/o tin eutectic to determine the solubility of Type 304 stainless steels. It utilizes the high sensitivity and precision of the spark-ignited, low-voltage ac-arc excitation of samples rendered homogeneous by dissolution.

B69-10088 IMPROVED pH BUFFERING AGENT FOR SODIUM HYPOCHLORITE NASH, J. B. WEDLER, L. N. /W. A. ROCKWELL CORP./ DATE- MAR. 1969 MSC-15443 Sodium citrate/citric acid was found to be an effective buffer for pH control when used with sodium hypochlorite. The mixture does not corrode aluminum. The buffer appears to form a type of conversion coating that may provide corrosion-resistant properties to aluminum in other applications.

B69-10092 DIRECT MEASUREMENT OF CARBON-14 IN CARBON DIOXIDE BY LIQUID SCINTILLATION COUNTING MORROCCO, D. L. DATE- APR. 1969 ARG-10237 Liquid scintillation counting technique is applied to the direct measurement of carbon-14 in carbon dioxide. This method has high counting efficiency and eliminates many of the basic problems encountered with previous techniques. The technique can be used to achieve a percent substitution reaction and is of interest as an analytical technique.

B69-10096 CORROSION PROTECTION OF ALUMINUM ALLOYS IN CONTACT WITH OTHER METALS KNUTZER, C. A. /W. A. ROCKWELL CORP./ DATE- APR. 1969 N-PS-15256 Study establishes the quality of chemical and galvanized protection afforded by anodized and zinc-plated coatings applied to test panels of various aluminum alloys. The test panels, placed in firm contact with panels of titanium alloys, were subjected to salt spray tests and visually examined for corrosion effect.

B69-10108 HANDBOOKS FOR NONDESTRUCTIVE TESTING USING ULTRASONICS SPOR- INNOVATOR NOT GIVEN /GEN. Durs./CONVAIR/ DATE- APR. 1969 REAAS- SEE ALSO NASA-CR-61209, NASA-CR-61210, NASA-CR-62111, AND NASA-CR-61220 B-PS-20409 Four handbooks have been prepared for use in teaching metal parts inspectors and quality assurance technicians the fundamentals of nondestructive testing using ultrasonic detection methods. The handbooks may be used in the shop or laboratory, or as study texts in technical schools and in the home.

B69-1011B NEW RAPID-CURING, STABLE POLYIMIDE POLYMERS WITH HIGH-THERMAL STABILITY BURNS, E. A. JOHNSON, J. P. KENDRICK, W. B. LORING, R. A. THORPE, R. S. WILSON, R. B. TEM,/ INC./ DATE- MAY 1969 LEWIS-10576 Additive-type polymerization reaction forms thermally stable polyimide polymers, thereby eliminating the volatile matter attendant with the condensation reaction. It is based on the utilization of reactive allylic rings positioned on the ends of polyimide prepolymer having relatively low molecular weights.

B69-10123 PRODUCTION OF METALS AND COMPOUNDS BY RADIATION CHEMISTRY MARX, S. J. PHILLIPS, W. N. DATE- MAY 1969 LEWIS-10237 Preparation of metals and compounds by radiation induced chemical reactions involves irradiation of metal salt solutions with high energy electrons. This technique offers a method for the preparation of high purity metals with minimum contamination from the container material or the cover gas.

B69-10136 PREPARATION OF HIGH PURITY COPPER FLUORIDE BY PLOEGERATING COPPER HYDROXYFLUORIDE KING, E. B. monkey, J. R. /BALLENC NORTHWEST/ DATE- MAY 1969 LEWIS-10794 Copper fluoride containing no more than 50 ppm of any contaminating element was prepared by the fluorination of copper hydroxyfluoride. The impurity content was obtained by spark source mass spectrometry. High purity copper fluoride is needed as a cationic material for high energy density batteries.

B69-10138 LIQUID GALIUM ROTARY ELECTRIC CONTACT PRZYBYSZEWSKI, J. S. DATE- MAY 1969 LEWIS-10628 Due to its low vapor pressure, gallium, when substituted for mercury in a liquid slip ring system, transmits substantial amounts of electrical current to rotating components in an ultrahigh vacuum. It features low electrical loss, little or no wear, and long maintenance-free life.

B69-10147 TORSION SYSTEM FOR CRIMP TESTING WITH MULTIPLE STRESS REVERSALS LILIENTHAL, P. A. /ILLINOIS UNIV./ DATE- MAY
effect of interparticle forces on feasibility of gaseous fluidization of particles below 50 microns in diameter. Interparticle forces are determined by inclined-plane method. Study indicated that fluidizability is related to the interparticle adhesive force.

B69-10196
IDENTIFICATION AND EVALUATION OF LINEAR DAMPING MODELS IN BRAKING VIBRATIONS
BORS, R. L.; ROSENBERG, G. S.; WAHRSCHEK, M. W.;
JUL. DATE- JUL. 1969 REAN- SEE ALSO ARL-7292
ARG-10275
Sensitive method, identifying effective damping mechanisms, involves comparing experimentally determined ratio of first to second mode magnification factors related to common point on beam. Cluster size has little effect on frequencies of elements, magnification factor decreases with cluster size, and viscous and stress damping are dominant damping mechanisms.

B69-10198
RECENT DEVELOPMENT IN ORGANIC SCINTILLATORS
MOORE, D. L.; WISE, N. O. DATE- JUL. 1969
ARG-10344 ARG-10346
Discussion on recent developments of organic scintillators and uses studies of organic compounds that form glass-like masses which scintillate and are stable at room temperature, correlations between molecular structure of organic scintillators and self-quenching, recently developed fast scintillators, and applications of liquid-scintillation counters.

B69-10200
HIGH TEMPERATURE COATINGS FOR GAS BEARINGS
MURRAY, S. F. /ARCH. TECHNOL/ DATE- JUL. 1969
ARG-10206
Report gives measurements of absolute thermoelectric powers of dilute gold-platinum alloys and influence of quenched-in lattice vacancies on their thermoelectric powers. It investigates phonon-drag component of thermoelectric power as a function of platinum concentration, and change in phonon-drag thermoelectric power by lattice vacancies.

B69-10206
MEASUREMENTS OF THERMOELECTRIC POWER IN ANNEALED AND QUENCHED GOLD-PLATINUM ALLOYS
DAARES, C. V. HUEBERER, R. F. DATE- JUL. 1969
ARG-10206
Report gives measurements of absolute thermoelectric powers of dilute gold-platinum alloys and influence of quenched-in lattice vacancies on their thermoelectric powers. It investigates phonon-drag component of thermoelectric power as a function of platinum concentration, and change in phonon-drag thermoelectric power by lattice vacancies.

B69-10235
TECHNIQUE FOR ABRASIVE CUTTING OF THICK-FILM CONDUCTORS FOR HYBRID CIRCUITS
NUSBETH, J. B.; PALERMO, J. S. /MIT/ DATE- AUG. 1969
M-13-242
Abrasive jet technique, producing prototype conductor networks for thick-film hybrid microcircuits, does not require screening and fixing procedures. Pantograph engraver is used to perform abrasive cutting of the conductor network.

B69-10237
DIFFUSION BOND METHOD OF JOINING STEEL AND A TYP-BRONZE COMPOSITE
LANACONI, P. F. DATE- JUL. 1969
M-13-242
Diffusion bonding method does not affect the mechanical properties of steel nor the strength of Teflon. It alleviates problems of adhesive outgassing, radiation damage, and delamination.

B69-10240
THERMOPHYSICAL PROPERTIES OF SODIUM
GOLDEN, G. H.; TOKAR, J. V. DATE- AUG. 1969
ARG-10240
Report studies elucidation and description of
Assessment is given of physical and thermodynamic properties of sodium. POSTAN subroutine computes enthalpy and entropy of sodium in given state, and composition, molecular weight, volume, and compressibility factor of corresponding vapor. Tabular results for saturated liquid and vapor are presented for a 500-2500 degree F range.

B69-10241
ZOE FURIFICATION OF POTASSIUM CHLORIDE
SUSMAN, S. DATE- AUG. 1969
ABC-10377
Procedure for removal of sodium and bromine from KC1 involves zone refining in dilute-halogen atmosphere. Distribution of Na and Br at concentrations of parts per million is followed by neutron-activation analyses.

B69-10250
A NEW SOLID LUBRICANT
FUSAKO, R. L. SLIBNEY, R. E. DATE- AUG. 1969
LEWIS-10817
Friction and wear studies on burnished films of the compound graphite fluoride have demonstrated its potential as a solid lubricant material. It is effective in moist air, dry air, or in dry argon at temperatures up to approximately 400 degrees C.

B69-10252
STUDY OF HIGH TEMPERATURE BEARING MATERIALS
FRANK, R. G. /GR/ DATE- AUG. 1969
LEWIS-10829
Experimental investigation identifies materials suitable for use in potassium lubricated turbo-generator journal bearing and shaft applications at high temperatures. Attention is given to nonrefractory metals and alloys, refractory metals and alloys, Fe-Ni-Co bonded carbides, refractory compounds, and refractory metal bonded carbides.

B69-10254
CONTINUOUS ANALYSIS OF NITROGEN DIOXIDE
IN GAS STREAMS OF PLANTS
ABC-10356
Analyzer and sampling system continuously monitors nitrogen dioxide concentrations in the feed and tail gas streams of a facility recovering nitric acid. The system, using a direct colorimetric approach, makes use of readily available equipment and is flexible and reliable in operation.

B69-10256
INDUCTION PROBE DETERMINES LEVELS OF LIQUID METALS
ABC-10946
Nital-inductance probe accurately measures liquid levels in a variety of liquid metals at elevated temperatures. It can be used in pyrochemical processes for the recovery of spent reactor fuel.

B69-10257
METHOD FOR COPPER STAINING OF GERMANIUM CRYSTALS
RIVER, B. J. DATE- JUL. 1969
ABC-10403
Proper conditions for copper staining of germanium crystals include a low solution temperature of 3 degrees C, illumination of the sample by infrared light, and careful positioning of the light source relative to the sample so as to minimize absorption of the infrared light.

B69-10262
THERMAL RADIATION SHIELDS FOR PIPING IN VACUUM ENVIRONMENTS
SPAGNUOLO, A. C. DATE- AUG. 1969
LEWIS-10899
System of thermal radiation shielding reduces radiant heat transfer in vacuum installations containing piping which carries volatile fluids. Method employs successive layers of spacers and rolled metal shields which are easily installed or removed, expedites efficient removal of entrapped gases, and adapts easily to small pipings.

B69-10265
TECHNIQUE FOR ANCHORING FASTENERS TO HONEYCOMB PANELS
BROWN, W. J. SPAGNUOLO, A. C. STONEBAKER, J. C. DATE- AUG. 1969
LEWIS-10888
Two-piece fastener bushing provides mounting surface for components on a three-inch thick honeycomb structure. Specially constructed starter drill and sheet metal drill permit drilling without misalignment. Tapered knife-edge cutting tool removes honeycomb core material without tearing the adjacent material.

B69-10266
IMPROVED HIGH-TEMPERATURE SILICIDE COATINGS
LEWIS-10817
Special technique for applying silicide coatings to refractory metal alloys improves their high-temperature protective capability. Refractory metal powders mixed with a baked-out organic binder and sintered in a vacuum produce a porous alloy layer on the surface. Exposing the layer to hot silicon converts it to a silicide.

B69-10283
AUTOMATED MEASUREMENT OF THERMAL CONDUCTIVITY
HALL, D. W. /LOCKHEED MISSILES AND SPACE CO./ DATE- AUG. 1969
M-P-20654
Testing technique permits accurate measurement of temperature-dependent thermal conductivity, by virtue of the small temperature differential required across a specimen. The permissible seam影像 temperature ranges from cryogenic to 10 degrees F for the insulation under test.

B69-10287
TECHNIQUE FOR ASSESSING POTENTIAL FIRE HAZARDS
LAMBERT, H. M. /GR/ DATE- AUG. 1969
HQ-10279
Combustion hazard modeling technique limits the fire evaluation to a description of only thermal energy exchanges which are involved in the burning process, and the calculation of temperatures, temperature changes, and weight losses as a result of these energy changes.

B69-10292
APPARATUS AUTOMATICALLY MEASURES SOLUBLE RESIDUE CONTENT OF VOLATILE SOLVENTS
OSWALT, F. W. /SPM/ DATE- AUG. 1969
SAN-10032
Solvent Purity Meter /SPM/ automatically measures the soluble residue in volatile solvents used in cleaning or extraction of oils, greases, and other nonvolatile materials. The SP8 gives instantaneous and continuous readout of soluble contaminant residues in concentrations as low as one part per million of solution.

B69-10293
HIGH STRENGTH, SUPERPLASTIC SUPERALLOY
ASHBROOK, R. L. PIECH, J. C. WATERS, W. J. DATE- AUG. 1965
LEWIS-10805
High strength superplastic superalloys are produced by extruding a pre-alloyed powder. The cast nickel base superalloy was remelted and converted to pre-alloyed powder by inert gas atomization. The superalloy shows high tensile strength and superplasticity and finds use in hot working and casting.

B69-10299
HEPARIN INSULATED WITH CROSSLINKING AGENT
KENDALL, A. DATE- AUG. 1969
WIB-10034
New plastic compositions, involving the synthesis of a polymeric system containing heparin insulatated with crosslinking agents, show
appreciable promise in human body implant technology.

B69-10309
METALLIC DIFFUSION MEASURED BY A MODIFIED
KNUDSEN TECHNIQUE
FRAT, B. J. / BIT/ DATE- SEP. 1969
HQ-10145
Diffusion coefficient of a metal in high
temperature systems is determined. From the
measurement of the weight loss from a Knudsen
cell, the vapor pressure of the encapsulating species
may be calculated. If the only way this species
can enter the Knudsen cell is by diffusion
through a foil, the weight loss is diffusion flux.

B69-10330
SIMPLE TEST INDICATES DEGREE OF CURE OF
POLYURETHANE COATINGS
URIBE, J. E. / C. / ROCKWELL CORP// WALLAUCH,
J. R. DATE- SEP. 1969
MSC-15487
Qualitative test involves immersing a coated cable
in methyl-2-pyrrolidone and removing it in one to
three minutes. Evidence of any cracking, peeling,
or other defects that shows under
20-power magnification indicates that the coating
has not been completely cured.

B69-10339
DEVELOPMENT AND TEST OF FLEXIBLE FILM
COUNTER STEMS FOR USE AS A SAMPLING
TECHNIQUE
AUDIBILITY, C. / MCDONNELL DOUGLAS ASTRONAUTICS
CO./ DATE- SEP. 1969
MFS-20448
Fils consisting of a gelatin base serves as a
flexible, water soluble microbiological assay
coupon for clean room use. It is nontoxic to
microorganisms and capable of remaining unchanged
during periods of storage.

B69-10352
IMPROVED HIGH-TEMPERATURE-STRENGTH
NICKEL-BASE SUPERALLOY
URIBE, J. E. / C. / WALLAUCH, J. R. DATE- SEP. 1969
LINIS-10874
Nickel-base superalloy has a strength of 20,000
psi at 2,200 degrees F, approximately double the
strength of the strongest available cast
nickel-base alloys. It is not subject to the
formation of embrittling phases upon long time
exposure at intermediate temperatures.

B69-10357
SPIRAL-FLOW APPARATUS FOR MEASURING
PERMEATION OF SOLIDS BY GASES
MIDDLETON, R. W. / C. / ROCKWELL CORP./ WALLAUCH,
W. B. DATE- SEP. 1969
MFS-16517
Test assembly measures the rate of permeation of
a solid by a gas. Test gas is forced
under pressure, into a cylindrical plug containing the
solid to be tested. Gas chromatograph detects
the presence of the test gas.

B69-10360
IMPROVED GYRO-FLOATATION /DAMPING/ FLUIDS
JACOBS, S. S. / C. / AND T CHEMICALS, INC./ DATE-
SEP. 1969
MSC-12317
Synthesis of a metal-stabilized halophosphazene
compound with a density of 3 q/cu at 137 Degrees
F serves as an improved stabilizer fluid for
floated gyro. Gyro sensitivity can be increased
with a fluid of higher density which could support a
heavier float.

B69-10366
INSTRUMENTATION FOR NONDESTRUCTIVE TESTING
OF COMPOSITE HONEYCOMB MATERIALS
MARTIN, C. B. / C. / ARNIT ROCKWELL CORP./ MOOGEE, J. F.
DATE- SEP. 1969
MFS-20405
Progress develops instrumentation for
nondestructive testing of adhesive bond strength
in honeycomb materials and air coupled inspection
methods suitable for large tankage.

B69-10372
EFFECTS OF HYDROGEN ON METALS
CATALDO, C. E. DATE- SEP. 1969
MFS-20364
Several rules to guide choice of materials, and
methods of welding, electroplating, and heat
processes provide a method for minimizing
failures in storage tanks and related hardware.
Failures are caused by high-pressure hydrogen
effects, the formation of hydrides in titanium,
and hydrogen absorption through various metals
processing techniques.

B69-10377
SEPARATION OF THE RARE EARTHS BY
ANION-EXCHANGE IN THE PRESENCE OF LACTIC
ACID
FABIS, J. P. DATE- SEP. 1969
ARG-10436
Investigation of adsorption of rare earths and a
few other elements to an anion-exchange resin from
mixed solvents containing lactic acid shows that
the lanthanides are absorbed more strongly than
from the alpha-hydroxyisobutyric acid system, but
with less separation between adjacent members of
the series.

B69-10397
MAGNETIC FORMING OF RESISTIVE MATERIALS
ROBBINS, R. W. / ADVANCED KINETICS INC./ DATE-
SEP. 1969
MFS-20417
Necessary theoretical foundation is given for the
the treatment of magnetic stresses applied to
cylindrical boundaries and swaging of metallic
tubing. Emphasis is placed on the use of
high-resistivity materials such as stainless steel
and Hastelloy.

B69-10406
QUICK-SET TEMPORARY BONDING CLAMPS
Baker, C. D. DATE- SEP. 1969
NPO-10695 WGO-10696
Method of bonding materials to a flat surface
eliminates the use of bolts to hold the pieces
together. Two adhesives are used, the primary or
permanent bonding material and a quick setting
adhesive. No permanent aftereffects are left on
the surfaces to which the materials are bonded.

B69-10412
DIRECT IN-VIAL COLLECTION FOR
LIQUID-SCINTILLATION ASSAY OF CARBON-14
AND RADIUM
KUEHNER, R. G. / KISTELSKI, W. E. DATE- SEP. 1969
REAC- SEE ALSO ABT-7778
ARG-10424
Dislocation of biological materials combines the
simplity of oxygen-flask combustion with the
reproducibility and purity of the final product,
and the convenience of direct in-vial collection of
the sample by the sealed-tube method. It assures
quantitative and reproducible recoveries.

B69-10413
INSTRUMENTATION FOR POTENTIOSTATIC CORROSION
STUDIES WITH DISTILLED WATER
LOSS, R. E. / RUFFAUD, C. A. DATE- SEP. 1969
ARG-10409
Corrosion is studied potentiostatically in the
environment of distilled water with an
instrument that measures the potential of the
corroding specimen immediately after interruption
of the polarizing current. No current is
flowing. The process permits compensation for
Ir drops when potentiostatic control is used in high
resistance systems.

B69-10414
POSSIBLE CORRELATION BETWEEN WORK-HARDENING
AND FATIGUE-FAILURE
KETTUNEN, P. O. ROCKS, G. F. DATE- SEP. 1969
ARG-10371
Conceptual theory proposes that cyclic hardening
due to non-uniform strain and stress amplitudes
during testing, especially during the initial
application of stress to a specimen, may correlate
positively with the ultimate strength of the
specimen under test.
B69-10417
DEVELOPMENT OF STRUCTURAL TEST ARTICLES FROM MAGNESIUM-LITHIUM AND BERYLLIUM.
ALARIO, R. /FAIRCHILD HILLER/ DATE- NOV. 1969
M-PS-1459

Study on the fabrication and testing of a magnesium-lithium box beam show the formability and machinability characteristics of that alloy to be excellent. Results of forming tests for shrink and stretch flanges show values for both flange heights that may be used in future beryllium design.

B69-10423
COORDINATION CHEMISTRY IN FUSED-SALT SOLUTIONS
GREEN, D. M. DATE- SEP. 1969
ARG-10469

Spectrophotometric work on structural determinations with fused-salt solutions is reviewed. Constraints placed on the method, as well as interpretation of the spectra, are discussed with parallels drawn to aqueous spectrophotometric curves of the same materials.

B69-10425
COMPARATIVE CHROMATOGRAPHY OF CHLOROPHIL PIGMENTS
GRANDOLFO, F. SHERNA, J. STRAIN, E. H. DATE-
SEP. 1969
ARG-10415

Methods for isolation of low concentration pigments of the cocklebar species are described. The methods entail two step chromatography so that the different sorption properties of the various pigments in varying column parameters can be utilized. Columnar and thin layer methods are compared. Many conditions influence separability of the chloroplasts.

B69-10430
PRODUCTION OF SOLVATED ELECTRONS
THOMAS, J. E. DATE- SEP. 1969
ARG-10416

Current research, both theoretical and experimental, relating to the production and kinetics of interactions of solvated electrons is reviewed. Particular attention is focused on solvated electrons generated by ionizing radiation in water, alcohols, and organic salts.

B69-10451
IMPROVED INORGIC ION EXCHANGE MEMBRANES
ARRANCE, J. C. /RC DOWELL DOUGLAS CORP./
BRINGER, C. KELKENS, A. B. DATE- SEP. 1969
LEWIS-10737

New method makes solid ion exchange membrane electrodes for use in hydrocarbon-oxygen and hydrogen-oxygen fuel cells. The membrane is a sintered composite of srichlon, phosphoric acid, and sucinate.

B69-10457
ABRASION AND FRACTURE TESTING IN A HIGH-PRESSURE HYDROGEN ENVIRONMENT
SHERIDAN, G. V. /ROCKETDYNE/ WALKER, E. J. DATE-
SEP. 1969
M-PS-18080 M-PS-18088

Two devices are necessary for abrasion and fracture testing of materials evaluated for storage of hydrogen at high pressure for long periods. The first device abrades tensile specimens. The second device tests for fracture toughness of metals. Both devices permit testing in both yield and failure modes in high pressure hydrogen.

B69-10464
NONDESTRUCTIVE DETERMINATION OF COHESIVE STRENGTH OF ADHESIVE-BONDED COMPOSITES
THOMPSON, D. O. /AM. ROCKWELL CORP./ DATE-
OCT. 1969
M-PS-20397

Systematic plan determines vibration responses and modes of composite specimens, correlates vibrational responses of composite specimens varying in strength of cohesive bond, determines effects of thickness variation of the face sheet over the frequency range, optimizes the characteristics of the excitation transducer, and measures bond strength.

B69-10466
IMPROVED RETORT FOR CLEANING METAL POWDERS WITH HYDROGEN
ABE, K. DATE- SEP. 1969
LEWIS-10718

Improved cleaning retort produces uniform temperature distribution in the heated zone and minimizes hydrogen channeling through the powder bed. Retort can be used for nonmetallic powders, sintering in reducing atmosphere, and for cleaning powders in reduction atmospheres other than hydrogen.

B69-10468
BASAL-PLANE METALLOGRAPHY OF DEFORMED PYROLYTIC CARBON
ADAMS, J. P. FISCHBACH, D. B. DATE- SEP. 1969
NFO-11916

Cleavage technique is recommended over the normal polishing technique in preparing pyrolytic carbon for metallographic examination of basal-plane surfaces. After careful removal of torn basal-plane fragments and other cleavage debris with cellulo-ose tape, the true structure is clearly revealed.

B69-10501
LOWEST MEMBRANE BATTERY SEPARATOR
MOLCKIN, J. A. DATE- OCT. 1969
NFO-11911

Ionic transport characteristics of ionenes, insoluble membranes from soluble polyelectrolyte compositions, are studied for possible application in a battery separator. Effectiveness of the thin film of separator membrane essentially determines battery lifetime.

B69-10511
THERMALLY CONDUCTING ELECTRON TRANSFER POLYMERS
BYRD, R. N. /RC DOWELL DOUGLAS CORP./ JENKINS,
E. K. LISTER, J. L. DATE- OCT. 1969
GSC-10703

New polymeric material exhibits excellent physical shock protection, high electrical resistance, and thermal conductivity. It is especially useful for electronic circuitry, such as subminiaturization of components and modular construction of circuits.

B69-10522
MEASUREMENT OF GAS FLOW AT EXTREMELY LOW PRESSURES
BUTTERLY, J. G. /RC DOWELL DOUGLAS CORP./ DATE-
OCT. 1969
MSC-13261

Method accurately measures the flow of gases produced by evaporation or sublimation at pressures approaching total vacuum. Measurement of heat rejection in terms of flow of steam is taken with water as the liquid undergoing change in phase.

B69-10530
A METHOD FOR OBSERVING GAS EVOLUTION DURING PLASTIC LAMINATE CURE
NICHOLS, J. E. /AM. ROCKWELL CORP./ DATE-
OCT. 1969
MSC-15592

Polyester, phenolic, and other resins which develop volatiles during laminating or molding cure are studied using optimus cure cycles. The specimen is placed on a plate and sealed in a plastic bag, then heated and observed for gas evolution using a binocular microscope. A cover plate is added to maintain an autoclave.

B69-10531
TESTING THE FLAMMABILITY OF MATERIALS EXPOSED TO ARC E
HARRITY, J. J. /AM. ROCKWELL CORP./ KUZISZK,
A. L. DATE- OCT. 1969
MSC-15225

Apparatus tests flammability and ignition characteristics of materials in close proximity to incandescent metal fragments or spalls ejected.
from intermetallic short circuit areas in air or oxygen rich atmospheres. It simulates a situation where an exposed live wire makes contact with a grounded member in areas containing organic matter.

B69-10536
IMPROVED METHOD OF PRODUCING OXIDE-DISPERSION-STRENGTHENED ALLOYS
GRANT, R. J. /ETF/ SCHILLING, W. F. DATE- OCT. 1969
EQ-10461
Dispersion strengthened alloys having the required properties are produced by a process in which the refractory particles are less than 100 to 500 A thick. These are fine enough to ensure the strength characteristics without appreciable degradation of other characteristics. The alloy consists of a matrix metal and a dispersoid metal.

B69-10540
IMPROVED PRIMER FOR BONDING POLYURETHANE ADESEIVES TO METALS
CONSTANZA, J. J. /M. AM. ROCKWELL CORP./ DATE- OCT. 1969
R-PS-90591
Primer ensures effective bonding integrity of polyurethane adhesives on metal surfaces at temperatures ranging from minus 423 degrees to plus 120 degrees F. It provides greater metal surface protection and bond strengths over thin temperature range than could be attained with other adhesive systems.

B69-10543
BURST DIAPHRAGM LEAK DETECTOR
FASCOLLA, J. A. /ROCKWELL/ DATE- OCT. 1969
R-PS-14500
New method replaces flowmeter approach with readily available burst diaphragm leak detector assembly mounted to all main ports. This allows simultaneous leak detection of all flange seals under operating conditions.

B69-10552
TECHNIQUE FOR ULTRASONIC CLEANING WITH VOLATILE SOLVENTS ELIMINATES NEED FOR HOODS OR CONDENSERS
FISHER, E. /M. AM. ROCKWELL CORP./ DATE- OCT. 1969
RSC-15611
Technique ultrasonically cleans small quantities of small mechanical parts in organic solvents without the need for vapor removal equipment. Parts are placed in a thin plastic bag with the solvent and then suspended in a cleaning tank containing the water-detergent solution.

B69-10559
DEVELOPMENT OF IMPROVED POTTING AND CONFORMAL COATING COMPOUNDS
WEBSTER, J. A. /BENGAMOTO RES. CORP./ DATE- OCT. 1969
R-PS-20219
R-PS-20223
Improved organic potting and conformal coating materials protect fragile electronic components and circuitry from mechanical shock and vibration, moisture, and corrosion. These materials meet specifications covering resistance to cycling, radiation, flammability, and sterilizing agents for certain space applications.

B69-10564
A NEW METHOD FOR FABRICATION OF FLEXIBLE VACUUM JUICE JACKETS
SHEFFER, C. R. /GOODYEAR AEROSPACE CORP./ DATE- NOV. 1969
R-PS-1264
Polyurethane-coated synthetic fabric is fitted with a filament-glass mat exterior which gives it a high degree of springback capability. Material is capable of maintaining its springback capability in a temperature range from ambient to cryogenic.

B69-10572
A COMPARISON OF TWO METHODS OF MEASURING PARTICLE SIZE OF AL2O3 PRODUCED BY A SMALL ROCKET FUELS
DOBROWSKI, R. A. STRAND, L. D. DATE- NOV. 1969
BPO-11198
The size of aluminum oxide particles produced by small rocket motors in determined by means of grain collection and spectrophotometry. The size of the particulate determines its effect due to particle lag, particulate radiant heat transfer, acoustic attenuation, and impingement and rocket plume structure and properties.

B69-10580
SILPHENYLENE ELASTOMERS HAVE HIGH THERMAL STABILITY AND TENSILE STRENGTH
SPOR- INNOVATOR NOT GIVEN /SOUTHERN RES. INST./ DATE- OCT. 1965
R-PS-20250
Two polymeric silphenylene ethers, when cured by reactions with ethyl silicates and metal salts at room temperature, form elastomers having excellent thermal stability and tensile properties. The highest tensile strength obtained in a reinforced elastomer was 2800 psi.

B69-10591
A METHOD FOR PRECISION ANODIZE STRIPPING
PEETERS, R. L. /M. AM. ROCKWELL CORP./ DATE- OCT. 1969
MSC-15040
Felt templates saturated with etch solution removed a modified finish from aluminum without damage to the surface. The solution is a combination of nitric acid, chromic acid, and hydrofluoric acid.

B69-10592
EFFECTS OF STERILIZATION ON THE ENERGY-DISSIPATING PROPERTIES OF Balsa WOOD
SORKIN, A. B. DATE- DEC. 1969
BPO-11207
Technical report on the effects of sterilization on the energy-dissipating properties of balsa wood is given. Sterilization by ethylene oxide plus heat enhances the average specific energy of balsa while plastic impregnation followed by irradiation-induced polymerization does not.

B69-10595
A METHOD FOR USING SURFACE TENSION TO DETERMINE THE SIZE OF HOLES IN HARDWARE
HUNIS, W. J. /M. AM. ROCKWELL CORP./ DATE- NOV. 1969
RSC-15174
To check the size of small holes in injectors, flow control orifices, filters, and similar hardware, a surface tension technique is used. The liquid surface tension causes it to act as a membrane when pressure is applied. This bubble pressure is a function of hole diameter and surface tension.

B69-10596
AUTOMATIC SAMPLE ROTATOR FOR METALLLOGRAPHIC POLISHING
ADAMS, J. M. BERNETT, C. C. DATE- NOV. 1969
BPO-11015
Simple, inexpensive device can be attached to most metallographic sample polishing tables. It provides a suitable surface finish for microscopic examination or photography of surface details of the samples.

B69-10599
LIQUID OXYGEN-COMPATIBLE INSULATION SYSTEM
JOHNS, J. S. /M. AM. ROCKWELL CORP./ DATE- NOV. 1969
R-PS-16113
To provide insulation for tees, elbows, sumps, and valves that are used to pass or store fluids at cryogenic temperatures, individual parts are insulated in an environmentally controlled facility. It is desirable to ensure such insulation be liquid oxygen compatible and be easily removable and reinstallable.

B69-10602
PROGRAMMED SCHEDULE HOLD S FOR IMPROVING LAUNCH VEHICLE HOLDS
GALLO, Y. H. /Boeing Co./ HAYES, J. D.
DATE- NOV. 1965
Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.

Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.

Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.

Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.

Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.

Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.

Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.

Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.

Baseline definition and system optimization are used for the analysis of programed holds developed through prelaunch system analysis. Identification of design specifications for ground support equipment and maintenance concepts, and design specifications are used to describe the functional utilization of the overall flow process.
Thermodynamic and transport properties include viscosity, heat capacity, thermal conductivity, and Prandtl number. Properties are calculated from 300 to 2500 degrees K and for pressures of three and ten atmospheres.

Tensile tests on welded plates of three grades of steel indicate an appreciable decrease of tensile strength and ductility of notched specimens and a decrease in ductility of unnotched specimens. Surface cracking, evident in unnotched specimens, is conducive to breakdawn in tensile strength and ductility.

Electro-deposits obtained have greater physical strength than deposits from the Brenner bath. This consists cf a spring-loaded piston, and a small vent for displace the piston. The packing becomes a variable reactant, for example, acids are removed by using an alkaline liquid.

To obtain high quality waveforms from a subject engaged in physical activity, an improved electrode assembly has been devised. This consists of a cup containing an electrically conductive paste and a silver electrode. The paste maintains contact between the skin and the plate.
minutes in enclosures containing a controlled volume of either. Thus the monkeys can be properly and safely positioned on test couches and fitted with electrodes or other devices prior to physiological tests.

B66-10049
IMPROVED ELECTRODE PASTE PROVIDES RELIABLE MEASUREMENT OF GALVANIC SKIN RESPONSE
DAR, J. L. DATE- FEB. 1966 REAR- SEE ALSO B66-10025 AND B65-10015
MSC-146
High-conductivity electrode paste is used in obtaining accurate skin resistance or skin potential measurements. The paste is isomotic to perspiration, is nonirritating and nonsensitizing, and has an extended shelf life.

B66-10117
MICROORGANISMS DETECTED BY ENZYME-CATALYZED REACTION
VANGO, S. P. WENTALL, H. H. WELKEY, N. DATE- MAR. 1966
JEL-782
Enzymes detect the presence of microorganisms in soils. The enzyme lysozyme is used to release the enzyme catalase from the microorganisms in a soil sample. The catalase catalyzes the decomposition of added hydrogen peroxide to produce oxygen which is detected manometrically. The partial pressure of the oxygen serves as an index of the sample bacteria content.

B66-10118
INTEGRAL SKIN ELECTRODE FOR ELECTROCARDIOGRAPHY IS EXPENDABLE
SPRON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- MAR. 1966
MSC-299
Inexpensive, expendable skin electrode for use in electrocardiography combines an electrical contact, conductive paste, and a skin-attachment adhesive. Application of the electrode requires only degreasing of the skin area.

B66-10154
PHONOCARDIOGRAPH SYSTEM MONITORS HEART SOUNDS
SPRON- INNOVATOR NOT GIVEN /BECKBAN INST./ INC./ DATE- APR. 1966
MSC-185
Phonocardiograph system monitors the mechanical activity of the heart in extreme environments. It uses a piezoelectric-crystal microphone with an integral preamplifier, and a signal conditioner having special frequency characteristics. The output signals can be recorded on tape, presented audibly, or transmitted telemetrically to a remote station.

B66-10184
SELF-INFLATING LIFESAVING STOOGES IN SMALL PACKAGE
RADOPHONY, N. I. DATE- MAY 1966
MSC-5A
Emergency lifevest is inflated with carbon dioxide from a self-contained cartridge in 10 seconds. When deflated, it fits into a package occupying less than 20 cubic inches and weighing less than one pound.

B66-10252
SEMICONDUCTOR FORMS BIOMEDICAL RADIATION PROBE
BURNS, F. F. FRIEDEICHS, J. B. /SOLID STATE RADIATION, INC./ DATE- JUN. 1966
MSC-320
Semiconductor radiation dosimeter in the form of a slender probe is easily inserted into body tissue. The probe has a signal-to-noise ratio that is acceptable to recording equipment and provides realistic measurements of the spatial and energy distributions of radiant electrons and protons.

B66-10314
PHONOCARDIOGRAPH MICROPHONE IS BURIED AND WATERPROOF
YOUNG, W. J. DATE- JUL. 1966
MSC-212
Microphone used as a phonocardiograph transducer monitors small amplitude audio signals in the presence of large shock loads and high humidity. It contains a lead zirconate-lead titanate piezoelectric plate encapsulated in a flexible polyurethane resin. The resin is contained in a sealed nylon case having a diameter of less than one inch.

B66-10332
BELLOWS JOINT ABSORBS TORSIONAL DEFLECTIONS IN DUCT SYSTEM
DANIELS, C. H. /N. AM. AVIATION/ DATE- JUL. 1966
MSC-882
Long, thin-walled bellows compressed into a short length absorbs the same amount of torsional deflections as the same tube in full length condition and saves in cost, complexity and space. This bellows has lower torsional spring rate to absorb the bulk of the duct assembly torsional deflections, leaving the other bellows free to absorb axial and angular deflections.

B66-10406
PLANT RESPIROMETER ENABLES HIGH RESOLUTION OF OXYGEN CONSUMPTION RATES
POSTER, D. L. /SPACE DEFENSE CORP./ DATE- SEP. 1966
NO-97
Plant respirometer permits high resolution of relatively small changes in the rate of oxygen consumption by plant organisms undergoing oxidative metabolism in a nonphotosynthetic state. The two stage supply and monitoring system operates by a differential pressure transducer and provides a calibrated output by digital or analog signals.

B66-10468
RADON GAS, USEFUL FOR MEDICAL PURPOSES, SAFELY FIXED IN QUARTZ
FIELDS, F. R. STEPN, L. ZIEHN, M. H. DATE- NOV. 1966
ARG-2
Radon gas is enclosed in quartz or glass ampules by subjecting the gas sealed at a low pressure in the ampules to an ionization process. This process is used in preparing fixed radon sources for radiological treatment of malignancies, without the danger of releasing radioactive gases.

B66-10515
APPARATUS ENABLES AUTOMATIC MICROANALYSIS OF BODY FLUIDS
SOUPT, G. A. STUART, J. L. DATE- NOV. 1966
JPL-962
Apparatus will automatically and quantitatively determine body fluid constituents which are amenable to analysis by fluoroscopy or colorimetry. The results of the tests are displayed as percentages of full scale deflection on a strip-chart recorder. The apparatus can also be adapted for microanalysis of various other fluids.

B66-10647
MODIFIED ALGESIMETER PROVIDES ACCURATE DEPTH MEASUREMENTS
TAYLOR, D. P. /N. AM. AVIATION/ DATE- DEC. 1966
MSC-616
Algesimeter which incorporates a standard sensory needle with a sensitive microsphere, measures needle point depth penetration in pain tolerance research. This algesimeter provides an inexpensive, precise instrument with assured validity of recordings in those biomedical areas with a requirement for repeated pain detection or ascertaining pain sensitivity.

B66-10649
SPRAY-ON ELECTRODES ENABLE EKG MONITORING OF PHYSICALLY ACTIVE SUBJECTS
SPRON- INNOVATOR NOT GIVEN /BEC/ DATE- DEC. 1966
MSC-94
Easily applied EKG electrodes monitor the heart signals of human subjects engaged in various physical exercises. The electrodes are forced from an air drying, electrically conductive cement mixture that can be applied to the skin by means of a modified commercially available spray gun.
ADJUSTABLE HINGE PERMITS MOVEMENT OF KNEE IN PLASTER CAST

MALV, w. e. DATE- MAR. 1967
B67-10056

Metal knee hinge with an adjustable sleeve worn on the outside of a leg cast facilitates movement of the knee joint. This helps eliminate stiffness of the knee and eliminates bulkiness and adjustment difficulty.

INTEGRATED MOBILITY MEASUREMENT AND NOTATION SYSTEM

BOEDECK, J. A., JR. /N. AM. AVIATION/ DATE- MAY 1967
B67-10114

System for description of movements and positions facilitates design of space suits with more mobility. This measurement and notation system gives concise and unequivocal descriptions, compatible with engineering analysis, and applicable to specific needs.

ION EXCHANGE DETERMINES IODINE-131 CONCENTRATION IN AQUEOUS SAMPLES

FAHR, W. D. SEDLET, J. DATE- MAY 1967
B67-10122

Inorganic radioiodine in aqueous media is analyzed by separating the radioactive iodine-131 as the iodide ion on a silver chloride column. The activity in the final precipitate may be determined by beta or gamma counting.

PHOTOLUMINESCENSE SHOW PROMISE IN THE TREATMENT OF BRAIN TUMORS

FRIGERIO, N. A. DATE- JUN. 1967
B67-10188

ABE-910

Processes synthesize sulfonated and nonsulfonated acryl phthalocyanines for application in neutron therapy of brain tumors. Tests indicate that the compounds are advantageous over the previously used boric and lithium compounds.

SELF-SEALING CLOSURE ENABLES ACCESS TO SEVERAL FLUID CONTAINERS

WHEELER, S. B. DATE- JUN. 1967
B67-10207

ABO-1023

Self-sealing closure enables small amounts of specific biochemical solutions to be withdrawn from or added to containers in inaccessible or small spaces. It uses a self-sealing septum of a silicone elastomer through which a hypodermic needle can be inserted.

AUTOMATED URINALYSIS TECHNIQUE DETERMINES CONCENTRATION OF CREATINE AND CREATININE BY COLOIDIMETRY

RIGG, J. E. DATE- JUL. 1967
B67-10245

ABO-1013

Continuous urinalysis technique is useful in the study of muscle wastage in primates. Creatinine concentration in urine is determined in an aliquot mixture by a color reaction. Creatine is determined in a second aliquot by converting it to creatinine and measuring the difference in color intensity between the two aliquots.

BLOOD OXYGEN SATURATION DETERMINED BY TRANSMISSION SPECTROPHOTOMETRY OF HEMOLYZED BLOOD SAMPLES

MALIK, W. N. /INST. OF MED. SCIENCES/ DATE- AUG. 1967
B67-10252

MSC-1105

Use of the Lambert-Beer Transmission Law determines blood oxygen saturation of hemolyzed blood samples. This simplified method is based on the difference in optical absorption properties of hemoglobin and oxyhemoglobin.

CTELOLOGY IS ADVANCED BY STUDYING EFFECTS OF DEUTERIUM ENVIRONMENT

B67-10304

Research of deuterium effects on biological systems shows deuteriation is not incompatible with life. With the successful cultivation of deuteriated bacteria, work is now being done on extraction of deuteric-compounds from bacteria.

LIQUID MICRURGY CHAMBER AND MICROSTRING DESIGNS ALLOW MORE EFFICIENT MICRANAPILATIONS

DANIELS, S. W. DATE- AUG. 1967
B67-10305

MSC-599

More efficient micromanipulations on large amoebae achieved by liquid micrurgy chamber and microsyringe. These innovations move the system closer to the specimen, and flatten the specimen for a clear view of the nucleus, also eliminating spherical aberration and evaporation.

HAND-HELD INSTRUMENT SHOULD RELIEVE HERATOMA PRESSURE

RAGEE, L. J. /N. AM. AVIATION/ ROBBIESON, T. L. DATE- SEP. 1967
B67-10332

MSC-599

Portable instrument relieves hematomas beneath fingernails and toenails without surgery. This device simplifies the operative procedure with an instant variable heating tip, adjustable depth settings and interchangeable tip sizes for cannulating small areas and relieving pressurized clots.

IMPROVED SAMPLE CAPSULE FOR DETERMINATION OF OXYGEN IN HEMOLYZED BLOOD

MALIK, W. N. /PRESBYTERIAN MPH. CENTER/ DATE- OCT. 1967
B67-10399

EQ-10055

Sample capsules for determination of oxygen in hemolyzed blood consists of a measured section of polytetrafluoroethylene tubing equipped at each end with a connector and a stopcock valve. This method eliminates errors from air entrainment or from the use of mercury or syringe lubricant.

EFFECT OF PREPARATION PROCEDURES ON INTENSITY OF RADIOAUTOPHOTOMIC LABELING IS STUDIED

B67-10500

ABO-10302

Effects of tissue preparation and extractive procedures on the intensity of radioautographic labeling are presented in terms of mean grain count per cell in cells labeled with tritiated precursors of proteins or nucleic acids. This information would be of interest to medical researchers and cyto]ogists.
B67-10556
CONTINUOUS MICROBIAL CULTURES MAINTAINED
BY ELECTRONICALLY-CONTROLLED DEVICE
RIGGS, W. J., R. WEBB. R. R. DATE- DEC. 1967
ARG-177
Photocell-controlled instrument maintains microbial culture. It uses commercially available chemostat glassware, provides adequate aeration through bubbling of the culture, maintains the population size and density, continuously records growth rates over small increments of time, and contains a simple, sterilizable nutrient control mechanism.

B67-10590
ULTRAVIOLET MICROSCOPY AIDS IN CYTOLOGICAL
AND BIOMEDICAL RESEARCH
SCHULKE, F. SYBEL. DATE- DEC. 1967 REAN-
SURE ALSO ABN-6971
ARG-178
Ultraviolet microscopy is used by cytologists and biochemists to study the morphological and physiological changes in the living cell under varied culture conditions. The yeast cell is used because of its content of ultraviolet absorbing materials and its lack of motility.

B67-10604
STUDY MADE OF RELATIONSHIP BETWEEN GROWTH
AND METABOLISM
SUTHERS. K. DATE- DEC. 1967
ARG-10046
Study shows that the growth of X irradiated sunflower seeds is inversely related to the metabolism of the seeds. The actual magnitudes of the relation between the two differed for various ranges of X ray exposure. The results of the study suggested that the X rays affected the embryo.

B67-10663
REVIEW OF BIOLOGICAL MECHANISMS FOR
APPLICATION TO INSTRUMENT DESIGN
HEALEY, J. /ALLIED RES. ASSOCIATES/ DATE- DEC. 1967
NO-32
Biological sensors are the mechanisms which enable a living organism to monitor its environment. Ways in which the functional mechanism of biosensors can be applied to develop new concepts of instrument enhancement and extend the human senses, and improve the sensitivity of existing instrumentation are described in a review of these mechanisms.

B68-10076
METABOLIC AND TOXICOCLOGICAL EFFECTS OF
WATER-SOLUBLE ZEUXON COMPOUNDS ARE STUDIED
TINKEL, A. J. KATZ, J. J. MILLER. C. E. DATE-
APR. 1968
ARG-90239
Biological properties of water-soluble zexon compounds are the moderate toxicity of these substances, their rapid decomposition in the body, the speed with which the xenon appeared to be reduced to xenon gas, and the very rapid elimination of this gas from the body.

B68-10169
IRRADIATION EFFECTS ON BACTERIAL CELLS
POWELL, E. L. DATE- JUN. 1968
ARG-10064
Study reveals the physicochemical and biochemical mechanisms which alter or modify the effects of high-energy radiation on living cells. An in-depth discussion is presented emphasizing the importance of optimizing bacterial treatment with glycerol.

B68-10206
INFRARED VIEWING PERMITS HUMAN IRIS
RESPONSE STUDIES
SCHNEE, E. B. /N. AM. AVIATION/ DATE- JUN. 1968
BSC-10003
Infrared image converter tube and a filtered light source monitor and measure the eye of a subject during experimental task-work operations to obtain a more natural measurement of unaided visual response. The device permits observation in the near infrared region, with little stimulation to the eye except by normal ambient lighting.

B68-10231
VACUUM PROBE SAMPLER REMOVES MICRON-SIZED
PARTICLES FROM SURFACES
WHITFIELD, W. J. DATE- JUL. 1968
SAN-10003
Vacuum probe sampler removes micron-sized particles from surfaces, without damage to the surface. The probe has a critical orifice to ensure an optimum airflow rate that disturbs the boundary layer of air and raises bacteria from the surface into the probe with the moving air stream.

B68-10320
EXPERIMENTAL STUDY AND EVALUATION OF
RADIOPROTECTIVE DRUGS
SMITH, D. K. THOMSON, J. F. DATE- AUG. 1968
ARG-10196
Experimental study evaluates radioprotective drugs administered before exposure either orally or intravenously. Specifically studied are the sources of radiation, choice of radiation dose, choice of animals, administration of drugs, the toxicity of protective agents and types of protective drug.

B68-10328
FOOD PRODUCTS FOR SPACE APPLICATIONS
COPE, F. S. LARSON, R. W. /WHIRLPOOL CORP./ DATE-
AUG. 1968
MSC-1697. MSC-1698. MSC-1699
Specially-prepared foodstuffs supply an astronaut with a diet containing his basic nutritional requirements in a form that is useful in his environment. Several edible coatings preserve foods and give loose foods form and firmness. These coatings aid in packaging and give the food slip for easy removal from the package.

B68-10366
STRATIFICATION OF CENTRIFUGED AMOEBA NUCLEI
INVESTIGATED BY ELECTRON MICROSCOPE
RILM, R. R. DANTZ, E. W. DATE- OCT. 1968
ARG-10161
Study establishes a relationship between radioresistance and the nuclear stratification characteristics of various amoeba species. Two species of fresh water amoeba are studied with the electron microscope. The report discusses the nature of nucleolar layers and their possible relationship to the differences in radioresensitivity of the two amoeba species.

B68-10428
RATE CONSTANTS MEASURED FOR HYDRATED
ELECTRON REACTIONS WITH PEPTIDES AND
PROTEINS
THOMAS, B. DATE- NOV. 1968
ARG-10195
Effects of ionizing radiation on the amino acids of proteins and the reactivity of the protonated amino group depends upon the pH subscript a of the group. Estimates of the rate constants for reactions involving the amino acid side chains are presented. These rate constants gave an approximate rate constant for three different protein molecules.

B68-10427
COMPOUND EQUATION DEVELOPED FOR POSTNATAL
GROWTH OF BIRDS AND MAMMALS
LARD, A. K. DATE- NOV. 1968
ARG-10192
Compound growth equation was developed in which the rate of this linear growth process in regarded as proportional to the mass already attained at any instant by an underlying Gompertz process. This compound growth model was fitted to the growth data of a variety of birds and mammals of both sexes.

B68-10500
BIOLOGICAL ISOLATION GARMENT
SPRINGER, R. F. DATE- NOV. 1968
MSC-2206
Biological Isolation Garment /BIG/ is a
one-piece loose-fitting garment fabricated from a tightly woven, permeable, 100 percent-cotton fabric. Its headpiece, incorporates an integral oronasal respirator with 0.3-micron-particle filters, and a full-wire cage, with all fabrication seams are sealed on the inside of the garment.

**R66-10554**

**A MICROBIOLOGICAL TECHNIQUE FOR THE CULTURE OF MAMMALIAN CELLS**

Cooper, C. B., Jr. PEDREW, K. H. DATE- DEC. 1968

LANGLEY-10407

Technique obtains micropartitioning in a simple and reproducible manner by forcing a field of tiny ponds or lagoons on the surface of a suitable cultivating vessel. The technique allows free access of the common culture to all parts of the field.

**B69-10022**

**INVESTIGATION OF TEMPERATURE DEPENDENCE OF DEVELOPMENT AND AGING**

SACHER, G. A. DATE- FEB. 1969

ARG-10145

Temperature dependence of maturation and metabolic rates in insects, and the failure of vital processes during development were investigated. The paper presents the general hypothesis that aging in biological systems is a consequence of the production of entropy concomitant with metabolic activity.

**B69-10087**

**CARBON OFFERS ADVANTAGES AS IMPLANT MATERIAL IN HUMAN BODY**

Benson, J. /N. AM. ROCKWELL CORP./ DATE- APR. 1969

M-Ps-18207 M-Ps-18208 M-Ps-18204 M-Ps-18205 M-Ps-18206 M-Ps-18209 M-Ps-18210

Because of such characteristics as high strength and long-term biocompatibility, aerospace carbonaceous materials may be used as surgical implants to correct pathological conditions in the body resulting from disease or injury. Examples of possible medical uses include bone replacement, implantation splints and circulatory bypass implants.

**B69-10088**

**MICROSCOPES AND COMPUTERS COMBINED FOR ANALYSIS OF CHROMOSOMES**


ARG-10256

Scanning machine CHLOE, developed for photographic purposes, is combined with a digital computer to obtain quantitative and statistically significant data on chromosome shapes, distribution, density, and pairing. CHLOE permits data acquisition about a chromosome component to be obtained twice faster than by manual pairing.

**B69-10124**

**IMPROVED MOUSE CAGE PROVIDES VERSATILITY AND EASE IN HANDLING LABORATORY MICE**

Jones, N. D. DATE- MAY 1969

KSC-12259

Mouse cage system provides versatility and ease in handling laboratory mice, cleaning their cages, and collecting uncontaminated metabolic test specimens. The cage, compact and free standing, contains a screened bottom and funnel channel to collect waste. The food is in the cage top and thereby separates the food and waste.

**B69-10160**

**RAPID AND PRECISE ANALYSIS FOR CALCIUM IN BLOOD SERUM**

BOOTZMAN, E. B. ILCEWICZ, F. H. DATE- JUN. 1969

ARG-10246

Differential absorption spectrophotometric technique, using auriside, given a highly precise analysis of calcium in volumes of blood serum as small as 0.01 ml. The method of addition of proper timing allows compensation to be made for fading, variation in type of serum or plasma, and aging of the specimen.
COMBUSTION

S. DATE-JUL. 1969
ARG-10314
Comparative data reveal little difference between kinetic and thermal stabilities of pure preparations of two ordinary enzymes and their fully deuterated counterparts. The effects of temperature on the enzymes proved to be consistent with earlier results.

B69-10208

CORROSION METHOD FOR ASSAY OF BIOLOGICAL MATERIALS LABELED WITH CARBON-14 OR TRITIUM, OR DOUBLE-LABELED
HUBBEN, L. G. KISIELSKI, W. E. DATE-JUL. 1969
BRAH-SEE ALSO NML-7409
ARG-10331
Dry catalytic combustion at high temperatures is used for assaying biological materials labeled carbon-14 and tritium, or double-labeled. A modified oxygen-flask technique is combined with standard vacuum-line techniques and includes convenience of direct in-vial collection of final combustion products, giving quantitative recovery of tritium and carbon-14.

B69-10223

AUTOMATED MICROORGANISM SAMPLE COLLECTION MODULE
GALL, L. S. /IBB/ GRAHAM, R. M. UMBREIT, W. DATE-JUL. 1969
NPO-10421
Modified Gelman Sampler obtains representative sample of microorganism population. Proposed Sample Collection Module is based on direct inoculation of selected solid growth media encased in a cartridge at all times except during inoculation. Cartridge can be handled with no danger of contamination to sample or operator.

B69-10236

INPRINTING OF CONFINING SITES FOR CELL CULTURES ON THERMOPLASTIC SUBSTRATES
CNS, C. D. FLICKNAG, R. M. DATE-AUG. 1969
LANGLY-10495
Prevention of test cell migration beyond the field of observation involves confining cells or cultures in microlagoons made in either a layer of agar with photobacteria provides a means for assaying biological materials labeled carbon-14 and tritium, or double-labeled. A modified oxygen-flask technique is combined with standard vacuum-line techniques and includes convenience of direct in-vial collection of final combustion products, giving quantitative recovery of tritium and carbon-14.

Inoculating preheated trays containing nutrient agar with photobacteria provides a means for mass culture of aerobic microorganisms in order to obtain large quantities of luciferase. To determine optimum harvest time, growth can be monitored by automated light-detection instrumentation.

B69-10304

SAMPLING AND HANDLING OF DESERT SOILS
BLAKE, G. B. CAMERON, R. E. DATE-AUG. 1969
NPO-11171
Report on sampling and handling desert soils includes sections on selection, characterization, and photography of area, site, and soil, sterilization of sampling equipment and containers, and soil sample collection, transport, storage, and dispersal.

B69-10317

MICRODETERMINATION OF UREA IN URINE USING P-DIMETHYLAMINOBENZALDEHYDE /PDAB/
GUER, P. J. DATE-AUG. 1969
NPO-10715
Adaptation of the p-dimethylaminobenzaldehyde method for determining area concentration in urine is an improved microchemical method. Accuracy and precision are satisfactory. This method avoids extra steps of deproteinizing or removing normal urinary chromogens.

B69-10319

MICRORESCUSCITATOR
KSC-10398
Miniature, portable resuscitation system is used during evacuation of patients to medical facilities. A carrying case contains a modified resuscitator head, cylinder of oxygen, two-stage oxygen regulator, low pressure tube, and a mask for mouth and nose.

B69-10475

LIFE DETECTION
MARTIN, W. E. /MCDONALD DOUGLAS CORP./ DATE-OCT. 1969
NFC-10510
Compact automated laboratory unit has 60 independently treatable culture chamber assemblies for metabolic studies of cultured microorganisms on the surface of Mars or other planets.

B69-10493

INHIBITION OF BROWNING IN FOODSTUFFS
NOBESHTAL, R. A. /SCHWARTZ BIORESEARCH, INC./ DATE-SEP. 1969
HQC-10177
Addition of water-soluble sulfur-containing compounds, thioc compounds or potential thio compounds, to a mixture of carbohydrates, and either proteins, peptides, or amino acids can retard or completely eliminate the browning process. Determining factor in dependent upon the concentration of the anti-browning agent in the aqueous media.

B69-10571

DEER SOIL COLLECTION AT THE JPL SOIL SCIENCE LABORATORY
BLAKE, G. B. CAMERON, R. E. DATE-NOV. 1969
NFC-11206
Collection contains desert soils and other geologic materials collected from sites in the United States and foreign countries. Soils are useful for test purposes in research related to extraterrestrial life detection, sampling, harsh environmental studies, and determining suitable areas for training astronauts for lunar exploration.
05 MECHANICAL

B63-10007
HIGH PURITY ELECTROFORMING YIELDS SUPERIOR METAL MODELS
HAFFEL, R. M. HOUSTON, J. P. DATE- JAN. 1964
ARC-6
Ultrasound electroforming has proven successful in making high purity metal models for heat transfer studies. This process provides smooth, pit-free models.

B63-10008
VACUUM FORMING OF THERMOPLASTIC SHEET RESULTS IN LOW-COST INVESTMENT CASTING PATTERNS
CLARKE, A. E. JR. DATE- MAR. 1964
ARC-7
Vacuum forming of a sheet of thermoplastic material around a mandrel conforming to the shape of the finished object provides a pattern for an investment mold. The thickness of the metal part is determined by the thickness of the plastic pattern.

B63-10009
CHAIN FRICTION SYSTEM GIVES POSITIVE, REVERSIBLE DRIVE
DAVIDSEN, J. S. DATE- APR. 1964
ARC-8
By cementing a strip of an elastomer to the smooth metal rim of the pulley and neoprene covered idlers providing suitable tension to the chain around the pulley, a positive reversible drive is accomplished more quietly and with less vibration.

B63-10023
V-SLOTTED SCREW HEAD AND MATCHING DRIVING TOOL FACILITATE INSERTION AND REMOVAL OF SCREW FASTENERS
HANLEY, H. G. DATE- JAN. 1964
BRC-16
A V-sloped design screw and a screwdriver with a V-shaped tang facilitate driving the screw into different locations and achieve axial forces thus avoiding damage to the screw.

B63-10123
ELASTIC ORIFICE AUTOMATICALLY REGULATES GAS FLOWINGS
BAYSCHE, F. LAMB, J. L. DATE- JUN. 1964
JPL-135
Elastic, pressure-sensitive orifice is used to automatically regulate the rate of gas flow into bearings under varying loads. Formed of a molded elastomer, these orifices increase the stability of gas bearings.

B63-10139
METHOD OF WELDING JOINT IN CLOSED VESSEL IMPROVES QUALITY OF SEAL
PRAHAK, R. LEVOS. DATE- MAY 1964
JPL-170
To facilitate welding of closed vessels, a metal backup strip is used at the junction inside the vessel. After welding from the outside, this strip is dissolved by a chemically reactive solvent poured through a filler hole into the vessel.

B63-10141
VENTED PISTON SEAL PREVENTS FLUID LEAKAGE BETWEEN TWO CHAMBERS
MAC GLASBAN, W. F. ROBISON, R. DATE- DEC. 1964
JPL-179
To prevent fluid leakage around piston seals separating two fluids under differential pressure, a venting system has been devised. Two methods may be used for venting seals through internal passages to an external low-pressure area, O-ring or split-ring seals.

B63-10143
COINCIDENT SWITCH CLOSING REDUCES ERROR IN MOTOR-DRIVEN timer
RICH, G. DATE- DEC. 1964
JPL-182
To cut the lag-load in motor-driven timing devices, the timing circuit has been extended to include a second switch. This is actuated in time with the first but driven directly at a speed x times faster than the first.

B63-10170
HIGH-PRESSURE REGULATING SYSTEM PREVENTS PRESSURE SURGES
KELLY, C. F. MAC GLASBAN, W. F. DATE- JUN. 1964
BFAK- SEE ALSO U. S. PATENT NO. 3,105,515
JPL-231
Gas flow is controlled by means of a pressure regulating system which prevents pressure surges. A high-pressure fluid source, a spring-loaded fluid-damped regulator valve, an accumulator, a convetional normally closed command valve, and a control valve are the main components.

B63-10198
DEVICE TRANSFER ROTARY MOTION THROUGH HERMETICALLY SEALED WALL
PARKER, E. R. DATE- APR. 1964
JPL-303
A wobble plate, metal bellows, and two shafts, assembled in a four-section housing, make it possible to transmit rotary motion through a hermetically sealed wall. In operation a rotational torque is developed by the wobble plate.

B63-10200
APPARATUS OF SMALL SIZE CAN BE EXTENDED INTO LONG, RIGID BOOM
MILLER, J. W. DATE- MAY 1964
JPL-305
Three metal sheets, having prenotched edges, are interlocked as they are unrolled from three feed rollers which form a triangle. The apparatus is relatively small, and the sheets can be erected into a rigid triangular boom of considerable length.

B63-10226
SELF SEALING DISCONNECT FOR TUBING FORMS METAL SEAL AFTER BREAKAWAY
GREENAWAY, H. E. DATE- JAN. 1964
JPL-354
Disconnect fittings form a positive metal seal when the fill tube pulls against a metal sleeve when disconnected by force. A specially designed sleeve surrounds the fill tube. O-rings in the shoulder of the sleeve and near the outer end of
05 MECHANICAL

the fill tube seal against leakage.

B63-10228
PACKLESS VALVE WITH ALL-METAL SEAL HANDLES WIDE TEMPERATURE, PRESSURE RANGE
MAC GLASHAN, W. F. DATE- MAR. 1964
JPL-361
A durable line valve utilizes stacked metal disks to seal off an inlet port. No packing or shaft sealing is needed, and the valve operates satisfactorily over a wide temperature and pressure range.

B63-10236
LIGHTWEIGHT UNIVERSAL JOINT TRANSITS BOTH TORQUE AND THRUST
BARFORD, R. E. DATE- JAN. 1964
JPL-375
A lightweight universal joint uses a thin steel flexure plate to transmit torque and a steel rod to transmit thrust. Both the plate and rod are independently mounted and can act individually.

B63-10237
SUPER-COLD TECHNIQUE DUPLICATES MAGNETIC FIELD IN SECOND SUPERCONDUCTOR
HILDEBRANDT, A. R. DATE- NOV. 1964
JPL-376
A superconductor cylinder, charged with a high magnetic field, can be used to create a similar field in a larger cylinder. The uncharged cylinder is precooled, lowered into a helium dewar system, and fitted around the cylinder with the magnetic field. Magnetic flux lines pass through the two cylinders.

B63-10240
SLEEVE AND CUTTER SIMPLIFY DISCONNECTING WELDED JOINT IN TUBING
PERKINS, G. S. DATE- APR. 1964
JPL-394
To test equipment, welded tubing joints may have to be disconnected and re-welded. To eliminate re-welding, a nonstandard welding sleeve permits the tubing to be welded and then disconnected by a specially designed sleeve cutter. Use of this tool assures that only the sleeve is cut.

B63-10261
VEITCH DIAGRAM PLOTTING SIMPLIFIES BOOLEAN FUNCTIONS
SNYDERS, D. K. DATE- APR. 1964
JPL-385
This device for simplifying the plotting of a Veitch diagram consists of several overlays for blocking out the unwanted squares. This method of plotting the various input combinations to a computer is used in conjunction with the Boolean functions.

B63-10247
NEW PACKAGE FOR BELLEVILLE SPRING PERMITS RATE CHANGE, EASY DISASSEMBLY
MAC GLASHAN, W. F. DATE- MAR. 1964
JPL-392
A spring package, with grooves to hold the spring washers at the inner and outer edges, reduces beryllium to a minimum. Three-segment retainers permit easy disassembly so that the spring rate can be changed.

B63-10251
HELICAL TUBE SEPARATES NITROGEN GAS FROM LIQUID NITROGEN
STEPHENS, D. R. DATE- JUN. 1964
JPL-398
To prevent boiloff problem, liquid nitrogen flowing from a storage tank to a container is separated into liquid and gaseous components. This is accomplished by centrifugal and venting action, using a section of perforated helical aluminum tubing.

B63-10269
FRICTIONAL WEDGE SHOCK MOUNT IS INEXPENSIVE, HAS GOOD DAMPING CHARACTERISTICS
THIBAULT, W. F. DATE- MAY 1964
JPL-IT-1001
A wedge-shaped shock mount uses rubber for energy absorption, and the frictional characteristics of ordinary brake material for damping.

B63-10291
SPECIAL PLIERS CONNECT HOSE CONTAINING LIQUID UNDER PRESSURE
BLAYDES, R. A. DATE- MAR. 1964
JPL-IT-1003
To remove staples from thick reports, a rooter, bending hook and post are incorporated into a heavy duty hand tool. This makes possible one-step extraction of long staples.

B63-10304
BREAK-UP OF METAL TUBE MAKES ONE-TIME SHOCK ABSORBER, BARE MEMBERS
HATHAWAY, M. M. DATE- JUN. 1964
JPL-IT-1004
To remove staples from thick reports, a rooter, bending hook and post are incorporated into a heavy duty hand tool. This makes possible one-step extraction of long staples.

B63-10340
CRYOPUMPING OF HYDROGEN IN VACUUM CHAMBERS IS AIDED BY CATALYTIC OXIDATION OF HYDROGEN
CHILDRESS, J. G. DATE- APR. 1964
JPL-IT-1003
A combination gravity and manually powered rapid loader aids extrusion of refractory metals.

B63-10341
DESIGN OF VALVE PERMITS SEALING EVEN IF THE STEM IS MISALIGNED
SCHMIDT, R. W. DATE- JAN. 1964
JPL-IT-1001
A conical-valved valve plug is designed to seal against a recessed spherical valve seat. This insures proper sealing during numerous seating cycles since the valve stem is shalformed or forced out of its proper axis.

B63-10354
RAPID EILLET LOADER AIDS EXTRUSION OF REFRACTORY METALS
BLOOMBERG, A. F. DATE- APR. 1964
JPL-IT-1001
A conical-valved valve plug is designed to seal against a recessed spherical valve seat. This insures proper sealing during numerous seating cycles since the valve stem is shalformed or forced out of its proper axis.

B63-10367
CONNECTOR FOR VACUUM-JACKETED LINES CUTS TUBING SYSTEM COST
CARYERT, H. F. DATE- MAY 1964
JPL-IT-1001
A low-cost fitting, fabricated from standard connectors, is used for disconnecting flow lines in cryogenic systems. Utilizing vacuum-jacketed lines made from two sizes of tubing welded at the ends, the connectors are stronger and setup time is reduced.

B63-10368
COMPOSITE, VACUUM-JACKETED TUBING REPLACES BELLINGS IN CHROMIUM SYSTEMS
CARYERT, H. F. DATE- MAY 1964
JPL-IT-1001
A low-cost fitting, fabricated from standard connectors, is used for disconnecting flow lines in cryogenic systems. Utilizing vacuum-jacketed lines made from two sizes of tubing welded at the ends, the connectors are stronger and setup time is reduced.

For reliability control of high pressure cryogenic
systems, one or more 90 degree elbow expansion devices are substituted for the metal bellows normally used. The device consists of a conducting tube inside a support tube, with the space between the tubes evacuated for insulation.

B63-10376
NOVEL CLAMPS ALIGN LARGE ROCKET CASES, ELIMINATE BACK-UP BARS
FRANKLIN, W. J. DATE- JUN. 1964
M-PS-1
Welding clamps, placed inside and outside a rocket case, allow it in proper alignment during tufted inert gas welding. These metal blocks, connected by a stainless steel band, eliminate the need for backup bars.

B63-10384
VACUUM-TYPE BACKUP BAR SPEEDS WELD REPAIRS
CARMODY, R. J. DATE- AUG. 1964
M-PS-12
A backup bar designed to use both vacuum and air pressure provides a method of sealing the weld root of a faulty section of seam weld. With slight readjustment, the bar can be made sufficiently flexible to fit any cylindrical surface.

B63-10385
FLEXIBLE HONEYCOMB STRUCTURE CAN BE ADJUSTED TO FIT COMPOUND CURVES
CARMODY, R. J. DATE- APR. 1964
M-PS-13
For flexibility in forming a curved surface, a honeycomb configuration using multiple pleats has proved superior to the usual core structures. The partial pleats forced in individual cell walls permit movements to and from the central axis without tearing.

B63-10387
PORTABLE FLOORING PROTECTS FINISHED SURFACES, IS EASILY MOVED
CARMODY, R. J. DATE- MAR. 1964
M-PS-15
To protect surfaces, finished surface and provide support for workers, a portable flooring has been made from rigid plastic foam blocks faced with aluminum strips. Held together by nylon webbing, the flooring can be rolled up for easy carrying.

B63-10420
SIMPLE MECHANISM COMBINES POSITIVE LOCKING AND QUICK-RELEASE FEATURES
CLAYTON, L. B. /HUGHES AIRCRAFT CO./ DATE- FEB. 1964
FGO-4
For secure locking and quick release of two objects, this device uses a spring-loaded slotted bolt, locked in position by two retainer arms. When these retainer arms are freed from contact, the bolt is ejected and the objects released.

B63-10431
HIGH-TEMPERATURE, HIGH-PRESSURE SPHERICAL SEGMENT VALVE PROVIDES QUICK OPENING
GIUVASTEMI, A. BERMELIGHT, R. METZ, K.
HUTTA, R. DATE- APR. 1964
ABC-13
A hollow spherical segment valve with an eccentric permits non-rubbing closure and provides a means for gas-cooling the seal. The design allows quick opening at high temperatures and discharge pressures.

B63-10483
PORTABLE DISPLAY PANELING HAS WIDE USE, EASY TAKE DOWN AND ASSEMBLY
DR WOOL, H. J. DATE- MAR. 1964
ABC-17
Design for a modular display panel is based on a cross-shaped corner connector and wooden lattice bars. The bars are fitted into the arms of the metal connector and a pocket slot holds a modular-size panel.

B63-10442
KINETIC-ENERGY ABSORBER EMPLOYS FRICTIONAL FORCE BETWEEN MACHINING CYLINDERS
CONRAD, Z. W. DATE- MAY 1964
LEWIS-75
A kinetic energy absorbing device uses a series of coaxial, mating cylindrical surfaces. These surfaces have high frictional resistance to relative motion when axial impact forces are applied. The device is designed for safe deceleration of vehicles impacting or landing surfaces.

B63-10469
FINE-PARTICLE FILTER PREVENTS DAMAGE TO VACUUM PUMPS
HARLEM, P., JR. DATE- APR. 1964
LEWIS-105
A filter system for mechanical pumps is designed with a baffle assembly that rotates in a circulating oil bath which traps destructive particles. This prevents severe damage to the pump and is serviceable for long periods before it requires cleaning.

B63-10497
INTEGRAL COOLANT CHANNELS SUPPLY MADE BY BELT-OUT METHOD
ESCHER, W. J. Z. DATE- JUN. 1964
M-PS-91
Belt-out method of constructing strong, pressure-tight fluid coolant channels for chambers is accomplished by cementing pins to the surface and by depositing a belt-out material on the surface followed by two layers of epoxy-resin impregnated glass fibers. The structure is heated to melt out the low-melting alloy.

B63-10520
FLUID-PRESSURE METER CAN BE CALIBRATED WITHOUT REMOVING FROM FLOW LINE
NELSON, D. H. DATE- MAR. 1964
M-PS-98
The construction of a fluid pressure meter with two inlet ports, flexible diaphragms and a pressure-responsive transducer is described. One port can be connected to the line and the other to a source of standard pressures for calibration.

B63-10577
MINIATURE OXIDATION-HYDROGEN CUTTING TORCH CONSTRUCTED FROM HYDROGENIC NEEDLES
SELICHTA, P. DATE- APR. 1964
JPL-545
A miniature cutting torch consisting of a main body member, upon which the hydrogen and oxygen containers are mounted, valves for controlling gas flow, and a hypodermic needle that acts as a mixing tube and flame tip is constructed.

B63-10591
TOOL FACILITATES SEALING OF METAL FILL TUBES
COOLEY, R. H., JR. /UNITED AIRCRAFT CORP./ DATE- JUL. 1964
MSC-24
A hand tool is designed for sealing metal fill tubes containing corrosive or inflammable liquids without the use of heat or open flame. The tool aligns the fill tube into which a tapered sealing pin is dropped and driven below the neck of tube.

B63-10526
BUILT-IN TEMPLATES SPEED UP PROCESS FOR MAKING ACCURATE MODELS
SPON- INNOVATOR NOT GIVEN /LANGLEY/ DATE- FEB. 1964
LNG-23
From accurate scale drawings of a model, photographic negatives of the cross sections are printed on thin sheets of aluminum. These cross-section images are cut out and mounted, and mahogany blocks placed between them. The wood can be worked down using the aluminum as a built-in template.

B63-10530
NEW ANEMOMETER HAS FAST RESPONSE, MEASURES DYNAMIC PRESSURE DIRECTLY
LYNCH, W. W. REED, W. H., III DATE- OCT. 1964
LNG-28
A simple anemometer having a fast response to high frequency wind fluctuations by direct measurement of two drag-force components in orthogonal planes.
Large seamless austenitic stainless steel elbows are fabricated by spin forging/ rotary forming. A specially designed spin forging tool for forming on a hydrospin machine has been built for this purpose.

**B64-10001**

**NEW INFLATABLE LIFE RAFT IS NOT MONTIPABLE**

**BESCHORFF, P. L.**  
**SEW EAK, G. A.**  
**DATE- MAR. 1964**

**BEAN - SEE ALS Nasa-79-d-1083**

**B6C-4A**

A one-seamed lightweight life raft has three underwater ballast buckets as stabilizers. Notippable, it can be compactly packaged and inflated with carbon dioxide.

**B64-10006**

**SPEED-SENSING OFFICE AIDS CRANE OPERATORS**

**SPOK- INNOVATOR NOT GIVEN /WALLOPS/ DATE- OCT. 1964**

**WS-8**

So that crane operators can judge payload moves more accurately, a friction-driven multiflled can device energizes a buzzer and indicator lamp in the crane cab. The signal frequency of this speed sensor has a sensitivity to joint movement of 1/8 inch.

**B64-10011**

**METAL STRIP FORMS 21 FOOT BOOM, ROLLS UP FOR COMPACT STORAGE**

**SPOK- INNOVATOR NOT GIVEN /CANADIAN COMMERC CORP./ DATE- MAY 1964**

**GSFC-151**

An extendible boom, carrying three separate electric conductor tapes, can be rolled into a compact storage drum. The tape is curved in cross section so that the boom automatically forms a tube as it is extended.

**B64-10016**

**GUIDE FOR EXTRUSION DIES ELIMINATES STRAIGHTENING OPERATION**

**GROGER, C. A.**  
**HOOVER, R. J.**  
**DATE- NOV. 1964**

**LEWIS-152**

To prevent distortion of extruded metal, a guidance assembly is aligned with the die. As the metal emerges from the extrusion dies, it passes directly into the receiver and straightening tube system, and the completed extrusion is withdrawn.

**B64-10015**

**COMFORTABLE, LIGHTWEIGHT SAFETY HELMET HOLDS RADIO TRANSMITTER, RECEIVER**

**ATLAS, R. D.**  
**/A. A. AVIATION/ DATE- MAY 1964**

**MCC-53**

For two-way radio communication where safety gear is required, a lightweight helmet with few protrusions has been designed. The electronics components and power supply are mounted between the inner and outer shells, and resilient padding is used for the lining.

**B64-10021**

**PRESSURE TRANSDUCER 3/8-INCH IN SIZE CAN BE FAIRED INTO SURFACE**

**SCHAPP, R. J.**  
**/A. A. AVIATION/ DATE- MAY 1964**

**M0D-065**

To measure fluid pressure with minimum disturbance to fluid flow, a miniature pressure transducer can be lashed and faired into the test surface. Incorporated in the design are piezoresistive elements mounted on a diaphragm, which transforms pressure strains into an electrical signal.

**B64-10026**

**QUICK-ACTING CLUTCH DISMENGAGES IDLE DRIVE MOTOR**

**STARK, K. W.**  
**DATE- AUG. 1964**

**GSFC-143**

Positive-drive, no drag, over-running clutch has been developed to conserve power of idle motor in a low-power system using multiple drive motors. This device is useful where a number of shaft speeds are required with frequent shifting.
GREATER ACCURACY, QUICKER DATA
VINCENT, E. R. DATE- SEPT. 1964
JPL-555
Fast, accurate, multipressure measuring system, which employs a multiple port pressure scanning valve that connects a pressure transducer to many pressures, is described.

B64-10050
MODIFIED GAS BEARING IS ADJUSTABLE TO optimum STIFFNESS RATIO
EVANS, J. L. DATE- AUG. 1964
N-PS-145
Inexpensive and rapid-adjustments of the radial to axial stiffness ratio of a spherical gas bearing are achieved by a series of gas passages in the equatorial plane of the sphere which feed into orifices that can be readily changed in size.

B64-10058
INSULATED WELD TOOLING PERMITS UNIFORM, HIGH-QUALITY WELD
SPOR- INNOVATOR NOT GIVEN / N. AM. AVIATION/ DATE- AUG. 1964
MSC-62
The application of a ceramic material coating to all surfaces contacting parts to be welded permits greater weld strength than the conventional weld tooling method.

B64-10066
ENCEAPULATION PROCESS STERILIZES AND PRESERVES SURGICAL INSTRUMENTS
MONTGOMERY, L. C. NOBELLY, P. A. DATE- JULY 1964
JPL-64
Ethylene oxide is blended with an organic polymer to form a sterile material for encapsulating surgical instruments. The material does not bond to metal and can be easily removed when the instruments are needed.

B64-10069
METAL-BENDING BRAKE FACILITATES LIGHTWEIGHT, CLOSE-TOLERANCE FABRICATION
ERCOLINE, A. L. WILSON, K. B. DATE- OCT. 1964
ABC-25
A lightweight, metal bending brake ensures very accurate bends. Features of the brake that adapt it for making complex reverse bends to close tolerances are a pronounced relief or cutaway of the underside of the bodyplate combined with modification in the leaf design and its suspension.

B64-10084
MOLDED ELASTOMER PROVIDES COMPACT FERRITE-CORE HOLDER, SIMPLIFIES ASSEMBLY
HAYDEN, R. E. DATE- NOV. 1964
JPL-564
A ferrite-core holder, fabricated by casting an elastomer in a simple mold, simplifies the assembly of modular matrix units for computers. Use of the device permits the cores to be multiply threaded and soldered to terminals, without requiring intermediate terminals.

B64-10119
BUCKLE JOINS WEB STRAPS QUICKLY, ADJUSTS EASILY
WILKINSON, J. E. / CHANCE VOUGHT CORP./ DATE- JULY 1964
LANGLEY-21
To join web straps used to hoist heavy loads, a novel buckle permits two straps to be quickly joined and held by the combined forces of strap load tension and friction.

B64-10121
ELECTRONIC ASSEMBLY RACK PANELS SNAP ON AND OFF
BAILEY, J. W. DATE- JUNE 1964
GSF-59
Snap fasteners on each side of an electronic assembly rack blank panel give quick access to the interior. Guide pins extending from the inside surface easily slip into standard screw holes on the frame and provide additional support.

B64-10124
ATTACHMENT CONVERTS MICROSCOPE TO POINT SOURCE AUTOCLILLIMATOR
SELIGTA, P. J. DATE- JULY 1964
JPL-499
A low-power microscope or telescope provides a simple means of autocollimation. This is done by fitting the instrument with a light source to permit alignment from a reflecting surface normal to the optic axis of the instrument.

B64-10130
BEARING TRANSMITS ROTARY AND AXIAL MOTION
DON, W. F. FITZES, E. W. DATE- SEPT. 1964
LANGLEY-27
A low friction, two-component bearing comprised of a pair of ball-bearing races for transmitting rotary motion and an inner series of ball bearing assemblies for transmitting axial motion is described and should be useful in mechanisms such as stress-strain testing machines.

B64-10141
PNEUMATIC POWER IS TRANSMITTED THROUGH AIR BEARING
JOHNSON, H. R. WOBIG, O. A. DATE- JULY 1964
MSC-8
A more efficient method for supplying high pressure air to an air bearing and pneumatic equipment mounted on it has been developed. The system uses a conventional air bearing and an air-supported sphere with a central passage. High pressure air is channeled through it into the pneumatic equipment on the sphere.

B64-10145
FLEXIBLE FASTENER ALLOWS THERMAL EXPANSION
CHRILPLE, W. B. DATE- JUNE 1964
LANGLEY-40
A flexible fastener permits thermal expansion of model skin sections which are rigidly attached to supporting structures in wind tunnel tests. The device uses a modified ball joint contact between the fastener and a skin section.

B64-10164
UPSETTING BUTT EDGE INCREASES WELD-JOINT STRENGTH
VESCO, S. DATE- OCT. 1964
N-PS-175
Mechanical upsetting / a mode of cold forging / of butt edges to be welded is accomplished by the use of hydraulic rams and pressure rollers. The mechanical upsetting increases the thickness of the material in the heat-affected zone and compensates for the lower specific strength per unit thickness common to this area.

B64-10170
BALL BEARING USED IN DESIGN OF RUGGED FLOWMETER
MINKIN, K. L. DATE- JANUARY 1965
LEWS-159
A volumetric flowmeter which has a small magnet imbedded in the outer perimeter of the turbine wheel or in the bearing permits measurement of liquid flow rates in the presence of wide ranges and violent surges.

B64-10178
MACHINE TESTS CRUSH DURABILITY OF SHEET MATERIALS
JONES, L. K. STANFORD, B. B. DATE- NOVEMBER 1964
JPL-604
To test the crease resistance of sheet materials, the mid-section is folded over crease-control blades. One end is clamped to a motor-driven eccentric, the other to a spring, and durability is measured by the cycles required to produce failure.

B64-10185
THREADED HOOK FACILITATES SAFE RECOVERY OF HEAVY LOADS
ARTHUR, J. S. WILLIAMS, D. C. DATE- OCT. 1964
MSC-46
A C-shaped threading hook and shuttle mounted on a spring-loaded driving rod located inside the long-handled pole are developed for recovering
B64-10188
BLADE VALVE ISOLATES COMPARTMENT IN PIPE, OPERATE TO ALLOW GASES Afloat in the sea.
IMUS, R. DATE- NOV. 1964
JPL-585

Two thin blades are incorporated into a valve which, when closed, forms a sealed compartment in the shock-tube portion of a pipeline. When forced open by an actuator, gas flows through the system.

B64-10211
MICROMACHINING PRODUCES OPTICAL APERTURES TO MICRON DIMENSIONS
WALCH, A. J. DATE- OCT. 1964
GSFC-206

Micron dimensioned rectangular optical aperture is formed under a high powered toolmakers microscope by laying two knife edged blocks over the miniature knife-edged hole in the base.

B64-10223
TWO-PART VALVE ACTS AS QUICK COUPLING
MAC GLASHAW, W. F. DATE- NOV. 1964
JPL-678

A two-part valve simplifies the problem of filling large tanks from smaller ones. One part acts as a check valve and remains integral to the recipient system, while the other part is integral to the donor system.

B64-10249
INSTRUMENT ADJUSTMENT KNOB LOCKS TO PREVENT ACCIDENTAL MALADJUSTMENT
SPON- INNOVATOR NOT GIVEN /LEAR SIEGLEY CORP./ DATE- NOV. 1964
MFS-P-37

A device, incorporating a collar with a hexagonal opening which fits snugly over a hexagonal nut used to engage instrument panel components, keeps the adjustment knob locked. A quick release mechanism frees the knob for rotational adjustment.

B64-10272
VISCOUS-PENDULUM DAMPER SUPPRESSS STRUCTURAL VIBRATIONS
BEED, W. II. III DATE- NOV. 1964
LANGLEY-45

The viscous pendulum damper consists of a cylinder containing round trays on which round lead slugs rest. When assembled, the container is filled with a viscous liquid and attached, with axis vertical, to the structure. The device permits varying the damping of structural vibrations.

B64-10277
APPARATUS ALTERS POSITION OF OBJECTS TO FACILITATE DEMAGNETIZATION
BIRARD, G. WATSON, J. B. DATE- NOV. 1964
GSFC-234

An apparatus consisting of pulleys, a drive shaft and an inner compartment, in which components to be demagnetized are mounted, is constructed. Due to the speed ratio of the three frames, every point on a component in the inner compartment is cycled through an optimum locus in the demagnetization field.

B64-10278
SENSITIVE LOW-PRESSURE RELIEF VALVE HAS POSITIVE SEATING AGAINST LEAKAGE
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- NOV. 1964
WOC-051

A pilot-operated relief valve which provides positive seating against leakage in cryogenic systems is described. The principal advantage is that the pilot poppet is unaffected by variations in control pressures in the pilot cavity, and results in a more accurate sensing of inlet pressure conditions.

B64-10298
APPARATUS MEASURES VERY SMALL THRUSTS
SPON- INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ DATE- NOV. 1964

WOC-008

Measurement of very small thrusts of an ion engine are made by mounting the engine on a platform supported by leaf springs which are loaded to have a zero spring constant. Measuring apparatus includes an inductive sensor, servo amplifier, and a counterthrust feedback system.

B64-10306
CONCEIVED GAS SYSTEM OPERATES SEMI-TRAILER BRAKES DURING WINCHING OPERATION
ZEPPER, W. E. DATE- DEC. 1964
JPL-0036

To move van-type semi-trailers into and out of confined spaces, an auxiliary braking system is mounted on a standard dolly converter. Compressed nitrogen is used to actuate the brakes which are used in conjunction with a power winch.

B64-10327
CONNECTOR SEALS FLUID LINES AT CRYOTHERMIST IC TEMPERATURES AND HIGH VACUUMS
KTAILS, W. T. PLATT, P. K. DATE- JAN. 1965
GSFC-253

A connector that will serve as a seal for fluids at cryogenic temperatures and in high vacuums was constructed by installing a metal disk between two sets of mating serrations to form two sealing surfaces. Compression on both sealing surfaces is ensured by spring action of the disk.

B64-10348
SAFETY RESTRAINER PREVENTS WHIPPING OF RUPTURED HIGH-PRESSURE HOSE
THOMPSON, W. E. DATE- DEC. 1964
LEWIS-99

The braid at each end of a standard electric cable pulley is modified to reinforce high pressure, flexible, fluid transfer hoses. This safety device acts as a restraint if the line ruptures.

B64-10406
POLYCHART CONTOUR PLOTTER ENABLES DATA EXTRAPOLATION FROM MULTIPLE PLOTTING CHARTS
SWINDALL, P. M. DATE- JUL. 1964
MFS-P-37

A polychart contour plotter is used to reduce the data from all 19 antenna pattern charts to a one-chart form.

B65-10003
ILLUMINATED DISPLAY PANEL IS EASILY CHANGED
SPON- INNOVATOR NOT GIVEN /IBM/ DATE- JAN. 1965
MSC-108

Photographic negative placed between two plastic sheets and back-lighted in selected areas prepares illuminated multicolored display panels. The device is inexpensive, easily changed, and quickly fabricated.

B65-10007
THERMOCOMPRESSION BONDING PRODUCES EFFICIENT SURFACE-BARRIER DIODE
SPON- INNOVATOR NOT GIVEN /IBM/ DATE- JAN. 1965
JPL-SC-066

Thermo-compression bonding of a gold wire to a gallium-arsenide wafer produces a quality surface barrier diode with fast recovery times. The properties of this combination may be useful in semiconductor devices.

B65-10008
SHOCK ABSORBER PROTECTS MOTIVE COMPONENTS AGAINST OVERLOADS
SPON- INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ DATE- JAN. 1965
WOC-092

Shock absorber with an output shaft, hollow gear, and a pair of springs forming a resilient driving connection between shaft and gear, operates when abnormally high torques are applied. This simple durable frictional device is valuable in rotating mechanisms subject to sudden overloads.

B65-10009
FORMING BLOCKS SPEED PRODUCTION OF STRAIN GAUGE GRIDS
BORN, J. L. GARDNER, D. E. DATE- FEB. 1965
LKB-192
A tool is designed which facilitates the forming of wire grids used in manufacturing strain gage grids. Flattening the grid wire by a cold working process produces a stabilized grid which can be readily handled for storage or shipment.

**B65-10014**

**USE OF TEAR RING PERMITS REPAIR OF SEALED MODULE CIRCUITRY**

**SPON- INNOVATOR NOT GIVEN /IBM/ DATE- JAN. 1965**

**M-PS-210**

Improved packaging technique for modular electronic circuitry utilizes a tear ring which may be removed for repair and reused. The tear ring is put over the container and header to which the electronic circuit assembly has been attached.

**B65-10017**

**EXPLOSIVES ACTUATE NONMAGNETIC INDEXING DEVICE**

**BADER-SCHUER, J. P., JR. DATE- JAN. 1965**

**GSFC-237**

Nonmagnetic explosive-actuated indexing device creates magnetic field that can be tolerated by a sensor.

**B65-10019**

**WIDE-ANGLE SENSOR MEASURES RADIANT HEAT ENERGY IN CORROSIVE ATMOSPHERES**

**SPON- INNOVATOR NOT GIVEN /BOEING CO./ DATE- JAN. 1965**

**M-PS-226**

Ellipsoidal cavity device measures radiant heat energy over wide incident angles in corrosive atmospheres. The instrument consists of a cavity in copper heat sink sealed with sapphire window to protect thermocouple.

**B65-10020**

**OPTICAL ARRANGEMENT INCREASES USEFUL LIGHT OUTPUT OF SEMICONDUCTOR DIODES**

**SPON- INNOVATOR NOT GIVEN /IBM/ DATE- JAN. 1965**

**JPL-SC-064**

Useful light output of semiconductor diodes increased by incorporating the diode in an integral reflector and lens assembly. This reduces normal reflection losses between the diode and the air.

**B65-10021**

**PICKUP DEVICE READS PRESSURES FROM PORTS IN ROTATING MECHANISMS**

**JANAS, B. DATE- JAN. 1965**

**SEE ALSO B64-10004**

**M-PS-158**

Indexing pickup monitors fluid pressures from ports at various angles on high or low speed rotating mechanism in operation. By a simple axial movement of a takeoff connector, angle changing takes place. This device can be adapted for electric current monitoring.

**B65-10022**

**KNOB LINKAGE PERMITS ONE-HANDED CONTROL OF SEVERAL OPERATIONS**

**CODDING, G. C. LAVENDER, C. E. DATE- JAN. 1965**

**M-SC-30**

Electromechanical device with single knob provides one-hand control of numerous electrical or mechanical functions. The principle of this design may have application to remote-control switching devices.

**B65-10027**

**FLUID-PRESSURE MEASUREMENT APPARATUS USES SHORT-LENGTH MANOMETER TUBES**

**DAVIS, B. I. DATE- MAR. 1965**

**LEWIS-28**

System of short length U-tube manometers with a proportionally divided reference pressure measures high fluid pressures.

**B65-10029**

**SEISMIC TRANSDUCER MEASURES SMALL HORIZONTAL DISPLACEMENTS**

**GREENWOOD, T. L. DATE- MAR. 1965**

**M-PS-81**

Pendular seismic transducer mounted on base plate measures small horizontal displacements of structures subjected to vibration where no fixed reference point is available. Enclosure of transducer in transparent plastic case prevents air currents from disturbing the pendulum balance.

**B65-10031**

**SPRING LOADED BEADED CABLE MAKES EFFICIENT WIRE PULLER**

**SPON- INNOVATOR NOT GIVEN /W. M. AM. AVIATION/ DATE- FEB. 1965**

**W-PS-108**

An efficient wire puller consists of a steel probe with a hole in one end fastened to a steel cable which is stiffened with metal beads compressed by spring loaded ferrules. This device allows cables to be pulled or forced around bends and elbows in pipes or tubes.

**B65-10035**

**OCEANIC TRANSPONDER PLATFORM HAS GOOD STABILITY**

**SPON- INNOVATOR NOT GIVEN /IBM/ DATE- FEB. 1965**

**M-PS-171**

Determination of space vehicle range and orbit is aided by a stable subsurface oceanic transponder. This device consists of a buoy held below the surface by a three-point system of anchors and mooring lines with an above surface antenna.

**B65-10037**

**IMPROVED SOLDER PROTECTS CRYSTAL DURING HIGH ACCELERATION AND IMPACT**

**LE VAY, K. H. DATE- FEB. 1965**

**JPL-463**

A plastic holder, which retains a crystal blank with standard silvered contacts sandwiched between two copper contacts, protects the crystal against vibration during high acceleration and impact.

**B65-10038**

**FASTENER PROVIDES COOLING AND COMPENSATES FOR THERMAL EXPANSION**

**SPON- INNOVATOR NOT GIVEN /AESDENTITY CORP./ DATE- FEB. 1965**

**NU-0003**

A fastener composed of a concentric bellows welded to two plates forming an annular cavity provides cooling and thermal expansion compensation in a high temperature environment.

**B65-10039**

**NONRESONANT SUPPORT FACILITATES VIBRATION TESTING OF STRUCTURES**

**SPON- INNOVATOR NOT GIVEN /BOEING CO./ DATE- FEB. 1965**

**M-PS-228**

An essentially frictionless four-point support system which utilizes bearings and pistons allows for determination of vibration frequencies of large structures. Retardation of vertical or horizontal motion is due to the viscous damping by the hydrostatic pressure of the oil or by adjustment of the gas volume in the accumulator.

**B65-10040**

**VALVE DESIGNED WITH ELASTIC SEAT**

**M-PS-1124**

**MECHANICAL VALVE DESIGN**

**DATE- FEB. 1965**

**JPL-482**

Absolute valve closure is accomplished by a machined valve with an axially annular channel which changes the outlet passage into a thin tubular elastic seat member with a retainer backup ring. The elasticity of the seat provides tight conformity to wall irregularity.

**B65-10082**

**FLUID SUPPORT SYSTEM PROTECTS THERMALY AND DYNAMICALLY LOADED MODELS**

**CROPLER, W. B. DATE- FEB. 1965**

**LANGLEY-39**

The design of an eight legged flexure support system which permits differential thermal expansion of thin skinned models subjected to high temperatures is done by setting the lengthwise axes of the supporting legs approximately normal to the line of absolute motion of the model supported.
B65-10049
SCREW LOCKING CORPS QUICKLY AND EASILY CINCHED
SPOW= INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC.
CORP./ DATE= FEB. 1965
NU-0009
A tool consisting of a positioning pin which is
engaged in the screw and depressed until the tool
body contacts the locking cup permits quick and
neat crimping.

B65-10053
SEAL ALLOWS BLIND ASSEMBLY AND THERMAL
EXPANSION OF COMPONENTS
SPOW= INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC.
CORP./ DATE= FEB. 1965
NU-0005
The design of a seal consisting of two concentric
cylinders with outer and inner threaded elements
attached to each side of the system interface
withstanding large temperature changes and allows
for blind assembly.

B65-10060
NEW ALLOY BRAZES TITANIUM TO STAINLESS STEEL
SPOW= INNOVATOR NOT GIVEN / N. A. AVIATION/ DATE=
MAR. 1965
MSC-102
Brazing alloy of palladium, silver and silicon is
used in brazing titanium to stainless steel without
embrittling metals at the brazed interfaces.

B65-10063
CERAMIC-FOATED BOAT IS CHEMICALLY ERECT,
PROVIDES GOOD HEAT TRANSFER
SPITZER, C. R. DATE= MAR. 1965
LANGLEY-90
Refractory metal foil sprayed with ceramic coating
serves as evaporating boat for inorganic
materials. The high thermal conductivity of this
boat makes it useful with ohmic heaters.

B65-10064
DEVICE MEASURES CURVED SURFACE FINISH ON
GEAR TEETH
SPOW= INNOVATOR NOT GIVEN /G/ DATE= MAR. 1965
W00-112
Measurement of the curved surface finish on gear
teeth is made by a device used in conjunction
with a conventional profilometer.

B65-10070
SIMPLE SCALE INTERPOLATOR FACILITATES
READING OF GRAPHS
FITZERMAN, D. K., JR. DATE= MAR. 1965
LANGLEY-004
Simple transparent overlay with interpolation
scale facilitates accurate, rapid reading of graph
coordinate points. This device can be used for
enlarging drawings and locating points on
perspective drawings.

B65-10074
NITROGEN DIOXIDE PRODUCED BY SELF-SUSTAINED
PYROLYSIS OF NITROUS OXIDE
SABOL, A. F. DATE= MAR. 1965
LANGLEY-32
Apparatus is developed for achieving continuous
self-sustaining pyrolysis reaction in the
production of nitrogen dioxide from nitrous oxide.
The process becomes self-sustaining because of
the exothermic reaction and the regenerative
heating of the gases in the pyrolysis chamber.

B65-10075
TENSION IS SERVO CONTROLLED IN FILM ADVANCE
SYSTEM
SPOW= INNOVATOR NOT GIVEN /M. OPT. CO./ DATE=
MAR. 1965
LANGLEY-54
Servocontrol device feeds film into a roller
system. Two linear potentiometers connected to
spring-loaded tension rollers furnish servo input
signal. Can be used in any continuous material
transport system.

B65-10077
NEW COUPLING COEFFICIENTS FOR SHAFT
DISALIGNMENT
SPOW= INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC.
CORP./ DATE= MAR. 1965
NU-0013
Coupling of splined shafts with slight
misalignment is accomplished by means of a crown
spline and sleeve arrangement.

B65-10078
FABRICATION METHOD PRODUCES HIGH-GRADE
ALUMINA CRUCIBLES
PAIGN, N. DATE= MAR. 1965
N-P-216
Alumina-binder mixture, which has been dry pressed
in a die using a setting punch, forms crucibles of
various configurations and after firing results in
a ceramic structure for use in diffusion
experiments.

B65-10090
COMPACT ASSEMBLY GENERATES PLASTIC FOAM,
IMPLEMENTS FLUORINATION BAG
DATE= APR. 1965
LANGLEY-96
Device for generating plastic foam consists of an
elastomeric bag and two containers with liquid
resin and a liquid catalyst. When the walls of
the containers are ruptured the liquids come into
contact producing foam which inflates the
elastomeric bag.

B65-10094
CUTTER AND STRIPPER REDUCES COAXIAL CABLE
CONNECTION TIME
THOMPSON, F. R. DATE= APR. 1965
ARC-40
Consisting of three pivoted members, this hand
cutter and stripper positions to cut shielding and
insulation at the right distance and depth.
Coaxial cable is prepared quickly and accurately
for connector attachment.

B65-10098
CONTACT STRESSES CALCULATED FOR MINIATURE SLIP
RINGS
ALBRIGHT, P. G. DOMERST, K. E. BOSTON, J. C.
DATE= APR. 1965
N-75-260
Using mathematical formulations to plot the graphs
of the contact preload versus the Hertzian load,
calculations of unit loading of the preloaded
brushes on slip rings can be made. This optimizes
the design of contact brushes and miniature slip
rings.

B65-10099
SLIT FEEDS REDUCE UNBALANCED TORQUES IN
GAS-LUBRICATED BEARINGS
RATSH, P. F. LADE, J. H. DATE= APR. 1965
REAN-5
506-10123 AND 506-10050
JFL-264
Gas-lubricated journal bearing with narrow radial
slots forming circular gas-feed passages regulates
gas flow in precision instruments, asymmetrical
flow pattern and unbalanced torques are prevented.

B65-10101
JIG AND FIXTURE AID FABRICATION OF TUNGSTEN
RIVETS
CHATTIN, J. H. DATE= APR. 1965
LWINS-105
Jig and fixture that holds several lengths of
tungsten rod produces rivets simply and
inexpensively. The apparatus allows sufficient
tungsten to be exposed for heating and forging
into a rivet head.

B65-10104
LEAF-SPRING SUSPENSION PROVIDES ACCURATE
PARALLEL DISPLACEMENTS
MC GREG, R. A. DATE= APR. 1965
JFL-480
Leaf-spring suspension device with the springs
symmetrically mounted on suspension frames
provides accurate parallel displacements of loads
over short linear distances.

B65-10109
ROCK BIT REQUIRE NO FLUSHING MEDIUM TO
MAINTAIN DRILLING SPEED
SPONSOR: INNOVATION NOT GIVEN /HUGHES AIRCRAFT CO./ DATE- APR. 1965
JPL-WOC-031
Steel drill bit having terraces of teeth interrupted by spiral grooves with teeth permitting the boring of small holes through rock with low power. The cuttings are stored in a chamber behind the cutting head. Could be used as sampling device.

B65-10110 MAGNETS POSITION X-RAY FILM FOR WELD INSPECTION
SIRON: INNOVATION NOT GIVEN /DUGLAS AIRCRAFT CO./ DATE- APR. 1965
WAGNER, R. P. DATE- APR. 1965
W-PS-253
Film-positioning device uses magnets to hold x-ray film for weld inspection in inaccessible structures, such as tanks, where access to interior points is difficult.

B65-10111 PROBE TESTS MICROWELD STRENGTH
SIRON: INNOVATION NOT GIVEN /DUGLAS AIRCRAFT CO./ DATE- APR. 1965
WAGNER, R. P. DATE- APR. 1965
W-PS-253
Probe is developed to test strength of brazed or microwelded joints. It consists of a spring which may be adjusted to the desired test pressure by means of a threaded probe head, and an indicator lamp. Device may be used for electronic equipment testing.

B65-10113 SHOCK MOUNT ISOLATES PRESSURE TRANSDUCERS FROM VIBRATION
SIRON: INNOVATION NOT GIVEN /DUGLAS AIRCRAFT CO./ DATE- APR. 1965
ROGERS, R. S., JR. DATE- APR. 1965
JPL-631
Pressure transducer is isolated from shock and vibration forces by a pressure-compensated shock mount. Silicone elastomer O-rings within the shock mount serve as shock and vibration-damping pads.

B65-10114 AVERAGING PROBE REDUCES STATIC-PRESSURE SENSING ERRORS
SIRON: INNOVATION NOT GIVEN /HUGHES AIRCRAFT CO./ DATE- APR. 1965
LANGLEY-36
Averaging the high and low pressure admitted to a probe through circumferentially spaced orifices provides a probe that accurately senses the free-stream static pressure on an aerodynamic surface. This surface does not have a preferred angle of inclination to the direction of the airstream cross flow.

B65-10115 INERT GAS SPRAYING DEVICE AIDS IN REPAIR OF HAZARDOUS SYSTEMS
SIRON: INNOVATION NOT GIVEN /HUGHES AIRCRAFT CO./ DATE- APR. 1965
TILEHA, S. DATE- APR. 1965
LEWIS-82
Inert gas spraying device aids in safely making mechanical repairs to a cryogenic fluid system without prior emptying of the system. This method can be applied to any natural or bottled gas system and with modifications to gasoline transports.

B65-10116 LOW-COST TOOL MINIMIZES DAMAGE TO O-RINGS DURING INSTALLATION
SIRON: INNOVATION NOT GIVEN /H. AM. AVIATION/ DATE- APR. 1965
MSC-190
Tapered cylindrical tool enables O-ring installation over threaded fasteners without seal damage.

B65-10121 HYDRO CONTROL VALVE IS INDEPENDENT OF PRESSURE DROP
SIRON: INNOVATION NOT GIVEN /THIEGEL CHEM. CORP./ DATE- APR. 1965
JPL-WOC-039
Remote control of fluid flow in a low-power system is established by a flow control valve with a flapper and nozzle flow control. Constant rates are maintained despite fluctuating pressure across the valve.

B65-10126 COLLAPSEABLE TRUSS STRUCTURE IS AUTOMATICALLY EXPANDABLE
SIRON: INNOVATION NOT GIVEN /H. AM. AVIATION/ DATE- MAY 1965
GSFC-230
Coil springs wound with maximum initial tension in a three-truss, closed loop structure form a collapsible truss structure. The truss automatically expands and provides excellent rigidity and close dimensional tolerance when expanded.

B65-10130 COLLAR POSITIONS STEEL STOCK USED TO FORM COIL ON HANDREX
SIRON: INNOVATION NOT GIVEN /HUGHES AIRCRAFT CO./ DATE- APR. 1965
BLAKE, C. J. DATE- MAY 1965
JPL-198
Guide collar fastened to a mandrel helps form a coil of strip sheet metal stock. The collar maintains the strip stock in its proper position during winding of each turn of the coil.

B65-10131 APPARATUS FACILITATES PRESSURE-TESTING OF METAL TUBING
SIRON: INNOVATION NOT GIVEN /H. AM. AVIATION/ DATE- MAY 1965
LEWIS-174
Burst-testing of refractory metal tubing is conducted in an apparatus in which tubular specimens are firmly gripped and test pressures and temperatures are applied. Porosity, flaw, and fatigue-stress rupture are also tested.

B65-10135 COILED SPRING MADES SELF-LOCKING DEVICE FOR THREADED FASTENERS
SIRON: INNOVATION NOT GIVEN /H. AM. AVIATION/ DATE- MAY 1965
MSC-149
Coiled spring device provides both easy self-locking and disassembly for screw-threaded fasteners. When the fastener turns in one direction the spring grips one of the fastener threads and releases when the fastener turns in the opposite direction.

B65-10141 INTEGRAL RIBS FORMED IN METAL PANELS BY COLD-PRESS EXTENSION
SIRON: INNOVATION NOT GIVEN /H. AM. AVIATION/ DATE- MAY 1965
BRADIE, E. R. SCHERER, R. B. DATE- MAY 1965
M-PS-230
Metal panels with integral ribs are formed by the cold-press extrusion method without material loss. Integral ribs in aluminum-alloy panels are formed by this process.

B65-10144 LIGHTWEIGHT LOAD SUPPORT Serves AS VIBRATION DAMPER
SIRON: INNOVATION NOT GIVEN /H. AM. AVIATION/ DATE- MAY 1965
LATHEAN, W. E. DATE- MAY 1965
JPL-661
Glass directional antennas and solar panels can be supported by a thin-walled tubular str. Silicon grease is used as the vibration-damping medium and a coil spring supports static loads.

B65-10147 IMPROVED FLUID CONTROL VALVE EXTENDS DIAPHRAGM LIFE
SIRON: INNOVATION NOT GIVEN /H. AM. AVIATION/ DATE- MAY 1965
MAC GLASHAN, W. P. DATE- MAY 1965
JPL-345
Wear resistance of flexible diaphragms in fluid control valves is increased by incorporating a soft rubber washer at the bottom of the piston, a flexible buffer between the diaphragms and the valve seat, and a fluid feedback arrangement. The stress and wear of components at the valve seat
are minimized.

**B65-10148**

**BIDIRECTIONAL TORQUE FILTER ELIMINATES BACKLASH**

BAKER, R. VEILLETTA, L. WILLIAMS, S. DATE- MAY 1965

CABTILEVEB SPRIBGS

BIDIRECTIONAL TORQUE FILTER ELIMINATES BACKLASH.

**B65-10149**

**CASTILE LEVER SPRINGS MAINTAIN TENSION IN THERMALLY EXPANDED WIRE**

TERSELIC, R. A. DATE- MAY 1965

LEWIS-136

Two deflected cantilever springs strung with wire provide force displacement compensation to maintain tension in the wires as they undergo thermal expansion. This method of maintaining tension in thermally expanded wires is used in electric space heaters and residential heat exchangers.

**B65-10150**

**METAL BELLOWS CUSTOM-FABRICATED FROM TUBING**

DATE- MAY 1965

LEWIS-192

Manual assembly mounted in a lathe chuck is used with a forming wheel to roll-form bellows from standard sheet metal tubing. Spaces and mandrels of various sizes custom-fabricate bellows of any desired dimensions.

**B65-10153**

**TITANIUM TREATMENT IMPROVES BRAZED JOINTS**

SPOR- INNOVATOR NOT GIVEN /EN/ DATE- MAY 1965

MSC-127

Pretreating metal with a thin coating of pure titanium improves the wettability and flow of brazing alloys. This can be used in the manufacturing of aviation and aerospace components where high strength-to-weight ratio must be achieved.

**B65-10158**

**SYSTEM MEASURES UNIDIRECTIONAL FORCES, EXCLUDES EQUIDIRECTION FORCES**

BEHRENS, D. E. HOLLAND, D. E. DATE- MAY 1965

LEWIS-170

System measures unidirectional force without interference from other directional forces. The measuring apparatus is mounted so that it only moves vertically and is constrained from horizontal and rotational movement. This system can be used to accurately measure small forces in one direction, or as an analytic balance.

**B65-10160**

**LOW-COST SEAL COMPENSATES FOR SURFACE IRREGULARITIES**

SPOR- INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./ DATE- JUN. 1965

NO-0016

Sealed assembly consisting of a steel V ring and a perforated tubular fluorocarbon polymer O ring provides a barrier to gaseous and liquid hydrogen under high pressure.

**B65-10163**

**DEVICE DISCONNECTS several COUPLINGS SIMULTANEOUSLY**

FORDEN, A. K. DATE- JUN. 1965

JPL-226

Actuator assembly disconnects electric cable and fluid-line coupling from a rocket. The disconnector incorporates interconnected hydraulic cylinders which effect an equal and simultaneous displacement of pistons upon admission of compressed air through a solenoid control valve.

**B65-10166**

**SEAL PLATE DESIGN ASSURES STRUCTURAL SEPARATION BY MILD EXPLOSIVE**

SPOR- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- JUN. 1965

MSC-137

Splice plate with mechanical joint is separated by expanding gases of a mild detonating fuse. The gas pressures of the low-yield explosive eliminate component fragmentation and achieve excellent control of the separation line.

**B65-10168**

**LATE ATTACHMENT USED TO MACHINE ELLIPTICAL CONES**

AILEN, J. H., SR. WOIG, G. A. DATE- JUN. 1965

MSC-100

Close-tolerance elliptical cones are fabricated by cutting-tool guide assembly used with conventional tracer cartridge on turret lathe accurately produced in two machine operations.

**B65-10170**

**METAL PARTS HYDROZIZED BY EXPLOSIVE FORCE**

SPOR- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- JUN. 1965

MSC-154

Large metal parts are sized by a charge exploded above a sealed container filled with evacuated die and water. Explosive hydrozizing achieves close dimensional tolerances, eliminates damage to the surface, and allows longer force application and more even pressure distribution.

**B65-10174**

**PRESSURE TRANSDUCER SYSTEM IS FORCE-BALANCED, HAS DIGITAL OUTPUT**

SPOR- INNOVATOR NOT GIVEN /M. A. AVIATION/ DATE- JUN. 1965

MSC-154

Forced-balance pressure transducer and associated circuitry controls pressure testing of space equipment systems under actual operating conditions. The transducer and circuitry automatically converts the sensed pressure to digital form.

**B65-10176**

**DEVICE ENABLES MEASUREMENT OF MOMENTS OF INERTIA ABOUT THREE AXES**

CONN, J. DATE- JUN. 1965

GEC-49

Device measures moments of inertia of an irregularly shaped mass about three mutually perpendicular axes by the standard pendulum and torque methods. A fixture suspends the test mass at one point and can be adjusted to allow oscillation of the mass.

**B65-10177**

**IMPORT-HEAT PATTERN SPEE SHELL-MOLDING OF ALUMINUM PARTS**

SPOR- INNOVATOR NOT GIVEN /ALABAMA UNIV./ DATE- JUN. 1965

MSC-303

Half patterns cast from commercial epoxy resin containing aluminum powder are used for shell-molding of aluminum parts. The half patterns are cast in plastic molds of the original wooden patterns. Ten serviceable sand resin molds are made from each epoxy pattern.

**B65-10180**

**NEW NUT AND SLEEVE IMPROVE FLARED CONNECTIONS**

GARRARD, J. SR. DATE- JUN. 1965

MSC-194

Improved nut and sleeve of standard stainless steel flared tube connection allows forces on the mating surfaces to be uniformly applied. This can be applied to pressurized fluid systems such as refrigeration, air conditioning, and hydraulic systems.

**B65-10181**

**HAND TOOL BENDS COMPONENT LEADS ACCURATELY**

SPOR- INNOVATOR NOT GIVEN /CHRYSLER CORP./ DATE- JUN. 1965

MSC-303

Hand-operated die set bends, without damage, electrical component leads to perfectly match holes in printed circuit board. This tool speeds up printed circuit fabrication and reduces the number of component rejections.

166
B65-10185

DEPLOYED BOSES may be stowed on drum. These systems eliminate torsion in deployed hoses. 

B65-10214

WIRE MESH ISOLATOR PROTECTS SENSITIVE ELECTRONIC COMPONENTS. 

B65-10191

EXTENDIBLE COLUMN CAN BE STOWED ON DRUM. 

B65-10219

FLEXIBLE MAGNETIC PLANNING BOARDS ARE EASILY TRANSPORTED. 

B65-10192

SPHERICAL HOPPER COILS ARE HAND-FORMED WITH FIXTURE. 

B65-10222

INEXPENSIVE CHECK VALVE IS INSTALLED IN STANDARD AN FITTINGS. 

B65-10198

SELF-ALIGNING FIXTURE USED IN LATHE CHUCK JAW REPLACING. 

B65-10227

DIAPHRAGM ELIMINATES LEAKAGE IN CRYOGENIC FLUID DUCT COUPLING. 

B65-10203

ELECTRICAL CABLE CONNECTOR-CLAMP HAS SMOOTH EXTERIOR SURFACE. 

B65-10229

SCOOP ATTACHMENT MAKES HELICOPTER RECOVERIES EASIER AND SAFER. 

B65-10205

BALL AND SOCKET JOINTS PROVIDE ACCURATE BIAXIAL GIMBAL. 

B65-10230

HYDRAULIC DEVICE PROVIDES ACCURATE DISPLACEMENTS TO MICROINCHES. 

B65-10207

FLUID CHECK VALVE HAS FAIL-SAFE FEATURE. 

B65-10231

HANDTOOL FACILITATES EXTRACTION OF CIRCUIT MODULES. 

B65-10210

TIN-BASED GLASS DIES SPEED FORMING OF LARGE METAL SHEETS. 

B65-10235

ANGULAR GLASS TUBING DRAWN FROM ROUND TUBING. 

Dispensing system uses a rotating drum, transfer arm, and stationary drum to deploy, reel in, and store an attached hose. This system eliminates torsion and minimizes strain and wear of flexible hoses, is used for handling flexible cables that have one end permanently attached to an outlet or connector.

Column formed from a series of segments held together by an internal spring or cable can be coiled on a drum or extended into a rigid structure. This storable coil is useful in boring for small samples and supporting electrical and optical sensors.

Column clamp for hand fabricating spiral coils of various lengths from flat strip stock. This tool is used to make the cable and provides for connecting it to a standard electrical connector.

Check valve with a cylindrical flanged tube body is used in standard AN fittings. The valve also has an easily removable spring-loaded piston.

Joint coupling with nickel steel diaphragm of low hydraulic drive device translates microinch deviation measurements into precise corrective displacements. The unit is driven by a servomotor activated by the output of an attitude sensing device.

Check valve ensures unidirectional fluid flow and, in case of failure, vents the downstream fluid to the atmosphere and gives a positive indication of malfunction. This dual valve consists of a master check valve and a fail-safe valve.

Fiberglass tooling dies accelerate forming of large metal sheets. The dies, fabricated to fit over and fasten to the side bands, are lightweight, quickly replaced and have nongalling surfaces.

Easily transportable preprinted magnetic planning boards are made by coating thin sheet steel with clear plastic. Flexible magnetic boards used with paper charts are constructed from close mesh steel screen.

Duct coupling with nickel steel diaphragms of low thermal expansivity is leakproof when used with cryogenic fluids. The diaphragm, located between the two flanges of the coupling, reduces axial shrinkage at the coupling flanges to a minimum.

This provides an accurate biaxial gimbal which will operate in continuous motion without backlash.

Round glass tubing softened in a furnace is drawn over a shaped plug or mandrel to form shapes with other than a circular cross section. Irregularly shaped tubing is formed without limitations on tube length or wall thickness.
B65-10236
BURST DIAPHRAGM PROTECTS VACUUM VESSEL FROM INTERNAL PRESSURE TRANSIENTS
BARTELL, G. M. HOWARD, E. A. DATE- AUG. 1965
JPL-690
Supported dual-mode burst diaphragm protects vacuum vessels from transient internal pressures. It forms the interface between the vacuum in the vessel and an external pressure.

B65-10241
SHOCK ABSORBER OPERATES OVER WIDE RANGE
CREASY, J. P. JONES, J. C. DATE- AUG. 1965
MSC-160
Piston-type hydraulic shock absorber, with a metered damping system, operates over a wide range of kinetic energy loading rates. It is used for absorbing shock and vibration on mounted machinery and heavy earth-moving equipment.

B65-10245
CAPTIVE NUT FASTENER SECURELY JOINS BRITTLE MATERIALS
SACCOCCIO, R. M. WESTINGHOUSE ELEC. CORP./ DATE- AUG. 1965
ND-0028
Extension tube captive nut with a standard bolt joins assemblies with an inaccessible nut location. This fastener is excellent for joining brittle materials.

B65-10246
TERMOCOUPLE-TO-INSTRUMENTATION CONNECTOR FEATURING QUICK ASSEMBLY
HAWWA, E. WESTINGHOUSE ELEC. CORP./ DATE- AUG. 1965
ND-0022
Flexible thermocouple leads are connected to flexible instrumentation leads by a crimping and bridging process. This method eliminates the need for expensive transition sections and can be accomplished in about five minutes.

B65-10248
SYSTEM TRANSITS MECHANICAL VIBRATION INTO HAZARDOUS ENVIRONMENT
ABRANOVICH, D. A. WESTINGHOUSE ELEC. CORP./ GAAL, A. S. DATE- AUG. 1965
ND-0025
Vibration transducers are tested in a hazardous environment using a single axis transmission system with an electromagnetic shaker table and vibrating wires which drive identical rocker arms, one in the test cell and the other outside. This system can be modified for a multiaxis configuration.

B65-10251
CONTROL OF COMPONENT DIFFERENTIAL HARDNESS INCREASES BEARING LIFE
ANDERSON, W. J. FARKER, E. J. ZARETSKY, E. V. DATE- AUG. 1965
LEWIS-190
Bearing fatigue life is maximized when the bearing ball or roller hardness is between one and two points greater than that of the bearing race as measured on the Rockwell C scale.

B65-10254
RETRACTABLE OPERATED CLAMPING TOOL HAS POSITIVE GRIP
ADCOCC, S. A. WESTINGHOUSE ELEC. CORP./ SWALD, A. W. DATE- AUG. 1965
ND-0020
Jaw-type clamping tool inserts or removes objects in a hazardous environment. It has a strong, positive gripping force which is remotely operated by means of a wedge-screw mechanism.

B65-10256
HOLLOW PLASTIC HOOPS PROTECT TERMOCOUPLE IN STORAGE AND HANDLING
OSMOND, L. E. WESTINGHOUSE ELEC. CORP./ DATE- AUG. 1965
ND-0023
Thermocouples are shipped and stored in hollow plastic hoops. The hoop is an inexpensive but efficient method of protection.

B65-10262
ROTATING HOLDERS PERMITS ACCURATE GRINDING OF METALLURGICAL MICROSAMPLES
CHARNER, D. L. DATE- SEP. 1965
LEWIS-131
Metallurgical microsamples are held in a fixture which rotates the sample across a rotating grinding wheel. The dual rotation results in a level, flat surface on the sample.

B65-10266
ONE-SHOT VALVE MAY BE REMOTELY ACTUATED
KARL, S. HOWELL AIRCRAFT CO./ DATE- SEP. 1965
W00-125
One-shot valve, with spring-loaded plunger and sealing diaphragm, incorporates an emergency release actuated by a remote sensor. The plunger is released by the electrical melting of a fuse link and pierces the valve seal. The valve lowers fluid pressure in a container without losing the contained fluid.

B65-10285
DIFFERENTIAL PRESSURE GAUGE HAS FAST RESPONSE
WEBB, F. S. ARMOUR ENG. FOUND./ DATE- SEP. 1965
K-FS-358
Differential pressure gauge with semiconductor type strain gage elements measures rapidly changing pressure. Output of the strain gage elements is a dc voltage that is directly proportional to the pressure difference being measured.

B65-10312
AIR BRAKE-DYNAMOMETER ACCURATELY MEASURES TORQUE
SPOON- INNOVATOR NOT GIVEN /LEWIS/DAY- OCT. 1965
LEWIS-163
Air brake-dynamometer assembly combines the principles of the air turbine and the air pump to apply braking torque. The assembly absorbs and measures power outputs of rotating machinery over a wide range of shaft speeds. It can also be used as an air turbine.

B65-10319
BRASS-REMEDY METAL WELDING OR BRAZING WITH TUNGSTEN INERT GAS EQUIPMENT
WISNER, J. P. DATE- OCT. 1965
LEWIS-219
Appropriate brazing metals and temperatures facilitate the welding or brazing of base metals in vacuum and dynamic load conditions by a line-pressure furnace.

B65-10323
VOLUMETRIC SYSTEM CALIBRATES METERS FOR LARGE FLOW RATES
SPRO- INNOVATOR NOT GIVEN /LEWIS/DAY- SEP. 1965
W00-130
Volumetric system calibrates meters used for large fluid flow rates. The system employs trip probes and equipment to time the flow of liquid from a tare vessel into a calibrated vessel. This calibration system is used in the petroleum and chemical industries.

B65-10326
ROUGH SURFACE IMPROVES STABILITY OF AIR-SOUNDING BALLOONS
SCOGGINS, J. E. DATE- NOV. 1965
K-FS-320
Aerodynamic stability of balloons used for measuring the intensity and direction of atmospheric winds at various elevations is improved by incorporating a rough surface on the balloons. The rough-surfaced balloon is useful for collecting wind profiles with other meteorological data.

B65-10327
PRESSURE RESPONSIVE SEAL HANDLES STATIC AND DYNAMIC LOADS
RAVES, J. W. /AM. AVIATION/ DATE- NOV. 1965
GSFC-441
Ported ball valves are sealed under both static and dynamic load conditions by a line-pressure seal.
responsive double-acting seal. The top of the seal engages the ported ball at the outer circumferential edge of the seal upper end, and the bottom of the seal seats on a flat circular land with a continuous wall.

B65-10334
FREQUENCY DIVIDER IS FREE OF SPURIOUS OUTPUTS
MC DERMOND, D. DATE- NOV. 1965
GSFC-368
Frequency divider provides sixteen output states free of spurious pulses from four input circuits. The input is binary coded, and a change of one in the input only changes the number of output states by one.

B65-10338
INERT-GAS WELDING AND BRAZING ENCLOSURE
FABRICATED FROM SHEET PLASTIC
NISBER, J. F. DATE- NOV. 1965
LEWIS-220
Custo-fabricated plastic bag maintains an inert-gas atmosphere for welding and brazing certain metals. The bag fits over part of the workpieces and the welding and brazing tools. It is also used for metal brazing and fusion plating which require an inert-gas atmosphere.

B65-10339
DISK CALCULATOR INDICATES LEGIBLE LETTERING
SIZE FOR SLIDE PROJECTION
BULTHOFF, B. E. DATE- NOV. 1965
GSFC-409
Hand-operated disk calculator indicates the minimum size of letters and numbers in relation to the width and height of a working drawing. The lettering is legible when a slide of the drawing is projected.

B65-10342
ELECTROMAGNETIC HAMMER REMOVES WELD DISTORTIONS FROM ALUMINUM TANKS
SCHWINGBAHER, R. J. DATE- NOV. 1965
N-SF-207
Distortions around weld areas on sheet-aluminum tanks and other structures are removed with a portable electromagnetic hammer. The hammer incorporates a coil that generates a controlled high-energy pulsed magnetic field over localized areas on the metal surface.

B65-10346
IMPROVED POPPET VALVE PROVIDES POSITIVE DAMPERS SEALS
WALLACE, W. D. DATE- NOV. 1965
N-FS-293
Soft-seat poppet valve provides positive closure against fluid without damage to the seating surface on repeated cycling. It incorporates two compressible soft rings and a retaining ring of hard metal. Sealing is effected when the poppet seat is forced into intimate contact with a mating surface on one of the soft rings.

B65-10348
STANDOFF TOOL SPEEDS PLACEMENT OF PRECISION-FIT ELECTRICAL TERMINALS
MOORE, D. J. SKIFSTROM, W. W. /SPACE TECHNOL.
LaRS./ DATE- NOV. 1965
WOO-029
Hand operated tool inserts terminals through compartment walls in electronic equipment. The tool is in the configuration of a modified pair of pliers with jaws consisting of a split chuck and serial.

B65-10351
HYDRAULIC DRIVE SYSTEM PREVENTS BACKLASH
ACORD, J. D. DATE- NOV. 1965
JEL-371
Hydraulic drive system uses a second drive motor operating at reduced torque. This exerts a relative braking action which eliminates the acrnal gear train backlash that is intolerable when driving certain heavy loads.

B65-10356
Fasterer distributes stress evenly from SANDWICH-PANEL-HINGE ITEMS
SHAPING, J. /N. AM. AVIATION/ DATE- NOV. 1965
MSC-236
Items are attached externally to cellular-core sandwich panel by a fastener anchored in the panel by a constant amount of adhesive. The changes caused to the core cells and skin sheets are minimized.

B65-10360
PORTABLE TOOL REMOVES BURRS FROM PIPE AND TUBING
HEADLEY, C. A. /MCDOUGALL AIRCRAFT CORP./ DATE- NOV. 1965
MSC-237
Portable tool cleanly removes burrs that remain on tubing when it is cut. It restores the cut end to its original configuration, and carries away all chips and pieces. This tool is used in places of limited access where a larger tool could not be used.

B65-10367
FLEXIBLE PLASTIC RING ASSEMBLY MAKES DURABLE SHAFT SEAL
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- DEC. 1965
WOO-227
Stacked flexible rings interleaved with solid metal rings of smaller width provide a durable seal ring for rotating shafts used in vacuum or pressure pumps.

B65-10370
BRAZING METHOD PRODUCES SOLID-SOLUTION BOND BETWEEN REFRACTORY METALS
SPON- INNOVATOR NOT GIVEN /AVCO CORP./ DATE- DEC. 1965
LEWIS-212
Brazing two refractory metals by diffusion bonding minimizes distortion and avoids excessive grain growth in the metals. This method requires the selection of an interface metal that forms intermediate low-melting eutectics or solid solutions with the metals to be brazed.

B65-10371
UNIVERSAL HELIXES JOINT RESTRAINT PERMITS ANGULAR AND OFFSET MOVEMENT
KUHN, R. F., JR. /N. AM. AVIATION/ DATE- DEC. 1965
WOO-102
Universal joint-type restraint that employs ball joints permits maximum angular and lateral offset movement in a bellows joint without danger of rupture or pressure drop in the line. It is used in high pressure and high temperature applications in refineries, steam plants, or stationary power plants.

B65-10375
PORTABLE TOOL CLEANS PIPES AND TUBING
HEADLEY, C. A. /MCDOUGALL AIRCRAFT CORP./ DATE- NOV. 1965
MSC-238
Portable tool cleans and polishes the external surfaces of tubes and pipes without contaminating the interior areas with loose particles. The tool is driven by an electric drill and is connected to a vacuum source that removes debris resulting from the cleaning and polishing action.

B65-10378
REINFORCEMENT CORE FACILITATES O-RING INSTALLATION
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- DEC. 1965
WOO-226
Reinforcement core holds O-ring in place within a structure while adjacent parts are being assembled. The core in the O-ring adds circumferential rigidity to the O-ring material. This inner core does not appreciably affect the sectional elasticity or gland-sealing characteristics of the O-ring.
LANGLEY-145

Threaded split ring connector quickly and cleanly separates two structural members by remote control. The connector is retained in an expanded position by spring plates that are deflected and held by an explosive bolt. Ignition of the bolt effects the separation. This conceptual approach lends itself to various configurations and sizes of structures.

B65-10305

BACK MOUNT DEVICE QUICKLY INSERTS OR EXTRACTS CHASSIS UNITS

HAZETINE, L. N. /ZIMMERMAN, P. A. /COLLINS RADIO CO./ DATE- DEC. 1965

Mc-294

Rack mounted chassis units are quickly inserted or extracted by a device which is driven in either direction by turning a simple hand crank. This device is used in aircraft and water craft.

B65-10306

DRILL BIT DESIGN ENSURES CLEAN HOLES IN LAMINATED MATERIALS

TILLOTSON, W. N. /DOUGLAS AIRCRAFT CO./ DATE- DEC. 1965

Mc-208

Drill bit eliminates delamination when drilling laminated material. It cuts or shaves the material as it progresses through it. The bit acts to hold down the material during drilling to prevent tearing or ripping and produces a clean, smooth and defect-free hole. It prevents chipping in stretched plastic windows for high-altitude, high-performance aircraft.

B65-10308

STRAINER FITS INSIDE FLARED-TUBE FITTINGS

PAKER, C. J. DATE- DEC. 1965

LANGLEY-160

Cylindrical wire-mesh strainer which fits inside flare-tube fittings is readily installed and easily replaced. It has a collar that seats on the tapered shoulder of the male fitting.

B65-10311

TUNGSTEN WIRE AND TUBING JOINED BY NICKEL BRAZING

J. A. 1965

B65-10317

PORTABLE TOOLS IMPROVE QUALITY OF TUBING FLARES

SPON- INNOVATOR NOT GIVEN /ASTRO-COMPUTERS LABS./ DATE- DEC. 1965

NS-520

This tungsten wire and tungsten tubing are brazed together using a contacting coil of nickel wire heated to its melting point in an inert-gas atmosphere. This method is also effective for brazing tungsten to tungsten-rhenium parts.

B65-10319

DIE AND TELESCOPING PUNCH FOR CONVOLUTIONS IN TUB DIAPHRAGM

SPON- INNOVATOR NOT GIVEN /HONEYWELL/ DATE- DEC. 1965

JP-13-135

Die and punch set forms convolutions in this dished metal diaphragm without stretching the metal too thin at sharp curvatures. The die corresponds to the metal shape to be formed, and the punch consists of elements that progressively slide against one another under the restraint of a compressed-air cushion to mate with the die.

B65-10329

CENTRIFUGAL SYSTEM SEPARATES LIQUID FROM GAS

HANDLEY, R. E. /UNITED AIRCRAFT CORP./ STROG, E. K. DATE- DEC. 1965

MSC-282

Liquid-to-gas ratio is reduced from maximum efficiency of jet engine fuel by a centrifugal separator. The amount of liquid removed from the fuel is controlled by the separator-screen mesh size and its rotational speed.

B65-10401

PHOTOSENSORS USED TO MAINTAIN WELDING ELECTRODE-TO-JOINT ALIGNMENT

BOWES, J. E. /A. M. AVIATION/ DATE- DEC. 1965

MSC-243

Photoelectrodes maintain electrode-to-joint alignment in automatic precision arc welding. They detect the presence and relative position of a joint to be welded and actuate a servomechanism to guide the welding head accordingly to permit alignment for more than straight line or true circle joints.

B65-10402

LIGHTWEIGHT DOOR STAYS FOR CYLINDRICAL VESSELS

NAGLE, R. C. /A. M. AVIATION/ DATE- DEC. 1965

NS-527

Lightweight, removable, sealed joint access door for a spherical or hemispherical pressure vessel containing cryogenic materials uses a joint overlock design to take the shear and moment loads. Oversize bolt holes are used so that the attaching bolts are in tension only.

B66-10001

FORMING TOOL IMPROVES QUALITY OF TUBING FLARES

SPON- INNOVATOR NOT GIVEN /GEN. DYN. /ASTRONAUTICS/ DATE- JAN. 1966

N-231

Punch and die set improves the quality of tubing flares for use with standard flared-tube fittings in high-pressure systems. It forms a dimensionally true flare in the tubing and forces more tubing material into the high-stress areas to improve the strength and tightness of the tubing connection.

B66-10003

PORTABLE, COMPACT TOOL EASILY REMOVES BRAZED TUBING CONNECTORS

SCHOOP, R. A. /MOWWELL AIRCRAFT CORP./ DATE- JAN. 1966

MSC-263

Portable, compact tool quickly and cleanly removes brazed connectors from system tubes. The tool uses an induction coil to melt the braze and a compression spring to automatically separate the connector. An inert gas is forced-tied about the heated area to prevent oxidation of the tube.

B66-10007

FLOATING DEVICE Aligns BLIND CONNECTIONS

BESSEL, J. E. /A. M. AVIATION/ DATE- JAN. 1966

MSC-266

Panel-mounted connectors overcome the misalignment of blind connectors in electronic rack mounted equipment. The connector is free to move in the vertical direction by the action of a parallelogram mount. This freedom of motion maintains the guide pin hole centerline parallel to the guide pin centerline at all times.

B66-10011

TORQUE WRENCH DESIGNED FOR RESTRICTED AREAS

FAGERBERG, E. B. /LOCKHEED MISSILES AND SPACE CO./ DATE- JAN. 1966

LWIS-246

Wrench with twisting handle grip applies torque to a fastener in a restricted area. The wrench handle may be any length without affecting output torque.

B66-10014

EXPLOSIVE FORCE OF PRIMACORD GRID FORNS LARGE SHEET METAL PARTS

SPON- INNOVATOR NOT GIVEN /A. M. AVIATION/ DATE- JAN. 1966

REIN- SEE ALSO NASA-SP-5017

E-FS-316

Primacord which is woven through fish netting in a grid pattern is used for explosive forcing of large sheet metal parts. The explosive force generated by the primacord detonation is uniformly distributed over the entire surface of the sheet metal workpiece.

B66-10018

COMPACT RETRACTOR PROTECTS CABLE LOOPS

SPON- INNOVATOR NOT GIVEN /A. M. AVIATION/ DATE- JAN. 1966

E-FS-561

Core and swivel retractor mechanism combined with cable stiffeners provides compact, long-wearing protection for cable loops in cabinet-mounted electronic equipment drawers.
O-RING
BUOYANT STOKES LITTER ASSEMBLY
SPON- INNOVATOR NOT GIVEN / N. AM. AVIATION/ DATE-

B66-10019
BORATE STOKES LITTER ASSEMBLY USED FOR SEA RESCUE OPERATIONS
POLLARD, R. A. /SHENIN, G. A. /DATE- JAN. 1966
MSC-131
Standard stokes litter is fastened to inflatable flotation units for sea rescue operations. The assembly keeps an injured person immobilized during transportation to a first aid station.

B66-10020
RING TUBE FITTINGS FORM LEAKPROOF SEAL IN HYDRAULIC SYSTEMS
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-

B66-10021
O-RING TUBE FITTINGS FORM LEAKPROOF SEAL IN HYDRAULIC SYSTEMS
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-

B66-10022
RING VALVE RESPONSES TO DIFFERENTIAL PRESSURE CHANGES
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-

B66-10023
SIMPLE KEY LOCKS TURBINE ROTOR BLADES
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-

B66-10024
FRICTION DEVICE DAMPS LINEAR MOTION OF ROTATING SHAFT
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-

B66-10025
SHEET METAL STRIP UNROLLS TO FORM CIRCULAR BOOM
SPON- INNOVATOR NOT GIVEN /HELPAF, INC./ DATE-

B66-10026
RELIABLE CLAMP HOLDS FUEL CELL STACK THROUGH THERMAL CYCLE
GREEN, R. E. /UNIFIED AIRCRAFT CORP./ DATE- FEB. 1966
MSC-313
Reliable clamping device holds a stack of fuel cells during thermal expansion and contraction periods. The clasp has torsion bar action which maintains seal integrity over a wide stress range.

B66-10030
ASSEMBLY JIG ASSURES RELIABLE SOLAR CELL MODULES
OFARRELL, H. O. /TRW SPACE TECHNOL. LABS./ DATE-

B66-10035
IMPROVED MODIFIED POWER TOOL RAPIDLY DRIVES SERIES TURBO DRIVES
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-

B66-10040
IMPROVED CALIBRATED CLAMP FACILITATES PRESSURE APPLICATION
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-

B66-10045
IMPROVED CLAMP HELPS FUEL CELL STACK THROUGH THERMAL CYCLE
GREEN, B. E. VAN DEFREESTER, E. L. /N. AM. AVIATION/ DATE- FEB. 1966

B66-10050
IMPROVED BENCH VISE ADEPTLY GRIPS TUBING SECURELY AND SAFELY
MSC-279
Plastic self-compressing adapter with grooves, attached to the jaws of a bench vise, secures thin-wall tubing vertically or horizontally during cutting and flaring operations without marring or damaging it. Magnets incorporated in both sections of the adapter prevent detachment from the jaws when the vise is opened.

B66-10055
IMPROVED HYDROGEN-ATMOSPHERE INDUCTION FURNACE HAS INCREASED TEMPERATURE RANGE
MSC-299
Improved hydrogen-atmosphere induction furnace operates at temperatures up to 5,350 deg F. The furnace heats up from room temperature to 4,750 deg F in 30 seconds and cools down to room temperature in 2 minutes.

B66-10056
IMPROVED INSTRUMENT QUICKLY TRANSPOSES GROUND REFERENCE TO ITS LEVEL
GREEN, B. E. VAN DEFEESTER, E. L. /N. AM. AVIATION/ DATE- FEB. 1966

B66-10060
IMPROVED TUNED DISS FACILITATES TUNGSTEN FORMING
LEWIS-25A
Tungsten forming in a press brake employs a bottom die assembly with a heating manifold between two water-cooled die sections. The manifold has hydrogen-oxygen burners spaced along its length for even heat during forming.

B66-10065
IMPROVED INSTRUMENT QUICKLY TRANSPOSES GROUND REFERENCE TO ITS LEVEL
GREEN, B. E. VAN DEFEESTER, E. L. /N. AM. AVIATION/ DATE- FEB. 1966

171
Optical alignment of equipment is facilitated by a traverse target with a string suspending a plumb bob to transpose the ground level point to eye level operation. This instrument appreciably decreases the time required from the present method but achieves the same degree of precision.

Tensile-strength testing apparatus employs a capillary bundle through which a noncompressible fluid is extruded and a quick-release valve system. This apparatus applies the test loads at relatively constant very high strain rates with minimal shock and vibration to the tensile specimen and apparatus.

T-handle wrench can be preset to release when a certain torque value is exceeded by means of a spring-loaded roller and groove torque-limiting mechanism contained in the handle of the wrench. The wrench is also equipped with a push button in the handle that permits the operator to lock the handle to the spindle shaft, thus eliminating the torque-limiting function.

Run-in treatment provides a protective coating on wearers from injury. A shock absorber is mounted directly on the handle of the gun. It is held in a fixed position during the cutting operation. Because of their size and location, they pose no problem in repacking the chute and harness after a jump.

Load weighing cell used in conjunction with a hoist ensures defect-free welds. With the adapter, the operator can hold the gun steadily at uniform pressure to ensure defect-free welds.

Shear pin coupling with plugged hollow shaft provides required load capacity for shaft protection and has no groove to induce fatigue failure.

Reversing, thermal, motor-driven device positions magnetometer sensors on each of the four risers between the shroud lines and the harness. Because of their size and location, they pose no problem in repacking the chute and harness after a jump.

Push-pull with chemical additive protects gear surface.

Load weighing cell used in conjunction with a hoist is isolated during lifting and manipulation of the load. A simple mechanism, attached to a cradle hook, provides a screw adjustment for engaging the load cell during weighing of the load and isolating it from lift forces during hoisting of the load.

Mathematical analysis and computations determine optimum magnetic coil configurations for a magnetic brake which controllably accelerates a free falling load to a soft stop. Calculations on conventionally wound coils determine the required parameters for the desired deceleration with minimum electrical energy supplied to the stationary coil.

Threaded pilot allows machining of a port component, or boss, after the reciprocating hole has been threaded. It is used to align cutting surfaces with the boss threads, thus insuring precision alignment.

Shoulder adapter fits on one end of a hand-held spot welding gun. With the adapter, the operator can hold the gun steadily at uniform pressure to ensure defect-free welds.

Deduced hollow shaft makes fatigue-resistant shear pin.

Shear pin coupling provides required load capacity for shaft protection and has no groove to induce fatigue failure.

Reversing, thermal, motor-driven device positions magnetometer sensors.

Nylon shock absorbers reduce the canopy-opening shock of a parachute to a level that protects the wearer from injury. A shock absorber is mounted on each of the four risers between the shroud lines and the harness. Because of their size and location, they pose no problem in repacking the chute and harness after a jump.

Fingertip-operated trigger accurately controls the current supplied to an arc welding gun. The trigger is mounted directly on the handle of the gun.

Tool provides constant purge during tube welding.

Tool provides a constant purge of inert gas during in-place welding of tubular components to prevent contamination and oxidation. It also permits self-jiggings of the tube and sleeve to be welded.

Queueing register uses fluid logic elements.

Pipe cutting tool is useful in limited space.

Mechanism continuously measures static and dynamic cable loads.
PALLEY MECHANISM MEASURES THE TENSILE LOADS ON A CABLE UNDER STATIC AND DYNAMIC CONDITIONS, WITHOUT DISTURBING THE CONTINUITY OF OPERATION OF THE SYSTEM. A SET OF TAKE-OF PULLEYS ARE MOUNTED ON A PIVOTED FRAME THAT IS LINKED TO A STRAIN GAGE WHICH MEASURES THE FRAME DISPLACEMENT AS A FUNCTION OF THE STATIC OR DYNAMIC TENSILE LOAD ON THE CABLE.

SOLDERING TOOL HEATS WORKPIECES AND APPLIES SOLDER IN ONE OPERATION

LEWIS-247 GUDKESE, W. V. DATE- MAY 1966

B66-10115

Fountain-pen type soldering iron heats workpieces and applies solder to joints in densely packed electronics assemblies. The basic soldering tool is used with different-sized orifice tips, eliminating the need for an assortment of conventional soldering guns.

TELESCOPING OF INSTRUMENTATION TUBING ELIMINATES SWAGING

MC CLELLAN, W. L. /N. AM. AVIATION/ DATE- MAY 1966

N-PS-586

Short sections of stainless steel tubing of slide-fit sizes fitted together and silver-soldered at the junctions for small-diameter tubing assemblies with accurately stepped-down dimensions. This method of fabrication eliminates the costly swaging operations formerly used.

B66-10123

HAND DRILL ADAPTER LIMITS HOLES TO DESIRED DEPTH

SPOR- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- MAR. 1966

M-SC-346

Adjustable adapter fastened to the shank of a drill bit limits the depth of bored holes. The adapter may be made in sizes appropriate for bits of different diameters.

B66-10124

ECONOMICAL AND MAINTENANCE-FREE GAS SYSTEM OPERATES RAILROAD SWITCHES

VISSING, G. S. DATE- MAR. 1966

NU-0045

Remote control system that uses bottled nitrogen as a power source operates infrequently used railroad switches. This system is economical and maintenance free.

B66-10125

ALUMINUM OXIDE FILLER PREVENTS OBSTRUCTIONS IN TUBING DURING WELDING

OKELLY, K. P. DATE- MAR. 1966

ESC-223

Granular aluminum oxide is used as filler in serpentine tubing while welding the tubing to a flat surface. The filler eliminates obstructions in the tubes formed by molten weld nuggets and is porous enough to allow gases to escape from the welding area.

B66-10132

EXPANDABLE INSERT SERVES AS SCREW ANCHOR

SPOR- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- MAR. 1966

M-SC-301

Expandable self-locking adapter secures components to panels having one accessible side. Mounting holes in the panels may not be threaded to accommodate screws, therefore, the adapter contains a female thread that will mate a mounting screw.

B66-10135

CHART CASE OPENS TO FORM BRIEFCASE

WELLOG, E. A. /N. AM. AVIATION/ DATE- APR. 1966

ESC-349

Aluminum carrying case protects charts during transit and opens to form a rigid easel for their presentation. Looseleaf clamps hold the charts in place for both carrying and displaying them.

CRYOGENIC TRAP VALVE HAS NO MOVING PARTS

BRAND, L. W. WELLS, G. /N. AM. AVIATION/ DATE- APR. 1966

M-PS-447

Aluminum-body trap valve with an invar stem keeps cryogenic materials in the liquid state while entering the final component of a system. The valve has no moving parts and is self-actuated and self-monitoring.

ROTATING MANDREL SPEEDS ASSEMBLY OF PLASTIC INFLATABLES


LANGELEY-155

Rotating mandrel permits the accurate cutting, forming, and sealing of plastic gores for assembly of an inflatable surface of revolution. The gores remain on the mandrel until the final seam is reached. Tolerances are tightly controlled by the mandrel configuration.

PORTABLE POWER TOOLS MACHINES WELD JOINTS IN FIELD

SPIER, R. A. DATE- APR. 1966

M-PS-258

Portabl machine for cutting precise weld joints required by nonstandard pipe sections used in the field for transfer of cryogenic fluids. This tool is adaptable for various sizes of pipes and has a selection of router bits for different joint configurations.

EXTENDABLE RAST USED IN ONE SHOT SOIL PENETROMETER

HOTZ, G. M. HOWARD, G. A. DATE- APR. 1966

JPL-585

Penetrometer to test soil characteristics has a piercing head with soil instrumentation equipment attached to an expandable mast actuated by compressed air. The penetrometer gives continuous measurements as the mast pushes the piercing head through the soil.

DEEP INDICATOR AND STOP AID INACHENING TO PRECISE TOLERANCES

LAVERY, J. L. /N. AM. AVIATION/ DATE- APR. 1966

M-PS-553

Attachment for machine tools provides a visual indication of the depth of cut and a positive stop to prevent overcutting. This attachment is used with drill presses, vertical milling machines, and jigs bores.

MOUNTING FACILITATES REMOVAL AND INSTALLATION OF FLAME-DETECTOR RODS

CASTIE, T. /N. AM. AVIATION/ DATE- APR. 1966

M-PS-555

Flame-detector-rod holder is easily removed from the wall of a gas-fired furnace for maintenance or replacement of the detector rod without requiring shutdown of the furnace. The holder consists of an externally threaded outer bushing, a sleeve which is held inside the outer bushing with a set screw, and a detector rod assembly which screws into the sleeve.

SPLIT GLASS TUBE ASSURES QUALITY IN ELECTRON BEAM BRAZING

KRESSIN, W. J. /N. AM. AVIATION/ DATE- APR. 1966

M-PS-564

Sealed enclosure of heat-resistant glass tubing and silicone rubber molds provide good visibility for electron beam brazing of metal tubes in an inert gas atmosphere. The glass tubing and rubber molds, which are bonded together, are easily applied to and removed from the brazing area by operation of a clamp.

NYLON HIT REMOVES CORR INSULATION WITHOUT DAMAGE TO SUBSTRATE

B66-10152
CLEANDALL, J. C. /AM. AVIATION/ DATE- APR. 1966
MSC-381
Nylon router bit in an electric hand-held drill removes small quantities of cork insulation from a metal or fiber glass surface without cutting or scratching the surface.

B66-10155
SIMPLE DEVICE FACILITATES INERT-GAS WELDING OF TUBES
CAREYERS, K. V. /AM. AVIATION/ KELLEY, W. B. DATE- APR. 1966
M-FS-550
Metal Y-tube simultaneously directs argon streams over weld areas on both sides of tubes being joined along a line on their outer periphery. The device is advanced along the junction in step with the welding operation.

B66-10167
DUAL REGULATOR CONTROLS TWO GASES FROM A SINGLE SOURCE
JACKSON, R. /CABINET CORP./ DATE- APR. 1966
MSC-227
Dual-pressure regulator uses single reference for parallel control of two gases. The regulator uses an external fluid pressure to modulate the flow of one gas, and the regulated flow of the first gas to modulate the flow of the second.

B66-10168
SAFETY SWITCH PERMITS EMERGENCY BRIDGE CRANE SHUTDOWN
LONG, E. J. B. /AM. AVIATION/ DATE- APR. 1966
M-FS-549
Safety switch on a crane control pendant must be held closed to operate the crane. This provides for immediate power cutoff to the crane in an emergency or a pendant circuit failure.

B66-10169
MODIFIED DRILL PERMITS ONE-STEP DRILLING OPERATION
LIBERTONE, C. /AM. AVIATION/ DATE- APR. 1966
M-FS-559
Drill with modified cutting faces permits one-step drilling operation without chatter upon contact and premature wear. The modification of the drill, which has the same diameter as that of the desired hole, consists of a groove across the bottom of each of the cutting faces of the drill flutes.

B66-10171
MULTISURFACE FIXTURE PERMITS EASY GRINDING OF TOOL BIT ANGLES
JONES, C. R. /AM. AVIATION/ DATE- APR. 1966
M-FS-586
Multisurface fixture with a tool holder permits accurate grinding and finishing of right and left hand single point threading tools. All angles are ground by changing the fixture position to rest at various references angles without removing the tool from the holder.

B66-10172
FLEXIBLE COILED SPLINE SECURELY JOINS RATING CYLINDERS
COPPERNOIL, R. W. /GEN. DET./ASTRONAUTICS/ DATE- APR. 1966
W00-270
Ratios cylindrical members are joined by spline to form an integral structure. The spline is made of tightly coiled, high tensile-strength steel spiral wire that fits a groove between the rating members. It provides a continuous bearing surface for axial thrust between the members.

B66-10174
EPOXY-COATED CONTAINERS EASILY OPENED BY WIRE BAND
MC COY, J. W. /AM. AVIATION/ DATE- APR. 1966
M-FS-592
Epoxy coating reduces punctures, abrasions, and contamination of synthetic cellular containers used for shipping and storing fragile goods and equipment. A wire band is wound around the closure joint, followed by the epoxy coating. The container can then be easily opened by pulling the wire through the epoxy around the joint.

B66-10175
DEVICE LOOP-SPOTS SPHERES TO VERY CLOSE TOLERANCES
AEFFY, H. W. /GE/ DATE- MAY 1966
JPL-SC-119
Device loops precise amounts of metal from high spots on a spherical body to correct minute surface imperfections. The device generates the lapped surface with reference to an existing true surface on the spherical workpiece. Lapping is performed by applying a rotary and oscillatory motion to the workpiece while the lapping tool is held on the workpiece high spot.

B66-10176
LIFTING CLAMP POSITIVELY GRIPS STRUCTURAL SHAPE
REINHARDT, E. C. DATE- MAY 1966
M-FS-593
Welded steel clamps securely grip structural shapes of various sizes for crane operations. The clamp has adjustable clamping jaws and screw-operated internal v-jaws and provides greater safety than hoisting slings presently used. The structural member can be rotated in any manner, angle, or direction without being released by the clamp.

B66-10180
CONTROL SYSTEM MAINTAINS COMPARTMENT AT CONSTANT TEMPERATURE
LINDBERG, J. G. /AM. AVIATION/ DATE- MAY 1966
JPL-SC-145
Gas-filled permeable insulating material maintains an enclosed compartment at a uniform temperature. The material is interposed between the two walls of a double-walled enclosure surrounding the compartment.

B66-10189
PNEUMATIC SHUTOFF AND TIME-DELAY VALVE OPERATES AT CONTROLLED RATE
HORNING, J. L. TOMLINSON, L. E. /AM. AVIATION/ DATE- MAY 1966
M-FS-602
Shutoff and delay valve, which incorporates a metering spool that moves at constant velocity under pneumatic pressure and spring compression, increases fluid-flow area at a uniform rate. Diaphragm areas, control cavity volume, and bleed-orifice size may be varied to give any desired combination of time delay and spool travel time.

B66-10190
BELLOWS DESIGN FEATURES LOW SPRING RATE AND LONG LIFE
LESCIC, H. F. /AM. AVIATION/ DATE- MAY 1966
MSC-521
High pressure bellows has high strength rigid hoops for strength and stability and sheet stock for low spring rate effects. The simplicity of this bellows design facilitates mass production.

B66-10191
TOOL POST MODIFICATION ALLOWS EASY TURRET LATHE CUTTING-TOOL ALIGNMENT
PONTS, L. /AM. AVIATION/ DATE- MAY 1966
M-FS-581
Modified tool holder and tool post permit alignment of turret lathe cutting tools on the center of the spindle. The tool is aligned with the spindle by the holder which is kept in position by a hydraulic lock in feature of the tool post. The tool post is used on horizontal and vertical turret lathes and other engine lathes.

B66-10195
SEGMENTED BALL VALVE IS EASY TO OPEN AND CLOSE
PEHONY, E. SHINAGUI, L. H. /AM. AVIATION/ SPEISGRAN, C. DATE- JUL. 1966
W00-288
Segmented ball valve and flowmeter in the same spherical housing provide a valve that will handle large fluid volume with bulkiness and weight of
BLADE VALVES OR CONVENTIONAL BALL VALVES. THE VALVE IS EASILY OPENED OR CLOSED AND THE FLOWSEWER REMAINS STATIONARY, SO ERRORS ARE ELIMINATED.

B66-10197
INTERMEDIATE ROTATING RING IMPROVES RELIABILITY OF DYNAMIC SHAFT SEAL
MILLS, P. R. /AM. AVIATION/ DATE- MAY 1966
M-FS-575
Intermediate rotating ring improves the reliability of dynamic shaft seals whose rubbing surfaces wear down rapidly at high shaft speeds. The rotating ring is placed between the rotating shaft sealing surfaces and the stationary surface, and driven at one-half the shaft speed.

B66-10201
SELF-CONTAINED CLOTHING SYSTEM PROVIDES PROTECTION AGAINST HAZARDOUS ENVIRONMENTS
CLAYTON, DE. /AM. AVIATION/ DATE- MAY 1966
M-FS-536
Self-contained clothing system protects personnel against hazardous environments. The clothing has an environmental control system and a complete protection envelope consisting of an outer garment, inner garment, underwear, boots, gloves, and helmet.

B66-10202
BODY-FITTED HARNESS PROVIDES SAFE AND EASY COMPONENT HANDLING MILLER, E. O. /AM. AVIATION/ DATE- MAY 1966
M-FS-533
Body-fitted restraint harness enables workers to safely and conveniently handle critical components during their installation or removal. Since the harness supports the components, the worker is able to maneuver through restricted areas with his hands free. It is easily put on, adjusted, and removed, or comfortably worn without interfering with normal activities.

B66-10204
TORQUE WRENCH ALLOWS READINGS FROM INACCESSIBLE LOCATIONS
DE BARRANCO, M. /AM. AVIATION/ DATE- MAY 1966
M-FS-538
Torque wrench with an adjustable drive shaft permits indicator to remain in view when used on sections of equipment with limited access. The shaft is capable of protruding from either side of the wrench head by means of spring loaded balls.

B66-10206
LOW PRESSURE HEATING ELEMENT PROVIDES THERMAL CONTROL DURING WELDING OPERATIONS CROWELL, J. W. /CHRYSLER CORP./ DATE- MAY 1966
M-FS-647
Low power, cylindrical heating element in a swaging anvil assembly heats the material being worked on. The increased ductility of heated material results in crack-free deformation.

B66-10208
TOOL ENABLES PROPER MATING OF ACCELEROMETER AND CABLE CONNECTOR NEEDE, C. H. /AM. AVIATION/ DATE- MAY 1966
M-FS-611
Tool supports accelerometer in axial alignment with an accelerometer cable connector and permits tightening of the accelerometer to the cable connector with a torque wrench. This is done without damaging the components or permitting them to work loose under sustained, high-level vibrations.

B66-10209
SPECIAL TOOL SEALS CONDUCTORS WITH COMBINATION OF PLASTIC SLEEVES YOUNG, S. /AM. AVIATION/ DATE- MAY 1966
M-FS-579
Special tool seals electrical conductors connecting instrumentation within space vehicle cryogenic fuel tanks and oxidizer tanks. An inner sleeve of fluorinated ethylene-propylene and an outer sleeve of tetrafluoroethylene enclose a bundle of conductors and are heated with the tool to form a tight seal of the bundle and each individual wire.

B66-10210
ADJUSTABLE CUTTING GUIDE ALIGNS AND POSITIONS STACKS OF MATERIAL TIMMER, A. D. /AM. AVIATION/ DATE- MAY 1966
M-FS-321
Adjustable guide tool aligns and positions stacks of material for cutting at various angles. The device adapts its shape to stacks of any corner angle, adjusts to any cutting angle, and quickly aligns the stacks for repeated cutting. With this device, an operator need not place his hands under the knife during alignment.

B66-10211
PRESSURE SEAL RING MAY BE EFFECTIVE OVER WIDE TEMPERATURE RANGE SCHROEER, E. P. /AM. AVIATION/ DATE- MAY 1966
M-FS-486
Positive pressure seal rings seal bolted flange joints in pressure vessels containing fluids whose temperatures can vary over a wide range. The seal rings mate with grooves in the flanges and compensate for the excessive thermal expansion or contraction of a gasketed joint.

B66-10212
LIQUID TRAP SEALS THERMOCOUPLE LEADS RUPPEL, E. F. /AM. AVIATION/ DATE- MAY 1966
M-FS-646
Liquid trap seals thermocouple leads coming out of a brazing retort that operates with a controlled atmosphere so that air cannot enter the retort and hydrogen cannot escape. The trap is fastened to a duct welded to the retort. Thermocouple leads are led out through the duct and trap, with the fluid forming a gastight seal between the atmosphere and the retort.

B66-10213
CYLINDRICAL CLAW CLAMP HAS QUICK RELEASE FEATURE GOODWIN, G. D. /CHRYSLER CORP./ DATE- MAY 1966
M-FS-513
Claw clamp grasps cylindrical shapes by pressing its jaws around the object. The clamp is released by retraction of a release pin which extends beyond the clamp handle on both sides for better purchase.

B66-10214
COLLOIDAL SUSPENSION SIMULATES LINEAR DYNAMIC PRESSURE PROFILE MCNABB, R. J. /LOCKEED MISSILES AND SPACE CO./ DATE- JUN. 1966
WOG-266
Missile nose fairings immersed in colloidal suspension prepared with various specific gravities simulate pressure profiles very similar to those encountered during reentry. Stress and deflection conditions similar to those expected during atmospheric reentry are thus attained in the laboratory.

B66-10215
ELECTRON BEAM WELDING OF COPPER-NICKEL FACILITATED BY CIRCULAR MAGNETIC SHIELDS LAND, J. N. /AM. AVIATION/ DATE- MAY 1966
M-FS-569
High permeability, soft magnetic rings are placed on both sides of electron beam weld seams in copper-nickel circular joint. This eliminates deflection of the electron beam caused by magnetic fields present in the weld area.

B66-10216
Valve assembly allows transfer of hazardous or reactive fluids such as liquid fluorine without corrosion of valve face and seat material. The assembly consists of a plug to block bulk flow and a soft-seal outer seat to effect zero-leak stoppage.
05 MECHANICAL

B66-10217
FIBERGLASS CONTAINER SHELLS FORM CONTAMINATION-FREE STORAGE UNITS
KEAR, H. E. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-527
Interchangeable molded fiberglass shells are locked together to form storage units of various depths. These units can hold components weighing 1500 pounds, are easily transportable, and protect contents from contamination.

B66-10218
PRESSURE VESSELS FABRICATED WITH HIGH-STRENGTH WIRE AND ELECTROFORMED NICKEL
ROTH, R. /N. AM. AVIATION/ DATE- JUN. 1966
H-FS-581
Metal pressure vessels of various shapes having high strength-to-weight ratios are fabricated by using known techniques of filament winding and electroforming. This eliminates nonuniform wall thickness and unequal wall strength which resulted from welding formed vessel segments together.

B66-10219
TOOL PERMITS DAMAGE-FREE REMOVAL OF SOLAR CELL
BICKLEY, J. E., JR. /COMPREHENSIVE DESIGNERS/ DATE- MAY 1966
MSC-867
Modified soldering iron extracts a wrap-around solar cell that is attached with solder or adhesive to a substrate without destroying the cell removed or damaging adjacent cells. Heat, vacuum, and compressed air, operated from a special head attached to the soldering iron, loosen, extract, and protect the cell.

B66-10226
A CONCEPTUAL DESIGN FOR SQUEEZE FILM BEARINGS
SPO- INNOVATOR HOT GIDES /BENDIX CORP./ DATE- JUN. 1966
M-FS-573
Squeeze film bearings which require at least one of two adjacent surfaces to oscillate at high frequency and low amplitude have the oscillating /strain-producing/ member on a double gas film. This means of support allows dynamic changing of the gap between the bearing surfaces without the disadvantages produced when the oscillator is affixed to the bearing base itself.

B66-10228
STUDIES REVEAL EFFECTS OF PIPE BENDS ON FLUID FLOW CAVITATION
STONEFELTZ, R. T. DATE- MAY 1966
H-FS-516
Incipient cavitation in liquids flowing in pipes curved in one plane are affected by the pipe bend radii and pipe diameters, but little by pipe bend angles ranging from 60 to 120 degrees. Critical cavitation indices decrease with higher Reynolds number and pressure ratio. Bulk liquid temperature increase lowers the mean critical velocity at which cavitation occurs.

B66-10229
EXPANDABLE RUBBER PLUG SEALS OPENINGS FOR PRESSURE TESTING
DATE- MAY 1966
NU-0048
Plug assembly seals openings in piping systems, vessels, and chambers for low pressure leak testing. The assembly, which consists of a rubber sealing plug and the mechanism for expanding it into a pressure-tight configuration, adequately seals irregular diameters without damage to mating surfaces.

B66-10233
QUICK-CLOSING VALVE IS ACTUATED BY EXPLOSIVE DISCHARGE
RAJESKI, S. J. DATE- JUN. 1966
M-FS-55
Remotely controlled plug-type valve shuts off a high-pressure, high-temperature gas flow in a few milliseconds. The valve is actuated by a commercially available electrically initiated squib of low explosive power. More rapid closure is attainable with squibs containing heavier explosive charges.

B66-10235
KEY-LOCKED GUARD PREVENTS ACCIDENTAL SWITCH ACTUATION
HARTMANN, K. C. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-419
Switch guard, which locks in place on a panel, protects individual switches from accidental activation. The guard consists of a cup to cover the switch lever, a standard screw lock tumbler, and a stud that mates with a threaded adapter in the panel.

B66-10236
AUTOMATIC REEL CONTROLS FILLER WIRE IN WELDING MACHINES
HILLERT, A. V. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-416
Automatic reel on automatic welding equipment takes up slack in the reel-fed filler wire when welding operation is terminated. The reel maintains constant, adjustable tension on the wire during the welding operation and rewinds the wire from the wire feed unit when the welding is completed.

B66-10237
ADJUSTABLE KNIFE CUTS HONEYCOMB MATERIAL TO SPECIFIED DEPTH
BRAWELL, J. A. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-475
Calibrated, adjustable knife cuts aluminum honeycomb or other soft materials to a desired depth. The frame of the device accommodates standard commercial blades. Since the blade is always visible to the operator, the device can be used on any straight or irregular layout line.

B66-10238
INSERT SLEEVE PREVENTS TUBE SOLDERING CONTAMINATION
STEIN, J. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-552
Teflon sleeve insert prevents contamination of internal tube surfaces by solder compound during soldering operations that connect and seal the tube ends. The sleeve insert is pressed into the mating tube ends with a slight interference fit.

B66-10239
HAND TOOL PERMITS SHRINK SIZING OF ASSEMBLED TUBING
HILLERT, A. ODOR, M. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-504
Portable tool sizes tubing ends without disassembling the tubing installation. The shinking tool is charged to the tubing and operated by a ratchet wrench. A gear train forces the tubing end against an appropriate die or mandrel to effect the sizing.

B66-10240
JIG PROTECTS TRANSISTORS FROM HEAT WHILE TINNING LEADS
MSC-515
In tinning transistor leads, an aluminum jig is used to dip the leads into the molten tin. The jigs mass shunts excess heat given off by the molten tin before it reaches and damages the transistor body.

B66-10241
BRAZING PROCESS USING AL-SI FILLER ALLOY RELIABLY BONDS ALUMINUM PARTS
MSC-448
Brazing process employs an aluminum-silicon filler alloy for diffusion bonding of aluminum parts in a vacuum or inert gas atmosphere. This process is carried out at temperatures substantially below those required in conventional methods and produces bonds of greater strength and reliability.

176
Portable sandblaster cleans small areas

MSC-522
Portable sandblasting unit rapidly and effectively cleans localized areas on a metal surface. The unit incorporates a hoppers enclosure, making plates, sand container, and used sand accumulator connected to a vacuum system. The hoppers is equipped with an inspection window and light for observation of the sanding operation.

Lathe chuck key incorporates safety feature

MSC-506
Lathe chuck key with spring loaded plunger cannot inadvertently be left in the chuck when the lathe is started. The plunger automatically ejects the key from the chuck when hand pressure is released.

 Hollow needle used to cut metal honeycomb structures

Gregg, E. A. /N. Am. Aviation/ Date- Jun. 1966
MSC-486
Hollow needle tool cuts metal honeycomb structures without damaging adjacent material. The hollow needle combines an electrostatic discharge and a stream of oxygen at a common point to effect rapid, accurate metal cutting. The tool design can be varied to use the hollow needle principle for cutting a variety of shapes.

Modified soldering iron speeds cutting of synthetic materials

M-FS-725
Modified soldering iron cuts large lots of synthetic materials economically without leaving frayed or jagged edges. The soldering iron is modified by machining an axial slot in its heating element tip and mounting a cutting disk in it. An alternate design has an axially threaded bore in the tip to permit the use of various shapes of cutting blades.

Pressure-welded flange assembly provides leaktight seal at reduced bolt loads

Bartensol, A. J. /GE/ Date- Jun. 1966
M-FS-640
Vibration resistant flange-connector assembly provides a leaktight seal under reduced bolt loads. The assembly consists of ductile metal plates that are pressure welded between dies mounted in recessed flanges.

Electrical upsetting of metal sheet forms weld edge

Scheffy, I. S. /N. Am. Aviation/ Date- Jun. 1966
M-FS-726
Electric gathering of sheet stock edges forms metal sheets in the shape of gore sections with heavier edge areas that can be welded without loss of strength. The edges are gathered by progressive resistance heating and upsetting, and are forced automatically. This process avoids disturbance of the metal's internal structure.

Fluid damping reduces bellows seal fatigue failures

Spork- Innovator Not Given /N. Am. Aviation/ Date- Jun. 1966
M-FS-565
Service life of a bellows-type seal is the presence of mechanical vibration is increased by a system of interconnected bellows with intervening cavities filled with a fluid which dampens the amplitude of periodic deflection of the sealing bellows. Different damping fluids are used according to environmental conditions.

Diffusion bonding makes strong seal at flanged connector

M-FS-637
Copper strip seals high pressure fluid system connector so that it is insensitive to relaxation of the bolt loads. The copper strip is diffusion bonded to the surfaces of the connector flange by application of high pressure and temperature.

Tool separates sleeve-type unions without heat

MSC-497
Tool that uses conventional milling and cutting techniques separates sleeve type tubing unions and tubes without using heat. A selection of holders, associated bits, and cutting wheels permits preparation of varied diameter unions.

Mill profiler machines soft materials accurately

Hauschel, J. A. /N. Am. Aviation/ Date- Jun. 1966
M-FS-692
All profiler mechanisms, belts, slots, and grooves in soft materials, such as styrofoam, phenolic-filled cores, to any desired thickness. A single operator can accurately control cutting depths in contour or straight line work.

Flow king valve is simple, quick-acting

M-FS-752
Two porting rings, one within the other, control gas or liquid flow by using seal buttons at the sliding valve clomers. Multiporting within the ring allows close control of the flow by the slight rotation of the outer porting ring.

Critical parts are stored and shipped in environmentally controlled reusable container

Kummerfeld, K. E. /N. Am. Aviation/ Date- Jun. 1966
M-FS-703
Environmentally controlled, hermetically sealed, reusable metal cabinet with storage drawers is used to ship and store sensitive electronic, pneumatic, or hydraulic parts or medical supplies under extreme weather or handling conditions. This container is compatible with on-site and transportation handling facilities.

Aluminum/steel wire composite plates exhibit high tensile strength

Spork: Innovator Not Given /Harvey Aluminum Co./ Date- Jun. 1966
M-FS-401
Composite plate of fine steel wires imbedded in an aluminum alloy matrix results in a lightweight material with high tensile strength. Plates have been prepared having the strength of titanium with only 85 percent of its density.

Compact actuator converts rotary to linear motion

Ford, A. G. Date- Jun. 1966
JPL-786
Compact motor mounted on a stationary base converts rotary to linear motion. The motor rotates a gear train assembly so that the end of an arm is attached to the assembly moves in a linear path.

Seal surfaces protected during assembly

Richardson, G. L. /Aerojet-General Corp./ Date- Jun. 1966
NU-0067
Protection device for sealed surfaces is placed over the polished surface entrance of trapped bosses and removed when the seal fitting has been
engaged with the boss threads. This technique applies to various seal types used in close fitting, spring loaded, threaded fittings.

**B66-10267**

**RADIAl COOLANT CHANNELS FABRICATED BY SIMPLIFIED METHOD**

FREEHAN, A. /AEGEO-GEN. CORP./ DATE- JUN. 1966

**NU-0070**

Radial coolant channels for distributing a coolant over the inner wall of a circular section are fabricated by cold-rolling indentations on the inside circumference of the base section and covering the indentations with a rolled flange.

**B66-10269**

**DIFFERENTIAL EXPANSION PROVIDES PRESSURE FOR DIFFUSION BONDING OF LARGE DIAMETER RINGS**

SCHMIDT, E. /INNOVATOR NOT GIVEN/BOEING CO./ DATE- JUN. 1966

**B6-588**

External pressure band is used to bond aluminum alloy collars to large diameter, stainless steel flange. The band contracts while cooling and exerts pressure on the joint between the silver plated surfaces of the ring and collar which expand toward the band. This diffusion bonding by differential expansion minimizes aluminum deformation.

**B66-10275**

**PASTERN PROVIDES FOR BOLT MISALIGNMENT AND QUICK RELEASE OF FLANGE**

ENGEL, C. /AEROJET-GEN. CORP./ DATE- JUN. 1966

**G-0074**

Pastern enables two large flanges to be bolted together without close alignment between the bolt and bolt-hole diameters, and provides for a quick release of one of the flanges under emergency conditions. It contains a nut that is retained by a square head in a recess in one side of the removable flange and by a collar and snap ring on the other side of the flange.

**B66-10276**

**REMOTE CONTROLLED SYSTEM COUPLES AND DECOUPLES LARGE DIAMETER PIPES**

GRIFFIN, P. A. /AEROG-GEN. CORP./ DATE- JUN. 1966

**G-0062**

Remote control, six-motor driven, chain-drive system engages and disengages a flange coupling from large-diameter, high pressure fluid lines.

**B66-10277**

**OFFICE FACILITATES CENTERING OF WORKPIECES IN LATHE CHUCK**

FRAZER, L. /N. AM. AVIATION/ DATE- JUN. 1966

**H-FS-645**

Spring loaded device used in conjunction with a standard dial indicator facilitates centering a workpiece in an independent four-jaw lathe chuck.

**B66-10278**

**C-CLIPS WITH MYLAR BACK-UP PROVIDE HIGH-PRESSURE CYROGENIC SEAL**

FORK, G. N. /N. AM. AVIATION/ DATE- JUN. 1966

**G-0053**

Mylar lip type back-up ring installed in combination with three rubber O-rings seal the junctions between a tube stub and an adapter during high pressure gas flow at cryogenic to room temperatures. Mylar seals should not be used with oxygen under pressure or in the liquid state.

**B66-10279**

**MAGNETIC LATCHES PROVIDE POSITIVE OVERPRESSURE CONTROL**

LOT, J. L. /WESTINGHOUSE ASTRONUC. LAB./ DATE- JUN. 1966

**G-0057**

Lowers are used for overpressure safety venting in rooms or chambers where explosion hazards exist. The lowers have individually hinged closures that are held in locked position by commercially available magnets that quickly release them in an overpressure condition.

**B66-10283**

**FIXED VACUUM PLATE CLAMPS STYROFOAM FOR BACING**

BAUSCHL, J. A. /N. AM. AVIATION/ DATE- JUN. 1966

**H-FS-683**

Aluminum plate holds styrofoam securely in place for machining operations. The styrofoam is clamped to rubber or cork pads on the plate surface by vacuums. Foam rubber tape provides the vacuum seal.

**B66-10284**

**EXTENSOMETER AUTOMATICALLY MEASURES ELONGATION IN ELASTOMERS**

HOOPES, C. D. DATE- JUN. 1966

**H-FS-517**

Extensometer, with a calibrated shaft, measures the elongation of elastomers and automatically records this distance on a chart. It is adaptable to almost any tensile testing machine and is fabricated at a relatively low cost.

**B66-10285**

**HIGH PRESSURE TUBE COUPLING REQUIRES NO THREADS OR FLANGES**

STEIN, J. A. /N. AM. AVIATION/ DATE- JUN. 1966

**G-66-500**

High pressure tube coupling connects to any straight, unthreaded, and unflared tubing end without deforming or damaging the tubing. The coupling grips the tube wall tightly between an external compression sleeve and an internal hollow mandrel. It is adaptable to standard screw fittings for test stand attachment.

**B66-10294**

**PNEUMATIC SEPARATOR GIVES QUICK RELEASE TO HEAVY LOADS**

BUCARAN, D. C. DAVIS, E. J. PHILLIPS, J. D. DATE- JULY 1966

**G-66-10**

Pneumatic separator, using applied pressure, quickly releases restraining devices securing heavy loads. With minor modifications this separator can be used as a coupling device.

**B66-10297**

**DIAPHRAGM SPRING GIVES CLUTCH OVER-CENTER TOGGLE EFFECT**

ROSENBERG, H. W. /GE/ DATE- AUG. 1966

**G-29**

Diaphragm spring clutch mechanism is used in testing the relative merits of eddy-current and hydraulic dampers. The dampers are alternately coupled to a single damping boom shaft. The floating clutch mechanism enables the inoperative damper to remain completely isolated from the damping boom shaft during test of the other damper.

**B66-10301**

**TOGGLE PRE-TENSIONS COVERS PRIOR TO LACING**


**G-63**

In securing a bulky object in a storage compartment, a clenching or tightening tool is used to draw two opposing covers halves together at a predetermined tension to permit quick lacing to retain the stored object. This tool is also useful in fabrication industries to draw components together during assembly or treating.

**B66-10302**

**SIMPLE SCALE INTERPOLATOR FACILITATES READING OF GRAPHS**

FARIO, A. HENRY, E. HOOD, D. DATE- JULY 1966

**LEWIS-92**

Set of cards with scale divisions and a scale finder permits accurate reading of the coordinates of points on linear or logarithmic graphs plotted on rectangular grids. The set contains 34 different scales for linear plotting and 28 single cycle scales for log plots.

**B66-10303**

**BYPASS ROD TRANSFERS HEAT DEVELOPED IN THERMIONIC DIODE**

LARKINIS, L. J. /THEMEO ELECTRON ENG. CORP./ DATE- JUN. 1966

**178**
In a thermionic diode, a cesium tube joining the emitter-collector area and the cesium reservoir is fitted with a copper bypass rod held in place by two standoff brackets. The rod transfers heat from the emitter-collector to the reservoir without going through the ceramic seal structure which surrounds the cesium tube and cannot sustain large temperature gradients.

Flexible tube inserted into a 3/4-round strip receptacle inflates to form an airtight material fastener. Inflation is done with a carbon dioxide cartridge and deflation by a manually operated release valve. Device has potential use in space suits, underwater suits, and other protective clothing.

Union assembly provides a fluidtight joint between two lengths of tubing and minimizes introduction of braze contaminants into the tubing. The union contains two brazing preforms separated by a metal ring that serves as a dam for the molten brazing alloy.

Latching mechanism that is securely locked by the movement of the operating handle in one direction is used in limited access areas. This mechanism is operated by a force applied to the handle at small angles.

An adjustable apparatus which simulates partial to zero gravity partially supports the weight of convalescing patients in rehabilitation exercises. This device is an ideal tool for physical therapy.

Compact, cylindrical gas diffuser with radial exhaust slots and internal axial flow channels maintains the necessary pressure for the desired withdrawal rate of cryogenic liquids from tanks. The diffuser minimizes pressure losses which result from condensation of nitrogen gas in the liquid and prevents direct impingement of gas jets on liquid surface to reduce turbulence.

In a thermionic diode, a cesium tube joining the emitter-collector area and the cesium reservoir is fitted with a copper bypass rod held in place by two standoff brackets. The rod transfers heat from the emitter-collector to the reservoir without going through the ceramic seal structure which surrounds the cesium tube and cannot sustain large temperature gradients.

Flexible tube inserted into a 3/4-round strip receptacle inflates to form an airtight material fastener. Inflation is done with a carbon dioxide cartridge and deflation by a manually operated release valve. Device has potential use in space suits, underwater suits, and other protective clothing.

Union assembly provides a fluidtight joint between two lengths of tubing and minimizes introduction of braze contaminants into the tubing. The union contains two brazing preforms separated by a metal ring that serves as a dam for the molten brazing alloy.

Latching mechanism that is securely locked by the movement of the operating handle in one direction is used in limited access areas. This mechanism is operated by a force applied to the handle at small angles.

An adjustable apparatus which simulates partial to zero gravity partially supports the weight of convalescing patients in rehabilitation exercises. This device is an ideal tool for physical therapy.

Compact, cylindrical gas diffuser with radial exhaust slots and internal axial flow channels maintains the necessary pressure for the desired withdrawal rate of cryogenic liquids from tanks. The diffuser minimizes pressure losses which result from condensation of nitrogen gas in the liquid and prevents direct impingement of gas jets on liquid surface to reduce turbulence.

In a thermionic diode, a cesium tube joining the emitter-collector area and the cesium reservoir is fitted with a copper bypass rod held in place by two standoff brackets. The rod transfers heat from the emitter-collector to the reservoir without going through the ceramic seal structure which surrounds the cesium tube and cannot sustain large temperature gradients.

Flexible tube inserted into a 3/4-round strip receptacle inflates to form an airtight material fastener. Inflation is done with a carbon dioxide cartridge and deflation by a manually operated release valve. Device has potential use in space suits, underwater suits, and other protective clothing.

Union assembly provides a fluidtight joint between two lengths of tubing and minimizes introduction of braze contaminants into the tubing. The union contains two brazing preforms separated by a metal ring that serves as a dam for the molten brazing alloy.

Latching mechanism that is securely locked by the movement of the operating handle in one direction is used in limited access areas. This mechanism is operated by a force applied to the handle at small angles.

An adjustable apparatus which simulates partial to zero gravity partially supports the weight of convalescing patients in rehabilitation exercises. This device is an ideal tool for physical therapy.

Compact, cylindrical gas diffuser with radial exhaust slots and internal axial flow channels maintains the necessary pressure for the desired withdrawal rate of cryogenic liquids from tanks. The diffuser minimizes pressure losses which result from condensation of nitrogen gas in the liquid and prevents direct impingement of gas jets on liquid surface to reduce turbulence.
06 MECHANICAL

B66-10345
FRICCTION LOADING DEVICE ENABLES ACCURATE TESTING OF BRITTLE MATERIALS
HUNSENBERG, R. F. /WESTINGHOUSE ASTRONAUTICAL LAB./ DATE- JUL. 1966
RU-0051
Friction loading device gives axial symmetry to test specimen of brittle materials during tensile testing. This axial alignment prevents bending stresses which hinder measurement of tensile strength.

B66-10346
TOOL FORMS RIGHT ANGLES IN COMPONENT LEADS
GLENN, C. G. DATE- JUL. 1966 M-P5-722
Hand tool forms right angles in electronic component leads so they fit the spaced holes of a printed circuit board. This tool firmly holds the leads at points near the component ends to prevent damage and provide accuracy.

B66-10352
BRAZING PROCESS PROVIDES HIGH-STRENGTH BOND BETWEEN ALUMINUM AND STAINLESS STEEL
HUSCHER, R. G., JR. /N. AM. AVIATION/ DATE- AUG. 1966 M-P5-607
Brazing process uses vapor-deposited titanium and an aluminum-zirconium-silicon alloy to prevent formation of brittle intermetallic compounds in stainless steel and aluminum bonding. Joints formed by this process maintain their high strength, corrosion resistance, and hermetic sealing properties.

B66-10358
WELDS CHILLED BY LIQUID COOLANT MANIFOLD
ODOR, H. E. /AvCO/ /N. AM. AVIATION/ DATE- AUG. 1966 M-P5-679 M-P5-680
Liquid coolant chill tool provides uniform cooling to materials adjacent to weld areas as long or contoured butt welds. This tool incorporates a manifold that clamps to the weld joint by vacuum and circulates liquid in direct contact with adjacent material.

B66-10357
SUSPENSION PLATE ELIMINATES UNDESIRED ARCING DURING ELECTRON BEAM WELDING
HANCHET, K. E. /Hill, J. BARROW, J. C. /BATES INTECH. CORP./ DATE- AUG. 1966 M-P5-1126
Suspension grid eliminates undesired arcing during electron beam welding in one of two ways. A grid at ground potential collects secondary emission of ions and electrons produced by the beam as it strikes the workpiece, or a negatively energized grid repels the plasma arc back to the workpiece. This eliminates ground screens used to cover view ports.

B66-10360
ALUMINUM CORE STRUCTURES BRAZED WITHOUT USE OF FLUX
SUP- INNOVATOR NOT GIVEN /ABBOWCA MFG. CORP./ DATE- AUG. 1966 M-P5-659
Aluminum alloy face sheets are brazed to aluminum alloy honeycomb cores without using corrosive flux by means of one or three methods. The completed brazed structure has the high-strength characteristic of heat treated aluminum alloys.

B66-10364
VERSATILE MACHINE MILLS, SAWS LIGHT MATERIALS
HAUSCHL, J. A. /N. AM. AVIATION/ DATE- AUG. 1966 M-P5-627
Versatile milling/sawing machine performs angle cuts, flat and profile milling, machining of grooves and slots, and edge trimming of phenolic panels. The machine is mounted on rails above a table equipped with vacuum capability for holding workpieces.

B66-10365
DIAPHRAGM VALVE FOR CORROSIVE AND HIGH TEMPERATURE FLUID FLOW CONTROL HAS UNIQUE FEATURES
EBBED, B. T. /AVCO/ DATE- AUG. 1966 M-P5-647
Monometallic diaphragm valve is used for corrosive and high temperature fluid flow control. The body, diaphragm, and plug of the valve are welded together to form an integral leakproof unit for containing the fluid as it passes through the valve from inlet to outlet.

B66-10366
HOLLOW SPHERICAL ROTORS FABRICATED BY ELECTROPLATING
AVEL, W. W. /CONW/ DATE- AUG. 1966 JPL-5C-117
Equatorial bands are fabricated to provide a locating fit for the hemispheres of hollow spherical rotors which are then joined by electroplating. Several nonmagnetic materials may be used to form the joint, such as aluminum, copper, iron, gold, platinum, and zinc.

B66-10367
DOT PATTERNS PROVIDE REPRODUCIBLE FLAW AREAS FOR STUDY OF ADHESIVE BONDING
FRANK, L. SCHMIDT, G. /GEN. AM. TRANSPORTATION CORP./ DATE- AUG. 1966 M-P5-862
Photographic production of a small-dot pattern of known geometry on the surface of a substrate for controlled area degradation enables a study of adhesive bond strengths. These dot patterns may also be applied to force-limiting devices which must depend on the adhesive bonding strength between mating surfaces.

B66-10369
AUTOMATIC PROTECTIVE VENT HAS FAIL-SAFE FEATURE
DAZTAM, C. E. /N. AM. AVIATION/ DATE- AUG. 1966 M-FL-218
Delayed vent valve system in a mechanical backing pump in a vacuum system allows the pneumatic foreline valve to seal before the pump vent opens. The system is designed to be fail-safe and operate even though there is loss of electrical power.

B66-10370
PORTABLE LIGHTWEIGHT CELL PROVIDES CONTROLLED ENVIRONMENT
SHELTON, S. TARR, J. /N. AM. AVIATION/ DATE- AUG. 1966 M-SC-648
Inflatable, lightweight cell provides a separate, secondary environment for a space-suited man in case of spacesuit damage or malfunction. The cell has a pressure-sealing zipper and is equipped to maintain a livable atmosphere.

B66-10371
BRAZING RETORT MANIFOLD DESIGN CONCEPT MAY MINIMIZE AIR CONTAMINATION AND ENHANCE UNIFORM GAS FLOW
SUPP, E. P. /N. AM. AVIATION/ DATE- AUG. 1966 M-P5-707
Brazing retort manifold minimizes air contamination, prevents gas entrapment during purging, and provides uniform gas flow into the retort bell. The manifold is easily cleaned and turbulence within the bell is minimized because all manifold construction lies outside the main enclosure.

B66-10375
IMPACT AND PUNCTURE RESISTANT MATERIAL PROTECTS PARTS FROM DAMAGE
Uniform sized, laminated panels protect delicate parts and equipment from damage during storage and transportation. The panels consist of sheets of steel foil bonded between sheets of elastic foam. They are lightweight, impact and puncture resistant, and, when forced into an enclosure, provide a barrier against moisture and thermal shock.
Single rotary valve controls a circular bank of hydraulic leveling cylinders that must maintain large loads within plus or minus three arc minutes of the true vertical. Since the position of the valve spool determines the flow rate of each bank of cylinders and hence cylinder position, different flow rates may be obtained by changing the spool shape.

B66-10403

SPECIAL TOOL KIT AIDS HEAVILY GARMENTED WORKERS

HOLMES, A. E. / HARTIN CO./ DATE- SEP. 1966

Triangular aluminum tool kit, filled with polyurethane is constructed to receive various tools and hold them in a snug but quick-release fit as an aid to heavily gloved workers. The kit is designed to allow mounting within easily accessible reach and to provide protection of the tools during storage.

B66-10405

DESIGN RELIABILITY GOAL DEVELOPED FROM SMALL SAMPLE

BURBOW, D. L. / REICHECK, R. / DATE- SEP. 1966

M-FS-403

Sampling distributions, constructed by Monte Carlo simulation are used in hardware development to establish a design reliability goal, to place a confidence coefficient on reliability estimates, and to determine whether sample stress/strangth data demonstrate a specified reliability at a specified confidence level.

B66-10408

CLOSED LOOP OPERATION ELIMINATES NEED FOR AUXILIARY GAS IN HIGH PRESSURE PUMPING STATION

LAWNT, D. G. / DATE- SEP. 1966

M-FS-893

Closed loop system for a liquid nitrogen high pressure pump feeds back gaseous nitrogen generated by heat leak into the reservoir to maintain the pressure in the storage tank. This system, more efficient system eliminates the need for auxiliary gas to maintain the tank pressure and can be used on relatively high cryogenic pumping systems.

B66-10410

ALIGNMENT TOOL FACILITATES PIN PLACEMENT ON IRREGULAR HORIZONTAL SURFACES

BOYLE, J. V. / DATE- SEP. 1966

LANGLEY-219

Alignmet tool facilitates spotting and cementing plastic pins on the true vertical to irregular concave and convex surfaces. The tool consists of a wood tripod with individually adjustable legs, a wood block with a hole for placing the pins and two spirit levels at a 90 degree angle for easy alignment.

B66-10411

HEAVY DUTY PRECISION LEVELING JACKS EXPEDITE SETUP TIME ON HORIZONTAL BORING MILL

DELLERBAUGH, W. JONES, C. / DATE- SEP. 1966

M-FS-1084

Leveling jack is a precise alignment tool which expedites the setup of components or assemblies up to 2500 pounds on horizontal boring mills. This tool eliminates the necessity of wedges and blocks to shis the components to proper position.

B66-10415

ELECTROPLATING ELIMINATES GAS LEAKAGE IN BRAZED AREAS

KEGG, J. D. / DATE- SEP. 1966

M-FS-923

Electroplating method seals brazed or welded joints against gas leakage under high pressure. Any conventional electroplating process with many different metal anodes can be used, as well as the build up of layers of different metals to any required thickness.

B66-10416

MATCHING FLOW CHARACTERISTICS OF STANDARD
LARGE METAL RING SEAL PREVENTS GAS LEAKAGE AT 5000 PSI

B66-10422
MIDDLEKOOP, J. H. /N. AM. AVIATION/ DATE- SEP. 1966

Weldable metal ring seal prevents gas leakage in hydrogen, helium, or nitrogen storage bottles at pressures up to 5,000 psi. The grooved ring seal contains elastomer O-rings and is installed between the mating faces of the access cover and the storage bottle.

LABYRINTH-TYPE VALVE SEAL INCREASES VALVE LIFE BY DECREASING FLUID VELOCITY

B66-10424
HICKS, J. E. /N. AM. AVIATION/ DATE- SEP. 1966

Labyrinth-type valve seat and a moving piston with V-notch openings reduce the fluid velocity and, thus, the erosion rate of regulator valves.

INTERIOR SERVICING PLATFORM SIMPLIFIES MAINTENANCE OF STORAGE TANKS

B66-10425
RANGES, C. S. /N. AM. AVIATION/ DATE- OCT. 1966

Rapid synchronization of phase-locked oscillators is best achieved by the swept-frequency acquisition technique, wherein the Voltage-Controlled Oscillator (VCO) is linearly swept through the uncertainty band. The theoretically predicted sweep rates of this technique and the observed experimental results differ by less than seven percent.

FLEXIBLE DRIVE ALLOWS BLIND MACHINING AND WELDING IN HARD-TO-REACH AREAS

B66-10428
HARVEY, D. H. /N. AM. AVIATION/ DATE- OCT. 1966

Flexible power and control unit performs welding and machining operations in confined areas. A machine/weld head is connected to the unit by a flexible transmission shaft, and a locking-indexing collar is incorporated onto the head to allow it to be placed and held in position.

ROTATING MAGNETIC POLES USED TO PUMP MERCURY

B66-10434
BEHRBA, W. T. /N. AM. AVIATION/ DATE- OCT. 1966

Rotating magnetic pump with redesigned pump cell is used for pumping mercury. The modified pump has better electrical continuity, more efficient heat removal, and good wetting characteristics in the mercury flow channel.

NEW BACKUP-BAR GROOVE CONFIGURATION IMPROVES MELTING WELD OF 2014-26 ALUMINUM

B66-10443
BLACK, F. J. /N. AM. AVIATION/ DATE- OCT. 1966

Backup chill bar with new grooved dimensions improve welding of 2014-26 aluminum. This groove geometry affords optimum chilline characteristics, reduces shrinkage and the weld head is narrower and consistently free from laps or voids.

SEAL-OFF ASSEMBLY PERMITS RAPID EVACUATION OF AIR FROM CONTAINERS

B66-10446
DENSER, E. R. /RCA/ DATE- OCT. 1966

Seal-off assembly which permits rapid container evacuation using large diameter tubing has a vacuum valve that permits sealing plate transfer from the vacuum valve stem to the container after evacuation. The sealing plate can be reused repeatedly. This device can repump in case of a small leak without exposing the container to the atmosphere.

MYLAR FILM ELIMINATES SILK SCREENING OF EQUIPMENT PANELS

B66-10455
CONGER, D. R. /N. AM. AVIATION/ DATE- OCT. 1966

Equipment panel designs and nomenclature are photographed on clear Mylar film to permit fast and inexpensive panel redesigns and revisions and to eliminate the silk screen process. The film is coated with an adhesive and impressed on the panel. For revisions, the film is easily peeled off and replaced.

LOGIC SYSTEM AIDS IN EVALUATION OF PROJECT READINESS

B66-10457
HAYES, S. J. /N. AM. AVIATION/ DATE- OCT. 1966

Measurement Operational Readiness Requirements (MORR) logic is used for determining the readiness of a complex project to go forward as planned. The system used logic network which assigns qualities to all important criteria in a project and establishes a logical sequence of measurements to determine what the conditions are.

IMPROVED METHOD FACILITATES DEBULKING AND CURING OF PHENOLIC IMMERGENT ASBESTOS

B66-10459
GAMBE, F. J. /N. AM. AVIATION/ DATE- OCT. 1966

Workpieces covered with phenolic impregnated asbestos tape and then wrapped with a specified thickness of nylon yarn under pressure, are debulked and cured in a standard oven. This method of debulking and curing is used in the fabrication of ablative chambers for the Gemini and Apollo attitude control engines.

CHART SYSTEM SIMPLIFIES IDENTIFICATION OF COMPLEX DESIGN ASSEMBLIES

B66-10460
OREIN, R. P. /N. AM. AVIATION/ DATE- OCT. 1966

Chart system simplifies identification of complex design assemblies.
Identification breakdown chart that lists the component parts required for any specific end item is used to identify rapidly and accurately, from numerous drawings, all the component parts of a complex design assembly. Cylindrical and complex configurations are depicted as continuous flat surfaces for ready identification.

B66-10463
MICROMINIATURE THERMOCOUPLE MONITORS OWN INSTALLATION
GABRIEL, A. J. SELLERS, J. P., JR. /N. AM. AVIATION/
DATE- OCT. 1966
H-PS-1111
Micro Miniature thermocouple makes precision gas sidewall temperature readings inside large thrust chambers. It is installed by a technique whereby the sensor monitors its own installation to insure against thermal damage to the thermocouple and ensure minimal disturbance to chamber surfaces.

B66-10464
LARGE SEALS FABRICATED FROM SMALL SEGMENTS
REDUCE PROCUREMENT LEAD TIME
KANBEL, M. B. HAYES, V. D. /N. AM. AVIATION/
DATE- DEC. 1966
N-PS-1117
Large diameter seals are fabricated from narrow strip stock positioned in segments to form a complete ring. This technique could be used to reduce the cost of critical, large diameter seals in the heating and ventilating industry, petrochemical industry, and marine fabrication industry.

B66-10470
INDICATOR SYSTEM PROVIDES COMPLETE DATA OF ENGINE CYLINDER PRESSURE VARIATION
MC. JONES, R. B. MORGAN, R. B. /FICKERGS, INC./
DATE- DEC. 1966
LEWIS-291
Variable reference pressure used together with a balanced pressure pickup /a diaphragm switch/ to switch the electric output of the pressure transducer in a reference pressure line obtains precise engine cylinder pressure data from a high speed internal combustion engine.

B66-10471
COPPER-ACRYLIC ENAMEL SERVES AS LUBRICANT FOR VACUUM TUBE BOX PANEL DRAWING
KANBEL, C. KARASEK, P. R. /BECKMAN/
DATE- NOV. 1966
ARG-56
Acrylic enamel spray containing metallic copper pigment lubricates refractory metal tubing during cold drawing operations so that the tubing surface remains free from scratches and nicks and does not seize in the die. Zirconium alloys, zirconium, tantalum alloys, niobium alloys, vanadium alloys and titanium alloys have been used using this lubricant.

B66-10472
RUBBER AND ALUMINA GASKETS MAINTAIN VACUUM SEAL IN HIGH TEMPERATURE EMF CELL
STIPOFF, J. C. DATE- NOV. 1966
ARG-77
Silicone rubber gasket and an alumina gasket retain a vacuum inside a high temperature EMF cell in which higher and lower density liquid metal electrodes are separated by an intermediate density fused salt electrolyte. This innovation is in use on a sodium bismuth regenerable EMF cell in which the fused salts and metals are at about 500 deg to 800 deg C.

B66-10473
MICROSCOPIC VALVE ACCURATELY CONTROLS SMALL VOLUME FLUID FLOW
GORMAN, A. DATE- NOV. 1966
ARG-66
Hydraulic or pneumatic actuated valve accurately controls small volume flow of liquids or gases by expanding or relaxing an O-ring within an annular flow space. In one application, 2 such valves were used to accurately set small volumes of helium under a pressure of 1000 psi.

B66-10477
CONCEPT OF PLANETARY GEAR SYSTEMS TO CONTROL FLUID MIXTURE RATIO
MC. GIBBON, J. B. /N. AM. AVIATION/
DATE- DEC. 1966
N-PS-1785
Mechanical device senses and corrects for fluid flow departures from the selected flow ratio of two fluids. This system has been considered for control of rocket engine propellant mixture control but could find use wherever control of the flow ratio of any two fluids is desired.

B66-10484
BRACING MECHANISM IS SELF ACTUATING AND UNIDIRECTIONAL
PIZZO, J. /N. AM. AVIATION/
DATE- DEC. 1966
N-PS-1299
Mechanism automatically applies a bracing action on a moving item, in either direction of motion, immediately upon removal of the driving force and with no human operator involvement. This device would be useful wherever free movement is undesirable after an object has been guided into a precise position.

B66-10485
COMBINATION SPACER AND GASKET PROVIDES EFFECTIVE STATIC SEAL
JONES, F. B. /N. AM. AVIATION/
DATE- DEC. 1966
N-PS-1397
Closely machined steel ring having narrow sealing lands on both faces and a thin coating of a commercially available halocarbon polymer combines the functions of a spacer and static seal ring or gasket having a minimum of potential leak paths. The device is effective over a wide range of temperatures down to minus 423 deg F and at pressure up to 180 psig.

B66-10489
PLUG REPLACES WELD FILLER AS SEAL IN COMPLEX CASTING
GORDON, R. L. HARRIS, C. L. /AEROJET-GM/
DATE- OCT. 1966
N-PS-1299
Expansible metal plug is inserted to provide a seal to support the solid core with small blocks, referred to as chapples, during the casting of a complex voulte. Weld-warpage and multiple X ray inspection are eliminated by use of this technique.

B66-10495
PULG VALVE CYCLES AT CONTROLLED FREQUENCY
CHARLTON, K. W. VAN ARNAN, D. E. /BECKMAN/
DATE- NOV. 1966
MS-143
Spool valve accurately controls the cycle of a pneumatically-actuated system over long periods. Regulation of pressure from the external source, positioning of the adjusting plugs, and magnet selection, together afford wide variation in cyclic timing and speed of closure in either direction.

B66-10498
QUICK-RESPONSE SERVO AMPLIFIES SMALL HYDRAULIC PRESSURE DIFFERENCES
WAGLAND, R. E. DATE- NOV. 1966
ARG-99
Hydraulic servo, which quickly diverts fluid to either of two actuators, controls the flow rates and pressures within a hydraulic system so that the output force of the servo system is independent of the velocity of the mechanism which the system actuates. This servo is a dynamic feedback control device.

B66-10513
OPPOSED ARCS PERMIT DEEP WELD PENETRATION WITH ONLY ONE PASS
BRIDGES, L. E. /N. AM. AVIATION/
DATE- NOV. 1966
N-PS-1696
Arc welding technique uses opposed electrodes on either side of the workpiece, operated in right angles, out-of-phase, pulsating direct current. Complete penetration has been obtained with this technique in metals ranging from 0.062 to 1.0 inch thickness.
B66-10514
IN-TANK SHUTOFF VALVE IS PROVIDED WITH
MAXIMUM BLAST PROTECTION
HOLSEN, C. F. /WA. AM. AVIATION/ DATE- NOV. 1966
M-PS-1529
In-tank shutoff valve is installed with the valve
poppet and actuator inside the tank to provide
maximum blast protection during rocket engine test
operation. This valve design is applicable
wherever explosive fuels are used and is currently
being used in J-ox and liquid hydrogens tanks at a
rocket engine test site.

B66-10522
SELF-ACTUATING GRAPPLE AUTOMATICALLY
ENGAGES AND RELEASES LOADS FROM OTHER
CRANES
FROEBELICH, J. A. /KASS, G. A. DATE- NOV. 1966
ARG-01
Two-piece grapple mechanism consisting of a lift
knob secured to the load and a grapple member
connected to the crane or lift automatically
disengages the load from the overhead lifting
device when the load contacts the ground. The
key feature is the sliding collar under the lift
knob which enables the grapple latch to be
stripped off over the lift knob.

B66-10523
HYDRAULIC FLUID SERVES AS MANDREL FOR SMALL
DIAMETER REFRACTORY TUBE DRAWING
MAYFIELD, R. N. DATE- DEC. 1966
ARG-04
Sealing hydraulic fluid within a tube and passing
the tube through a reducing die produces high
quality small diameter refractory metal tubing.
THe encased fluid eliminates the need for mandrel
or ductile core removal and drawing can proceed
without handling operations.

B66-10530
PERFORATIONS IN JET ENGINE SUPERSONIC INLET
INCREASE SHOCK STABILITY
KEPLER, C. E. /UNITED AIRCRAFT CORP./ DATE-
NOV. 1966
WSD-0
Modification of a conventional jet engine internal
compression supersonic inlet results in increased
shock stability and thus, engine instantaneous
response to changes in inlet air properties.
This technique provides a large amount of bleed
near the maximum pressure recovery at the expense
of minor bleed flow during critical operation.

B66-10537
GAGE TESTS TUBE FLARES QUICKLY AND
ACCURATELY
GRIFFIN, F. D. DATE- NOV. 1966
KSC-66-19
Flared tube gage with a test cone that is
precisely made with a tapering surface to
complement the tube flare is capable of
determining the accuracy of a tube flare
efficiently and economically. This device should
improve the speed, efficiency and accuracy of
tube flare inspections.

B66-10545
HOIST IS AUTOMATICALLY STOPPED AT LOW
DECELERATION RATE
GEORGE, K. R. /H. HESS, H. C. /WA. AM. AVIATION/
DATE- DEC. 1966
N-FS-1639
In operating a hoist to transport delicate or
fragile components, an automatic stopping device
is adjusted to impose a predetermined deceleration
rate during stopping.

B66-10546
INTERNAL MACHINING ACCOMPLISHED AT CONSTANT
RADIUS
COLLIIGH, T. E. /WA. AM. AVIATION/ DATE-
DEC. 1966
M-FS-1573
Device machines fluid passages in workpieces at
constant radii through two adjacent surfaces that
are at included angles up to approximately 120
degrees. This technique has been used
extensively in fabricating engine parts where
close control of fluid flow is a requirement.

B66-10550
DAMPER REDUCES EFFECTS OF RESONANCE ON
FORCE TRANSDUCER
POSTA, R. W. /WA. AM. AVIATION/ DATE- NOV. 1966
WSO-321
Vicious-file damper eliminates response lag of
resonance generated noise when inserted into the
thrust measuring system. This technique can be
applied to automated devices when pulsed force or
low order impact is involved, and where signal
noise is produced by stopping or reversal of
mechanical travel or by water hammer.

B66-10562
METALLURGICALLY HARDENED FIXTURE PERMITS
POLISHING OF SOFT METALS ON VIBRATORY
LAPING MACHINE
CALVITRAS, S. DATE- DEC. 1966
ARG-02
Circular fixture which mounts several specimens
within a single turret prevents specimen scoring
during grinding and polishing operations performed
on a vibratory lapping machine. Each specimen is
loaded individually with a weight small enough to
prevent scoring but large enough to promote
polishing.

B66-10567
HEAT EXCHANGER TUBES SUPPORTED IN HIGH
VIBRATION ENVIRONMENT
URQUIDI, R. /WA. AM. AVIATION/ DATE- DEC. 1966
M-FS-1401
Cantilevered structure supports heat exchanger
cores against vibration loading while allowing
freedom for differential thermal growth. The
support channels will accept a variety of coil
angles with the same coil pitch, thus reducing the
number of parts required. This design, with
slight modification, could be used to support
parallel rows of straight piping.

B66-10570
STATIONARY DEVICE PRODUCES HOMOGENEOUS
MIXTURE OF FLUIDS
Baker, D. I. COLLISON, H. P. /WA. AM. AVIATION/
DATE- DEC. 1966
M-FS-525
Stationary device produces a homogeneous mixture
of two or more one-phase or two-phase fluids. The
device contains two concentric flow guides with
helical passageways through which the fluids are
forced into turbulent flow by the system pressure
differential.

B66-10571
DUCTILE MANDREL AND PARTING COMPOUND
FACILITATE TUBE DRAWING
RITZ, W. R., JR., MAYFIELD, R. N., POLAKOREK, W.
H. DATE- DEC. 1966
ARG-03
Refactory tubing is warm drawn over a solid
ductile mandrel with a powder parting compound
packed between mandrel and the tubes inner
surface. This method applies also to the
coextrusion of a billet and a ductile mandrel.

B66-10573
ORTHOPEDIC STRUTTER WITH AVERAGE-SIZED
PERSON CAN PASS THROUGH 10-INCH OPENING
LOTHSCHUETZ, F. X. /MASON-RUST CO./ DATE-
1966
M-FS-011
Modified Robinson stretcher for vertical lifting
and carrying, will pass through an opening 10
inches in diameter, while containing a person of
average height and weight. A subject 6 feet tall
and weighing 200 pounds was lowered and raised out
of an 18 inch diameter opening in a tank to test
the stretcher.

B66-10575
EMERGENCY ESCAPE SYSTEM USES SELF-BRAKING
MECHANISM ON FIXED CABLE
BILLINGS, C. R. /MC DAVIS, R. A. /MC GOODR, J. T.
WILL, P. F. DATE- DEC. 1966
KSC-66-44
Slide-wire system with a twist level slide
device
incorporates automatic descent and braking for the safe and rapid evacuation of personnel from tall structures. This device is used on any tall structure that might require emergency evacuation. It is also used to transfer materials and equipment.

B66-10582
COMPOSITE BULKHEAD FABRICATION DEVELOPMENT
J. R. DATE- DEC. 1966
MSC-1264
Composite bulkhead is produced by a fabrication concept utilizing vacuum and/or autoclave pressure to hold formed welded sandwich elements in place during bonding and aging.

B66-10585
ROTATIONAL FLUID COUPLING ELIMINATES HOSE ENTANGLEMENT
AUBOE, R. B. /TAS/ DATE- DEC. 1966
MSC-312
Rotational fluid coupling mechanism circulates a temperature controlled fluid between a stationary heat exchanger and a coolant plate on a rotating platform. The mechanism consists of two concentric cylinders containing one or more flexible tubes which are controlled and positioned in such a way that it eliminates tubing entanglement.

B66-10587
QUALITY CONTROL CRITERIA FOR ACCEPTANCE TESTING OF CROSS-WISE WELDS
BRATONT, R. D. /AM. AVIATION/ DATE- DEC. 1966
MSC-627
Visual inspection criteria assure the metallurgical integrity of spot welds joining nickel leads and nickel ribbon in a 90 degree cross-wire configuration.

B66-10588
PLASTIC TUBING PROTECTS FLEXIBLE COPPER HOSE
BELLING, R. E. /AM. AVIATION/ DATE- DEC. 1966
MSC-772
Flexible copper purge and coolant hoses is covered with a high-temperature shrinkable plastic for protection against severe vibration during rocket engine tests. Thin type of tubing is being used on all flexible water tubes used in Y-1 engine tests.

B66-10589
POSITIVE DISPLACEMENT CYLINDER MEASURES CORROSIVE LIQUID VOLUMES
BANBDAK, H. A. VENDL, C. J. /AM. AVIATION/ DATE- DEC. 1966
MSC-10-10
Positive displacement cylinder accurately measures volumetric flow rates of corrosive liquids. The cylinder is compatible with corrosive liquids and handles flow rates from zero to 75 gpm at pressures to 900 psig with an accuracy of 0.25 per cent.

B66-10593
FLUID LOGIC CONTROL CIRCUIT OPERATES ROTATOR ACTUATOR MOTOR
SPÓR- INNOVATOR NOT GIVEN /ERDIX CORP./ DATE- DEC. 1966 NOR- SEE ALSO NASA CR-54798
LEWIS-294
Fluid logic control circuit operates a pneumatic rotator actuator motor. It has no moving parts and consists of connected fluid interaction devices. The operation of this circuit demonstrates the ability of fluid interaction devices to operate in a complex combination of series and parallel logic sequence.

B66-10595
TREATMENT INCREASES STRESS-CORROSION RESISTANCE OF ALUMINUM ALLOYS
JACOBS, J. J. /AM. AVIATION/ DATE- DEC. 1966
M-78-1840
Governing during heat treatment of the aluminum alloys immediately followed by moderate plastic deformation, preferably by shock loading achieves near optimum values of both yield strength and resistance to stress corrosion. Similar results may be obtained by substituting a conventional deformation process for the shock loading step.

B66-10597
GRIT BLOWING NOZZLE FABRICATED FROM MILD TOOL STEEL PROVES SATISFACTORY
MC PELLAND, J. E. TUBERTY, B. DATE- DEC. 1966
MSC-1420
Dry blasting with glass beads through a nozzle assembly descales both the outside and inside surfaces of tubes of Inconel 718 used for the distribution of gaseous oxygen. The inside of the nozzle is coated with polyurethane and the deflector with a commercially available liquid urethane rubber.

B66-10601
EQUATIONS PROVIDE TUBULAR INFORMATION ON EFFECTS OF UNIFORM AND VARIABLE LOADS ON TUBE, FLAT, CIRCULAR PLATES
HEAP, J. C. DATE- DEC. 1966
ARG-151 ARG-152
Unit-mass system of derivation of equations determines the deflection, slope, and moments for thin, flat, circular plates subjected to either a uniform or a symmetrical variable load. The derived equations are computed, organized in tabular form, and graphically depicted.

B66-10604
SN Mirror ATTACHMENT HAS ZERO FORCE REACTION
HOLMES, A. E. RILEY, B. N., JR. /BLACK AND DECKER ENG. CO./ DATE- DEC. 1966
MSC-543
Zero reaction tools require no force application by workers in space. The tool accomplishes hole cutting by holding the workplace and through it by forces entirely absorbed within the tool.

B66-10608
FRICTION BRAKE CUSHIONS ACCELERATION AND VIBRATION LOADS
FEASEY, G. F. ZAWADZKI, G. Z. /AM. AVIATION/ DATE- DEC. 1966
MSC-715
Friction brake cushions an object in a vehicle from axially applied vibration and steady-state acceleration forces. The brake incorporates a doubly tapered piston that applies a controlled radial force to friction brake segments bearing against the walls of a cylinder.

B66-10610
SELECTIVE TUBE ROUGHENING INCREASES HEAT TRANSFER CAPABILITY
CARTER, L. W. DATE- DEC. 1966
M-75-599
Selectively roughening inside surfaces of tubes increases the heat transfer capabilities, but minimizes the pressure drop. This technique is used to construct roughened test sections for hydrogen heat transfer studies.

B66-10611
MULTILAYER REFRACTORY NOZZLES PRODUCED BY PLASMA-SPRAY PROCESS
BLOFORD, J. L. /ITT RES. INST./ DATE- DEC. 1966
WOO-318
Multilayer rocket nozzles formed by plasma spraying have good thermal shock resistance and can be rebeated in an oxidizing environment without loss of coating adherence. Suggested application of this process are for the production of refractory components, which can be forced as surfaces of revolution.

B66-10613
NEW WELDABLE HIGH STRENGTH ALUMINUM ALLOY DEVELOPED FOR CRYOGENIC SERVICE
SPÓR- INNOVATOR NOT GIVEN /ALUMINUM CO. OF AM./ DATE- DEC. 1966
MSC-757
Wrought aluminum alloy has improved low temperature notch toughness and weldability. This alloy can be all-fabricated to plate and sheet
without difficulty. Post-weld aging improves weld ductility and strength properties. A typical treatment is 8 hours at 225 deg F plus 16 hours at 300 deg F.  

**B66-10618**  
A DESIGN PROCEDURE FOR THE WEIGHT OPTIMIZATION OF STRAIGHT PINNED RADIATORS  
BURRIAN, R. J.; BARELL, D. W.; PEMBER, J. J.  
/NASA MERR INST./  
DAtE- DEC. 1966  
B66-10618

**B66-10620**  
TRENDING BLADE ROOT DESIGN CONCEPT PROMISES  
SUPEpoRI AlignMeNT  
KING, G. D.  
/AIR AVIATION/  
DAtE- DEC. 1966  
B66-10620

**B66-10626**  
HYDRAULICALLY CONTROLLED FLEXIBLE ARM CAN BE IN ANY DIRECTION  
GRiffin, F. D.  
DAtE- DEC. 1966  
KSC-66-20

**B66-10627**  
QUick attACH AND release fluid CouPLing  
ASSEMBLY IS SELF-ALIGNING, SELF-SEALING  
HERNOL!; C. P.; STANLEY, S. D.  
DAtE- DEC. 1966  
KSC-66-68

**B66-10628**  
CONTROLLED RELEASE DEVICE PREVENTS DAMAGE FROM DYNAMIC STRESSES  
BURCHAN, T. W.  
DAtE- DEC. 1966  
KSC-66-14

**B66-10633**  
PREDICTING SURFACE HEATING RATES AND PRESSURES RESULTING FROM HOT EXHAUST GASES  
PFEKST, S. T.; SIMKIN, D. J.  
/AIR AVIATION/  
DAtE- DEC. 1966  
MSC-971

**B66-10634**  
EMERGENCY ESCAPE SYSTEM PROJECTS PERSONNEL FROM EXPLOSION AND FIRE  
OFFICE, W. C.  
/MADECO CO./  
DAtE- DEC. 1966  
KSC-66-12

which descends along a vertical guide cable, penetrates the dome shaped roof of an underground blast shelter and stops in a deceleration bed of granular material.  

**B66-10635**  
LIGHTWEIGHT, ALL-METAL HOSE ASSEMBLY HAS HIGH FLEXIBILITY AND STRENGTH OVER WIDE RANGE OF TEMPERATURE AND PRESSURE  
BESSING, L. L.  
/AIR AVIATION/  
DAtE- DEC. 1966  
B66-10635

**B66-10641**  
POWER ARC WELDER TOUGH-STARTED WITH CONSUMABLE ELECTRODE  
JEANETTE, J. C.  
/AIR REDUCTION CO./  
DAtE- DEC. 1966  
B66-10641

**B66-10642**  
DEVICE MEASURES REACTION ENGINE THRUST VECTOR DEVIATIONS  
LEONARD, K.; SHIEBER, R.  
SPACE TECHNOLOGICAL LABS.  
DAtE- DEC. 1966  
JPL-SC-163

**B66-10648**  
FUEL AND OXIDIZER VALVE ASSEMBLY EMPLOYS SINGLE SOLENOID ACTUATOR  
SPORN- INNOVATOR NOT GIVEN /PARKER AIRCRAFT CO./  
DAtE- DEC. 1966  
B66-10648

**B66-10655**  
CHECK VALVE INSTALLATION IN PILOT OPERATED RELIEF VALVE PREVENTS REVERSE PRESSURIZATION  
OSWALT, L.  
/AIR AVIATION/  
DAtE- DEC. 1966  
B66-10655

**B66-10656**  
MECHANICAL GAGE ACCURATELY CHECKS TUBING FLARE, ROUNDNESS, AND CONCENTRICITY  
CLARE, L. E.  
/SPACE/  
DAtE- DEC. 1966  
B66-10656

**B66-10662**  
METHOD FOR PREDICTING FRICTIONAL LOSS IN METAL BELLOWS AND FLEXIBLE HOSE  
CLEVELAND, J. R.; DANIELS, C. R.  
/AIR AVIATION/  
DAtE- DEC. 1966  
B66-10662

Test data obtained concerning the frictional pressure loss to fluids flowing in unsealed bellows and flexible hose. This data should be useful in the design of fluid systems where high
delivery velocities are involved and flexible hose or bellows must be employed.

B66-10663
LATERAL RING METAL ELASTIC WHEEL ABSORS
SHOCK LOADING
GALAN, L. /BENDIX CORP./ DATE- DEC. 1966
M-PS-1312

Lateral ring metal elastic wheel absorbs practically all shock loading when operated over extremely rough terrain and delivers only a negligible shock residue to associated suspension components. The wheel consists of a rigid aluminum assembly to which lateral titanium ring flexible elements with treads are attached.

B66-10665
SPHERICAL PIPE JOINT DELIVERS LOADS EQUALLY
TO MATING FLANGE
PFEUGER, R. /S. O. /N. AM. AVIATION/ DATE- DEC. 1966
M-PS-807

Oxidizer inlet duct with a ball joint pipe fitting incorporating two spherical bearing races and balls in contact with centering cage spring transmits an evenly distributed load to the mating flange. This design should find application in piping systems where unequal load distributions exist.

B66-10667
SILAZANE ELASTOMER REMAINS RESILIENT AT
400 DEG C
SPON- INNOVATOR NOT GIVEN /SOUTHERN RES. INST./ DATE- DEC. 1966
M-PS-1144

Smooth, unfoamed elastomer is unaffected by cosmes acids, alkanes, and organic solvents. Its thermal stability, chemical resistance, and physical properties make it of interest for various applications.

B66-10672
RESONANT FREQUENCY CAN BE ADJUSTED ON
VIBRATION MOUNT
HODGES, F. /ETAS AEROW./ DATE- DEC. 1966
JPL-SC-134

Vibration mount allows adjustment of its resonant frequency and is insensitive to wide temperature variation. The concept is essentially a multidirectional, frictionally damped spring with an adjustable cap. The mount provides vibration isolation in both compression and shear and may be applicable to space use.

B66-10674
ELIMINATION OF ROCKET ENGINE ASYMMETRIC
LOADS DURING TESTS AT SEA LEVEL
JOHNSON, J. R. /N. AM. AVIATION/ DATE- DEC. 1966
M-PS-1730

Secondary injection concept eliminates asymmetric loads and may increase thrust rocket engine loads during sea level tests. The concept uses either a tubular manifold with evenly spaced injection ports or secondary fluid injected at the turbine exhaust inlet to the thrust chamber.

B66-10675
STUDY MADE OF DESTRUCTIVE SECTIONING OF
COMPLEX STRUCTURES FOR EXAMINATION
RILEY, T. DATE- DEC. 1966
LEWIS-341

Advances in destructive sectioning of very small or complex structures are discussed. Examination is made by filling the structure in a vacuum with a low viscosity potting compound and then cutting without danger of spatial disorientation.

B66-10677
STUDY MADE TO CONTROL DEPTH OF POTTING
COMPOUND FOR HONEYCOMB SANDWICH STRUCTURES
CUSHNAR, J. /GEN. DYN./CONVAIR/ DATE- DEC. 1966
LEWIS-370

Study determines optimum fastener insert size and shape, type of embedding cement, fixture, undercut and depth control by fiber glass plug in a honeycomb structure for maximum tensile strength. The best potting compound is 5-1 weight mixture of epoxy resin, curing agent, and milled glass fibers.

B66-10678
IMPROVED ROLLING ELEMENT BEARINGS PROVIDE
LOW TORQUE AND SMALL TEMPERATURE RISE IN
ULTRAHIGH VACUUM ENVIRONMENT
GLENW, R. C. DATE- DEC. 1966
LEWIS-359

Rolling element bearing with stainless steel races and rolling elements and a porous bronze cage successfully operates in ultrahigh vacuum environments at a low torque and with small temperature rise. All components are burnished in polyethylene sulfide.

B66-10683
VALVE EFFECTIVELY CONTROLS AMOUNT OF
CONTAMINANT IN FLOW STREAM
SCHNITZER, T. N. DATE- DEC. 1966
M-PS-1771

Contaminant valve with a coaxial groove rotor uniformly deposits contaminant into a flow stream under full pressure and flow conditions. The valve tests filters and filter elements of hydraulic oil, fuel, or lubricant systems without any detrimental effect on the performance.

B66-10686
ACTUATOR DEVICE SCHEDULES RATE OF VALVE
CLOSURE
SPON- INNOVATOR NOT GIVEN /WHITTAKER CORP./ DATE- DEC. 1966
M-PS-1556

Valve actuator schedules the closure rate of a valve. The actuator is spring loaded to produce a normally open valve and pneumatically powered to close the valve. The closure rate is controlled by means of pneumatic snubber and booster circuitry.

B66-10688
PREPARED STIFFENERS USED TO FABRICATE
STRUCTURAL COMPONENTS FOR PRESSURIZED
TANKS
LEWIS, J. C. SHERBA, E. S. /N. AM. AVIATION/ DATE- DEC. 1966
M-PS-1796

Process of fabricating stiffened section components of pressurized tanks for aerospace use was developed. A potential use of the fabrication process is in the production of gore and quarter-panel sections of hydrogen and oxygen tanks for space vehicle boosters.

B66-10694
MECHANICAL DEVICE ACCURATELY MEASURES RP
PHASE DIFFERENCES IN VHF OR UHF RANGES
Rupp, L. J. /N. AM. AVIATION/ DATE- DEC. 1966
M-PS-1736

Dual range linear measurement device accurately measures RP phase differences in either VHF or UHF ranges. The device has a capability consisting of a coarse range extending to 30 cm readable to 1 mm and any fine range portion of 2.5 cm readable to .01 mm.

B66-10695
MOTION DRIVE SYSTEM IS ACCURATELY CONTROLLED
IN THE 1-MICRON RANGE
ROCKCRAFT, J. N. DATE- DEC. 1966
JPL-664

Motion drive system has been developed for use with interferometers where accurate control of minuscule distance in the 1-micron range is of prime importance. The drive system is applicable to any device that requires extremely accurate positioning control.

B66-10697
COMBINATION DOUBLE DOOR HIGH-VACUUM VALVE
PROVIDES ACCESS TO VACUUM CHAMBER
TAGES, S. F. DATE- DEC. 1966
JPL-649

Double door provides an extreme high vacuum seal as well as access to a vacuum chamber. The vacuum chamber has insertion of test devices into the vacuum environment. This arrangement is applicable to any vacuum chamber and should be of value in cryopumping or mechanically pumped chambers.
05 MECHANICAL

B66-10698
MECHANICAL FACILITATES COATING OF INNER SURFACES OF METAL CYLINDERS
BILLINGSLEY, J. B. TAFT, A. R. DATE—DEC. 1966
GSFC-515
Cylinder is rotated about shielded hot filament to vapor deposit this coatings of aluminum or other metallic substances on the inner surface of a cylinder while avoiding heat-producing high-density current flow which causes outgassing of the coating surface. This method is acceptable for glass or metal.

B66-10702
TEFLON SHEET PERMITS VALVE AND VALVE OPERATOR TO MOVE AS A SINGLE UNIT IN A CYTOMATIC PIPE LINE
KINDER, S. K. /WESTINGHOUSE ASTRONUTL. LAB./ DATE—DEC. 1966
NU-0077
Free floating support system in cytomatic pipe lines maintains the valve and valve operator in alignment. A Teflon sheet that is placed between the slide support base and the plate permits the valve and valve operator to move freely, as a unit, when the pipe line moves.

B66-10703
SILVER PLATING TECHNIQUE SEALS LEAKS IN THIN WALL TUBING JOINTS
BLANDERMAN, W. H. / N. AM. AVIATION/ DATE—DEC. 1966
NU-0090
Leaks in thin wall tubing joints are sealed by cleaning and silver plating the hot gas side of the joint in the leakage area. The pressure differential across the silver during hydrostatic test and subsequent use forces the ductile silver into the leak area and seals it.

B66-10704
METAL BOOT PERMITS FABRICATION OF HERMETICALLY SEALED SPILICES IN METAL SHEATHED INSTRUMENTATION CABLES
CHAMBERS, G. /WESTINGHOUSE ASTRONUTL. LAB./ DATE—DEC. 1966 READ—SEE ALSO B66-10705
NU-0083
Metal boot splices hard sheathed instrumentation cables with high temperature strain gages and thermocouples. Silver brazing the conductors together, hermetically seals the splice. This boot is a highly reliable sealed splice which is equally effective at cryogenic temperatures, high temperatures, nuclear environments, and combinations of the above.

B66-10707
PNEUMATIC WRENCH RATCHETS OR DISCHARGES NUTS OR BOLTS AS DESIRED
BOUILLUX, J. B. /WESTINGHOUSE ASTRONUTL. LAB./ DATE—DEC. 1966
NU-0085
Pneumatic wrench grips, screws or uncros, and discharges a nut or bolt as desired. The device consists of a standard pneumatic wrench modified with a special hex bolt head socket assembly and a diaphragm air cylinder.

B66-10708
AIR BEARING PROVIDES FRICTION-FREE SUPPORT FOR SHAKER SYSTEM SLIP TABLE
SKOFF, R. W. /WESTINGHOUSE ASTRONUTL. LAB./ DATE—DEC. 1966
NU-0086
Air bearing system supports a shaker system slip table with minimum friction. At each corner of a square of grooves made on the table, a hole is drilled through the table and fitted with air connections. Air pressure is simultaneously fed to the four fittings forming an air bearing.

B66-10711
CARRIAGE SYSTEM REMOTELY MOVES DRAWER OVER EXTENDED DISTANCE
SALLING, G. R. /PARSONS-JURDEN CORP./ DATE—DEC. 1966
NU-0092
In the transferring of material remotely through thick radiation shielding walls, a drawer is mounted on rollers which operate on rails carried on a slide carriage to eliminate the feature of the slide hardware projecting beyond the drawer when the drawer is extended its full distance.

B66-10712
SIMPLE MOTOR DRIVE SYSTEM OPERATES HEAVY HINGED DOOR
PITKIN, R. G. /PARSONS-JURDEN CORP./ DATE—DEC. 1966
NU-0093
Motor drive system remotely operates heavy steel radiation shielding doors. The drive consists of a standard motor reducer unit which is mounted on the door. This reducer drives a sprocket which is linked by chain to a fixed sprocket of the same size on the door jamb.

B66-10713
SWING-OUT RAIL SYSTEM SEPARATES OVERHEAD CRANE RAILS
PITKIN, R. G. /PARSONS-JURDEN CORP./ DATE—DEC. 1966
NU-0094
Swing-out rail system separates and reconnects the overhead traveling crane rails of a building to provide for the passage of a thick concrete radiation shield sliding door through the rails. In the swing-out position, the rail cantilevered from an axial shaft.

B67-10008
MICROAMALIMATION TOOL IS EASILY ADAPTED TO MANY USES
SHLEIGH, P. J. DATE—JAN. 1967
JPL-129
A special micromalimation tool equipped with a plunger mounted in a small tube can be easily adapted to such work operations as cutting, precision clamping, and spot welding of microscopic filaments or other parts. This tool is valuable where extreme steadiness of high magnification is required.

B67-10006
COMPLEX SURFACES PLAYED BY THIN-FILM DEPOSITION IN ONE OPERATION
BUCKLEY, D. N. PRIZNITZKIN, J. S. SHULVINS, T. DATE—JAN. 1967
LEWIS-292
Ion plating deposits thin film on complex surface in one operation. The ionized materials follow electric lines of force to all points on the objects, uniformly plating the surface from all sides simultaneously.

B67-10010
PROCESS SEQUENCE PRODUCES STRONG LIGHTWEIGHT REFLECTORS OF EXCELLENT QUALITY
LEWIS-331
Large compound curved surfaces for collecting and concentrating radiation are fabricated by the use of several common machining and forming processes. Lightweight sectors are assembled into large reflectors. With this concept of fabrication, integrally stiffened reflective sectors up to 25 square feet in area have been produced.

B67-10011
ELASTIC GUIDES REDUCE HYSTERESIS EFFECT IN BELLEVILLE SPRING PACKAGE
RC GLASHAN, W. F. TOTS, L. R. DATE—JAN. 1967
JPL-910
Peripheral support guides that elastically flex with the slight breathing on radial displacement during actuation can greatly reduce the hysteresis present in a Belleville spring package. This technique provides a control device that enhances the precision of pressure regulating valves, pressure switches, and vacuum actuators.

B67-10018
TECHNIQUE CUTS TIME AND COST OF BENDING JACKETED PIPING
GARDNER, J. W. /N. AM. AVIATION/ DATE—FEB. 1967
188-333

188
Technique uses a stiff medium in the annular space between inner and outer pipes of jacketed piping in transfer lines. The process eliminates splicing, welding and makes possible the use of standard pipe-bending tools.

B67-10019

ORBITAL TUBE FLARING SYSTEM PRODUCES TUBING CONNECTORS WITH ZERO LEAKAGE

WILLIAMS, J. B. / DATE- FEB. 1967

An orbital tube flaring system produces tubing connectors with a zero-leak potential needed in high pressure hydraulic and pneumatic systems. The flaring system incorporates a rolling cone and rolling die to closely control flare characteristics.

B67-10023

TESTS SHOW THAT ALUMINUM WELDS ARE IMPROVED BY BRAD REMOVAL

HOOD, W. W. /BOEING CO./ DATE- FEB. 1967

Tests with 2218-T87 aluminum alloy plate indicate improvements in strength, ductility, fatigue properties, and burst pressure result when one or both of the top and bottom weld beads are removed. There is, however, a drop in yield strength. The consistency of test data is considerably improved by weld bead removal.

B67-10039

SIMPLE PUMP MAINTAINS LIQUID HELIUM LEVEL IN CRYOSTAT

BUCBOLD, T. A. /GE/ DATE- MAR. 1967

Reciprocating pump maintains a precise level of liquid helium in a cryostat. The pump contains a niobium solenoid armature that is maintained in a superconductive state by the liquid helium.

B67-10043

HIGH SPEED BLOWDOWN SYSTEM PROVIDES RAPID PRESSURE LOSS

BRITTAN, H. C. /GEN. DYN. /CONVAIR/ DATE- MAR. 1967

Lewis-375

High speed blowdown takes advantage of discretely maintained differential pressures to vent a test chamber from high to ambient pressure with minimum time lag. This technique is advantageous where the use of pyrotechnics is undesirable.

B67-10065

RESISTANCE HEATING RELAYS STRUCTURAL ADHESIVE

GLEXEB, W. N. /BOEING CO./ DATE- MAR. 1967

Lewis-1607

Composite adhesive package bonds components together for testing and enables separation when testing is completed. The composite of adhesive, insulation and a heating element separate easily when an electrical current is applied.

B67-10047

VISCO SEAL DESIGN OFFERS ZERO-LEAKAGE AND WEAR-FREE CHARACTERISTICS

KETTILA, H. N. /MC GRAW, J. M. /GE/ DATE- MAR. 1967

Lewis-SEE ALSO NASA-TM-X-52245

Study provides specific design criteria in sealing applications for continuous duty pumps used in bulk liquid transfer. A basic sealing equation predicts visco seal performance in the turbulent regime.

B67-10048

TECHNIQUE FOR STRIPPING TEFON INSULATED WIRE

BABB, D. D. /HAYES INTERN. CORP./ DATE- MAR. 1967

Lewis-1774

Cryogenic stripping of Teflon insulated wire leaves no residue and produces no physical damage. After the wire is immersed in liquid nitrogen, bent slightly, and returned to room temperature, the Teflon is removed by fingernails or flat-nosed pliers.

B67-10052

LABORATORY ARC FURNACE FEATURES

INTERCHANGEABLE HEARTS

ARNSTEING, J. L. /KEUGER, O. L. DATE- MAR. 1967

ARC-125

Laboratory arc furnace using rapidly interchangeable hearts gains considerable versatility in casting so that buttons or special shaped castings can be produced. It features a sight glass for observation.

B67-10059

VACUUM CHAMBER IS REMOTELY SEALED BY REACTICN METAL

CODOVA, R. S./ACORE, G. R. /AEROJET-GEN. CORP./ DATE- APR. 1967

Nu-0091

Vacuum chamber is remotely sealed by a design using metal seal blades which are inserted into a solenoid reactive metal by pressurizing an expansion bellows. The process increases allowable manipulations by improving working space and safety factors.

B67-10063

FLUIDIC OSCILLATOR USED AS HUMIDITY SENSOR

REPROKIPUS, P. H. DATE- MAR. 1967

Lewis-340

Fluidic oscillator measures the humidity of the hydrogen stream leaving a hydrogen-oxygen fuel. The instrument provides continuous readings with a certain speed of response.

B67-10068

NEGATIVE FEEDBACK SYSTEM REDUCES PUMP OSCILLATIONS

ROHMSCHANDER, W. /ON. AVIATION/ DATE- MAR. 1967

Lewis-1652

External negative feedback system counteracts low frequency oscillations in rocket engine propellant pumps. The system uses a control piston to sense pump discharge fluid on one side and a gas pocket on the other.

B67-10066

HOLDING FIXTURE FACILITATES PIPE THREAD GAGE MEASUREMENTS

CUPPS, R. HILL, J. /ON. AVIATION/ DATE- MAR. 1967

Lewis-2009

Holding fixture that holds the thread gage and three wires in the proper relationship facilitates the measurement of the pitch diameter of the tapered threads of a pipe thread gage. Modified, this device can be used to hold involute spur gears.

B67-10067

ADJUSTABLE, SELF-LOCKING LADDER INCLUDES OPTIONAL WORK PLATFORM

WEBSTER, B. E. /ON. AVIATION/ DATE- APR. 1967

Lewis-1922

Height-adjustable ladder with a self-locking platform at its top makes elevated locations more accessible, increases the quantity and size of tools handled there, and decreases the risk of disturbance or damage to components. The retractable platform adapts the ladder to normal use.

B67-10073

COLDPLATE OF PIN FIN DESIGN MAKES EFFICIENT HEAT EXCHANGER

DVER, W. P. /ON. AVIATION/ DATE- APR. 1967

MC-1053

Flat, hollow coldplate that permits the flow of coolant liquid removed heat from heat-generating electronic equipment. This coldplate solves unusual problems of bulk, weight, and excessive pumping requirements.

B67-10081

RIGID-BODY MOTION EXTRACTED FROM TOTAL MOTION OF A FLEXIBLE BODY

HOWARD, J. C. DATE- APR. 1967

Lewis-345

Control system eliminates or reduces flexibility effects on the manual and automatic control of large flexible vehicles. It extracts rigid-body
and flexible-body motion and adapts well when a flexible-body frequency coincides or nearly coincides with the control mode frequency.

B67-10094
ULTRASONICS PERMITS BRAZING COMPLEX STAINLESS STEEL ASSEMBLY WITHOUT FLUX
BAKER, W. E. /WESTINGHOUSE ASTRONUC. LAB./ DATE- APR. 1967
NU-0115
Ultrasonic vibration of an assembly of stainless steel instrumentation tubes ensures brazing without flux. Vibration with an ultrasonic transducer permits the brazing material to flow down each tube in contact with a seal plug installed in a pressure vessel wall.

B67-10096
UNDERCOAT PREVENTS BLISTERING OF SILVER PLATING AT ELEVATED TEMPERATURES
KROGER, C. A. /N. AM. AVIATION/ DATE- APR. 1967
MFS-2049
Gold undercoat prevents blistering in the silver plating of Inconel 718 sheets from steam at high temperatures. The undercoat is diffused into the surface of the parent metal by baking prior to silver plating.

B67-10098
TOROIDAL RING PREVENTS GAS IGNITION AT VENT STACK OUTLET
MFS-2042
Toroidal ring welded to the vent stack outlet prevents static discharges which ignite combustible gases in a venting system. The ring inhibits the flow of current by removing the cause of turbulence characteristics of a sharply defined vent exit.

B67-10105
TOOL FACILITATES INSTALLATION OF BARRON CLAMPS
PETERS, G. A. WARNING, K. /N. AM. AVIATION/ DATE- APR. 1967
MFS-2039
Adjustable tool facilitates the installation of Barron clamps. It provides sufficient mechanical advantage to force the clamps into place, permitting one man operation. Two handles provide the major leverage, and a pivoting arm with a slot enables snap-out action.

B67-10107
COMPOSITE WELD NOB CONNECTS INDIVIDUAL FILLER WEAKNESSES
GERMALDO, S. /N. AM. AVIATION/ DATE- MAY 1967
MFS-1923
Composite filler wire welded together an assembly made from components of Rene 41 nickel base alloy. Using equal parts of Rene 41 and Inconel, the wire in the filler reduces the cracking and weaknesses of the individual parent metals.

B67-10117
INVESTIGATION OF PRESSURIZED TOROIDAL SHELLS GROW- INNOVATION NOT GIVEN /MARTIN CO./ DATE- MAY 1967
BEAN- SEE ALSO NASA-CE-264
HQ-27
The effect of internal pressure and external load on thin-walled toroidal shells was investigated. The result of the analysis agreed with experimental results on a 5-inch-diameter toroidal shell subjected to both pressurization and axial loading.

B67-10123
LOCK-DISCONNECT MECHANISM GIVES POSITIVE RELEASE TO JOINTED RODS
BEAVER, C. E. /BOEING CO./ DATE- MAY 1967
MFS-2167
Uniballistic system mechanism locks and unlocks through an internal collet device that is controlled by a single reciprocating shaft. The reduction in the number of operational parts results in higher reliability.

B67-10154
ASPIRATOR INCREASES RELIEF VALVE POPPET STROKE
RIDDLE, H. E. /N. AM. AVIATION/ DATE- MAY 1967
HQ-77
Addition of an aspirator to a relief valve increases the valve poppet stroke under dynamic flow conditions. The aspirator allows poppet inlet dynamic forces to overcome relief valve spring force. It reduces the fluid pressure in the skirt cavity by providing a low pressure sense probe.

B67-10158
SINGLE WRENCH SEPARATES NUTS FROM FREE-FLOATING BOLTS
THOMSON, C. /WESTINGHOUSE ASTRONUC. LAB./ DATE- MAY 1967
NUC-10013
Pneumatic impact wrench removes the nuts from freewheel turning bolts when the heads cannot be reached or the shafts anchored. It uses a fixed screwdriver blade that fits a slot cut into the threaded end of the bolt shaft.

B67-10167
HYDROSTATIC FORCE USED TO HANDLE OUTSIDED HEAVY OBJECTS
CRAPHT, G. W. STAREH, A. W. /BELLCOMM. INC./ DATE- JUN. 1967
HQ-90
Specially fitted barge is used to load and transport large, heavy objects to a dock side site. There the barge itself can lift, rotate, and position the objects. Typical functions are economically accomplished by water buoyancy.

B67-10178
SCANNING MEANS FOR CASSEGRAINIAN ANTENNA GIANDOMENICO, A. BUSCE, W. F. T. DATE- JUN. 1967
JPL-946
Mechanical antenna beam switching device detects weak signals over atmospheric and equipment noise sources in microwave antennas. It periodically rotates the paraboloidal dish in a Cassegrainian reflector system.

B67-10177
EFFECT OF WELDING POSITION ON POROSITY FORMATION IN ALUMINUM ALLOY WELDS
HAYFORD, J. WECHS, E. S. /DOUGLAS AIRCRAFT/ DATE- JUN. 1967
MFS-2310
Program investigates the effects of varied welding positions on weld qualities. Progressive changes in bead geometry occur as the weld plane angle is varied from upslope to downslope. The gravitational effect on the weld puddle varies greatly with welding position.

B67-10178
PICTURE FACILITATES HELIUM LEAK TESTING OF PIPE WELDS BOUTY, J. A. /HAYES INTERN. CORP./ DATE- JUN. 1967
MFS-2167
Picture facilitates inspection testing of circumferential pipe welds for vacuum tightness, using helium gas as a leakage tracer in conjunction with a mass spectrometer. It consists of a split rubber torus and a mating clamping ring with a vacuum hose fitting.

B67-10180
WORK PLATFORM IS SUPPORTED BY SELF-LOCKING BLADES
RUTHERFORD, T. /N. AM. AVIATION/ DATE- JUN. 1967
MFS-2297
Work platform has a supporting plate to engage the deck edge of the supporting structure when lowered into place. The plate is attached to blades hinged to the platform, rigidly supporting the platform when latched, and allowing the platform to be moved away when unlatched.

B67-10183
CONTINUOUS INTERNAL CHANNELS FORMED IN ALUMINUM FUSION WELDS
GAULT, J. SABG, W. /N. AM. AVIATION/ DATE- JUN.
1967
M-FS-2399

Process produces continuous internal channel systems on a repetitive basis in 2014-T6 aluminum. Standard machining forms the initial channel, which is filled with tungsten carbide powder. TIG machine fusion welding completes formation of the channel. Checkmill techniques enlarge it to the desired size.

B67-10195

WELD PROCEDURE PRODUCES QUALITY WELDS FOR TRUCK SECTIONS OF HASTELLOY-C

FLEET, P. J. /FLETCHER, C. W. /GLASSIER, L. F., JR. /Aerojet Gen./ DAT- JUN. 1967

Welding program produces quality, multipass welds in heavy tubular sections of Hastelloy-C. It develops semi-automatic tungsten-inert gas procedures, weld wire procurement specifications, material weld properties, welder-operator training, and non-destructive testing inspection techniques and procedures.

B67-10198

GLASS BLED SHOT PEENING REDUCES STRESS CORROSION OF METALS OF TITANIUM ALLOYS

PHILLIPS, M. D. /Aerojet Gen./ DAT- JUN. 1967

Workmanship standards manual defines practices, that adhere to rigid codes and specifications, for fusion welding of component piping, assemblies, and systems. With written and pictorial presentations, it is part of the operating procedure for fusion welding.

B67-10200

WORKMANSHIP STANDARDS FOR FUSION WELDING PHILLIPS, M. D. /Aerojet Gen./ DAT- JUN. 1967

Workmanship standards manual defines practices, that adhere to rigid codes and specifications, for fusion welding of component piping, assemblies, and systems. With written and pictorial presentations, it is part of the operating procedure for fusion welding.

B67-10202

APPARATUS FOR FABRICATION OF AMERICAN-BERYLLIUM METAL SOURCES PREVENTS CAPSULE CONTAMINATION KORS, W. C. /VAC. LOON, J. A. /Aerojet Gen./ DAT- JUN. 1967

Modifed gloved enclosure is used to fill a capsule with a mixture of americium and beryllium, which is sealed into a vacuum, to contain it. It contains a horizontal partition, vortex mixer, mounting press, welder, test vessel, and radiation shielding to prevent contamination.

B67-10210

ENVIRONMENTAL STUDY OF MINIATURE SLIP RINGS RADNIR, J. L. /Lit. Res. Inst./ DAT- JUN. 1967

Investigation studied the long term operation of miniature slip ring assemblies in high vacuum of space and included the influence of ring, brush, and insulator materials on electrical noise and mechanical wear. Results show that soft metal vapor plated and niobium diselenide miniature slip rings are beneficial.

B67-10211

HIGH-STRENGTH BRAZE JOINTS BETWEEN COPPER AND STEEL KORM, R. F. /Aerojet Gen./ DAT- JUN. 1967

High-strength braze joints between copper and steel are produced by plating the taping surface of the copper with a layer of gold. This reduces porosity in the braze area and strengthens the resultant joint.

B67-10212

DESIGN CONCEPT TO DECREASE RELATIVE SPEED OF BALL BEARINGS JESMAN, S. /S. AR. Aviation/ DAT- MAY 1967

Intermediated ring decreases the rolling speed of a ball bearing relative to the rotational speed of the shaft. It has raceways on its inner and outer peripheries and an additional row of balls. The modification permits operation at much higher shaft speeds than usual.

B67-10214

SYSTEM ENABLES DIMENSIONAL INSPECTION OF VESTA LARGE STRUCTURES SIMPSON, R. H. /Boeing Co./ DAT- JUN. 1967

Precise rotary table with an integrated optical tooling bar system enables accurate and rapid measurement of linear and angular dimensions on very large structures of any configuration. The structure is mounted on a turntable, which can be rotated to expose any desired surface.

B67-10219

SOLENOID VALVE DESIGN HAS ONE MOVING PART ANDERSON, J. W. /Aerojet Gen./ JUL. 1967

Solenoid valve structure has only one moving part, a ball and spring assembly. This eliminates wear caused by sliding motion contact between stationary and moving parts or between moving parts.

B67-10225

TEMPERATURE RESISTIVE WAVE WITHSTANDS IMPACT LOADING GRAN, R. B. /Aerojet Gen./ JUL. 1967

Valve regulates the flow of a reactant to a chemical heater used in a space application and withstands extreme impact loading. The valve has an upper and a lower housing, the lower containing an inlet and an outlet port, and upper containing a cavity.

B67-10237

POST-STRESSED CONCRETE FOUNDATION BAY REDUCE MACHINERY VIBRATION FISTEDIS, S. H. /Aerojet Gen./ JUL. 1967

Post-stressing concrete mat foundation reduces excessive vibrations in machinery. The mat is stressed in compression after the machinery is mounted, thus closing any cracks in it, altering the distribution of the soil subgrade reaction on the mat, and changing the mat-subgrade natural frequency.

B67-10238

TRAVELING WIRE ELECTRODE INCREASES PRODUCTIVITY OF ELECTRICAL DISCHARGE MACHINING /EDM/ EQUIPMENT FOTOFFA, J. B. SMITH, S. V. /Aerojet Gen./ JUL. 1967

Traveling wire electrode on electrical discharge machining /EDM/ equipment reduces the time requirements for precision cutting. This device enables cutting with a minimum of lost material and without inducing stress beyond that inherent in the material. The use of wire increases accuracy and enables tighter tolerances to be maintained.

B67-10261


Modified PERT technique processes the input data and arranges it in familiar graphic form in a booklet which is issued at periodic intervals. The tabulated data provides readily available information to management personnel concerned with monitoring the progress of a program.

B67-10263

CABLE CLAMP BOLT FIXTURE FACILITATES ASSEMBLY IN CLOSE QUARTERS DUNNENDALL, G. M. /Boeing Co./ JUL. 1967

KSC-67-80
Cable clamp bolt holding fixture facilitates forming of electrical cable runs in limited equipment space. The fixture engages the threads of the short clamp bolt through the clamp and maintains tension against clamp tendency to open while the operator installs the nut without difficulty.

**B67-10256**
LINE ADAPTER PROVIDES QUICK DISCONNECT UNDER MODERATE SIDE LOADING
N-PS-2159
Line adapter acts as quick and simple disconnect system. It quickly separates upon the application of a side load of 15 pounds withstanding line pressure at 100 psig.

**B67-10271**
PIPE JOINTS REINFORCED IN PLACE WITH FITTED ALUMINUM SLEEVES
CORTES, J., J. SIEGFRIED, J. WOSIG, O. DATE- AUG. 1967
MSC-1109
Installation of an aluminum sleeve, using specially designed tools, reinforces welded ferrule joints in installed small-diameter aluminum tubing. Tubing joints reinforced by this method withstand considerable torsional tensile loads, and vibrational stresses at moderately elevated temperatures.

**B67-10272**
PORTABLE MACHINE WELDING HEAD AUTOMATICALLY CONTROLLED ARC
OLESIASIA, C. E. BOB, M. A. /N. AM. AVIATION/ DATE- AUG. 1967
N-PS-12763
Portable weld tool makes weld repairs out-of-station and on the side opposite the original weld. It provides full automatic control of the arc voltage, current, wire feed, and electrode travel speed in all welding attitudes. The device is readily adaptable to commercially available straight polarity dc weld packs.

**B67-10273**
SPHERICAL JOINT CONNECTS AXIALLY MISALIGNED FLANGES
MC GROFF, J. D. /N. AM. AVIATION/ DATE- AUG. 1967
N-PS-2238
Interconnecting straight tube connects axially misaligned flanges in a duct assembly. It adjusts to accommodate variations in relative location of the flanges by pivoting. Adjustment is by spherical mating faces and a spherical-faced indexing swivel flange for bolting backup.

**B67-10283**
CONCEPT FOR MODIFYING DRAFTING INSTRUMENTS TO RIBBIND DRAWING
REBOE, T. A. /BOEING CO./ DATE- AUG. 1967
KSC-10056
Ball bearing standoffs added to drafting instruments enable the instruments to be moved about, with their surfaces out of contact with the drawing paper. This provides a safeguard against smearing of the lines.

**B67-10285**
STATIC SEAL CONCEPT TO ACCOMMODATE SEAT TOLERANCES
HARDY, F. III /N. AM. AVIATION/ DATE- AUG. 1967
N-PS-1854
Static seal permits compensation for flange separation and flange-groove tolerances without large seal-leg deflections.

**B67-10291**
REMOTELY OPERATED HIGH PRESSURE VALVE PROTECTS TEST PERSONNEL
NOWLAND, R. T. /N. AM. AVIATION/ DATE- AUG. 1967
MSC-11010
High pressure valve used in testing certain spacecraft systems is safely opened and closed by a remotely stationed operator. The valve is self-regulating in that if the incoming pressure drops below a desired value the valve will automatically close, warning the operator that the testing pressure has dropped to an undesired level.

**B67-10292**
WELDING OF AR350 AND AR355 STEEL
DAYS, E. J. PROTE, E. S. /DOUGLAS AIRCRAFT CO./ DATE- AUG. 1967
N-PS-2319
A series of tests was conducted to establish optimum procedures for TIG welding and heat treating of AR350 and AR355 steel sheet in thicknesses ranging from 0.030 inch to 0.125 inch. Statistical analysis of the test data was performed to determine the anticipated minimum strength of the welded joints.

**B67-10293**
SQUARE TUBING REDUCES COST OF TELESCOPING BRIDGE CRANE HOIST
BERNSTEIN, G. GRAAE, J. SCHMIDT, J. DATE- AUG. 1967
ARG-13
Using standard square tubing in a telescoping arrangement reduces the cost of a bridge crane hoist. Because surface tolerances of square tubing need not be as accurate as the tubing used previously and because no spline is necessary, the square tubing is significantly less expensive than splined telescoping tubes.

**B67-10308**
JACKETED CYCLOGIC PIPING IS STRESS RELIEVED
DOWERS, W. M. /N. AM. AVIATION/ DATE- AUG. 1967
N-PS-585
Jacketed design of piping used to transfer cryogenic fluids, relieves severe stresses associated with the temperature gradients that occur during transfer cycles and ambient periods. The inner /transfer/ pipe is preloaded in such a way that stress relief takes place automatically as cycling occurs.

**B67-10321**
APPLICATION OF DISTORTED MODELS IN DEVELOPING SCALED STRUCTURAL MODELS
WHITE, E. W. /WILE LABS./ DATE- SEP. 1967
N-PS-2256
In the design and development of dynamically similar structural models a distorted model of the panel is used. The panel thickness is made larger than that dictated by geometric scaling, and the mass of the panel is decreased by adding mass to the surface of the panel to counteract the additional stiffness obtained by the thickness increase.

**B67-10325**
SEGMENTED, ARC-BOUND CARBON SEAL IS PRESSURE LOADING
BUNCHER, R. E. /N. AM. AVIATION/ DATE- SEP. 1967
N-PS-12777
Conventional segmented carbon seal has a low leakage rate and minimum loading requirements for a high pressure, large diameter fluid impeller shaft with large axial and radial movements. Modifications in the segments allow part of the load to be carried in hoop stress.

**B67-10341**
DEVELOPMENT OF TECHNOLOGY FOR HOT-DRAPE FORMING OF LARGE TUBE SECTIONS
SPON- INNOVATION NOT GIVEN /FAIRCHILD HILLER CORP./ DATE- OCT. 1967
N-PS-12161
Compound-contoured sheet metal structure development is aided by hot-drape forming, a method combining hot-stretch forming, die quenching, and age forming. It permits in-process control of material gage thin-out through a flexible process of heat zone control.

**B67-10353**
ULTRASONIC WRENCH PRODUCES LEAKTIGHT CONNECTIONS
BLAISE, H. T. MARBEH, H. /TECHNEC/ DATE-
ULTRASONIC WRENCH SYSTEM PRODUCES LEAKTIGHT SEALS IN FLARED TUBING CONNECTIONS. IT INDUCES A COMBINED VIBRATION NODE IN THE COUPLED NUT. THE SYSTEM CONSISTS OF A FREQUENCY CONVERTER, A JUNCTION BOX, AND WRENCH ASSEMBLY.

EXTENSION OF SMALL-DIAMETER, THIN-WALL TUNGSTEN TUBING

Tungsten has been fabricated in lengths of up to 10 feet by hot extrusion over a floating mandrel. Extrusion of 0.50-inch-diameter tubing over 0.4-inch-diameter mandrels was accomplished at temperatures ranging from 3000 degrees to 4000 degrees F.

STEEL TEST PANEL HELPS CONTROL ADDITIVES IN PYROPHOSPHATE COPPER PLATING

Self-acting, partial-arc, pivoted-pad bearings in which the bearing-to-journal applied load is approach the torch. The initial individual attitudes of the torch and wire guide are set with respect to the general configuration of the part.

STUDY MADE TO ESTABLISH PARAMETERS AND LIMITATIONS OF EXPLOSIVE WELDING

It is theorized that metal jetting must be present for welding to occur, therefore an explosive weld interface may indicate the relation between the metal jet velocity and shock wave velocity in welding. Parameters for explosive welding in patches of 3 or 4 inches in diameter were established, and found applicable to explosive welding of patches of various sizes.

STANDARD SURFACE GRINDER FOR PRECISION MACHINING OF THIN-WALL TUBING

Low-cost metal tube reducer accepts tubing up to 1 inch outer diameter and can reduce this diameter to less than 1/2 inch with controlled wall thickness. This device can reduce all of the tube without waste. It produces extremely good surface finishes.

WEAR STUDIES MADE OF SLIP RINGS AND GAS BEARING COMPONENTS

Neutron activation analysis techniques were employed for the study of the wear and performance characteristics of slip ring and rotor assemblies and of the problems arising from environmental conditions with special reference to surface contamination. Results showed that the techniques could be successfully applied to measurement of wear parameters.

OS MECHANICAL
Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates. This configuration modifies a series connection of the drive motors with compensating orifices to offset the effects of drain line loss. Linearization of response eliminating cogging or cyclic operation is thus obtained.

Coaxial cable stripping device assures clean, right angled shoulder for RF cable connector fabrication. This method requires minimal skill and creates a low voltage standing wave ratio and mechanical stability in the interconnecting RF cables.

Method provides precise alignment for metal-forming dies while permitting minimal thermal expansion without die warpage or cavity space restriction. The interfacing dovetail bars and die side facings are arranged so the dies are restrained in one orthogonal angle and permitted to expand thermally in the opposite orthogonal angle.

Heavy-gage bonded honeycomb sandwich is used as a primary load-bearing structural material in large-diastem boosters. Theoretical investigations based on a small deflection theory for prediction of stress fields and buckling loads, and structural testing were made. This structure is a potential weight saver for compression load-critical components.

Safety yoke would protect construction workers from falling.

Pump simulator provides variable pressure-flow characteristics.

Turn-to-header joint for bimetallic construction.

Hand-operated plug insertion valve.

Aluminum and stainless steel tubes joined by simple ring and welding process.

Tool samples subsurface soil free of surface contaminants.

Concept for design of variable stiffness.

Combined accumulator and latch for cartridge powered actuator.

Rock anchors restore broken swamp anchors economically.

Flow liner extends operating life of high-angulation bellows.

Tube-to-header plate crevice and prevent crevice and stringer corrosion.
B67-10525
STUDY MADE OF THIN-WALLED PIPE RESPONSE TO TURBULENT FLUIDS
CLINCKS, H. R. /AEROSPACE INST./ DATE- DEC. 1967
STUDY MADE OF THIN-WALLED PIPE RESPONSE TO TURBULENT FLUIDS
CLINCKS, J. B. /AEROSPACE INST./ DATE- DEC. 1967

B67-10526
DYNAMIC VALVE SEAL IS RELIABLE AT CRYOGENIC TEMPERATURES
ROSELYN, B. F. /AEROSPACE INST./ DATE- DEC. 1967
B67-10527
C-shaped PTFE/polytetrafluoroethylene/ seal ring provides a reliable seal in cryogenic fluids over a fluid pressure range of 0 to 2000 psig. It is interference-fitted internally with a metal expander ring and a metal compressor ring.

B67-10528
ACCUUMULATOR ISOLATOR PREVENTS MALFUNCTIONS OF PULSATION HYDRAULIC SYSTEM
WALSHE, G. D. /BOEING CO./ DATE- DEC. 1967
B67-10529
Special isolator valve prevents malfunction of a closed hydraulic system by converting the initial accumulator-reservoir to a reservoir function only when the system loses oil, or gas, or nitrogen pressure charge, or has a jammed piston. This permits near-normal operation until the defect is corrected.

B67-10530
DEVELOPMENT OF LUNAR DRILL TO TAKE CORE SAMPLES TO 100-FOOT DEPTHS
SPACE INNOVATOR NOT GIVEN /WESTINGHOUSE DIVISION AND SPACE CENTER/ DATE- DEC. 1967
B67-10531
Lunar drill takes lunar surface cores to depths of 100 feet and is being developed to the sample at greater depths. The wireline drill system has be adapted to operate in the lunar environment by providing a sealed dc motor and solid metallic base lubricants.

B67-10532
LEAD PLATED ALUMINUM RING PROVIDES STATIC HIGH PRESSURE SEAL FOR LARGE DIAMETER PRESSURE VESSEL
LOCKE, J. W. /AEROSPACE INST./ DATE- DEC. 1967
B67-10533
Lead plated aluminum ring provides a positive static seal for a large diameter pressure vessel for use in a hazardous environment at cryogenic temperatures with high pressure fluid flow. This design can be used in high and low pressure lines of any diameter for any fluid, with appropriate material modification.

B67-10534
PRECISION TRIMMER AIDS IN PREPARING BIOMICROSCOPIC SPECIMEN BLOCKS FOR ULTRATHIN SECTIONING
TRAHISKIN, T. W. DATE- DEC. 1967
B67-10535
Precision trimmer, which neatly trims biomedical specimen blocks for ultrathin sectioning, eliminates the risk of human error. Four inches in diameter and 3 inches in height, it supports the block and serves as a support for a cutting tool and can be adjusted in three dimensions.

B67-10536
POWER TORQUE WRENCH CONCEPT FOR PRECISION TORQUE APPLICATION
PETRUS, S. A. /AEROSPACE INST./ DATE- DEC. 1967
B67-10537
Precision electromechanical power wrench applies a given amount of torque to a series of fasteners. It uses a commercially available dc permanent magnet torque motor with a current-controllable torque output and torque value indicator designed to the principles of human engineering.

B67-10538
STUDY MADE OF HEAT TRANSFER AND PRESSURE DROP THROUGH TUBES WITH INTERNAL INTERRUPTED FINNS
B67-10539
Argon gas flow through an internal interrupted finned tube was investigated to obtain heat transfer and frictional pressure drop data. The results were plotted against the same data for corresponding louvered plate-finned surfaces.

B67-10540
INSTRUMENT ACCURATELY MEASURES WELD ANGLE AND OFFSET
SONDER, W. G. /AEROSPACE INST./ DATE- DEC. 1967
B67-10541
Butterfly valve with metal seals operates over a temperature range of minus 423 degrees to plus 440 degrees F with hydrogen as a medium and in a radiation environment. Media flow is controlled by an internal butterfly disk which is rotated by an actuation shaft.

B67-10542
FLAT CABLE INSULATION STRIPPING MACHINE
SCHRAPP, J. H. /VIKING IND./ DATE- DEC. 1967
B67-10543
Flat cable insulation stripping machine operates on a principle of variable parameters of abrasive wheel speed, wheel pressure on the flat cable, and flat cable feed speed into the abrasive wheel. Application of connectors is handled efficiently with this flat terminal termination technique.

B67-10544
HIGH ENERGY FORMING FACILITY
CRUIKSHANK, B. /AEROSPACE INST./ DATE- DEC. 1967
B67-10545
Watertight, high-explosive forming facility, 25 feet in diameter and 15 feet deep, withstands repeated explosions of 10 pounds of TNT equivalent. The shell is fabricated of high strength steel and allows various structural elements to deform or move elastically and independently while retaining structural integrity.

B67-10546
FLUOROCARBON SEAL REPLACES METAL PISTON RINGS IN LOW DENSITY GAS ENVIRONMENT
HEATH, W. D. /VICKERS, INC./ DATE- DEC. 1967
B67-10547
Reinforced fluorocarbon cup seal, which provides an integral lip-type seal, replaces the metal piston rings in piston-cylinder configurations used in the compression of low density gases. The
fluorocarbon seal may be used as cryogenic compressor piston seals.

B67-10594
SELF-ALIGNING ROD PREVENTS ECCENTRIC LOADING OF TETRA SPECIMENS VANDERGRIFT, E. F. /WESTINGHOUSE ASTRONUC./ LAB./ DATE- DEC. 1967
NUC-10525 Tensile specimens can be tested in liquid nitrogen without subjecting the cryostat to tilting during assembly of the specimen in the liquid nitrogen-filled cryostat. A universal joint with a semelliptical head and socket reduces misalignment and permits only limited side travel.

B67-10607
HONEYCOMB SEAL BACKING RING INCREASES TURBOPUMP DISK LIFE BROOKS, W. S. /AM. AVIATION/ LABOR., E. W. DATE- DEC. 1967 M-PS-13303 Turbopump disk life increased by thin, relatively rigid metal backing ring installed to the honeycomb seal. The aerodynamic and friction damping provided by this modification eliminates first-stage disk cracking.

B67-10611 ROLAMITE - A NEW MECHANICAL DESIGN CONCEPT WILKES, D. F. DATE- DEC. 1967 SAM-10601 Rolamite, a mechanical suspension system, provides substantial reductions in friction in the realms of extremely low bearing pressures. In addition, rolamite devices are easily microinluminated, are extremely tolerant of production variations and are inherently capable of virtually all functions to construct most electromechanical devices.

B67-10619 FEED-THRU CONDUIT MINIMIZES HEAT PICKUP TAYLOR, S. F. DATE- DEC. 1967 JPE-847 Insulated feed-thru conduit minimizes heat pickup by a cryogenic fluid passing through the walls of a double high-vacuum chamber, and is capable of expansion and contraction with the walls of the chamber. It uses a bellows and rigid cylinder to provide a low-loss feed-thru for the cryogenic liquid.

B67-10622 FIRE EXTINGUISHER CONTROL SYSTEM PROVIDES RELIABLE COLD WEATHER OPERATION GRABUS, J. C. /AM. AVIATION/ DATE- DEC. 1967 M-PS-13031 Fast acting, pneumatically and centrally controlled, fire extinguisher/pipe system is effective in freezing climates. The easy-to-operate system provides a fail-safe function which is activated by an electrical power failure.

B67-10623 FERROMAGNETIC CORE VALVE GIVES RAPID ACTION ON MINIMUM ENERGY HARNIS, A. T. /GEN. DYR./CONWAY/ TINNEN, J. P. DATE- DEC. 1967 LEWIS-10135 Miniature solenoid valve controls propellant flow during tests on a coaxial plasma accelerator. It uses an advanced ferromagnetic core design which meets all the rapid-acting requirements with a minimum of input energy.

B67-10628 TENSILE TESTING GRIPS ARE EASILY ASSEMBLED UNDER LIQUID NITROGEN SHALEA, J. /WESTINGHOUSE ASTRONUC./ VANDERGRIFT, E. F. DATE- DEC. 1967 NUC-10524 Split-screw grips for tensile testing provide uniform load on the specimen shoulders. Holes in the heads enable the screws and specimen to be threaded as an assembly into a grip body, closely controlled guides and seats avoid positive seating, and precision machining of mating surfaces minimizes misalignment effects.

B67-10638 REDDY CURRENT DISK VALVE LARSON, A. T. /GEN. DYN./CONWAY/ TINNEN, J. P. DATE- DEC. 1967 LEWIS-10123 Quick-opening, intermittent flow valve requires a small amount of electrical energy to open and which closed by the restoring action of a rubber stop. This eddy current disk valve opens in less than 100 microseconds and takes only 10 joules of energy.

B67-10639 SOLNED VALVE DESIGN MINIMIZES VIBRATION AND SLIDING WEAR PROBLEM WRENC, R. H. /GEN. DYN./CONWAY/ DATE- DEC. 1967 LEWIS-10134 Quick-opening lightweight solenoid hammer valve requires a low amount of electrical energy to open, and closes by the restoring action of the mechanical springs. This design should be applicable to many quick-opening requirements in fluid systems.

B67-10655 DEVELOPMENT OF HELICAL SEAL FOR HIGH TEMPERATURE /2000 DEGREES F/ APPLICATION BOLTON, C. /AM. AVIATION/ DATE- JAN. 1968 M-PS-1304a Helical seal is used to seal bolted flanges in a high temperature environment. The seal design incorporates a new cross-sectional shape, a metal strip with a slight radius, and the use of preformed asbestos. It provides equal load distribution under compressive loads, allows for minimum loss and recovery values, and increases the temperature range.


B67-10667 SOLNED VALVE DESIGN MINIMIZES VIBRATION AND SLIDING WEAR PROBLEM WRENC, R. H. /AM. AVIATION/ DATE- JAN. 1968 M-PS-14079 Two-way cryogenic solenoid valve resists damage from vibration and metallic interfacial sliding. The new system features a flat-faced armature guided by a flexure disk which eliminates sliding surfaces and is less subject to contamination and wear.

B67-10670 RECONNECT MECHANISM MOORE, E. L. /BOEING CO./ DATE- JAN. 1968 M-PS-12968 Mechanism remotely controls de-safetying of two bodies by unlock and withdrawal of one body from the other and, upon command, extends, locates, remates and relocks the two bodies. The system is designed to transfer fluid from a dispensing body to a receiving body.

B67-10673 CRYOGENIC SEAL CONCEPT FOR STATIC AND DYNAMIC CONDITIONS DE GAETANO, P. A. /AM. AVIATION/ DATE- JAN. 1968 M-PS-12966 Seal rings reduces cryogenic pump seal leakage under static and dynamic conditions. The rings are fitted into annular diaphragms, which are affected by cryogenic pressure and temperature, to move against a mating ring, to increase seal-bearing loads under static conditions.
Study determines the most efficient method for magnetic tapes rehabilitation and storage for reuse. Investigators were the physical changes taking place in the tape during the rehabilitation process, measure of quality of the processed tapes, and the level of quality required to achieve sufficient yield.

B66-10036
TUBE DIMPLING TOOL ASSURES ACCURATE
DI-LANCED JOINTS
BROOKS, C. E. /HEISMAN, R. N. /N. A. AVIATION/ DATE- FEB. 1968
MSC-11464
Portable, hand-held dimpling tool assures brazed joints between tubes of different diameters. Prior to brazing, the tool performs precise dimpling and nipple forming and also provides control and accurate measuring of the height of nipples and depth of dimples so formed.

B66-10037
SWING ARM CARRIER PROTECTS FLEXIBLE LINES
DURING TESTING AND ROTATION
WARD, D. P. /N. A. AVIATION/ DATE- FEB. 1968
MSC-11464
Swing arm carrier provides protection for flexible lines /fluid, electrical, HP/ connected to a test item that must be rotated through 360 degrees during test. It uses five gates riding on pivots to permit rotation of flexible lines through arcs of plus 160 degrees and minus 180 degrees.

B66-10038
CONCEPT TO STANDARDIZE SPACE VEHICLE
FLIGHTBACK EXPERIMENT PROGRAM
MSC-11457
Study investigates the use of spent launch vehicle stages and modules to support earth orbital operations and functions after successful completion of the primary mission. Emphasis is placed primarily on determination of those uses that afford the greatest utility with minimum possibility of degradation to the primary mission.

B66-10039
FUEL TRANSFER SYSTEM PERMITS RAPID COUPLING
WEST, A. W. /LOCKHEED MISSILES AND SPACE CO./ DATE- FEB. 1968
MSC-91326
Docking and fuel transfer system provides an efficient method for transferring fuel from a tanker to another vehicle. With this system, no triggering operation is required prior to docking. The support system can be rigidized by simply locking the rams of shock absorbers, and no separate fuel line coupling action is required.

B66-10040
BRASS-SHRINK PLASTIC TUBING SEALS JOINTS IN GLASS TUBING
DEL DUCA, E. DOWEY, A. DATE- FEB. 1968
MSC-10329
Small units of standard glass apparatus held together by short lengths of transparent heat-shrinkable polyolefin tubing. The tubing is shrunk over glass O-ring type connectors having O-rings but no lubricant.

B66-10041
IMPROVED TORCH INCREASES WELD QUALITY IN REFRACTORY METALS
LESSMAN, G. G. SPECAKE, E. /WESTINGHOUSE ELEC. CORP./ DATE- FEB. 1968
LWIS-324
Specially designed torch welds refractory metals in a vacuum purged, inert gas backfilled welding chamber /weld box/ with practically zero contamination resulting from its use. Included in the torch design is a radiation shield to protect the operators hands when welding at high asperages.

B66-10042
SUSPENDED CHAINS DAMP WIND-INDUCED OSCILLATIONS OF TALL FLEXIBLE STRUCTURES
Date- FEB. 1968
LWIS-324
Specially designed torch welds refractory metals in a vacuum purged, inert gas backfilled welding chamber /weld box/ with practically zero contamination resulting from its use. Included in the torch design is a radiation shield to protect the operators hands when welding at high asperages.
Pipe plug for remote installation in an open-ended shut-off valve at the destination of a transferred gas tank. The plug provides a physical support for a mechanical clamp contacting the pipe flange for gastight sealing. The plug is deployed by extending each section in sequence. The equipment includes a 34-foot rotary table, a variable reluctance displacement transducer, an electronics console, a digital computer, and a 5-foot plotter used for final data display.

Pipe plug for remote installation in a hazardous environment provides a gastight seal by expanding a rubber seal against the inside surface of the pipe opening, with a 34-foot rotary table, a variable reluctance displacement transducer, an electronics console, a digital computer, and a 5-foot plotter used for final data display.

Pipe plug for remote installation in a hazardous environment provides a gastight seal by expanding a rubber seal against the inside surface of the pipe opening, with a 34-foot rotary table, a variable reluctance displacement transducer, an electronics console, a digital computer, and a 5-foot plotter used for final data display.

Flexible ring baffles for damping liquid slosh. Slosh damping, obtained through the use of small, light, and flexible baffles, provides a relatively lightweight system for damping the motions of liquid propellants in launch vehicles, missiles, and other tankage systems.

Flexible ring baffles for damping liquid slosh. Slosh damping, obtained through the use of small, light, and flexible baffles, provides a relatively lightweight system for damping the motions of liquid propellants in launch vehicles, missiles, and other tankage systems.

Flexible ring baffles for damping liquid slosh. Slosh damping, obtained through the use of small, light, and flexible baffles, provides a relatively lightweight system for damping the motions of liquid propellants in launch vehicles, missiles, and other tankage systems.

Flexible ring baffles for damping liquid slosh. Slosh damping, obtained through the use of small, light, and flexible baffles, provides a relatively lightweight system for damping the motions of liquid propellants in launch vehicles, missiles, and other tankage systems.
instrumentation subjected to shock loading to
tolerable limits. The device consists of a
spiral formed plastic member interleaved between
the spring coils in the same helix configuration.

B68-10115

METHOD FOR REINFORCING TUBING JOINTS
KINZLER, J. LEE, W. S. DATE- APR. 1968
MSC-1105

Joint repair technique uses a longitudinally split
aluminum shield over the joint ferrule and
immediately adjacent tubing to seal or reinforce
leaking or weak joints in small tubing. Epoxy
resin coating on inside surfaces of the two shield
covers provides a tightly sealed bond between
shield and tubing.

B68-10117

TOGGLE OPERATED DOUBLE LATCH
BARROUN, R. T. BECKER, D. E. /W. AM. AVIATION/
DATE- APR. 1968
MSC-11377

Double hook latch provides preloading and support
capability up to 60,000 pounds and opens
self-energizingly when restraint linkage is
released. It incorporates a double hook latch
clasp linked together and a flexible cable rigged in tension.

B68-10120

PRESSURE VARIABLE ORIFICE FOR HYDRAULIC
CONTROL VALVE
ANDREW, R. L. /W. AM. AVIATION/ DATE- APR. 1968
MSC-1123

Hydraulic valve absorbs impact energy generated in
docking or joining of two large bodies by
controlling energy release to avoid jarring shock.
The area of exit porting presented to the
hydraulic control fluid is directly proportional to
the pressure acting on the fluid.

B68-10122

MEASURING THERMAL EXPANSION OF MULTIPLE
SPACERS AT HIGH TEMPERATURE
GAAL, F. S. /WESTINGHOUSE ASTRONUC. LAB./ DATE- APR. 1968
MSC-10153

Furnace capable of heating 10 specimens to a
uniform temperature simultaneously, aids in the
measuring of the thermal expansion of each
specimen. The specimens are measured with a
telescope unit consisting of two microtelescopes.
Overall accuracy of the system is estimated to be
plus or minus 2 percent at 2000 degrees C.

B68-10123

IMPROVED ACTIVE VIBRATION ISOLATOR
DIXON, G. V. LEATHERWOOD, J. D. STEPHENS, D. G.
DATE- APR. 1968
LANGLEY-10106

Active vibration isolator simultaneously isolates a
flexible structure or payload from disturbances,
attenuates the response of a flexible structure to
transient disturbances, and maintains the
equilibrium position of the payload within
predetermined limits over a wide range of steady
loads and accelerators.

B68-10125

VACUUM-JACKETED TRANSFER LINE INSTALLATION
TECHNIQUE
BOWES, W. M. /W. AM. ROCKWELL CORP./ DATE- APR. 1968
NPS-14096

Rolling-type spacers in the form of steel balls
retained in appropriate sleeves affixed at
intervals to the exterior of the transfer line
facilitate the installation of a vacuum-jacketed
line. They act as standoffs to position the
transfer line concentrically within the vacuum
jacket line.

B68-10132

IMPROVED MOLDING PROCESS ENSURES PLASTIC
PARTS OF HIGHER TENSILE STRENGTH
HIEB, W. C. DATE- APR. 1968
LANGLEY-10033

Single molding process ensures that plastic parts

/ of a given mechanical design/ produced from
a conventional thermosteaming molding compound will
have a maximum tensile strength. The process can
also be used for other thermosteaming compounds to
produce parts with improved physical properties.

B68-10134

SHALLOW GROOVES IN JOURNAL IMPROVE AIR
BEARING PERFORMANCE
ANDERSON, W. J. CUNNINGHAM, S. E. FLEIXING, D. P.
DATE- APR. 1968
LEWIS-10396

Bearing designs, which shape the surface to create
artificial fluid-film wedges in the absence of any
applied radial load, generate radial restoring
forces to keep journals from whirling. Helical-
or herringbone-grooved journals or rotors show
most promise of stable operation, with no
sacrifice in load capacity.

B68-10161

ROLL DIFFUSION BONDING OF TITANIUM ALLOY
PAVELS
NPS-1400a

Roll diffusion bonding technique is used for
fabricating T-stiffened panel assemblies from
titanium alloy. The single unit fabrication
exhibits excellent strength characteristics under
tensile and compressive loads. This program is
applied to structures in which weight/strength
ratio and integral construction are important
considerations.

B68-10162

ASBESTOS AND INCONEL COMBINED TO FORM
HOT-GAS SEAL
WOOSTER, C. W., JR. /W. AM. AVIATION/ DATE- MAY 1968
NPS-14032

Hot-gas seal prevents warpage tendencies in large
flange joints exposed to high temperatures, such
as those present in large space vehicle engine
exhausts. Two Inconel wire mesh cores are held
in place by an asbestos cloth cover that acts as a
spacer to form the seal.

B68-10165

BEARINGS USE DRY SELF-LUBRICATING CAGE
MATERIALS
ANDERSON, W. J. GLENN, D. C. SCHEIBBE, H. W.
DATE- MAY 1968
LEWIS-10342

Rolling element bearings in spacecraft mechanical
systems use solid lubricant composites of
polytetrafluoroethylene in the bearing cage which
functions as the lubricant reservoir. The cage
spaces the rolling elements equally and provides the
lubricant at the bearing load-carrying
surface.

B68-10168

BALLISTIC BARGE CONCEPT FOR UNDERWATER
STRUCTURES
PAINES, E. DATE- JUN. 1968
KSC-10196

Ballistic barge for underwater structure consists of a
reinforced concrete structure partitioned into
watertight compartments. The barge structure
includes a 3-way venting valve, a compressed air
manifold, a master valve for connecting the
transfer line concentrically within the vacuum
jacket line.

B68-10176

HIGH-TEMPERATURE BEARING-CAGE MATERIALS
ANDERSON, W. J. ZARETSKY, E. V. DATE- JUN. 1968
LEWIS-10403

Evaluation tests conducted at temperatures of 500
and 700 degrees F reveal that S-Monel and AISI
M-1 steel are suitable as high temperature cage
materials for precision bearings. The area of the
wear scar in the cage pocket that developed
during the test was used as the measure of wear.

B68-10180

SQUEEZE-FILM GAS BEARING TECHNOLOGY
REAN- SEE ALSO B66-10226
M-FS-14021
Squeeze-film bearing is studied to develop a low-friction suspension for the output-axis gimbal of a single-degree-of-freedom gyroscope. Included are a review of pertinent literature, the theory of squeeze-film lubrication, and design elements.

B66-10209
MAGNETICALLY CONTROLLED TORQUE WRENCH PREVENTS OVERTORQUING
HENDERSON, J. A. /DATE- JUN. 1968
SAN-10002
Magnetically controlled torque wrench produces the required torque values accurately, and prevents overtorqueing. The force between a magnet and a soft iron bar on the arms of the wrench constitutes a predetermined maxima torque that cannot be exceeded. So long as the magnetic flux remain constant, the torque remains the same.

B66-10211
PROPOSED GAS GENERATION ASSEMBLY WOULD RECOVER DEEPLY SUBMERGED OBJECTS
SPRAGUE, C. W. /DATE- JUN. 1968
SAN-10007
Gas generation system, used for recovery of submerged objects, generates hydrogen gas by the reaction of sodium with sea water. The assembly consists of tanks floated together, equipped with relief valves to equalize pressure as the array ascends and hydrostatic pressure diminishes, and carrying remotely activated vending units.

B66-10219
PACKAGING CRITERIA FOR TRANSPORTATION AND HANDLING SHOCK AND VIBRATION
SPON- INNOVATOR NOT GIVEN /MARRSHALL/ DATE- JUN. 1968
M-FS-13007
Information compiled on the shock and vibration environment encountered by items and equipment during shipment shows the distribution of drop heights for particular packages, distribution systems, and handling operations. Applications of the data to typical package design problems are discussed.

B66-10222
ASSEMBLY, CHECKOUT, AND OPERATION OPTIMIZATION ANALYSIS TECHNIQUE FOR COMPLEX SYSTEMS
SPON- INNOVATOR NOT GIVEN /MARRSHALL/ DATE- JUN. 1968
M-FS-14105 M-FS-14132 M-FS-14137
Computerized simulation model of a launch vehicle/gound support equipment system optimizes assembly, checkout, and operation of the system. The model is used to determine performance parameters in three phases or modes - /1/ systems optimization techniques, /2/ operation analysis methodology, and /3/ system effectiveness analysis technique.

B66-10225
LASER SYSTEM USED FOR DYNAMIC BALANCING OF GYROS
M-FS-12218
System using a pulsed ruby laser balances or trims gyro rotors spinning at speeds of up to 24,000 rpm. It is designed to detect high spots on the spinning rotor and to focus a precisely timed laser beam on these detected spots.

B66-10229
EFFECT OF SURFACE IRREGULARITIES ON BELLows FATIGUE LIFE
M-FS-14480
Report presents test data on the bending fatigue life of notched sheet specimens. The influence of a surface irregularity on the fatigue life of a metal bellows is evaluated, with emphasis on accidental defects in ducting bellows which are impossible to avoid short of completely eliminating human contact.

B66-10235
TUBE SWAGING DEVICE USES EXPLOSIVE FORCE
MC SMIT, D. G. /DATE- JUL. 1968
LANGLSET-10092
Tool joins a sleeve to a tube by explosive swaging, thus providing a leakproof, lightweight, and strong assembly. So now or different material is used in this method and therefore the thermal and galvanic properties are maintained.

B66-10237
DEAL RATE PRESSURE RELIEF VALVE
STEENHOF, J. /GARRETT CORP./ DATE- JUN. 1968
MSC-11626
Pressure relief valve vents at a slow bleed rate at one pressure level and at a higher bleed rate at a higher pressure level. The valve housing contains a sleeve, inlet port, outlet port, an orifice, a ball and seat arrangement, and a bellvellie spring diaphragm.

B66-10239
MANUAL OF INDUSTRIAL DIAMONDS PLUS DRESSING AND GRINDING CRITERIA FOR MACHINING SUPERALLOYS
CARE, W. L. /A. N. ROCKWELL CORP./ DATE- JUL. 1968
M-FS-14582
Manual contains the important and controlling factors for the proper selection and use of diamond stones for cutting and dressing grading wheels. This manual is a compilation of empirical data and incorporates an original compnios treatise on the physical descriptions of the diamond stones, their grading, and their applications.

B66-10247
DYNAMICALLY STABLE CHECK VALVE CONCEPT FOR WIDE FLOW RANGE
ABRILON, J. G. /A. N. ROCKWELL CORP./ DATE- JUL. 1968
M-FS-14579
Poppet-type check valve design accommodates a wide flow range without the usual chatter problems at low flow conditions. This pressure isolation check valve is proposed for the J-2 rocket pneumatic package.

B66-10248
TENSILE TESTING GEPS ENSURE UNIFORM LOADING OF BIMETAL TUBING SPECIMENS
DRISCOL, S. R. HURLP. /ABREJET-GEN. CORP./ DATE- SEP. 1968
LEWIS-10267
Tensile testing grip uniformly distributes stresses to the internal and external tube of bimetal tubing specimens. The grip is comprised of a slotted external tube grip, a slotted internal tube grip, a machine bolt and nut, an internal grip expansion cone, and an external grip compression nut.

B66-10249
HIGH-TEMPERATURE BEARING LUBRICANTS
ANDERSON, W. J. PARKER, R. J. ZARETSKY, E. V. /DATE- SEP. 1968
LEWIS-10408
Synthetic paraffinic oil lubricates ball bearings at temperatures in the 600 degrees F range. The lubricant contains antioxidant and antiwear additives, is thermally stable in the high temperature range, but requires protection from oxygen.

B66-10250
QUICK-ATTACH CLAMP
VOG, A. E. /DATE- JUL. 1968
ZAPL-05241
Clamp of the slideable jaw type can be applied to moving lines such as cables or ropes. The clamp has a trigger-operated jaw that can be attached to a redrop parachute on a moving tow cable. The trigger mechanism maintains the jaws retracted in the housing until they are released for clamping.
INSPECTION CRITERIA ENSURE QUALITY CONTROL OF PARALLEL GAP SOLDERING

Dynamic-reservoir lubricating device supplies controlled amounts of lubricating oil to ball bearings during operation of the bearings. The dynamic reservoir lubricating device includes a rotating reservoir nut, a hollow cylinder filled with lubricating oil, flow restrictions and a ball bearing retainer.

Compact shock-absorbing caster wheel mitigates or absorbs shock by a compressible tire which deforms into a cavity between its inner edge and the wheel hub. A tee-shaped annular ring embedded in the tire distributes loads more uniformly throughout both wheel and tire.

Compact shock-absorbing caster wheel is simple and compact.

Compact shock-absorbing caster wheel mitigates or absorbs shock by a compressible tire which deforms into a cavity between its inner edge and the wheel hub. A tee-shaped annular ring embedded in the tire distributes loads more uniformly throughout both wheel and tire.

Thermal protective visor for entering high temperature areas.

Chamber observer suit visor protects the eyes and ears of the wearer while he is performing rescue operations using a fire.

Small-diameter, thin-wall tungsten and tungsten alloy tubes are produced by double extrusion. Plug-drawing has emerged as an excellent secondary fabrication technique for the reduction of the overall tube dimensions.

Placing the shaft seals, in an oxidizer pump, between the pump bearings, reduces the shaft overhang length and overall turbopump length.

This arrangement of the components in the pump removes the seals from the hot turbine region.

Advances in light-gas gun technology.

Constant-area accelerator used with light-gas guns increases the velocity of accelerating projectiles. A disposable accelerator on the muzzle of the gun uses the energy of a primary projectile, launched by the gun, to achieve high velocities of a light secondary projectile accelerated from rest in the accelerator.

Compact shock-absorbing caster wheel is simple and compact.

Compact shock-absorbing caster wheel mitigates or absorbs shock by a compressible tire which deforms into a cavity between its inner edge and the wheel hub. A tee-shaped annular ring embedded in the tire distributes loads more uniformly throughout both wheel and tire.

Small-diameter, thin-wall tungsten and tungsten alloy tubes are produced by double extrusion. Plug-drawing has emerged as an excellent secondary fabrication technique for the reduction of the overall tube dimensions.

Placing the shaft seals, in an oxidizer pump, between the pump bearings, reduces the shaft overhang length and overall turbopump length.

This arrangement of the components in the pump removes the seals from the hot turbine region.
porous material with an electron beam so that the melted material fills all surface pores.

B68-10332
DUAL WIRE WELD FEED PROPORTIONER
WODGE, R. E. /W. AM. ROCKWELL CORP. / DATE- SEP. 1968
M-FTS-18037
Dual feed mechanisms enables proportioning of two different wire feed wires during automated TIG welding to produce a weld alloy deposit of the desired composition. The wires are fed into the weld simultaneously. The relative feed rates of the wires and the wire diameters determine the weld deposit composition.

B68-10338
TWO-FIUID, IMPINGING-SHEET INJECTOR
RHEELING, R. W. DATE- SEP. 1968
NPO-1058
Two-fluid, impinging-sheet propellant injector reduces the severe erosion found to occur when nojector elements are directly exposed during throttling without the benefits of a cooling flow of the propellant liquids. It greatly improves combustion efficiency by venting the secondary stress of combustion gases generated by backreaction.

B68-10343
X-RAY FILM HOLDER PREVENTS SINGLE CONTINUOUS PICTURE OF TUBING JOINT
DIAMOND, J. W. HUNT, V. MIEGELL, C. /SOCIETY-GEN. CORP. / DATE- SEP. 1968
LEWIS-10382
I X-ray technique produces a clear continuous picture of a welded brazed tubing joint on a single film with one exposure. A stationary X-ray source located in the plane of the joint to be inspected, a means of rotating the tube, and a unique internal film holder and positioning fixture are used.

B68-10352
MACHINING TECHNIQUE PREVENTS UNDERCUTTING IN TENSILE SPECIMENS
BOSCAN, R. E. ROYSTER, D. N. DATE- SEP. 1968
GLOBE-10281
Machining technique prevents undercutting at the tensile section in tensile specimens when machining the four corners of the reduced section. Made with a gradual taper in the test section, the width of the center of the tensile specimen is less than the width at the four corners of the reduced section.

B68-10353
SHOCK AND VIBRATION RESPONSE OF MULTISTAGE STRUCTURE
M-FTS-18972
Study of the shock and vibration response of a multistage structure employed analytically, lumped-mass, continuous-bean, multimode, and matrix-iteration methods. The study was made on the load paths, transmissibility, and attenuation properties along a longitudinal axis of a long, slender structure with increasing degree of complexity.

B68-10359
REMTLY OPERATED GRIPPER PROVIDES VERTICAL CONTROL Rod MOVEMENT
KOFF, E. J. DATE- SEP. 1968
ARG-10160
Remote actuation of a gripper shaft affects vertical engagement between a drive shaft and control rod. A secondary function of the gripper is to provide remote indication of positive connection of the gripping or ungripping operation.

B68-10371
VERSATILE IMPACT HAND TOOL
MOSIL, F. E. ULIN WINCHESTER / DATE- OCT. 1968
M-FTS-18146
Improved cartridge-actuated impact hand tool includes a common power head and four attachments to punch holes, drive forced entry fasteners, hammer, and shear. The attachments are self-contained and easily fitted to the power head assembly.

B68-10372
IMPROVED ELECTROMECHANICAL MASTER-SLAVE MANIPULATOR
FORSTER, G. GOERTZ, R. GREGSON, J.INGEST, D. POSTS, C. DATE- OCT. 1968
ARG-10227
Electric master-slave manipulator uses force multiplication and allows the operator to remotely control the slave arms. Both the master and slave arms execute seven distinct motions by a specially designed force-reflecting servo having a one to one correspondence between the motion at the master and slave.

B68-10385
EFFECTS OF HIGH FREQUENCY CURRENT IN WELDING ALUMINUM ALLOY 6061
FISH, R. E. /W. AM. ROCKWELL CORP. / DATE- OCT. 1968
M-FTS-18337
Uncontrolled high frequency current causes cracking in the heat-affected zone of aluminum alloy 6061 weldments during tungsten inert gas ac welding. Cracking developed when an improperly adjusted superimposed high frequency current was agitating the semisolenoid metal in the areas of grain boundary.

B68-10387
MINIATURE PAINT-SPRAY GUN FOR RECEESD AREAS
WANSSIE, M. A. /W. AM. ROCKWELL CORP. / DATE- OCT. 1968
MCS-13060
Miniature spray gun regulates paints and other liquids to spray at close range, facilitating spraying of remote or recessed areas. Individual valves for regulating air pressure and paint maximizes atomization for low pressure spraying.

B68-10393
DETERMINING GAS LEAKAGE FROM BUBBLE FORMATIONS
DAESTRA, J. E. WILDS, P. E. DATE- OCT. 1968
M-FTS-14041
Gas leakage rates are quantitatively estimated using threaded and flanged fittings by standardizing bubble appearance. Three classes of bubble formations have been proposed.

B68-10395
DESIGN OF FLUID-DUCT BENDS WITH LOW PRESSURE LOSS
CELACH, B. /SOUTHWEST RES. INST. / DATE- OCT. 1968
M-FTS-20176
Duct bends are designed in which pressure losses and velocity profile distortions due to centrifugal force gradients are significantly reduced. The correction is achieved by properly changing the cross sectional area through the bend without affecting the shape of the duct at the upstream and downstream sides.

B68-10398
BATTERY-PACKAGE DESIGN PROVIDES FOR CELL COOLING AND CONSTRAINT
GROSS, S. /BOEING CO. / DATE- OCT. 1968
MCS-18389
Lightweight battery-package provides for even cooling of individual alkaline cells, constraint against cell expansion, and convenient placement of cells. The battery package also provides for venting of the cells and includes instrumentation to measure cell temperature, pressure, and voltage.

B68-10401
COMPACT MONITORING AND CONTROL CONSOLE FOR PRESSURIZED GAS BOTTLES
FUENAR, B. PILCHER, A. /W. AM. ROCKWELL CORP. / DATE- NOV. 1968
M-FTS-14874
Compact monitoring and control console dispenses
gas over a range of pressures from conventional compressed-gas cylinders. It incorporates in a single assembly the necessary equipment for a portable pressurization system that can be used in welding and other operations requiring a controlled gas supply.

B68-10407
AN INVESTIGATION OF PARTICLE MIXING IN A GAS-FLUIDIZED BED
CARLSON, R. E. /GAROB, J. D. /DATE- DEC. 1968
AHE-10483
Mechanisms for particle movement in gas-fluidized beds was studied both from the theoretical and experimental points of view. In a two-dimensional fluidized bed particle trajectories were photographed when a bubble passed through.

B68-10417
HAND-TIGHTENED, HIGH-PRESSURE SEAL
MYERS, W. A. /AM. ROCKWELL CORP. /DATE- DEC. 1968
N-FS-10416
To provide flared tubing and hose connections for high-pressure hand tightened cryogenic service, a 1/4-inch male AN seal was modified by machining to receive a special, double-truncated-cone-shaped Kel-F washer between it and the flared flex hose connector.

B68-10439
HYDRAULIC TESTING OF POROUS ASSEMBLIES
BIGELOR, W. L. /AM. ROCKWELL CORP. /DATE- DEC. 1968
N-FS-10429
Pores of the material were plugged with dust particles suspended in water. This technique provides a permanent high-integrity seal for porous material without affecting its physical properties, yet permitting pressure testing to verify structural adequacy.

B68-10440
LOW FRICTION SERVO VALVE
DUSTIN, R. O. /DATE- NOV. 1968
LWIS-10574
Valve was developed using air bearings which provide frictionless operation. The servo valve is of the flat plate type with rectangular meter openings. Fluid bearings support the metering plate. The overlap is adjustable by means of a variable hinge block support.

B68-10441
LOW COST TECHNIQUES FOR FABRICATING LOBED BEARINGS
SCHUSTER, F. T. /DATE- NOV. 1968
LWIS-10296
New low cost technique utilizes shims to create the lobes in bearing. Conventional methods of manufacture require accurate off-center grinding of the inside diameter of a bearing in a housing at various arc lengths depending on the number of lobes required.

B68-10444
COAXIAL CABLE STRIPPER FOR CONFINED AREAS
BROWN, J. D. /LIPSCOMB, W. G. /BOEING CO. /DATE- NOV. 1968
KSC-10167
Manual coaxial cable stripper quickly and accurately prepares a coaxial cable in a confined area. With this tool, preparation time is greatly reduced, and a completely inexperienced technician can perform the operation.

B68-10503
FLUID POWER-TRANSMITTING GAS BEARING
COLLINS, D. DE FURIA, H. EZEKIEL, F. YANG, F. /DATE- NOV. 1968
BHC-10097
Fluid power-transmitting gas bearing was designed that is essentially frictionless, stable, and highly efficient. The two basic components of this design are the base assembly and the upper plate. System could be a fluidic control system, a momentum exchange or reaction jet device.

B68-10507
ELECTRONIC COMPONENT RELIABILITY ANALYSIS
BY DATA REDUCTION SYSTEM
DINH, H. M. HURT, D. G. /BOEING CO. /DATE- NOV. 1968
NPS-10253
Mechanized data reduction system has been designed to take advantage of the data handling capacity of computers and to reduce voluminous and unrelated test and performance data to a format useful for the rapid analysis of electronic component reliability.

B68-10509
ROTARY-KNIFE STRIPPER FACILITATES REMOVAL OF X-RAY FILM FROM PACK
MITCHELL, D. K. /BOEING CO. /DATE- NOV. 1968
NPS-14583
Rotary-knife stripper facilitates removal of X-ray film from the daylight pack paper sleeve. The new stripper is rectangular, approximately 4 inches wide, 5 inches high, and 7 inches long.

B68-10512
FASTENER, A POSITIVE-LATCH, SIMPLE-RELEASE
BRODQUIST, J. FENSE, T. HART, F. KATZ, M. /BENDIX CORP. /DATE- NOV. 1968
MSC-13061
Fastener /Bendix/ has recently been designed to furnish positive lock and release characteristics that positively prevent accidental adverse functions of lock or release.

B68-10515
FATIGUE OF REINFORCED CONCRETE BEAMS UNDER DYNAMIC LOADING
KATZ, G. C. /WILLY LABS. /DATE- DEC. 1968
NPS-14920
Study, consisting of a literature survey and experiments, determined the strength properties of reinforced concrete beams subjected to vibrational stresses.

B68-10530
VERTICAL BORING MILL CAPACITY IS INCREASED
YOUNG, R. J. /AM. ROCKWELL CORP. /DATE- NOV. 1968
NPS-16196
Commercially available vertical boring mill with a nominal capacity to 27 feet in diameter of workpiece has been modified in-shape to handle work up to 36 feet in diameter. Capacity was increased by adding extension saddles to the mill support columns on each side.

B68-10531
DESIGN ELIMINATES RADIAL THERMAL EXPANSION IN TURBINE STATOR COMPONENTS
ANDERSON, R. J. DIETRICH, J. A. /AM. ROCKWELL CORP. /DATE- NOV. 1968
NPS-18146
Stress levels created in turbine stator components because of differential thermal expansion was eliminated by incorporation of a semifloating design, in which the stator vanes are retained by the outer ring assembly and radially piloted in the inner ring.

B68-10534
IMPROVED THERMAL TREATMENT OF ALUMINUM
ALLOT 7075
COOKS, F. H. /TYCO LABS. /DATE- DEC. 1968
NPS-20083
Newly developed tempering treatment considerably increases the corrosion resistance of 7075-T6 alloy and concomitantly preserves its yield strength. The results of tests on samples of the alloy subjected to the above treatments show that when the overaging period is 12 hours at 325 degrees F, the alloy exhibits a yield strength of 73,000 psi.

B68-10535
FIBROTECHNIC-ACTUATED CABLE RELEASE
HANSON, R. W. /DATE- DEC. 1968
XNP-10049
Remote, unattended means has been designed and used to practice that retains and then releases an attached load by means of a restrained cable. The cable is released by an electrical impulse on signal.

B66-10537
FLUIDIC TRANSDUCER GIVES PRESSURE OUTPUT AS A FUNCTION OF TEMPERATURE
WALL, E. B. /HARVIE CO./ DATE-DEC. 1966 REAR-SEE ALSO B66-10536
KRC-10093
Fluidic transducer gives a pressure output signal that is a direct function of the differential temperature sensed by the device. The transducer is arranged as a bridge.

B66-10538
FLUIDIC ANALOG AMPLIFIER
MC EWING, C. F. /HARVIE CO./ DATE- DEC. 1968 REAR-SEE ALSO B66-10537
KRC-10102
Five-stage, high-gain, push-pull fluidic amplifier provides increased range and improved linearity. The fluidic amplifier was designed to operate in conjunction with a fluidic transducer.

B66-10540
TUBE JOINT LEAK REPAIR COUPLING
PECKWONG, W. R. /W. A. ROCKWELL CORP./ DATE- DEC. 1968
KRC-15022
Tube joint repair coupling consists of 2 split seals, 1 male split nut, 1 female split nut, and two aligning pins. Each assembly consists of 2 half-shell sections which, when engaged, are held together by a dovetail joint and an aligning pin.

B66-10549
HIGH-TORQUE PRECISION STEPPING DRIVE
KASPERWICK, W. E. DATE- NOV. 1968
R-P-14772
Stepping drive has been designed for precise incremental angular positioning of scale models of spacecraft about a horizontal axis in order to accurately measure antenna receiving and transmitting characteristics. Positioning is insured by spring-loaded, self-locking plungers.

B66-10550
CONTACT-SPRING FORKING MACHINE FOR FLAT CONDUCTOR CABLE RECEPTACLES
ANGELO, W. MARTINIEK, H. G. DATE- DEC. 1968
R-P-10246
Machine tool produces beryllium-copper contact springs for FCC /flat conductor cable/ feed-through receptacles. The springs are heat-treated and plated to impart the required electrical contact properties.

B66-10551
WELD PREPARATION TOOL FOR PIPES AND TUBING
WALLACE, R. D. DATE- DEC. 1968
KSC-09955
Improved scarfing tool consists of a mountable, roller-guided assembly. It converts a conventional routing machine for relatively precise field preparation of pipes for welding.

B66-10567
RADIAL ZPION TUBE DE DESIGN CHARTS
RMONIE, R. E. DATE- DEC. 1968
LEWIS-10720
Design charts were prepared for the selection of turbine geometry corresponding to maximum turbine efficiency. Optimum values can be determined as functions of specific speed.

B66-10573
FIXTURE FACILITATES SOLDERING OPERATIONS
WHITE, C. R. /CHRYSLER CORP./ DATE- DEC. 1968
R-P-14456
Soldering fixture, designed forprinted circuit cards, is a basic bench-mounted, self-contained integral unit combining all soldering needs into a compact, readily available work station. All tools, materials, and accessories are available to provide an ideal station to perform critical soldering.

B69-10575
HOISTING FRAME FACILITATES LIFTING OF LARGE OBJECTS
COLPER, K. V. ROLOFF, D. F. /W. A. ROCKWELL CORP./ DATE- DEC. 1968
R-P-16156
Hoisting frame can be used with a standard 5-ton forklift to handle the large spreader bars, or other bulky pieces of equipment, much faster and more efficiently than by a boom or gantry crane. In addition forklifts of this type are more readily available.

B69-10008
TAPE READING FIXTURE
SPRUN- INNOVATOR NOT GIVEN /CHRYSLER CORP./ DATE- JAN. 1969
R-P-10299
Commercially available roller type desk pad provides an efficient and orderly manner of handling rolled paper tapes for proofreading. The fixture, which is modified to accept Flex-O-Writer or similar tapes and roll them in either direction, reduces the chance of damaging or soiling the tapes through repeated handling.

B69-10009
GUN FACILITATES ADHESIVE BONDING OF STUDS TO SURFACES
Davis, E. K. SIMPSON, W. G. DATE- JAN. 1969
R-P-10299
Gun facilitates adhesive bonding of thermoplastic-backed studs to smooth, hard surfaces. Such studs can be used for mounting loads where defacement with drilled holes cannot be tolerated. These studs can be easily removed by softening the plastic bonding with heat from the gun.

B69-10016
SEMITOROIDAL-DIAPHRAGM CAVITATING VALVE
DESIGNED FOR BIPROPELLANT FLOW CONTROL
YOUNG, A. L. /CHRYSLER CORP./ DATE- FEB. 1969
R-P-09704
Valve controls the flow of bipropellant liquids in rocket engines. Thrust control and cavitation of the liquids are controlled by axial deflections of a semitoroidal metal diaphragm. The valve is highly resistant to corrosion and leakage, and should be useful in food processing and chemical industries.

B69-10018
COMPOUND TAPER MILLING MACHINE
CAMPBELL, H. R. /W. A. ROCKWELL CORP./ DATE- FEB. 1969
R-P-15178
Simple, inexpensive milling machine tapers panels from a common apex to a uniform height at panel edge regardless of the panel perimeter configuration. The machine consists of an adjustable angular beam upon which the milling tool moves back and forth above a rotatable table upon which the workpiece is held.

B69-10019
BERYLLIUM FASTENER TECHNOLOGY
BLACKS, J. J. GOREN, R. F., JR. GRESZ, G. W. DATE- FEB. 1969
R-P-20306
Program was conducted to develop, produce, and test optimum-configuration, beryllium prestressed and blind fasteners. The program was carried out in four phases - phase 1, feasibility study, phase 2, development, phase 3, evaluation of beryllium alloys, and phase 4, fabrication and testing.

B69-10021
FIFTH-WHEEL FORK TRUCK ADAPTER
SMITH, F. L. /CHRYSLER CORP./ DATE- FEB. 1969
R-P-14460
Standard fifth wheel mounted on a rectangular steel structure adapted for use with a forklift truck provides a fast, safe, and economical way of maneuvering semitrailers in close quarters at plants and warehouses. One operator can move and
locate a semitrailer without disconnecting from a fork lift truck.

**B69-10030**

**MULTIPLE-ORIFICE THROTTLE VALVE**

**PITTMAN, J. S. / J. B. ROGERS, L. A. / EB/ INC. /**

DATE- FEB. 1969

M-PS-9698

Multiple-orifice throttle valve is not subject to cold welding in a vacuum environment and is compatible with strong oxidizing fluid. The valve is all metal construction using simple components that do not slide or rotate and excludes static or dynamic seals.

**B69-10044**

**ABRASION AND RESISTANT DISCHARGE VALVE DEVELOPED**

**GOTTWALL, W. L. DATE- FEB. 1969**

ARG-10219

Discharge valve capable of withstanding intense radiation and high abrasion was developed for use in a fluidized bed reactor. The valve which employs a replaceable Teflon seal, has only one moving part and is designed for remote assembly and disassembly.

**B69-10046**

**HYDRODYNAMICS OF A NEW CONCEPT OF PRIMARY CONTAINMENT BY SECRET ABSORPTION**

**FISSTEDIS, S. H. SORENSEN, H. C. DATE- FEB. 1969**

HEM-SEE ALSO ARL-7114

ARG-10242

Fluid dynamical analysis for idealized reactor system with spherical symmetry determines the effect which the destructive component of nuclear accident produces on primary containment structures. Steel strands surrounding the reactor cavity in the biological shield exhibit plastic deformation to achieve the energy absorption.

**B69-10051**

**WELDED REPAIRS OF PUNCTURED TUBE-WALLED ALUMINUM PRESSURE VESSELS**

**JONES, D. J. /BOEING CO. / DATE- FEB. 1969**

M-PS-14836

Punctures in thin-walled aluminum pressure vessels are repaired by plugging the hole with an interference-fit disc and welding the unit. The repaired vessels withstand test pressures in excess of vessel ultimate design values for 2-, 4-, and 6-inch holes in 0.202-inch-thick aluminum alloy parent material.

**B69-10052**

**HOT CRACKING STUDIES OF INCOLOY 718 WELD-HEAT-AFFECTED ZONES**

**THOMPSON, E. G. /N. AM. ROCKWELL CORP. / DATE- FEB. 1969**

M-PS-16211

Hot ductility tests, gas-tungsten-arc fillerless fusion tests, and circle patch-weld-restraint tests were conducted on Inconel 718 to better understand and correlate the weldability /resistance to hot cracking/ of the alloy. A correlation of the test results with composition, heat-treat condition, grain size, and microstructure was made.

**B69-10059**

**REIDENTIFYING HARDWARE AFTER LOSS OF SERIAL NUMBERS**

**WILLS, H. J. /N. AM. ROCKWELL CORP. / DATE- MAR. 1969**

M-PS-10133

System traces fabrication and inspection records of special hardware back to the raw material. Reidentification of hardware, after loss of serial numbers, is established by X raying all parts against and comparing the new film with the original, whose numbers were previously recorded on serialized documents.

**B69-10062**

**TWO-AXIS WINCH INSTALLER FOR HEAVY DUCTS IN COMPRESSED SPACE**

**COX, E. P. /N. AM. ROCKWELL CORP. / DATE- MAR. 1969**

M-PS-14254

Two-axis winching and traversing device is used for installing liquid-propellant rocket-engine fuel and liquid oxygen suction ducts between the valves and the rocket engine on a test stand. The device raises and maneuvers the duct into the required position where it can be safely installed by mechanics.

**B69-10069**

**INFLATABLE BLADDER TO FACILITATE HANDLING OF HEAVY OBJECTS - A CONCEPT**

**MC GOLDRICK, G. J. /N. AM. ROCKWELL CORP. / DATE- MAR. 1969**

M-PS-16272

Inflatable bladder facilitates the removal of heavy, highly finished metal parts from tote boxes or shipping containers. The proposed concept permits removal without danger of damage to the parts or injury to handling personnel.

**B69-10071**

**FATIGUE FAILURE IN METAL BELLows DUE TO FLOW-INDUCED VIBRATIONS**

**DANIELS, C. M. FARBOO, G. G. /N. AM. ROCKWELL CORP. / DATE- MAR. 1969**

M-PS-18363

To prevent fatigue due to flow-induced vibrations in metal bellows connected to ducts carrying liquid hydrogen, a study was made which shows that the flexure lines are in general a function of the vibration coupling between the fluid and bellows structure, and the nature of the external environment.

**B69-10076**

**NOZZLES FOR SIZE RECLASSIFICATION OF MICROPARTICLES**

**LEONARDI, S. J. SMITH, J. /MOBIL RES. AND DEVELOP. CORP. / DATE- MAR. 1969**

LEWIS-10705

Reclassified reclassifying nozzles, commonly used with mist lubrication systems, creates larger particle sizes in the mist. The concept used involves the wetting out of particles within the nozzle with continuous re-atomization of the resulting liquid film by passing gas through the nozzle.

**B69-10083**

**DIRECT INDICATION OF PARTICLE SIZE IN FLUIDIZED BEDS**

**KNUDSEN, I. E. OLESEN, W. F. DATE- MAR. 1969**

HEM-SEE ALSO ARL-6907

ARG-10138

Differential pressure measurements indicate particle size and particle size distribution in fluidized beds. The technique is based on the relationship between bed particle size and the intensity and frequency of fluctuations. By measuring the fluctuations, an estimate of average particle size of the fluid-bed material can be made.

**B69-10085**

**TOBE WELDING AND BRAZING**

**POONRAM, R. M. DATE- APR. 1969**

M-PS-20348

Brochures outline the tools, equipment, materials, and techniques used for joining tubes by automatic and semiautomatic welding and brazing. A few of the metals being joined are stainless steels of various diameters and thicknesses. Techniques that have been developed for on-site or work-bench repair.

**B69-10086**

**TECHNIQUES FOR CONTROLLING WARPING AND RESIDUAL STRESSES IN WELDED STRUCTURES**

**COLE, D. G. /HARRERY ENG. LABS. / DATE- APR. 1969**

M-PS-20307

Thermal pattern alteration technique controls both distortion and residual stresses in aluminum weldments. Cryogenic liquids and auxiliary heat sources are used to produce contraction and expansion of metal in the vicinity of the weld in such a manner as to counterbalance expansion and contraction caused by welding.

**B69-10100**

**ELECTROMECHANICAL ROTARY ACTUATOR**
COLD MACHINING OF HIGH DENSITY TUNGSTEN

Electromechanical rotary actuator, which operates over wide temperature range, contains a spring stop which has been calculated to limit internal deceleration loads to a magnitude equal to stall torque. Cryogenic capability is obtained by using dry lubricant on the gears and no lubrication on the bearings.

869-10109
CALIBRATED WATER TANK FACILITATES PROOFLOADING OF CRANES AND DERRICKS
KOPPI, R. K. /BOEING CO./ DATE- APR. 1969
M-FS-15059
Calibrated steel water tank provides the weight loads required for proof-testing of cranes and derricks. The use of the water tank provides a safe, fast, economical method of proof-loading cranes and derricks.

869-10110
COLD MACHINING OF HIGH DENSITY TUNGSTEN AND OTHER MATERIALS
ZIEGLER, R. /DATE- APR. 1969
ABG-10289
Cold machining process, which uses a sub-zero refrigerated cutting fluid, is used for machining refractory or reactive metals and alloys. Special carbide tools for turning and drilling these alloys further improve the cutting performance.

869-10119
MAGNETRON TUNER HAS LOCKING FEATURE
FANTUCCI, V. J. /METCO, INC./ DATE- APR. 1969
HWP-07771
Magnetron tuning arrangement features a means of moving a tuning ring axially within an anode cavity by a system of reduction gears engaging a threaded tuning shaft of load screw. The shaft positions the tuning ring for the desired magnetron output frequency, and a washer prevents backlash.

869-10127
BATTERY CASE SHEAR
PATRO, S. DATE- MAY 1969
GSFC-10783
Hand operated shear removes a battery case without disturbing the internal components which are to be tested. It consists of three tool-steel elements, the cutter blade, and a hand lever that provides the mechanical advantage required to cut steel.

869-10120
SELF-STARTING CIRCUIT FOR SWITCHING REGULATORS
SCHROEDER, R. B. SCHL, G. /ELECTRO-OPT. SYSTEMS/ DATE- MAY 1969
LWIS-10606
Schematic is provided on a self-starting circuit for a switching regulator which uses a logic circuit to sense a change in output voltage and provides a correction signal for dc power sources. With this device, the total power consumed by the logic circuit is held to a minimum, and the circuit receives the optimum regulated supply power.

869-10137
HELICAL TAPE FORMING DEVICE
BUSH, J. E. COLT, P. T. DATE- MAY 1969
GSFC-10830
A device that is not limited to a minimum thickness or width-to-thickness ratio, a very thin metal tape or ribbon is formed into a continuous flat wound helical coil. The device imparts the desired circular shape by squeeze rolling it with an unequal force across its width.

869-10141
MECHANICAL PROPERTIES OF A LAP JOINT UNDER UNIFORM CLAMPING PRESSURE
DILLER, S. V. KETTRELL, A. F. /McDONNELL DOUGLAS CORP./ DATE- MAY 1969
N-FS-14538
Equations were derived for the load deflection relations, the energy dissipation per cycle, and the instantaneous rate of dissipation for a lap joint idealized as two overlapping plates clamped together under a uniform clamping pressure.

869-10140
ADVANCES IN ALUMINUM ANODIZING
DALE, L. R. /REYNOLDS METALS CO./ DATE- MAY 1969
M-FS-16600
White anodize is applied to aluminum alloy surfaces by specific surface preparation, anodizing, pigmenting, and sealing techniques. The development techniques resulted in alloys, which are used in space vehicles, with good reflectance values and excellent corrosive resistance.

869-10145
MIXING WELD GASES OFFERS ADVANTAGES
MAT, J. L. MENDENHALL, R. M. /NA. ROCKWELL CORP./ DATE- MAY 1969
M-FS-16813
Argon added to helium during gas tungsten arc cover-pass welding in the horizontal position results in a better controlled wider bead width, increased arc stability, and reduction in heat input. Adequate filler material wetness and penetration pass coverage is possible with only one pass.

869-10150
RENEWAL OF CORROSION PROTECTION OF COATED ALUMINUM AFTER WELDING
HEICIGS, B. R. DATE- MAY 1969
M-FS-20361
Effectiveness of conversion coatings designed to protect aluminum alloys against atmospheric corrosion is reduced after exposure to high temperature or welding. Damaged coating should be manually stripped six inches from the weld and then recoated by sponge or spray with the original solution.

869-10164
DETACHABLE CASTER ADAPTER
MORB, R. J. /NA. ROCKWELL CORP./ DATE- AUG. 1969
MSC-91275
Detachable caster adapter moves heavy welding tables when fork lift trucks are not practical. A support saddle on the adapter, connected to the caster platform by means of a hinge, fits the leg of the welding table, but can be modified to fit other leg configurations.

869-10178
DESIGN AND TESTING OF LIQUID HYDROGEN-COOLED, ULTRAHIGH-SPEED BALL BEARINGS
M-FS-19463
Large-bore, liquid hydrogen-cooled, ultrahigh-speed, rolling contact bearings of an optimum design allow optimization of large rocket engine turbopumps in which bearing speed is a limiting factor. Optimum design for the bearings resulted from an application of liquid hydrogen used as a coolant.

869-10180
SPACE-SAVING HOIST FOR TANK MANHOLES
SCHRAB, W. R., JR. /NA. ROCKWELL CORP./ DATE- JUL. 1969
M-FS-16508
Working platform and collapsible basket facilitate entry of men with equipment into the overhead manhole of a deep tank. A winch and pulley rigging hold the basket which is suspended in the manhole. The basket is suspended at three points without the rig impinging on the area of the manhole.

869-10180
JOURNAL BEARING FOR CURVED SURFACES
REDMON, J. W. DATE- JUN. 1969
M-FS-20423
Optimizing bearing length and permissible axis
B69-10183
ASTRONAUT’S TOOL FOR WITHDRAWING/REPLACING COMPUTE CARDS
WEST, R. L. /SPERRY RAND CORP./ DATE- JUL. 1969

The tool allows astronauts to withdraw and replace Apollo Telescopic Remote control computer cards. It is easily manipulated by a gloved hand, provides positive locking of a withdrawn card, and has visible locking device.

B69-10184
ADJUSTABLE WRENCH FOR ELECTRONIC CONNECTORS
JOHNSON, W. C. /ROCKWELL/ DATE- JUN. 1969

A standard crescent wrench has been modified to provide a means whereby one adjustable tool can be used with all sizes of electronic connectors. The machined wrench jaws provide leverage for engaging the standard size slots on the different connectors.

B69-10190
TOOLS FOR APPLYING LEAD TAPE TO FLAT CONDUCTOR CABLE FOR CHEMICAL STRIPPING

Two tools facilitate chemical stripping of insulation on flat conductor cables. A tape pressing tool and a tapping fixture apply adhesive lead tape with the proper amount of pressure to protect the remaining insulation from the chemical stripping solution.

B69-10199
TOOLS MADE OF ICE FACILITATE FORMING OF SOFT, STICKY MATERIALS
HARRIS, J. E. /BOEING CORP./ HANSY, J. G., JR.
SCHINBECKLER, K. D. DATE- JUN. 1969

Tools made of ice facilitate the foaming or shaping of materials that are soft and sticky in the uncured state. The low-temperature of the ice slows the curing of the material, extending the working time available before setup. Handling problems are eliminated because the material does not adhere to the tool, and the melting ice serves as a lubricant.

B69-10202
PROPOSED TECHNIQUE FOR VERTICAL ALIGNMENT OF A CRANE’S CABLE
GEA, J., JR. /N. AM. ROCKWELL CORP./ DATE- JUN. 1969

A vertical alignment technique senses the attitude of a crane’s cable and displays any deviation from the vertical. The system consists of a detector assembly fixed to the boom and a display scope located in the cabin. It has potential application with either fixed boom cranes or ganttries.

B69-10209
DETERMINATION OF THE ABSOLUTE CONTOURS OF OPTICAL FLATS
PRIER, W. DATE- JUL. 1969

Hermon’s procedure is used to determine true absolute contours of optical flats. Absolute contours of standard flats are determined and a comparison is then made between standard and unknown flats. Contour differences are determined by deviation of Pizeau fringes.

B69-10227
ELECTROCHEMICAL SINTERING PROCESS FOR PRODUCING ELECTRODES FROM CADMIUM FELT AND A NICKEL OR SILVER BASE
COLTON, L. HERRIGAN, J. P. POTTS, N. STEMMLE, J. T. WESTER, W. DATE- JUL. 1969

The electrochemical sintering process produces cadmium felt electrodes. Two pieces of cadmium felt are sandwiched around a nickel screen or silver expanded metal grid, held together by mold compression, and electrochemically sintered by being put through several charge and discharge cycles at low current density.

B69-10229
J-BEVELING OF PIPE ENDS WITH A HAND-HELD TOOL
HATUS, S. T. /BENDIX CORP./ DATE- JUL. 1969

A simple, hand-held tool is used to bevel pipe ends to facilitate welding.

B69-10231
TOOL SIMPLIFIES MACHINEING OF PIPE ENDS FOR PRECISION WELDING
HATUS, S. T. /BENDIX CORP./ DATE- JUL. 1969

A single tool prepares a pipe end for precision welding by simultaneously performing internal machining, end facing, and bevel cutting to specifications. The machining operation requires only one milling adjustment, can be performed quickly, and produces the high quality pipe-end configurations required to ensure precision-welded joints.

B69-10242
REMOTE BALANCE WEIGHS ACCURATELY AMID HIGH RADIATION
ZIEGEBRUGGER, D. R. /STRACK, A. B. DATE- JUL. 1969

Commercial beam-type balance, modified and outfitted with electronic controls and digital readout, can be remotely controlled for use in high radiation environments. This allows accurate weighing of breeder-reactor fuel pieces when they are radioactively hot.

B69-10245
REPLACEMENT OF FLUID-FILTER ELEMENTS WITHOUT INTERRUPTION OF FLOW
COUVER, J. R. /N. AM. ROCKWELL CORP. / BAND, J. B. DATE- JUL. 1969
KSC-15499

Gating-type filter assembly, preloaded with several filter elements, enables filter replacement without breaking into the operating fluid system. When the filter element becomes contaminated, a unit inner subassembly is rotated 60 degrees to position a clean filter in the line.

B69-10261
REPAIR OF HONEYCOMB PANELS WITH WELDED BREAKAWAY STUDS
BRUCE, D. F. /N. AM. ROCKWELL CORP./ DATE- AUG. 1969
KSC-15086

Damaged metallic honeycomb panels can be repaired by drilling holes and welding breakaway studs to both facing sheets. Minimal heat required for welding reduces distortion of highly stressed panels. Repairs can be made without the use of doublers and with greater strength when doublers are used.

B69-10263
PREDICTION OF PERFORMANCE OF CENTRIFUGAL PUMPS DURING STARTS UNDER PRESSURE
OSTAPINSKI, W. DATE- AUG. 1969

Method which calculates start-up characteristics of centrifugal pumps reveals a capacity to predict pressure drop characteristics of pumps with varied diffusers. Calculations are based on pump geometry, design-point flow, speed, and pressure rise, and the pump characteristics within the range of approximately ten percent of the design-point flow.
Handbook gives information on the selection and application of welding, brazing, and soldering techniques for joining various metals. Summary descriptions of processes, criteria for process selection, and advantages of different methods are given.

INSTRUCTION MANUALS FOR LIQUID PENETRANT NONDESTRUCTIVE TESTING
SP-1-09307-109309 110302 110303
Manuals provide quality control and test personnel with basic information on liquid penetrant testing. Topics covered include scope of application, equipment and materials used, test procedures, safety precautions, quality control, and comparison of liquid penetrant testing with other nondestructive testing procedures.

HANDBOOK FOR DESIGN OF CONTAINERS OF FLUIDS AND GASES FOR SPACECRAFT
CAPPS, J. E., KOEHLER, M. L. //BOEING CO./ //DATE- SEP. 1969
Handbook guides design of construction materials for liquids and gases used in rockets and spacecraft. Methods of design, fabrication, post-fabrication treatment, nondestructive testing, and repair are described in detail.

TWO-STEP ROCKET ENGINE BIPROPELLANT VALVE CONCEPT
CAPPS, J. E., FERGUSON, R. E., POHL, G. O. //DATE- AUG. 1969
Initiating combustion of altitude control rocket engines in a precombustion chamber of ductile material reduces high pressure surges generated by hypergolic propellants. Two-step bipropellant valve concepts control initial propellant flow into precombustion chamber and subsequent full flow into main chamber.

COUNTERSUNK HEADSCREW RETAINER
TUTTLE, R. S. //AM. ROCKWELL CORP./ //DATE- AUG. 1969
Pin locking technique for flush fasteners retains a screw under dynamic conditions when self-locking or lock wiring devices are not practical. Spring pin in counter sunk through one side of the screw head into the component to form a flat surface.

LEAKAGE TESTER FOR FLAT CONDUCTOR CABLE CONNECTOR
U-tube containing liquid indicates pressure differences in a leakage tester. This tube, connecting two containers, indicates the amount of leakage over a net period of time calculated from the pressure and gas volume.

TPR-PENTACARBON LINES FOR FLEXIBLE HOSES
RIGLEY, D. F. //AM. ROCKWELL CORP./ //DATE- AUG. 1969
Flexible hose handles high rates of flow under high pressures. Short lengths of tubing are overlapped to assist flexibility with much greater parallel offset.

A LABORATORY METHOD FOR PRECISELY DETERMINING THE MICRO-VOLUME-MAGNITUDES OF LIQUID FLUIDS
CLOUTIER, R. L. //BERKELEY SCI. LAB./ //DATE- AUG. 1969
Micro-volumetric quantities of ejected liquid are made to produce equal volumetric displacements of a more dense material. Weight measurements are obtained on the displaced heavier liquid and used to calculate volumes based upon the known density of the heavy medium.

ELECTROTHERMAL LINEAR ACTUATOR
DEEB, L. //DATE- AUG. 1969
Converting electric power into powerful linear thrust without generation of magnetic fields is accomplished with an electrothermal linear actuator. When treated by an energized filament, a stack of bimetallic washers expands and drives the end of the shaft upward.

FLEXIBLE HOSE FOR THERMAL COMPENSATION IN TEST MOUNTS FOR STRUCTURES
NOBAN, R. M. //DATE- AUG. 1969
Supporting system compensates automatically for the dimensional changes produced by contraction and expansion of structures undergoing thermal proofing on mounts. Structurally destructive forces would be exerted on a spacecraft in a simulator if this four bar linkage test mount was not used.

PARAMETERS FOR GOOD WELDING OF COPPER TO NICKEL
BALL, L. G. //MARTIN MARIETTA CORP./ //DATE- AUG. 1969
Quality in welding copper leads to nickel bus wires is obtained by the mass of nickel exceeding that of copper. Welding range increases proportionately with the increase in the nickel-to-copper mass ratio up to 4-to-1.

QUALITY-WELD PARAMETERS FOR MICROWELDING TECHNIQUES AND EQUIPMENT
Limited-amplitude, controlled-decay process improves the reliability of microwelding. The system consists in building a capacitor-discharge welder for control of the shape of the weld pulse. Standard welders may be modified.

REPAIRS OF WELD DEFECTS IN THIN-WALLED STAINLESS STEEL TUBES
Hand-operated tool repairs weld defects in large-diameter, thin-walled stainless steel tubes. Tool consists of a three-roll external planisher and an internal backup mandrel, both hydraulically pressurized by hand pumps, and an external restraining mandrel, which keeps the tube from turning during the planishing operations.

PRECISION MOUNTING FOR INSTRUMENT OPTICAL ELEMENTS PROVIDED BY POLYIMIDE BONDING
MOELLER, T. F. //BALL BROS. RESEARCH CORP./ //DATE- AUG. 1969
Epoxy resin-coated polyimide plastic is used for bonding materials with different thermal coefficients in applications requiring precision mounting, especially where vibrations, temperature extremes, and low pressures are encountered. Low vapor pressure of the bonding material precludes outgassing problems.
Mechanically simple, hermetically-sealed pump utilizes pumped fluid for lubrication. The rotor, having helical grooves on the outer surface, functions as both a bearing and pump.

B69-10328
A MECHANICALLY EXTENDIBLE BOOM
BACHEL, W. H. /PHILCO-FORD CORP./ DATE- SEP. 1969
NPO-11116
Series of elements connected by idle rollers and two tapes/one for extension and one for retraction/ are used in the fabrication of a telescoping boom. The boom has high strength and rigidity which will allow a gravity drop at any point in the extension cycle.

B69-10331
SHOCK-ABSORBER MOUNTINGS FOR BEARINGS
TOPITS, A., J8. DATE- SEP. 1969
NPO-10826
Inner and outer concentric rings are separated by a number of S-shaped rectangular leaf springs. The spring mounting will protect a bearing and its shaft form shock.

B69-10335
MASKING OF ALUMINUM SURFACE AGAINST ANODIZING
N-FS-12364
Masking material and a thickening agent preserve limited unanodized areas when aluminum surfaces are anodized with chromic acid. For protection of large areas it combines well with a certain self-adhesive plastic tape.

B69-10342
AUTOMATIC FILTER-BLOWBACK SYSTEMS USED WITH SINTERED-METAL FILTERS
CARLS, E. L. LEVITZ, W. M. DATE- AUG. 1969
ARG-10328
Sintered-metal filters remove entrained particulate solids from the fluid-lub effluent-gas stream. Removal prevents loss of material from the reactor or contamination of the gas stream.

B69-10343
DESIGN OF A STRAIN-GAGE PROBE
KOLBA, V. M. VESTER, D. L. DATE- AUG. 1969
ARG-10338
Strain-gage spacer probe uses the deflection of a leaf spring to measure strain in a long, slender beam nondestructively. The selected gage is of the smallest practical size, as thin as possible and yet of a standard type.

B69-10345
SURFACE PROFILOMETER FOR EXAMINING GRAIN-BOUNDARY GROOVES
JECH, R. E. RYALD, D. W. DATE- AUG. 1969
ARG-10246
Surface profilometer, consisting primarily of commercially available components, measures surface topographical features accurately and precisely. It shows improvement over the interferometric technique in measurement of grain-boundary grooves formed during annealing on nickel-oxide bicrystals.

B69-10366
IMPROVED TABLE FOR CUTTING AND WELDING
OLIVER, D. R. /W. R. ROCKWELL CORP./ BARTHEZ, M. DATE- SEP. 1969
MSC-15537
Welding table covered with parallel inverted steel angles improves metal torch cutting of various types and thicknesses.

B69-10346
VIBRATION DAMPENER FOR MILLS VERTICAL
BEER, R. J. /W. R. ROCKWELL CORP./ DATE- SEP. 1969
MSC-15529
Controlled hydraulic cylinder, which serves as a vibration damper, is used as a ram support unit. Constant pressure is exerted, minimizing the cutting tool vibration.

B69-10350
REMOVAL OF RETAINING WASHERS OF THE WAFFLE-SPRING TYPE
MARAVULLO, B. A. /W. R. ROCKWELL CORP./ DATE- SEP. 1969
MSC-15531
Special tool removes quick-locking fasteners incorporating waffle-spring retaining washers without damage.

B69-10355
SEALING A RUBBER BLADDER BETWEEN TWO SECTIONS OF AN ACCUMULATOR
SCHEITL, G. M. DATE- SEP. 1969
N-FS-20403
Leak-free clamping of a two section accumulator is accomplished by a flat metallic ring molded peripherally to the rubber flange of the bladder, and an inset rubber seal bonded to the face of the flange of each section. Method maintains constant torque on the clamping bolts.

B69-10367
STRESS-TESTING OF THE THROAT OF A ROCKET'S NOZZLE
ESTES, E. G. /BC DONELL DOUGLAS CORP. DATE- SEP. 1969
NPO-10311
Test motor in which high initial pressure can be reduced suddenly provides a method of stressing rocket nozzle throat. Motors operating pressure is increased to aggravate tensile stresses in a subembed throat. Opposing compressive stresses are limited by control of the operating plastic.

B69-10373
STUDY OF HIGH-SPEED ANGULAR-CONTACT BALL BEARINGS UNDER DYNAMIC LOAD
GEBBE, T. E. KANDEL, J. W. /BATTLE TECHNICAL EXPERIMENTAL LAB./ DATE- SEP. 1969
M-FS-15461
Research program studies behavior of specific high-speed, angular-contact ball bearings. Program is aimed at detailed investigation of ball-separator behavior and lubrication surface-finish effects in a specific gyro wheel.

B69-10375
IMPROVED DESIGN OF ITEM IN HIGH SPEED ROTATING MACHINERY
DIETRICH, J. A. /W. R. ROCKWELL CORP./ DATE- SEP. 1969
M-FS-10341
Greater centrifugal radial growth of the impeller hub with respect to the impeller and nut at operating speed alleviates clamping and alignment problems in high speed rotating machinery. Design results in axial tightness and radial piloting of the impeller.

B69-10379
CONNECT-DISCONNECT COUPLING FOR PREADJUSTED RIGID SHAFTS
BALKOWSKI, A. DATE- SEP. 1969
MSC-15540
Coupling device enables a rigid shaft to be connected to or disconnected from a fixed base without disturbing the point of adjustment of the shaft in a socket or causing the shaft to rotate. The coupling consists of an externally threaded, internally slotted boss extended from the fixed base.

B69-10379
TOOL REPAIRS TUBE COMPONENTS IN SITU
MSC-15348
MSC-15363
Two versions of a portable tool repair the seats of tube fittings and the flared ends of tubing. Each version operates on the principle of lapping to remove imperfections from tube and fitting.
interfacing surfaces.

B69-10388
QUICK-RELEASE BOOK-AND-LOOP FASTENER
WHITE, R. E. DATE- OCT. 1969
MSC-10950
Joints between two rigid materials lined with velcro fabric can now be broken with ease using any one of several methods. Three such methods are applicable to either hook or loop fabric.

B69-10393
CONVERSION OF CONTINUOUS-DIRECT-CURRENT TSC WELDER TO PULSE-ARC OPERATION
LITSCH, D. E. /AM. ROCKWELL CORP./ DATE- OCT. 1969
R-FS-16411
Electronics package converts a continuous-dc tungsten-inert-gas welder for pulse-arc operation. Package allows presetting of the pulse rate, duty cycle, and current value, and enables welding of various alloys and thicknesses of materials.

B69-10396
QUICK-ACTING BACKUP TOOL FOR WELDING DUCTS
JONES, L. L. /AM. ROCKWELL CORP./ DATE- SEP. 1969
R-PS-18404
Alignment and backup tool facilitates butt welding of large-diameter ducts. It consists of a circular three-place segmented hoop, a pneumatic piston, and two shoes.

B69-10398
ONE-HANDED HAMMER-SPANNER FOR CHECKS
HARTING, J. A. /AM. ROCKWELL CORP./ SEID, S. DATE- SEP. 1969
R-PS-18581
Modified spanner wrench with a heavy hammer-piece hinged to its handle allows one hand removal of a tool from a chuck.

B69-10399
HYDRAULIC CALIPERS
BENSON, J. A. /AM. ROCKWELL CORP./ DATE- SEP. 1969
R-PS-18052
Hydraulic calipers determine area of annular openings in irregular or concealed passages. With modifications the device could be adapted to investigations of cross-sectional changes in heat flow passages, ducts, conduits, and heat exchanger elements.

B69-10400
PNEUMATIC FLOW COMPARATOR
WILSON, A. J. /AM. ROCKWELL CORP./ DATE- SEP. 1969
R-PS-18373
Pneumatic flow comparator provides single go, no-go evaluation of individual tubes. Flow characteristics of tubes used to form the walls of regeneratively cooled combustors must be identical within very close tolerances to ensure equally distributed coolant flow throughout the combustor wall.

B69-10403
PRESSURE-CONTROL PURGE PANEL FOR AUTOMATIC BUTT WELDING
LANG, E. S. /AM. ROCKWELL CORP./ VAN NAGEL, B. H. DATE- SEP. 1969
R-PS-18465
Modification of a purge panel for use in an automatic butt weld reduces the dfc in pressure between the regulators and the weld head and tube purge fitting. The invention affects air regulators for plants, regulating circuits for pneumatic valves, and automatic welding machines.

B69-10404
GENERATION OF SONIC POWER DURING WELDING
MC CAMPBELL, W. R. DATE- SEP. 1969
R-PS-20333
Generation of intense sonic and ultrasonic power in the weld zone, close to the puddle, reduces the porosity and refinement of the grain. The acoustic induction brazing power supply is modified with long cables for deliberate addition of resistance to that circuit. The concept is extensible to the welding of metals and plastics.

B69-10408
SELF-LUBRICATING GRAB
DEMOEST, R. E. DATE- SEP. 1969
R-PS-14971
Self-lubricating gear, designed for long term operation in a vacuum at high, low, and ambient temperatures, is constructed of alternating layers of metal and a dry lubricant material, such as polytetrafluoroethylene, with a suitable reinforcing material bonded into a laminated composite unit, which is machined to form a standard gear.

B69-10422
MAGNETOROTORIC FORCING FOR PRECISION SIZING AND JOINING OF LARGE-DIAMETER TUBES
BELL RIGHTS, J. B. SCHWINGLAMER, R. J. DATE- SEP. 1969
R-PS-20481
Portable electromagnetic coil enables high precision expansion or constriction and joining of large diameter metal tubes. A nonconducting mandrel or forcing die is used on the side of the tubes wall opposite the coil. The coil is insulated from the tube by a thin plastic sleeve.

B69-10437
CALIBRABLE SOLID-STATE PRESSURE SWITCH
SPOON- INVENTOR NOT GIVEN /FAIRCHILD MILLER CORP./ DATE- SEP. 1969
R-PS-20474
Pressure switch, incorporating a semiconductor light-detector coupled to an electrically controlled actuating unit, provides accurate and reliable switching over a broad range of pressures and environments.

B69-10448
AIR-CUSHION LIFT PAD
R-PS-17702
R-PS-16485
Mathematical model is formulated for an air pad which is capable of lifting a structure to a height of 0.125 inch. Design is superior to conventional air cushion devices because it eliminates flutter, vibration, heating, and pitching.

B69-10450
IMPROVED FIRE RESISTANT RADIO FREQUENCY ANECHOIC MATERIALS
BRENNER, D. A. /AM. ROCKWELL CORP./ DATE- SEP. 1969
R-PS-16500
Protective, flameproof foam covering improves the resistance to fire and surface contamination of low-cost radio frequency absorbing and shielding anechoic materials. This promotes safety of operating personnel and equipment being tested in an otherwise combustible anechoic chamber.

B69-10456
CHECKING FLAT CONDUCTOR CABLE SPACING BY MEANS OF A MOIRE PATTERN
ANGEL, W. DATE- SEP. 1969
R-PS-20426
Moiré tester detects small variations in flat conductor cable spacing by a quick, visual inspection. This device compares the cable to be tested with the negative of a very precise standard cable. The moiré, consisting of bands of light and dark zones and its irregularities, can be interpreted as errors in spacing.

B69-10458
CALIBRATION STANDARD FOR DYNAMIC EVALUATION OF A PROFILE-PLOTTER
MOULTON, K. S. /AM. ROCKWELL CORP./ DATE- SEP. 1969
R-PS-16476
Template is used for evaluation of the dynamic characteristics and accuracy of the plotter. It has a profile composed of surfaces parallel to and at known distances from a reference plane, plane, the diverse surfaces being connected by slopes of
known angles and blended by cylindrical developments of known radii.

B69-10459
FLEXIBLE RIVET-SET
RESHEMIDES, W. H. /MC DONELLI DOUGLAS CORP./
DATE- SEP. 1969
M-PS-20317
Tool sets rivets in tight places where the riveting head of the gun cannot be laid on the rivet. Tool may be made in any of many diameters and lengths, and its principle and use are not restricted to riveting.

B69-10463
IMPROVED NICKEL PLATING OF INCONEL X-750
FARNS, R. E. /N. AM. ROCKWELL CORP./
E. KUSTERS, C. A. DATE- SEP. 1969
M-PS-18604
Electroplating technique with acid pickling provides a method of applying nickel plating on Inconel X-750 tubing to serve as a wetting agent during brazing. Low-stress nickel-plating bath contains no organic wetting agents that cause the nickel to blister at high temperatures.

B69-10471
A BIAXIAL WELD STRENGTH PREDICTION METHOD
RAWZ, R. A. /DOUGLAS AIRCRAFT CO./
DATE- OCT. 1969
M-PS-20019
Method is given for design of structures which are subjected to multi-axial loading due to internal pressure. The biaxial strength of a structure can be predicted by modifying the uniaxial formula.

B69-10483
MULTI-PURPOSE TOOL Mitten
WILCOMB, R. /RAF ANALYTIC STUDY ASSOC., INC./
DATE- SEP. 1969
BG-10047 BG-10049
Tool mitten provides a low reaction torque source of power for wrench, screwdriver, or drill activities. The technique employed prevents the attachments from drifting away from the operator. While the tools are specifically designed for space environments, they can be used on steel scaffolding, in high building maintenance, or underwater environments.

B69-10495
PEW, T-B1 CUTTING FLUID
PETZS, R. L. /N. AM. AVIATION, INC./
DATE- SEP. 1969
MSC-11486
Improved cutting fluid completely controls the heat generated from machining operations, thus providing longer tool life. Fluid is especially useful in the working of plastics and replaces less efficient contaminating oils.

B69-10495
HEAT-SHRINKABLE JACKET HOLDS FLUID IN CONTACT WITH TENSILE TEST SPECIMENS
LEGER, L. J. SPIKER, I. K. DATE- OCT. 1969
MSC-13195
Heat-shrinkable plastic tubing can be quickly sealed around a metal tensile test specimen and used as a jacket for any compatible liquid.

B69-10495
IRIS-LEAF CORE RETAINER FOR A SURFACE DRILL
OLIVARI, R. /ARTIN-ARISETTA CORP./
DATE- SEP. 1969
MSC-11602
Iris-leaf core retainer insures retention of a complete sample within the drill string. Individual overlapping leaves will not rupture or tear out when they come in contact with the oncoming core.

B69-10499
TORCISONAL TUBULAR DISCONNECT
COHEN, C. E. STARKY, D. J. DATE- OCT. 1969
NPO-10704
Torque driven disconnect maintains connection on a gas supply line until desired parting occurs at a remote location. It consists of a helical plastic tube with a disconnect coupling fitted for an interference condition slip joint, and a rotationally constrained support connected to a gas source.

B69-10506
ANALYSIS OF PROBLEMS RELATED TO SLINGSHOT SHOCK MACHINE HIGH VELOCITY SHOCK TESTING
SHIPLET, J. W. DATE- OCT. 1969
NPO-11193
Slingshot device is capable of imparting a square-pulse acceleration greater than 20,000 g with a pulse duration of up to 1.5 milliseconds. A load is applied to the bungee cord and the sled is drawn back to desired length. When released it provides the desired velocity at impact.

B69-10509
BORON FIBER-REINFORCED ALUMINUM ALLOY TUBING /EXPERIMENTAL/
SCHEIBER, R. S. /N. AM. ROCKWELL CORP./
DATE- OCT. 1969
MSC-15633
Prototype of a conceptual boron fiber-reinforced tubing meets requirements for lightweight structural members subjected to high shock loads and bending stresses.

B69-10514
AUTOMATIC LEVELING AND EQUALIZING HOIST DEVICE
BROWN, R. J. /N. AM. ROCKWELL CORP./
DATE- OCT. 1969
MSC-10549
Hoist uses six equally spaced support points with the load equalized between pairs to prevent over-stressing of any one point of support. The pickup point is automatically shifted through a motor driven feedback system to level the load throughout the lifting period.

B69-10527
FLARED-TUBE FITTINGS WITH REPLACEABLE SHUT INSERTS
BALLINGER, Y. J. /N. AM. ROCKWELL CORP./
DATE- OCT. 1969
MSC-15375
Three design modifications of conventional flared-tube fittings provide easily replaceable cone seats for specific applications in fluid flow lines.

B69-10527
TOOL FOR READING PSYCHROMETRIC CHARTS
DE ANGELO, F. T. /BOEING CO./
DATE- OCT. 1969
KSC-10358
Three-legged, clear plastic tool is designed so that the angles of each leg correspond with the angles of psychometric chart construction for each of the three required scales. The appropriate edges are tapered to the chart surface.

B69-10548
RHODIUM-PLATED BARRIER AGAINST HIGH TEMPERATURE FUSION BONDING
JANIS, E. C. /N. AM. ROCKWELL CORP./
DATE- DEC. 1969
M-PS-92135
Very thin rhodium electro-deposit plating eliminates the need for corrosion-resistant protection on silver surfaces and has no effect on the pliability characteristics of the plated surface.

B69-10545
INTEGRAL VALVE PROVIDES AUTOMATIC RELIEF AND REMOTE VENTING
GILMORE, R. P. /CHRYSLER CORP./
DATE- OCT. 1969
MSC-12134
In-line, pilot-operated, differential area, poppet type valve provides both automatic relief of a tank at a precise over-pressure and remote control of tank venting. Relief and vent operations are separate functions incorporated in an integral valve package.

B69-10547
SINGLE-ELEMENT COAXIAL INJECTOR FOR ROCKET FUEL
B69-10573
CONTROL FOR MAINTAINING CONSTANT LEVEL OF A CRYOGENIC LIQUID
LIBERNOTT, J. DATE- OCT. 1969
NPO-11177
Pressure formed as the cryogenic liquid vaporizes is used to pump new cryogenic liquid from a storage reservoir. Changes in volume of a gas resulting from changes in temperature actuate a valve which either replenishes the depleted liquid in the vessel or vents the evolving gas to the atmosphere.

B69-10588
TWO-FUNCTIONAL SEAL FOR ROSE CONNECTION
RICHARDSON, E. B. /RICHARDSON, H./DOUGLAS AIRCRAFT CO./ DATE- OCT. 1969
F-PS-14062
Seal, machined from a plastic material, prevents liquid hydrogen leakage from hose connections. It serves as a block-type seal supporting maximum loading of the poppet with slight elastic deflection or as a lip-type seal that is deformed elastically in bending, tension, or compression by the seated poppet.

B69-10590
MOUNT CARLO SIMULATION BY COMPUTER FOR LIFE-CYCLE COSTING
GRALOV, P. H. /BOEING CO./ LABSON, W. J. DATE-KOV. 1969
F-PS-14754
Prediction of behavior and support requirements during the entire life cycle of a system enables accurate cost estimates by using the Monte Carlo simulation by computer. The system reduces the ultimate cost to the procuring agency because it takes into consideration the costs of initial procurement, operation, and maintenance.

B69-10609
EXPERIMENTAL PROGRAM TO INVESTIGATE TRANSIENT FLOW AROUND PROTECTORAES
ROBERTSON, J. L. /YALE LABS./ DATE- NOV. 1969
F-PS-20037
Transverse and steady state aerodynamic flow of turbulent boundary layers are investigated for generalized cylindrical projections and several specific configurations used on the Saturn 5 launch vehicle. A transonic wind tunnel gave generalized information.

B69-10615
DESIGN OF MULTILAYER INSULATION SYSTEMS
ARC-10166
Analytical models for insulation system heat transfer studies the types of materials best suited for a near solar environment. This multilayer insulation system for spacecraft can operate at temperatures in the 300 to 700 degree K range.

B69-10634
HERETICALLY SEATED VIBRATION DAMPER
WEATLIF, D. G. /GEN. MOTORS CORP./ DATE- NOV. 1969
MSC-10959
Simple fluidic vibration damper for installation at each pivotal mounting between gimbals isolates inertial measuring units from external vibration and other disruptive forces. Installation between each of the three global axes can damp vibration and shock in any direction while permitting free rotation of the gimbals.

B69-10649
HIGH-PRESSURE SEALS FOR ROTARY SHAFTS
GOLDEN, C. P. /H. AM. ROCKETEER CORP./ DATE- NOV. 1969
F-PS-18548
High pressure seals for rotating shafts are machined from a polycrystalline. It is more durable and cheaper than the older seals of plastic coated metal and works at temperatures between minus 400 degrees and plus 500 degrees F.

B69-10661
POLE BEARING SUPPORT FOR HIGH-SPEED ROTOR
LAFAYE, L. /icip Cooper./ DATE- NOV. 1969
Eq-10315
High speed rotors are supported initially by flexible metal foil and then on an air film generated by a self-acting hydrodynamic effect. The flexibility of the bearing enables it to conform and deflect locally, wear is less severe, self-alignment and accommodation of thermal distortion is permitted.

B69-10684
A ROTATING, NONCAPILLARY HEAT PIPE
GRAY, V. H. DATE- DEC. 1969
LENIS-10298
Hollow rotating shaft operates like a heat pipe, with a small, sealed-in inventory of fluid that transfers heat by vaporizing at the hot end and condensing at the cold end. This heat pipe utilizes large centrifugal forces for pumping the condensate, and rotation to enforce liquid-vapor separation.

B69-10696
PRECISELY REPEATABLE ROTARY MECHANISM
JOHNSON, R. G. DATE- DEC. 1969
NFO-10707
Precision-finished lead screw and a fitted mating nut member produce a linear translatory motion. This motion is transformed to a rotary movement of a pivotal platform member. The transformation is achieved by coupling the nut member and the platform member through a pair of opposed, taut, flex bands.

B69-10704
IMPROVED SOLENOID VALVE DESIGN
EVANS, J. DATE- DEC. 1969
GSFC-10607
Modified solenoid valve reduces valve seat loading by eliminating off-center operation of the armature, reducing the poppet size and spring-cushioning its impact, and reducing armature impact with a poppet guide stop.

B69-10785
SHAKER SLIP-PLATE ADAPTER
RINN, G. S. /MC DONELL-DOUGLAS CORP./ DATE- DEC. 1969
F-PS-14063
Magnesium adapter ties in all of the attachment bosses on a horizontal slip table and makes a rigid coupling which terminates in a single row of attachment bosses at the edge of the horizontal plate. This eliminates ineffective dissipation of the driving force in vibration tests.

B69-10804
EXPLOSIVE BONDING OF METAL-MATRIX COMPOSITES
EECS, O. Y. DATE- DEC. 1969
F-PS-20657
Explosive bonding process produces sheet composites of aluminum alloy reinforced by high-strength stainless steel wires. The bonds are excellent metallurgically, no external heat is required, various metals can be bonded, and the process is inexpensive.

B69-10816
FLUID SAMPLE COLLECTION AND STORAGE DEVICE
CORMIER, D. /WILLIAMS CORP./ STONE, S. E. DATE- DEC. 1969
MSC-10452
Fluid sampling device collects a sample from a low-pressure fluid system and stores it for an indefinite period, with little risk of contamination of either the sample or the
surrounding environment. The collector /a plastic bladder/ is separated from the sampler after a sample is collected.

06 COMPUTER PROGRAMS

B67-10169
STUDY OF DYNAMIC RESPONSE OF ELASTIC SPACE STATIONS
NARANGA, F. W. AM. AVIATION/ DATE- JUN. 1967
NPO-10124
Analytical procedure and the requisite computer programs compute the dynamic responses of two large elastic space stations. The linearized equations of motion are derived from lagranges equations. Then the normal modes of free vibration of the nonrotating space station are used to define the elastic degrees of freedom.

B67-10172
SPACE TRAJECTORIES PROGRAM FOR IBM 7090
NPO-10125
Space trajectories Program studies the motion of a space probe confined to the solar system and influenced by the nonspherical Earth and Moon, and the point masses defined by the Sun, Venus, Mars, and Jupiter. It is written in the FORTRAN assembly program language.

B67-10173
LINEAR CIRCUIT ANALYSIS PROGRAM FOR IBM 1620 MONITOR III, 1311/1445 DATA PROCESSING SYSTEM /CIRCS/
WIFFIELD, J. DATE- JUL. 1967
NPO-10131
CIRCS in modification of INSILP Circuit Analysis Program, for use on smaller systems. This data processing system retains the basic dc, transient analysis, and FORTRAN 2 formats. It can be used on the IBM 1620/1311 Monitor I Mod 5 system, and solves a linear network containing 15 nodes and 45 branches.

B67-10193
COMPUTER PROGRAM SIMULATES PHYSICAL SYSTEMS BY SOLVING THE SIMULTANEOUS DIFFERENTIAL EQUATIONS DESCRIPTION OF THE SYSTEM/ MARKOWITZ, R. J. DATE- JUN. 1967
NPO-10019
DIANA, a digital-analog simulation program for IBM 1620 2 computer, simulates physical systems by solving the simultaneous differential equations describing the systems. It expands and optimizes the input-output capabilities, permits additional flexibility in midstream program alternation, and minimizes the computational time.

B67-10217
A MODAL COMBINATION COMPUTER PROGRAM FOR DYNAMIC ANALYSIS OF STRUCTURES
BARNFORD, R. M. DATE- JUN. 1967
NPO-10129
Computer program determines the response of a composite linear structure to sinusoidal base motion of a restrained structure or sinusoidal forces of a free structure. This program is applied to problems of testing practices and closed-loop stability of autopilot controlled space vehicles. It is written for the IBM 7094 in FORTRAN 4 language.

B67-10222
SUBROUTINES GROUP AND DEAST SIMPLIFY OPERATION OF AUTOMATIC DIGITAL PLOTTER
NWC-10094
FORTRAN language subroutines enable the production of a tape for a 360-30 tape unit that controls the CALCOMP 566 Digital Incremental Plotter. This provides the plotter with instructions for graphically displaying data points, plotting proper labeling of axes, numbering, lettering, and tic marking.
06 COMPUTER PROGRAMS

N-PS-2298
Dimensionless multiopion systems compiler
computer program constructs and analyzes a
behavioral model of any arbitrary one, two, or
three dimensional lumped parameter representation
of a physical system. It automatically optimizes
the utilization of computer core space and is more
general and versatile than BETA.

B67-10279
COMPUTER PROGRAM FOR DETERMINATION OF
NATURAL FREQUENCIES OF CLOSED SPHERICAL
SANDWICH SHELLS
WILKINSON, J. P. D. /N. AM. AVIATION/ DATE- AUG.
1967
NDC-1286
Solutions for the axial symmetric action of an
elastic spherical sandwich shell have been
obtained from a theory of shells which includes
the effects of transverse shear deformation and
rotary inertia. Frequency equations and mode
shapes are derived for the full vibrations of a
closed spherical shell.

B67-10280
MASTER CONTROL DATA HANDLING PROGRAM USES
AUTOMATIC DATA INPUT
ALLISTON, W. DANIEL, J. /BOEING CO./ DATE- AUG.
1967
N-PS-2259
General purpose digital computer in program is
applicable for use with analysis programs that
require basic data and calculated parameters as
input. It is designed to automate input data
determination for flight control computer programs,
but it is general enough to permit application in
other areas.

B67-10281
COMPUTER PROGRAM PREDICTS THERMAL AND FLOW
TRANSIENTS EXPERIENCED IN A REACTOR LOSO-
OF-FLOW ACCIDENT
HALL, C. J. /GEN. DYNAMICS/ DATE- AUG. 1967
NDC-10054
Program analyzes the consequences of a
loss-of-flow accident in the primary cooling
system of a heterogeneous light-water moderated
and cooled nuclear reactor. It produces a
temperature matrix 36 x 47 /x,y/ which includes
fuel surface temperatures relative to the time
the pump power was lost.

B67-10287
COMPUTER PROGRAM PROVIDES LINEAR SAMPLES-
DATA ANALYSIS FOR HIGH ORDER SYSTEMS
DUNN, R. B. /N. AM. AVIATION/ DATE- AUG. 1967
N-PS-12821
Computer program performs transformations in the
order S-to-W-to-Z so that analytic functions to
be completed in the W-plane. The method is based
on a direct transformation from the S-plane to
the W-plane. The W-plane poles and zeros are
transferred into Z-plane poles and zeros using the
bilinear transformation algorithm.

B67-10306
COMPUTER PROGRAM USES MONTE CARLO TECHNIQUES
FOR STATISTICAL SYSTEM PERFORMANCE ANALYSIS
WOHL, D. F. /N. AM. AVIATION/ DATE- AUG. 1967
N-PS-2239
Computer program with Monte Carlo sampling
methods determines the effect of a component
part of a unit upon the overall system
performance. It utilizes the full statistics of the
disturbances and misalignments of each
component to provide unbiased results through
simulated random sampling.

B67-10307
COMPUTER PROGRAM DETERMINES THERMAL
ENVIRONMENT AND TEMPERATURE HISTORY OF
LUNAR ORBITING SPACE VEHICLES
HEAD, R. H. MITCHELL, K. L. /BOEING CO./ DATE-
AUG. 1967
N-PS-12916
Program computes the thermal environment of a
spacecraft in a lunar orbit. The quantities
determined include the incident flux /colder and
lunar emitted radiation/, total radiation absorbed
by a surface, and the resulting surface
temperature as a function of time and orbital
position.

B67-10309
STUDY OF RANDOM PROCESS THEORY AIDS DIGITAL
DATA PROCESSING
RODHEE, G. W. /CORNELL AERON. LAB./ DATE- AUG.
1967
N-PS-1475
Study of techniques for all random process
theory, including stationary, nonstationary,
and Gaussian bivariate, aids digital data
processing. It presents material on digital
filtering, correlation function, optimal spectral
smoothing, deterministic data processing, and
nonstationary spectrum and correlation analyses.

B67-10310
COMPUTER PROGRAM FOR MASS OPTIMAL SOLUTIONS
OF SOME ENDPOINT TRAJECTORY PROBLEMS
BENNITT, A. C. ZIMMER, C. D. CHABSON, K. S.
/BOEING Co./ DATE- AUG. 1967
N-PS-12976
Optimization of trajectories for propellant
consumption is achieved by incorporating a coast
arc device into a three-dimensional fixed
end-point steepest ascent computer program. It
calculates a trajectory between any two points in
space defined by initial and final position
tectors, without restrictions on thrust or orbit
characteristics.

B67-10319
TRANSIENT ANALYSIS GENERATOR /TAG/ SIMULATES
BEHAVIOR OF LARGE CLASS OF ELECTRICAL
NETWORKS
THOMAS, W. J. DATE- SEP. 1967
NPO-10031
Transient analysis Generator program simulates
both transient and dc steady-state behavior of a
large class of electrical networks. It generates
a special analysis program for each circuit
specified in an easily understood and manipulated
programming language. A generator or
preprocessor and a simulation system make up the
TAG system.

B67-10323
COMPUTER PROGRAM UTILIZES FORTRAN 4
SUBROUTINES FOR CONTOUR PLOTTING
BLOCH, R. GABER, R. LAWSON, C. DATE- SEP. 1967
NPO-10127
Computer program constructs lists of xy-coordinate
pairs that define contour curves for an arbitrary
given function of two variables and transmits
those lists to plotting equipment to produce
contour plots. The principal subroutines,
CONTR, is independent of any specific system of
plotting subroutines and equipment.

B67-10327
MULTIPLE CORRELATION COMPUTER PROGRAM
DETERMINES RELATIONSHIPS BETWEEN SEVERAL
INDEPENDENT AND DEPENDENT VARIABLES
KASPAR, R. /N. AM. AVIATION/ NEWSBNO, J. E.
DATE- SEP. 1967
N-PS-13024
Relationships between independent and dependent
variables are determined by multiple correlation
computer program. This is applied to research
and experimental design and development of complex
hardware and components that require test
programs.

B67-10328
COMPUTER OPTIMIZATION PROGRAM FINDS VALUES
FOR SEVERAL INDEPENDENT VARIABLES THAT
MAXIMIZE A DEPENDENT VARIABLE
WALACH, E. J. /N. AM. AVIATION/ DATE- SEP. 1967
N-PS-13030
Computer program finds values of independent
variables which maximize the dependent variable.
This optimization program has been used on the
F-1 and J-2 engine programs to establish minimum
film coolant requirements.
Computer program provides elastic analysis of highly redundant structural configurations. Punched output of flexibility and stiffness matrices are obtained for use in a natural frequency analysis. Member reaction output in card or tape form is used in conjunction with other programs to perform stress analyses.

Computer program determines steady-state performance characteristics of active and passive linear circuits. The ac analysis program solves the basic circuit parameters. The compiled program solves these circuit parameters and in addition provides a more versatile program by allowing the user to perform mathematical and logical operations.

Computer program, an Iterative Scheme using a Direct Solution, obtains double precision accuracy using a single-precision coefficient matrix. ISUDS solves a system of equations written in matrix form as X equals B, where A is a square non-singular coefficient matrix, X is a vector, and B is a vector.

Computer program VARI-QUIR 3 provides Gauss-Seidel type of solution with inner and outer iterations for steady-state, multigroup, two-dimensional neutron diffusion equations. The program has no restrictions on any of the input parameters such as the number of groups, regions, or materials.

Computerized parts list system compiles and summarizes all pertinent and available information on complex new systems. The parts list system consists of three computer subroutines - list of parts, parts numerical sequence list, and specifications list.

Computer program generates average value data tapes.

Computer program uses Bernoulli formula and Newton-Raphson method to provide steady state fluid flow analysis of line pressure drop in a system with six outlets for each of two main storage tanks. Program flexibility arises in the ease with which changes in the fluid line geometry can be made.

Computer program analyzes generalized environmental control and life support systems.

Computer program generates magnetic output tape containing time and averaged data values of a specified number of major frames over a specified time interval. A decommutation system is used to acquire the raw data, which is then reformatted and averaged.

Computer program provides steady state analysis for liquid propellant propulsion systems.

Computer program analyzes fission products inventory for U-235.

Computer program calculates fission product inventories and source strengths associated with the operation of U-235 fueled nuclear power reactor. It utilizes a fission-product nuclear
library of 254 nuclides, and calculates the time dependent behavior of the fission product nuclides formed by fissioning of U-235.

B67-10456
COMPUTER MCAP-TOSS CALCULATES
STEADY-STATE FLUID DYNAMICS OF COOLANT IN PARALLEL CHANNELS AND TEMPERATURE DISTRIBUTION IN SURROUNDING HEAT-GENERATING SOLID
LEE, A. Y. /WESTINGHOUSE ASTRONUC. LAB./ DATE- NOV. 1967
NRC-10042
Computer program calculates the steady state fluid distribution, temperature rise, and pressure drop of a coolant, the material temperature distribution of a heat generating solid, and the heat flux distributions at the fluid-solid interfaces. It performs the necessary iterations automatically within the computer, in one machine run.

B67-10457
COMPUTER PROGRAM MCAP PROVIDES FOR STEADY STATE THERMAL AND FLOW ANALYSIS OF MULTIPLE PARALLEL CHANNELS IN HEAT GENERATING SOLID
Pierce, B. L. /WESTINGHOUSE ASTRONUC. LAB./ DATE- NOV. 1967
NRC-10043
Computer program /MCAP/ calculates the temperature distribution in a heat generating solid complicated by nonuniform power and flow distributions between multiple channels. It determines the channel diameters coefficients, the effects of tolerances, the pressure drop at a given flowrate, or the flowrate for a specific pressure drop.

B67-10476
COMPUTER PROGRAM CONDUCTS FACILITIES UTILIZATION AND OCCUPANCY SURVEY
NWO-10326
Computer program identifies the various uses of all facility rooms and provides information on the net area in each room as well as the number and classification of people occupying them. The program, which is easily updated, also provides a means to indicate unsatisfactory work areas.

B67-10478
FORTRAN IV PROGRAM FOR TWO-IMPULSE RENDEZVOUS ANALYSIS
Dailing, W. H., JE. BROTHERS, W. J. /LOCKHEED MISSILES AND SPACE CO./ DATE- DEC. 1967
NSP-13971
Program determines if rendezvous in near space is possible, and performs an analysis to determine the approximate required values of the magnitude and direction of two thrust applications of the upper stage of a rocket firing. The analysis is performed by using ordinary Keplerian mechanics.

B67-10480
NUMERICAL LEAST-SQUARE METHOD FOR RESOLVING COMPLEX PULSE HEIGHT SPECTRA
Schrandebek, L. /ELPAR/ THORRGA, J. I. DATE- DEC. 1967
GSPC-10182
Linear least-square method resolves complex pulse height spectra, allowing for calculation of relative intensity, of statistical variance based on counting statistics of the correlation between library components, and of the goodness-of-fit chi square. Some applications are the gamma-ray, X-ray, and charged-particle spectroscopy.

B67-10489
COMPUTER PROGRAM CALCULATES SONIC-BOOM PRESSURE SIGNATURES
Craibol, C. B. DATE- DEC. 1967
LANGLEY-10096
Computer program calculates sonic boom characteristics of airplane configurations for a range of flight conditions. One program provides the area distribution, and another program provides the equivalent area due to lift. Program outputs are the complete near field /far field/ pressure signature, including shock wave strengths and locations.

B67-10490
COMPUTER PROGRAM USES CHARACTERISTICS METHOD FOR FREE-JET INVESTIGATION
Craibol, C. B. DATE- DEC. 1967
LANGLEY-10117
Computer program calculates the free-jet boundary contours and other flow properties within the exhaust plume from highly expanded nozzles operating in near-vacuum conditions. The calculations are made by the method of characteristics which makes use of three-dimensional irrotational equations of flow.

B67-10492
COMPUTER PROGRAM REDUCES AND PROVIDES PROFILE PLOT OF SURFACE PLATE CALIBRATION DATA
Ford, E. W. /N. AM. AVIATION/ DATE- DEC. 1967
NSP-13866
Computer program which yields CRT displays will decrease the time and labor required to reduce and provide a profile plot of surface plate calibration data. The displays depict actual and resolved data points for each individually calibrated line.

B67-10493
ASSEMBLY PROCESSOR PROGRAM CONVERTS Symbolic programming language to machine language
Pelto, E. V. /N. AM. AVIATION/ DATE- DEC. 1967
NSP-13262
Assembly processor program converts symbolic programming language to machine language. This program translates symbolic codes into computer understandable instructions, assigns locations in storage for successive instructions, and computer locations from symbolic addresses.

B67-10498
COMPUTER PROGRAM PERFORMS AEROTHERMODYNAMIC FLIGHT TEST DATA CORRELATION
NRC-10075
Computer program plots flight test data stored on magnetic tape during the flight with comparative data from other tapes /design and post-flight predictions/. Information as to which measurements are on each tape, the order in which they appear, and the exact time span is supplied by the source of the data.

B67-10495
MULTIDIMENSIONAL REACTION KINETIC ABLATION PROGRAM /SEARAP/
Acton, B. /GE/ Bink, E. Collingswood, B. DATE- DEC. 1967
NSC-10079
Multidimensional reaction kinetics ablation program provides an improved capability for analyzing thermal performance of partially penetrated charring ablative heat shields. The capability was provided for determining transient temperature histories in an ablating three-dimensional shape consisting of up to five layers of material.

B67-10504
COMPUTER PROGRAMS FOR ANTENNA FEED SYSTEM
DESIGN AND ANALYSIS
LUDWIG, A. DATE- DEC. 1967
M-10-359
Fourteen computer programs have been developed for antenna feed system design and analysis. The programs cover a large spectrum of feed design problems, from primary feed pattern synthesis to the fairfield pattern of the main reflector, including analyses of structural distortions.

B67-10509
PROGRAM COMPUTES EQUILIBRIUM NORMAL SHOCK AND STAGNATION POINT SOLUTIONS FOR ARBITRARY GAS MIXTURES
CALLIS, L. E. KEMPER, J. T. DATE- DEC. 1967
LANGLEY-10090
Program computes solutions for flow parameters in arbitrary gas mixtures behind a normal and a reflected normal shock, for in-flight and shock-tube stagnation conditions. Equilibrium flow calculations are made by a free-energy minimization technique coupled with the steady-flow conservation equations and a modified Newton-Raphson iterative scheme.

B67-10510
PROBABLISTIC APPROACH TO LONG RANGE PLANNING OF SPACEWORTHY
LIJN, E. A. /TX. A AND M UNIV.- DATE- DEC. 1967
SSC-11524
Publication presents a total long range planning model for project oriented organizations. The total model consists of planning systems which originate at the project level and consolidate into an overall plan, and /2/ from a technical ceiling and allocate to the individual projects. Analysis of /1/ and /2/ is provided for management decision making.

B67-10511
LOGIC REALIZATION OF SIMPLE MAJORITY VOTING
ANGELSON, T. O. GOLDBERG, S. W. LUSBEAUGE, W. A. DATE- DEC. 1967
JPL-777
Redundant circuitry is added to computer network to eliminate incorrect output obtained due to a component failure, noise, or some other disturbance. This circuitry provides majority operation. Only NAND gates are employed, and the modules used are among the most popular microelectronic or integrated circuits presently in use.

B67-10520
COMPUTER PROGRAM PERFORMS RECTANGULAR FITTING STRESS ANALYSIS
BERBERAN, A. E. /BOEING CO.- DATE- DEC. 1967
M-PS-13010
Computer program simulates specific bulkhead fittings by subjecting the desired geometry configuration to a membrane force, an external force, an external moment, an external tank pressure, or any combination of the above. This program generates a general model of bulkhead fittings for the Saturn booster.

B67-10521
GENERAL FREQUENCY RESPONSE PROGRAM CALCULATES FREQUENCY RESPONSE OF SYSTEM, OPEN OR AT ANY SPECIFIED ELEMENT
FROCH, J. /BOEING CO.- DATE- DEC. 1967
M-PS-12817
The general frequency response program provides the frequency response of any linear feedback control system including the open loop control system. The system characteristic matrix, obtained from the Laplace transformations of the dynamic and control equations, is input to the program. A variety of outputs are available.

B67-10522
COMPUTERIZED SCHEDULE EFFECTIVENESS TECHNIQUE /SET/ DETERMINES PRESENT AND FUTURE SCHEDULE POSITION
BALLARD, D. /BOEING CO./ BIRDSONG, J. CALVA, B. DATE- DEC. 1967
M-PS-10012
Computerized scheduling system calculates an index of overall schedule-effectiveness. The schedule-effectiveness index is a measurement of actual overall performance against the existing schedule, and a series of schedule-effectiveness values indicates the trend of actual performance. This computer program is written in FORTRAN 4.

B67-10523
ANALYSIS OF DYNAMIC SYSTEMS WITH DAPAH
ABSALON, J. G. /N. AM. AVIATION/- DATE- DEC. 1967
M-PS-13999
Dynamic Analysis Program, FORTRAN 4 Level B /DAPAH/, developed from 27 subprograms, features liberal use of the subroutines, subprograms, and skeletonization to minimize programming effort in formulating models of new systems and components. It formulates mathematical models of complex mechanical, hydraulic, and hydraulic dynamic systems.

B67-10528
DYNA - AN ADVANCED PROGRAMMING SYSTEM FOR LARGE CLASSES OF DYNAMIC AND EQUIVALENT SYSTEMS
MC CORNECE, W. J. /BOEING CO./ DATE- NOV. 1967
M-PS-12084
DYNA /dynamic analyzer/ is an advanced programming system which performs automatically the computing of a problem, as well as a major portion of the programming and analysis. The system is divided into the response and frequency response of dynamic and equivalent systems.

B67-10530
PROGRAM COMPUTES ZERO LIFT WAVE DRAG OF ENTIRE AIRCRAFT
CHADDO, C. B. HARRIS, R. V., JR. DATE- DEC. 1967
LANGLEY-10079
Computer program computes zero lift wave drag of an entire aircraft including any combination of the wing, body, pods, fins, and canard. The program computes the total resistance and frequency response of the wing and the axial area distribution of the wing equivalent body.

B67-10531
COMPUTER PROGRAM PROVIDES IMPROVED LONGITUDINAL RESPONSE ANALYSIS FOR AXISYMMETRIC LAUNCH VEHICLES
SIEB, W. W. WILTON, W. C., JR. DATE- DEC. 1967
LANGLEY-10093
Computer program calculates axisymmetric launch vehicle steady-state response to axisymmetric sinusoidal loads. A finite element technique is utilized to construct the total load vehicle stiffness matrix and same matrix by subdividing the prototype structure into a set of axisymmetric shell components, fluid components, and spring-mass components.

B67-10536
M-SAP AND G-SAP NEUTRON AND GAMMA RAY ALBEDO MODEL SCATTER FIELD ANALYSIS PROGRAM
SAPVYVIA, J. H. /WESTINGHOUSE ASTRONUC. LAB./ STANSBERRY, L. D. DATE- DEC. 1967
NRC-10126
Computer program calculates neutron or gamma ray first order scattering from a plane or cylindrical surface to a detector point. The G-A code, G-SAP and M-SAP, constitute a multiple scatter albedo model shield solution.

B67-10537
SOC-DS COMPUTER CODE PROVIDES TOOL FOR DESIGN EVALUATION OF HOMOGENEOUS TWO-MATERIAL NUCLEAR SHIELD
DZENE, E. K. /WESTINGHOUSE ASTRONUC. LAB./ BICKS, L. G. DATE- DEC. 1967
NRC-10142
SOC-DS Code /Shield Optimization Code-Direc Search/, selects a nuclear shield material of optimum volume, weight, or cost to meet the requirements of a given radiation dose rate or energy transmission constraint. It is applicable to evaluating neutron and gamma ray shields for all nuclear reactors.
06 COMPUTER PROGRAMS

B67-10543
COMPUTER PROGRAM CALCULATES PRETHRUST WATERSHED INJECTION COOLING OF AXI-SYMMETRIC SUBSONIC DIFFUSER
DEE, J. /WESTINGHOUSE ASTRONUC. LAB. / DATE- JUN. 1969
WUC-10541
Digital computer program calculates the cooling effectiveness and flow characteristics resulting from the mixing of a cool liquid coolant/water/with a hot sonic or subsonic gas stream/hydrogen/. The output of the program provides pressure, temperature, velocity, density, composition, and Mach number profiles at any location in the mixing duct.

B67-10549
COMPUTER PROGRAM FOR OPTICAL SYSTEMS RAY TRACING
FERGUSON, T. J. / WEAVER CORP. / DATE- DEC. 1967
PFO-10037
Program traces rays of light through optical systems consisting of up to 65 different optical surfaces and computes the aberrations. For design purposes, paraxial tracings with astigmatism and third order tracings are provided.

B67-10566
COMPUTER PROGRAM ETC IMPROVES COMPUTATION OF ELASTIC TRANSFER MATRICES OF LEGENDRE POLYNOMIALS P0/ AND P1/
GIBSON, G. /WESLINGHOUSE ASTRONUC. LAB. / DATE- DEC. 1967
NUC-10078
Computer program improves computation of elastic transfer matrices of Legendre polynomials P0/ and P1/ rather than carrying out a double integration numerically. One of the integrations is accomplished analytically and the numerical integration need only be carried out over one variable.

B67-10568
GRAPHIC VISUALIZATION OF PROGRAM PERFORMANCE AIDS MANAGEMENT REVIEW
LIEBERMANN, Y. B. /BELL AEROSYSTEMS CO. / DATE- DEC. 1967
WUC-10084
Chart technique /PERT/ which displays the essential status elements of a PERT system in a vertical flow array, of high graphic quality, enables visual review by management of program performance. Since the display is versatile, it can accommodate any aspect of the program which the presenter wishes to accent.

B67-10562
EQUATION RELATES FLOW AT FREE JET TO FLOW DOWNSTREAM
FENNELL, J. R. /W. A. AVIATION/ DATE- DEC. 1967
M-PS-13769
Nonlinear equation relates the flowrate at an orifice to that at a station downstream from the orifice. This equation should aid in understanding combustion instabilities and should not be subject to the substantial errors of prior analytical methods.

B67-10625
PROPPELLANT TANK PRESSURIZATION ANALYSIS PROGRAM
EDELMAN, M. /W. A. AVIATION/ DATE- DEC. 1967
M-PS-1508
Computer program for the analysis of a single propellant tank pressurization system includes many pertinent physical phenomena previously ignored in other mathematical models. This program can be used for analysis, simulation, and design of propellant pressurization systems.

B67-10626
VERSATILE ANALOG PULSE HEIGHT COMPUTER PERFORMS REAL-TIME ARITHMETIC OPERATIONS
BRENNER, R. /STRAND, R. G. DATE- DEC. 1967
ARG-10052
Multipurpose analog pulse height computer performs real-time arithmetic operations on relatively fast pulses. This computer can be used for identification of charged particles, pulse shape discrimination, division of signals from position sensitive detectors, and other on-line data reduction techniques.

B67-10630
COMPUTER PROGRAM FOR VIDEO DATA PROCESSING SYSTEM /EPSS/ BILLINGSTON, Y. C. /NESHMAN, R. DATE- DEC. 1967
NFO-10042
Video data from spacecraft photographic mission telemetry is scanned to generate digital tape computer program which prints out intensity points, cleans noise and telemetry drop-out, enhances contrast, modifies the picture, and calculates contour lines. The output is converted into new photographic film.

B67-10631
DIGITAL COMPUTER PROGRAM PREDICTS EFFECTS OF LOCAL PRESSURE TRANSIENTS ON DEFORMATION AND STRESSES IN CYLINDRICAL DUCTS
BACHOOG, T. /BELL AEROSYSTEMS CO./ LOBENICKI, W. PADLOZ, J. REISMAN, H. DATE- DEC. 1967
M-PS-12058
Digital computer program determines the dynamic response of circular cylinders subjected to pressure transient forms commonly encountered in propulsion systems. The method can be readily used to obtain solutions for all possible combinations of admissible boundary conditions.

B67-10632
AUTOMATIC DESIGN OF OPTICAL SYSTEMS BY DIGITAL COMPUTER
CASAD, T. A. SCHMIDT, L. F. DATE- DEC. 1967
MFO-12025
Computer program uses geometrical optical techniques and a least squares optimization method employing computing equipment for the automatic design of optical systems. It evaluates changes in various optical parameters, provides comprehensive ray-tracing, and generally determines the acceptability of the optical system characteristics.

B67-10651
DEVELOPMENT OF RELIABILITY PREDICTION TECHNIQUE FOR SEMICONDUCTOR DIODES
FISHER, C. M. /HUGHES AIRCRAFT CO./ DATE- DEC. 1967
BRIEER, J. L. /ROCKET CO./ DATE- DEC. 1967
DATE- DEC. 1967
GSPC-10238
New fundamental technique of reliability prediction for semiconductor diodes based on realistic mathematical models can be applied to component failure rate prediction including mechanical degradation, electrical degradation, environmental stress factors, and electrical load stress factors.

B67-10658
X-Y PLOTTER ADAPTER DEVELOPED FOR SDS-930
COMPUTER
ROBERTSON, J. E. DATE- JAN. 1968
MFO-10220
Graphical Display Adapter provides a real time display for digital computerized experiments. This display uses a memory oscilloscope which records a single trace until erased. It is a small hardware unit which interfaces with the J-box feature of the SDS-930 computer to either an X-Y plotter or a memory oscilloscope.

B67-10665
COMPUTER PROGRAM CALCULATES GAMMA RAY SOURCE STRENGTHS OF MATERIALS EXPOSED TO NEUTRON FLUENCES
HEISE, F. C. /WESTINGHOUSE ASTRONUC. LAB./ RICKS, L. O. DATE- JAN. 1968
WUC-10143
Computer program contains an input library of nuclear data for 48 elements and their isotopes to determine the induced radioactivity for gamma emitters. Minimum input requires the irradiation history of the element, a four-energy-group neutron flux, specification of an alloy composition by elements, and selection of the output.

B67-10666
COMPUTER PROGRAM CALCULATES WING AERODYNAMIC
CHARACTERISTICS FOR FIXED WINGS WITH DIEREAL AND VARIABLE-SHEEP WINGS AT SUBSONIC SPEEDS
LANAR, J. R. MARGASON, R. J. DATE- DEC. 1967
LANGLEY-10191
Vortex lattice is used to describe the lifting surface of an arbitrary wing planform in steady potential subsonic compressible flow in computer programs which calculate aerodynamic characteristics. Estimates of flow field characteristics in the vicinity of a lifting wing can also be programmed.

B67-10678
COMPUTER PROGRAM /PI-GAS/ CALCULATES THE B67-10678
GIBSON, MODERATION ABD VARIABLE-SHEEP NUC-10141
MOP
B68-10005
MOP /Matrix Operation
LANGLEY-10191
COMPUTER PROGRAM CALCULATES AND PLOTS B68-10009
GORDON, GAS THERMODYNAMIC DATA
BALPERT, COMPUTER PROGRAM FOR CALCULATION OF IDEAL SOO,
ANALYSIS OF NUC-10301
B68-10025
DAVIS, D. A. GSNGW, D. G. /BOEING CC/ DATE- FEB. 1968
M-PS-14296
Computer program calculates and plots surface area and pore size distribution data for a circular flat plate of variable thickness.

B68-10009
COMPUTER PROGRAM PERFORMS FREQUENCY ANALYSIS OF NONUNIFORM TURBINE DISK
B68-10006
COMPUTER PROGRAM PERFORMS STIFFNESS MATRIX
SUBJECTED TO TEMPERATURE GRADIENTS

B68-10005
NOS-10069
NOS-10031
Computer program determines the natural frequencies of a turbine disk of variable thickness subjected to uniform rotation and radial temperature gradients by using Rayleigh-Sitz procedure. The program involves the potential and kinetic energy expressions for a circular flat plate of variable thickness.

B68-10025
COMPUTER PROGRAM FOR CALCULATION OF IDEAL GAS THERMODYNAMIC DATA
LEWIS-10254
Computer program calculates ideal gas thermodynamic properties for any species for which molecular constant data is available. Partial functions and derivatives from formulas based on statistical mechanics are provided by the program which is written in FORTRAN 4. 

B68-10033
COMPUTER PROGRAM FOR INTERPLANETARY CONIC TRAJECTORIES
DAVIS, D. A. GSNGW, D. G. /BOEING CC/ DATE- FEB. 1968
M-PS-14296
Computer program enables study of one-way transfers, single and double planet flybys, single and double planet stopovers, or mixed flyby and stopover trajectories. In each operation it first computes the heliocentric conic which connects the centers of the launch and target planets and requires a given trip time.

B68-10044
GENERAL COMPUTER PROGRAM FOR CALCULATION OF RADIATION FROM INHOMOGENEOUS, NONDISPERSE, NONISOTHERMAL ROCKET EXHAUST PLUMES
DASH, R. J. HUFFAKER, R. M. DATE- FEB. 1968
M-PS-14394
Computer program evaluates radiation from an axisymmetric gas body with water vapor, carbon dioxide, carbon monoxide, and solid carbon particles as radiating constituents, and hydrogen as a nonradiating constituent. The program provides a convenient method of evaluating a great many problems of radiation from rocket exhaust plumes.

B68-10045
CONCEPT FOR SIMPLIFIED SERIAL DIGITAL DECODER
GREEN, R. B. DATE- FEB. 1968
NFO-10150

B68-10050
SITE SURVEY FOR OPTIMUM LOCATION OF OPTICAL COMMUNICATION EXPERIMENTAL FACILITY
SPUR, INNOVATOR NOT GIVEN /SYLVANIA ELECTRON.
SISTERS-EAST/ DATE- MAR. 1968
M-PS-13155
Site survey was made to determine the optimum location for an Optical Communication Experimental Facility /OCF/ and to recommend several sites, graded according to preference. A site was desired which could perform two-way laser communication with a spacecraft and laser tracking with a minimum of interruption by weather effects.

B68-10055
THREAD CUTTING WITH 3-AXIS N/C MILLING MACHINE
LANGLEY-10017
A generalized macro written for the APT numerical control system, cuts threads in stock too big for conventional machines or for which conventional methods are unsuitable. TAPR computes the machine tool path necessary and the information is passed on to a post-processor which produces a control tape.

B68-10095
COMPUTER PROGRAM PERFORMS STIFFNESS MATRIX STRUCTURAL ANALYSIS
M-PS-10502
Computer program generates the stiffness matrix for a particular type of structure from geometrical data, and performs static and normal mode analyses. It requires the structure to be modeled as a stable framework of uniform, weightless members, and joints at which loads are applied and weights are lumped.

B68-10097
COMPUTER PROGRAM CALCULATES VELOCITIES AND STREAMLINES IN TURBOMACHINES
KATSANIS, S. DATE- MAY 1968
LEWIS-10252
Computer program calculates the velocity distribution and streamlines over widely separated blades of turbomachines. It gives the solutions of a two dimensional, nonviscous, compressible inviscid flow problem for a rotating or stationary circular cascade of blades on a blade-to-blade surface of revolution.

B68-10127
AUTOMATIC PLANNING CONCEPT - AN ANALYSIS OF
OPTIMUM SCHEDULING
REBEK, F. R. /TRUMBULL, P. /HONEYWELL, INC./ DATE- APR. 1968 M-PF-14198
Study considers resource costs, missions, and experiment results as linear functions, insofar as possible, in an effort to develop optimum scheduling by the use of linear programming. It involves a mathematical approach in which a number of constraints are considered operative.

B68-10137
COMPUTER PROGRAM CONDUCTS FACILITIES
UTILIZATION AND OCCUPANCY SURVEY
WFO-10451
Computer program identifies the uses of all facilities and provides information on the set area in each room as well as the number and classification of people occupying them. The system also provides a means to indicate unsatisfactory work areas and may be able to be updated each month.

B68-10139
COMPUTER PROGRAM AIDS DUAL REFLECTOR ANTENNA SYSTEM DESIGN
FINBREY, P. /GERRTSEN, R. /JARVIE, P. /INFORNATICS, INC./ DATE- APR. 1968 WFO-10501
Computer program aids in the design of maximum efficiency dual reflector antenna systems. It designs a shaped Cassegrainian antennas which has nearly 100 percent efficiency, and accepts input parameters specifying an existing conventional antenna and produces as output the modifications necessary to conform to a shaped design.

B68-10150
COMPUTER PROGRAMS FOR THERMODYNAMIC AND TRANSPORT PROPERTIES OF HYDROGEN
NALL, W. J. /MC CARTY, R. D. /ROBEE, H. R. /WAT.
SUB- OF STD. MAY 1968
WUC-10537
Computer program subroutines provide the thermodynamic and transport properties of hydrogen in tabular form. The programs provide 18 combinations of input and output variables. This program is written in FORTRAN 4 for use on the IBM 7044 or CDC 3600 computers.

B68-10158
COMPUTER PROGRAM DETERMINES EXACT TWO-SIDED TOLERANCE LIMITS FOR NORMAL DISTRIBUTIONS
FRIEDMAN, M. A. /WARD, S. R. /R. AM. ROCKWELL
CORP./ DATE- MAY 1968 M-PF-18045
Computer program determines by numerical integration the exact statistical two-sided tolerance limits, when the proportion between the limits is at least a specified number. The program is limited to situations in which the underlying probability distribution for the population sampled in the normal distribution with unknown mean and variance.

B68-10159
COMPUTER PROGRAM DETERMINES VIBRATION IN THREE-DIMENSIONAL SPACE OF HYDRAULIC LINES EXCITED BY FORCED DISPLACEMENTS
DOERGE, W. G. /CR. AB. AVIATION/ DATE- MAY 1968 M-PF-12225
Computer program determines the forced vibration in three dimensional space of a multiple degree of freedom beam type structural system. Provision is made for the longitudinal axis of the analytical model to change orientation at any point along its length. This program is used by industries in which structural designs dynamic analyses are performed.

B68-10164
DIGITAL FILTER SYNTHESIS COMPUTER PROGRAM
HOEFL, R. A. /RONG, R. B. /DATE- MAY 1968 ARC-10350
Digital filter synthesis computer program expresses any continuous function of a complex variable in approximate form as a computational algorithms or difference equation. Once the difference equation has been developed, digital filtering can be performed by the program on any input data list.

B68-10187
ELAS - A GENERAL PURPOSE COMPUTER PROGRAM FOR THE EQUILIBRUM PROBLEMS OF LINEAR STRUCTURES
KUYK, P. A. /OTTO, S. /DATE- JUN. 1968 NPO-10546
Digital computer program ELAS handles the equilibrium problems of linear structures of one, two, or three dimensional continua. ELAS generates the governing equations for the unknown deflections of the mesh points that define the stationary point of the total potential energy function associated with the given loading and unknown deflections.

B68-10193
DIGITAL FILTER SUPPRESSES EFFECTS OF NONSTATISTICAL NOISE BURSTS ON MULTICHANNEL SCALING DIGITAL AVERAGING SYSTEMS
GOODMAN, L. S. /SALTER, F. O. /DATE- JUN. 1968 ARG-9042
Digital filter suppresses the effects of nonstatistical noise bursts on data averaged over multichannel scales. Interposed between the sampled channels and the digital averaging system, it uses binary logic circuitry to compare the number of counts per channel with the average number of counts per channel.

B68-10208
JPKWIC - GENERAL KEY WORD INDEX AND SUBJECT INDEX REPORT GENERATOR
JPKWIC computer program in a general key word in context and subject index report generator specifically developed to help nonprogrammers and nontechnical personnel to use the computer to access files, libraries and mass documentation. This program is designed to produce a KWIC index, a subject index, an edit report, a summary report, and an exclusion list.

B68-10216
COMPUTER PROGRAM DETERMINES SYSTEM STABILITY /DIGIT/ LOMBARD, C. F. /SCALOGI, L. /DATE- JUN. 1968 LEWIS-10395
Computer program implements a stability criterion that can be applied directly to the natural solutions of systems of differential equations. The program accepts as input the time function of the system, a time to view the transient, and an acceptable amplitude boundary for any steady-state oscillations.

B68-10217
COMPUTER PROGRAM OFFERS NEW METHOD FOR CONSTRUCTING PERIODIC ORBITS IN NONLINEAR DYNAMICAL SYSTEMS
Computer program uses an iterative method to construct precisely periodic orbits which dynamically approximate solutions that converge to precise dynamical solutions in the limit of the sequence. The method used is a modification of the generalized Newton-Raphson algorithms used in analyzing the point boundary problems.

B68-10226
COMPUTER PROGRAMS ANALYZE BUCKLING OF SHELLS WITH EXPLOSION WITH VARIOUS WALL CONSTRUCTIONS, BOSOR
Computer program performs stability analyses for a wide class of shells without unduly restrictive approximations. The program uses numerical
integration, finite difference of finite element techniques to solve with reasonable accuracy any buckling problem for shells exhibiting orthotropic behavior.

B68-10227
SEAL /Subnetwork Enumeration and Listing/
ERC-10116
SEAL/Subnetwork Enumeration And Listing/computer program uses combinatorial techniques to generate all of the nonredundant subnetwork configurations derivable from an asymmetrical network or device. This is accomplished by a systematic shorting and opening of accessible terminals to obtain the desired allowable configurations.

B68-10232
HICOV - MOSTON-PABSON CALCULUS OF VARIATION WITH AUTOMATIC TRANSVERSALITIES
HEINTSCHEL, T. J. /SE/ DATE- JUL. 1968
M-FS-14616
Computer program generates trajectories that are optimum with respect to payload placed in an earth orbit. It uses a subroutine package which produces the terminal and transversality conditions and their partial derivatives. This program is written in FORTRAN 4 and FORTRAN for the IBM 7094 computer.

B68-10287
DEVELOPMENT OF ELECTRONIC DATA PROCESSING SYSTEMS/SEGMENTED DATA MANAGEMENT SYSTEM
SCOTT, J. E. NAudpLTON, T. H. /BOEING Co./ DATE- AUG. 1968
M-FS-14715
To tailor the existing Unified Flight Analysis System to manage data rather than technical data, a pilot model could be produced in breadboard form, using electronic data processing, in a matter of a few months at very moderate cost. Such a system lends itself to continuous refinement.

B68-10298
LINEAR SYSTEMS OF EQUATIONS SOLVED USING MATHEMATICAL ALGORITHMS
BAREISS, E. H. DATE- AUG. 1968 REAR- SEE ALSO B68-7213
B68-10146
New mathematical algorithms solve linear systems of equations, AX equals B, and preserves the integer properties of the coefficients. The algorithms presented can also be used for the efficient evaluation of determinate and their leading minors.

B68-10296
COMPUTER GRAPHICS DATA CONDITIONING
HAGENAG, R. E. MC MILLEN, G. C. /BOEING Co./ DATE- AUG. 1968
M-FS-16995
Graphics data conditioning program expedites engineering analysis of flight data and ensures timely correction of measurement errors. By adding interactive computer graphic displays to existing data conditioning programs, computational results are immediately visible, enabling on-line intervention and control of computer processing.

B68-10335
COMPUTER PROGRAM ANALYZES AND DESIGNS SUPERSONIC WING-MOUNT COMBINATIONS
WOODWARD, F. A. /BOEING Co./ DATE- SEP. 1968
M-ABC-10141
Computer program formulates geometric description of the wing body configuration, optimizes wing, camber shape, determines wing shape for a given pressure distribution, and calculates pressures, forces and moments on a given configuration. The program consists of geometry definition, transformation, and paneling, and aerodynamics, and flow visualization.

B68-10354
FORTRAN OPTICAL LENS DESIGN PROGRAM
NPO-10603
Computer program uses the principles of geometrical optics to design optical systems containing up to 100 planes, conic or polynomial aspheric surfaces, 7 object points, and 200 rays. This program can be used for the autodesign of optical systems or for the evaluation of existing optical systems.

B68-10356
ANALYSIS OF AERIAL SOLITONSING PROGRAMS
ARNING, I. H. CAI. DATE- SEP. 1968 B68-7274 AND Nasa-CR-7275
HAGENAG, R. E. DATE- AUG. 1968 LEWIS-10399
Computer program is used for analysis and design of gas turbine combustors. The program analyzes fluid flow, combustion, and heat transfer in annular and rectangular combustors with diffusers, making use of currently available analytical methods and correlations.

B68-10361
REAL FLUID PROPERTIES OF NORMAL AND PARAMETROGEN
GOLDBRUG, E. M. HAFERD, A. M. DATE- SEP. 1968 LEWIS-10658
Computer program calculates the real fluid properties of normal or parahydrogen using a library of single function calls without initial estimates, accurate transport and thermodynamic properties of molecular hydrogen are needed for advanced propulsion systems.

B68-10374
AXIESTRUCTIC TWO-PHASE PERFECT GAS PERFORMANCE PROGRAM
KLIEGEL, J. E. NICKERSON, G. R. /TRW SYSTEMS/ DATE- OCT. 1968 LEWIS-10376, AND B68-10377
MSC-11774
Computer program calculates the inviscid axiymetrical nozzle expansion of propellant systems having both gaseous and condensed exhaust products. The program uses velocity and thermal lag and will perform calculations for contoured and conical nozzles.

B68-10375
ONE-DIMENSIONAL REACTING GAS NONEQUILIBRIUM PERFORMANCE PROGRAM
KLIEGEL, J. E. NICKERSON, G. R. /TRW SYSTEMS/ DATE- OCT. 1968 LEWIS-10376, AND B68-10377
MSC-11777
Computer program calculates the inviscid one-dimensional equilibrium, frozen, and nonequilibrium nozzle expansion of gaseous propellant exhaust mixtures containing the elements - carbon, hydrogen, oxygen, nitrogen, chlorine and fluorine. This program performs calculations for conical nozzles only.

B68-10376
ONE-DIMENSIONAL TWO-PHASE REACTING GAS NONEQUILIBRIUM PERFORMANCE PROGRAM
KLIEGEL, J. E. NICKERSON, G. R. /TRW SYSTEMS/ DATE- OCT. 1968 LEWIS-10376, AND B68-10377
MSC-11780
Computer program calculates the inviscid one-dimensional equilibrium, frozen, and nonequilibrium nozzle expansion of propellant exhaust mixtures containing carbon, hydrogen, oxygen, nitrogen, chlorine, aluminum, beryllium, boron or lithium. This program performs calculations for conical nozzles only.

B68-10377
AXIESTRUCTIC REACTING GAS NONEQUILIBRIUM PERFORMANCE PROGRAM
MSC-11781
Computer program calculates the inviscid one-dimensional equilibrium, frozen, and nonequilibrium nozzle expansion of propellant
exhaust mixtures containing these six elements - carbon, hydrogen, oxygen, nitrogen, fluorine, and chlorine plus either aluminum, beryllium, boron or lithium. This program will perform calculations for contoured and conical nozzles.

B68-10403
INTERNAL VELOCITY FACTORS
CANCART, K. H. FRANK, A. J. RASSAGLIA, J. L.
/PER. AM. ROCKWELL CORP./ DATE- NOV. 1968
M-PS-15002
Computer program analyzes the entrice and planetary trajectories of space vehicles. It obtains the equivalence of altitude and flight path angle, respectively, to acceleration load factor with respect to velocity for a given inertial velocity.

B68-10405
ANALYSIS OF FILAMENT REINFORCED METAL-STEEL PRESSURE VESSELS
LANSER, R. E. MORRIS, E. E. /EROJET GEN. CORP./
DATE- NOV. 1968
M-PS-15002
Computer program analyzes design requirements and computes designs for metal-lined filament-wound pressure vessels with either geodesic /helical/ or in-plane filament winding patterns on the cylindrical portion and over the ends, reinforced by circumferential winding on the cylindrical portion.

B68-10410
DSN SEVEN DAY/TWELVE WEEK SCHEDULE PROGRAM
HOLMAN, R. E. DATE- DEC. 1968
M-PS-10752
Deep Space Network scheduling program allocates resources based on the users requirements. The system reviews and allocates the requests for equipament and resources. Depending upon the program input either the seven day or the twelve week schedule is generated.

B68-10416
CIRCUS-A DIGITAL COMPUTER PROGRAM FOR TRANSIENT ANALYSIS OF ELECTRONIC CIRCUITS
BROOKS, W. T. STEINBERG, L. L. /BOEING CO./
DATE- DEC. 1968
M-PS-15002
Computer program simulates the time domain response of an electronic circuit to an arbitrary forcing function. CIRCUS uses a charge-control parameter model to represent each semiconductor device. Given the primary photocurrent, the transient behavior of a circuit in a radiation environment is determined.

B68-10421
COMPUTER PROGRAM FOR MACHINE DESIGN OF CASSEGRAIN FEED SYSTEMS
POTTER, P. D. DATE- NOV. 1968
M-PS-15002
Program designs the feed system geometry and the subreflector surface, with the main reflector configuration and frequency of operation as input data. Although the feedback is not designed, its required gain, beamwidth, and approximate radiation pattern are specified.

B68-10422
GENERALIZED NEWTON-RAPHSON TRAJECTORY OPTIMIZATION-GENERATOR 1
COPE, D. D. ESSENDGE, C. D. HANFI, L. M.
/BOEING CO./ DATE- NOV. 1968
M-PS-15002
Computer program constructs a sequence of optimal solution to dynamically-approximate linear equations. Specification of the subset and type of subspace in the optimal solution allows simultaneous satisfaction of all switching criteria.

B68-10423
SYMBOLIC REDUCTION OF BLOCK DIAGRAMS USING FORMAC
LUHNING, C. F. SWIGERT, P. DATE- NOV. 1968
L-E-10409
Two computer programs - one written in FORMAC to generate the desired symbolic expressions, the other in FORTRAN 4. Numerically evaluate the expressions are announced. The FORTRAN program accepts the symbolic punched output from the FORMAC program in either expanded or expanded form. It numerically evaluates the expressions.

B68-10435
GEOMETRIC-OR COMBINING PATHS AND LOGS OF ELECTRICAL NETWORKS
ALAN, A. PRITIKER, B. /ARIZONA STATE UNIV./
DATE- DEC. 1968
M-PS-10206
Program takes a network with multi-parameter branches and reduces it to a network having a single branch connecting source nodes to sink nodes. The program calculates probability, expected time, and variance in the time to go from each source node to each sink node of the GERT network.

B68-10445
ENVIRONMENTAL TEST PLANNING, SELECTION AND STANDARDIZATION AIDS AVAILABLE
COPELAND, R. S. FOLLY, J. T. DATE- DEC. 1968
S-W-10028
Requirements for instrumentation, equipment, and methods to be used in conducting environmental tests on components intended for use by a wide variety of technical personnel of different educational backgrounds, experience, and interests is announced.

B68-10446
MODIFIED MULTICHIP MEAN AMBER COMPUTER PROGRAM
LARAB, J. E. DATE- DEC. 1968
LANGLEY-10376
Computer program which determines the mean amber surface required to support a given set of loadings on a composite wing in subsonic compressible flow has been developed.

B68-10447
PLUME RADIATION PROGRAM
DE SOTO, S. VOY. C. A. /PER. AM. ROCKWELL CORP./
DATE- DEC. 1968
M-PS-15002
Computer program determines the radiant flux to the base region of a real gas system with an axisymmetric geometry and any axisymmetric property distribution.

B68-10448
PERFORMANCE ANALYSIS OF ELECTRICAL CIRCUITS /PAGE/
JOHNSON, K. L. STEINBERG, L. L. /BOEING CO./
DATE- DEC. 1968
M-PS-15001
Automated statistical and worst case computer program has been designed to perform dc and ac steady circuit analyses. The program determines the worst case circuit performance by solving circuit equations.

B68-10449
SINGLE DEGREE OF FREEDOM ANTENNA POINTING PROGRAM /ANTENA/
FLEISHMANN, R. G. DATE- NOV. 1968
B6-10756
Computer program optimizes the accuracy of pointing a radio-frequency antenna at a target whose position is time varying but known with respect to a certain reference frame.

B68-10450
COMPUTER PROGRAM TRACK PERFORMS TRANSIENT AND/OR STEADY STATE THERMAL ANALYSIS WITH COUPLED FLUID FLOW AND HEAT CONDUCTION
LEE, A. Y. WOODS, M. D. WOODS, E. D.
/WESTINGHOUSE ASTROEWE./ DATE- NOV. 1968
M-PS-10419
Computer program called TRACK was developed by combining a transient fluid flow computer code and the existing modified TOS heat conduction code to perform the computation.

B68-10451
A REQUEST-ORIENTED INFORMATION SELECTION PROGRAM

222
B69-10031
THE COMPATIBLE CONVERSION SYSTEM
HOFFMAN, F. KETHE, J. RANDY, J. MC VAY, L.
WINNINGCOFF, K. TEBRING, E. /BOEING CO./ DATE- FEB. 1969
M-FS-15010
Compatible conversion system centralizes the
solution of general problems arising from the use of
direct access mass storage. It also provides
a simple stable interface for the conversion of
production programs to process on third generation
computer system.

B69-10034
COMPUTER PROGRAM ANALYZES WHEEL CRITICAL
SPRINGS AND BEARING LOADS FOR SHAFTS COUPLED
BY WORMWHEEL SPRINGS TO MACHINERY HOUSING
SFEVRUD, L. K. /AEROSAT GEN. CORP./ DATE- FEB. 1969
NUC-10308
Computerized method of analysis predicts bearing
loads, shaft deflections, and critical speeds for
shafts coupled by rolling contact bearings to the
machine housing. The bearing nonlinearities,
casing as well as rotor dynamics, and
rotor-imbalance forcing functions are all included
in the system dynamics analysis.

B69-10035
GENERAL SERIES SOLUTION TECHNIQUE FOR
BENDING OF TANGENT LATERALLY LOADED
FLAT PLATES
SWANSON, J. A. /WESTINGHOUSE ASTRONUC. LAB./
DATE- FEB. 1969
NUC-10170
Computer program calculates the stresses and
lateral deflections to a uniform thickness flat
plate with a uniform pressure load. The plate to
be analyzed may have several different boundary
conditions. The program in written in FORTRAN 4
for use on the CDC 6600 computer.

B69-10036
COMPUTER PROGRAM CALCULATES THE EFFECTIVE
TEMPERATURE FOR A CRYSTALLINE SOLID /DHTS/
JOHNSON, A. S. SOWDEN, R. M. /WESTINGHOUSE
ASTRONUC. LAB./ DATE- FEB. 1969
NUC-10161
Computer program computes and prints out both the
Debye and resulting effective temperatures for
each Debye model-dependent average energy per
vibrational mode, Debye-Waller factor, and
specific heat. The program calculates by the
trapezoidal rule and then Simpson’s rule.

B69-10038
MONTE CARLO DIRECT VIEW FACTOR AND GENERALIZED
RADIATIVE HEAT TRANSFER PROGRAMS
MC WILLIAMS, J. L. SCICE, J. H. /BOEING CO./
DATE- FEB. 1969
M-FS-15051
Computer programs find the direct view factor from
one surface segment to another using the monte
carlo technique, and the radioactive-transfer
coefficients between surface segments. An
advantage of the programs is the great generality
of problems treatable and rapidity of solution
from problem conception to receipt of results.

B69-10039
SPAN C - TERMINAL STERILIZATION PROCESS
ANALYSIS PROGRAM
DATE- FEB. 1965 REAK- SEE ALSO B69-10104
R69-10005
Computer program, SPAN-C, measures the dry heat
temperature sterilization process applied to a
planetary capsule and calculates the time required
for heat application under steady state conditions,
and cooling. The program is based on the logarithmic
survival of microorganisms. Temperature profiles
must be input on cards.

B69-10040
RATIO MATCHING OF HALF-BRIDGE WELDABLE
STRAIN GAGES, COMPUTER PROGRAM
ANDERSON, K. F. BROWN, G. L. DATE- FEB. 1969
FNC-10032
Computer program reduces the unbalance of weldable
half-bridge strain gage installations. The
program calculates the two resistance ratios of each half-bridge gage, outputting a table of gages ranked according to resistance ratio. The tabulation interval is a convenient record of gage characteristics.

B69-10041
WEIGHT CONTROL SYSTEM
BERMAN, A. JR. /BOEING CO. /DATE- FEB. 1969
M-FS-15028
Weight Control System, a set of linked computer programs which provides weight and balance reports from magnetic tape files, provides weight control and reporting on launch vehicle programs. With minor forest modifications the program is applicable to aerospace, marine, automotive and other land transportation industries.

B69-10103
APTRA ON-SITE TRACKING PREDICTION PROGRAM
BERMAN, A. L. /LEPPA, F. B. /DATE- APR. 1969
NFO-10836
Computer program, APTRA, provides deep space Network tracking stations with the capability of generating spacecraft predictions with on-site computers. The program is comprised of two major sections - the main prediction portion and a trajectory subroutine which spans the desired period of time with spacecraft ephemeris data written on magnetic tapes.

B69-10104
SPAN-TERMINAL STERILIZATION PROCESS ANALYSIS PROGRAM
DATE- APR. 1969 SEE ALSO B69-10039
NFO-10804
Computer program, SPAN, measures the dry heat thermal sterilization process applied to a planetary capsule and calculates the time required for heat application, steady state conditions, and cooling. The program is based on the logarithmic survival of micro-organisms. Temperature profiles must be input on tape.

B69-10105
MIDCOURSE MANEUVER OPERATIONS PROGRAM
GORDON, H. J. /HAMBURG, H. L. /MITCHELL, R. T.
PASS, D. /ROYER, D. B. /DATE- APR. 1969
NFO-10735
Midcourse Maneuver Operations Program /MOP/ computes the required velocity change to correct a spacecraft trajectory. The program establishes the existence of maneuvers which satisfy spacecraft constraints, explores alternate trajectories in the event that some out-of-tolerance condition forces a change in plans, and codes the maneuvers into commands.

B69-10106
LABCON-LABORATORY JOB CONTROL PROGRAM
BEANS, L. T. /N. ROCHWELL CORP. /DATE- APR. 1969
M-FS-10141
Computer program LABCON controls the budget system in a component test laboratory whose workload is made up from many individual budget allocations. A common denominator is applied to an incoming job, to which all effort is charged and accounted for.

B69-10111
GEOMETRY AND DESIGN POINT PERFORMANCE OF AXIAL FLOW TURBINES
LWTO-10471
Computer program determines the alternative geometries and associated design point performance of axial-flow turbines capable of satisfying specified design requirements. The program solves the flow field within the turbine without making the simplifying assumptions that result in restrictive design.

B69-10132
/MAGNIFY/ PROGRAM FOR CALCULATING VELOCITIES IN MAGNIFIED REGION OF TURBOMACHINES
KATZSINS, T. /MC NALLY, W. /DATE- MAY 1969
LWTS-10789
Computer program, MAGNIFY, calculates the velocity distribution through the passage between and over blade surfaces of blade rows for turbines and compressors. Using the input of other programs, MAGNIFY obtains velocities on smaller than normal finite difference mesh in any part of the blade-to-blade passage.

B69-10134
MASS SPECTROGRAPH ANALYSIS
SHORE, J. P. /DATE- MAY 1969
SBC-13239
Computer program provides a means of rapid data reduction of mass spectograph data. The methods used are suited to mechanization on a digital computer since they consist of the systematic search of a large amount of tabular data and the unknown.

B69-10139
V ICAV-DIGITAL IMAGE PROCESSING SYSTEM
BILLINGSLEY, F. /BRESLIER, S. /FRIEDEN, B.
MOORE, G. /HANF, R. /KIMPELSCHE, T.
SIEBER, S. /DATE- JUN. 1969
NFO-10770
Computer program corrects various photometric, geometric and frequency response distortions in pictures. The program corrects pictures to a number of elements, with each element's optical density quantized to a numerical value. The translated picture is recorded on magnetic tape in digital form for subsequent processing and enhancement by computer.

B69-10146
BELL NOZZLE KERNEL ANALYSIS PROGRAM
ELLIOT, J. J. /STROMBER, R. B. /ROCKETDYNE /DATE- MAY 1969
M-FS-10456
Bell Nozzle Kernel Analysis Program computes and analyzes the supersonic flowfield in the kernel, or initial expansion region, of a bell or conical nozzle. It analyzes both plane and axisymmetric geometries for specified gas properties, nozzle throat geometry and input line.

B69-10148
MINIATURIZATION OF MAGNETIC LOGIC CIRCUITRY
BAEA, P. /AMPEX CORP. /DATE- MAY 1969
LABCON-10037
Magnetic logic circuit design features two ferrite materials, with different formulation and magnetic characteristics, which are bonded into a continuous structure by preparing the materials as a slurry and using the doctor blade method to form flexible ferrite sheets. After firing, the sintering process was continuous across the bond.

B69-10157
PERFORMANCE STATISTICS OF THE FORTRAN 4 SUBROUTINE LIBRARY /ROCKETDYNE /
CLARK, R. A. /CODY, W. J. /BELLSTROM, K. E.
THIELEKER, E. A. /DATE- MAY 1969 /REAN SEE ALSO
M-FS-7321
Test procedures and results for accuracy and timing of the basic IBM 360/50 FORTRAN 4 subroutine library are reported. The testing was undertaken to verify performance capability and as a prelude to providing some replacement routines of improved performance.

B69-10158
SYNTHESIS OF CALCULATIONAL METHODS FOR DESIGN AND ANALYSIS OF RADIATION SHIELDS FOR NUCLEAR ROCKET SYSTEMS
CAPQ, R. A. /WESTINGHOUSE ASTRONOMICAL DISLOY
JORDAN, E. A. /SOLTESZ, E. G. /WOODSIDE, E. C.
LANE, A. /DATE- SEP. 1969
M-FS-10447
Eight computer programs make up a nine volume synthesis containing two design methods for nuclear rocket radiation shields. The first design method is appropriate for parametric and preliminary studies, while the second accomplishes the verification of a final nuclear rocket reactor design.
INVESTIGATION OF SPACECRAFT COATINGS

SPON-INGHAM NOT GIVEN /BATTLEHE ING. INST./ DATE- JUN. 1969

A-FS-20488

Literature review provides compilation of properties of coating materials used for external application on space vehicles. Attention is given to absorption-exittance data and experimental spectral reference curves.

INVESTIGATION OF SPACECRAFT COATINGS

B69-10155

COMPUTER GRADING OF EXAMINATIONS

FRIBERG, H. A. DATE- JUN. 1969

ARG-10269

A method, using IBM cards and computer processing, automates examination grading and recording and permits use of computational programs. The student generates his own answers, and the instructor has much greater freedom in writing questions than is possible with multiple choice examinations.

B69-10169

ENCODE/DECODE FACILITY FOR FORTRAN 4

COHN, C. E. DATE- JUN. 1969

A method, using IBM cards and computer processing, automates examination grading and recording and permits use of computational programs. The student generates his own answers, and the instructor has much greater freedom in writing questions than is possible with multiple choice examinations.

B69-10171

ADVANCED MISSION ANALYSIS PROGRAMS

BJORKHAN, G. DATE- JUN. 1969

FORTRAN LIBRARY FOR SPACECRAFT COATINGS

A method, using IBM cards and computer processing, automates examination grading and recording and permits use of computational programs. The student generates his own answers, and the instructor has much greater freedom in writing questions than is possible with multiple choice examinations.

B69-10176

FORTRAN PROGRAMS FOR AXIAL FLOW COMPRESSION DESIGN

CABNEY, R. E. DATE- JUN. 1969

LEWIS-10765

Four computer programs examine effects of design parameters and indicate areas for research of multistage axial flow compressors. The programs provide information on velocity diagrams and stage-by-stage performance calculation, radial equilibrium of flow, radial distribution of total pressure, and off-design performance calculation.

B69-10175

SHELL DESIGN COMPUTER PROGRAM

GREENBACH, G. A. /TWI INC./ DATE- JUN. 1969

A computer program determines the useful strength of a thin-walled shell once it has been wrinkled. It can be used as an analytical tool by designers to determine how much wrinkling or deformation a shell can withstand when subjected to axial compression and bending loads.

B69-10181

INVESTIGATION OF SPACECRAFT COATINGS

SPON-INGHAM NOT GIVEN /BATTLEHE ING. INST./ DATE- JUN. 1969

A-FS-20488

Finite-element computer program solves for nodal point displacements in an axisymmetric solid. The options in the program include plane stress analysis, axisymmetric solids analysis, nonlinear plasticity analysis, and equivalent stress and strain.

B69-10238

FINITE ELEMENT ANALYSIS OF COMPRESSIBLE SOLIDS WITH NONLINEAR MATERIAL PROPERTIES

WILSON, E. L. /THEOJET-GENERAL CORP./ DATE- JUL. 1969

NUC-10342

Computer program predicts the spectra resulting from electronic transitions of diatomic molecules and atoms in local thermodynamic equilibrium. The program produces a spectrum by accounting for the contribution of each rotational and atomic line considered.

B69-10233

THERMAL NETWORK ANALYZER PROGRAM

SARAKURA, B. D. /THEOJET-GENERAL CORP./ DATE- JUL. 1969

NUC-10540

Computer program solves transient or steady-state heat flow problems through the concept of lumped parameters expressed as the electrical analog of the heat transfer problem using finite differences techniques.

B69-10235

TIME-SHARED CATHODE RAY TUBE

HERNDON, E. S. /BITTE CORP./ DATE- JUL. 1969

MSC-12238

Time-shared cathode ray tube provides high quality display at low cost display stations which utilize television monitors. It updates a cluster of graphic displays from a computer and is useful in systems not equipped for graphics time-sharing.

B69-10267

COMPUTER PROGRAM FOR OFF-DESIGN PERFORMANCE OF RADIAL INFLOW TURBINES

PUTZ, S. M. JR. DATE- AUG. 1969

LEWIS-10764

Computer program estimates off-design performance without making actual tests and design point performance. Turbine flow areas, diameters, and blade angles are required input information.

B69-10344

COMPUTER PROGRAM, USING NUMERICAL INTEGRATION AND FINITE DIFFERENCE TECHNIQUES, SOLVES ALMOST ANY
buckling problem for shells exhibiting orthotropic behavior. Stability analyses can be performed with reasonable accuracy and without unduly restrictive approximations.

**B69-10334**

**ON THE BOUND OF FIRST EXCERSION PROBABILITY**

YANG, J. N. DATE- SEP. 1969

B69-11358

Method has been developed to improve the lower bound of the first excursion probability that can apply to the problem with either constant or time-dependent barriers. The method requires knowledge of the joint density function of the random process at two arbitrary instants.

**B69-10337**

**ANALYSIS OF SPACE VEHICLE STRUCTURES USING THE TRANSFER-FUNCTION CONCEPT**

BERGER, L. /CALIF. INST. OF TECHNOL./ THURSTON, R. R. DATE- SEP. 1969

B50-11642

Analysis of large complex systems is accomplished by dividing it into suitable subsystems and determining the individual dynamical and vibrational responses. Frequency transfer functions then determine the vibrational response of the whole system.

**B69-10368**

**COMPUTER SIMULATION OF HIGH-FREQUENCY COMBUSTION INSTABILITY AND ITS SUPPRESSION**

BRENNER, R. L. /BETTIS AND WHITNEY AIRCRAFT/ DATE- SEP. 1969

BQ-10391

Program for simulation of gas motion illustrates the effects of some of the variables on the combustion chambers of liquid propellant rocket engines. The program is based on numerically integrating the laws of inviscid fluid dynamics by two-step Lex-Wendroff technique.

**B69-10370**

**LX LOOKANGLE PROGRAM**

BACE, W. E. /LOCHS/ ELECTRON. CO./ DATE- SEP. 1969

B5E-13179

Program computes the spacecraft look angles and the slant range, which define a spherical coordinate system located in the spacecraft body. The program is designed to reduce data from the Lunar Module missions and to output desired information.

**B69-10391**

**SONIC BOOM PROPAGATION IN STRATIFIED ATMOSPHERE**


LANGLEY-10480

Comprehensive analysis and algorithms, realized in a computer program, provides realistic calculations for sonic boom signatures in the atmosphere. Algorithms include maneuvering aircraft in a sonic boom pressure calculation, a ray-trace calculation, and results in the form of complete signatures.

**B69-10394**

**VISUAL TASK ANALYSIS /VISTA/**

BILY, T. /BOEING CO./ KELLY, A. MERRITT, R., JR. DATE- SEP. 1969

B5E-14716

Computer system VISTA, automatically plots selective PERT networks in order to develop accurate, standardized scheduling documentation as an essential element to project planning. This automation of plotting networks generates standardized networks due to a priority scheme adopted for calculating paths between events.

**B69-10409**

**EXACT MINIMAL-STATE SYSTEM RELIABILITY ANALYSIS**

BILY, R. O. /M. N. ROCKWELL CORP./ DATE- SEP. 1969

B5E-16551

System reliability equation, an exact function of component reliabilities, for a system with a finite number of points is derived from the minimal states which are found by logical analysis of the configuration. The numerical value is obtained by substituting the component reliabilities or unreliabilities.
coefficients for an odd number of equally spaced data points. The adjusting technique derivation is for a ninth order polynomial. It reduces computer time for smoothing functions.

B69-10566
SYSTEM FOR COMPUTING OPERATIONAL PROBABILITY EQUATIONS
BYAN, K. E. /NR. AM. ROCKWELL CORP./ DATE- OCT. 1965
M-FS-16410
SCPE system computes an expression relating the probability of system success to the probabilities of success of its components. It is especially designed for complex system reliability studies.

B69-10574
SPACECRAFT THERMAL RADIATION ENVIRONMENT
COMPUTER PROGRAM
PAOLETTI, C. J. /BOEING CO./ SCATES, J. B. DATE- OCT. 1969
M-FS-15054
Computer program computes the total thermal radiation flux on each of a set of exposed surface elements of a spacecraft in the vicinity of a celestial body. The incident flux consists of solar, both direct and planetary-reflected, and planetary-emitted infrared radiation as functions of time.

B69-10608
AUTOMATIC COMPUTATION OF DATA-SET DEFINITIONS
REYNOLDS, J. C. DATE- DEC. 1969
ARG-10475
Mathematical method for the construction of a computer program data set description from a computer program contains detailed declarative information. Cartesian products and disjoint-union operators are used to yield a series of recursive group equations.

B69-10656
COGENT PROGRAMMING MANUAL
REYNOLDS, J. C. DATE- NOV. 1969
ARG-10463
COGENT/COmpiler and GENeralized Translator/ programming system is a compiler whose input language enables a description of symbolic and linguistic manipulation algorithms. Primarily for use as a compiler-compiler, it is also applicable to algebraic manipulation, mechanical theorem proving, and heuristic programming.

B69-10669
HIGH PRESSURE REAL GAS EFFECTS FOR HELIUM AND NITROGEN
JOHNSON, R. C. DATE- OCT. 1969
LET-10849
Critical flow factor is calculated that permits the isentropic mass-flow rate of the gases through critical flow nozzles to be calculated from plenum conditions. Results include nozzle throat velocity, compressibility factor, entropy, enthalpy, specific heat, and ratios of throat to plenum pressure, density, and temperature.

B69-10686
ADDING CALCIUM IMPROVES LITHIUM FERRITE CORE
LASSOFF, R. DATE- NOV. 1969
EFC-10536
Adding calcium increases uniformity of grain growth over a wide range of sintering temperatures and reduces porosity within the grain. Ferrite cores containing calcium have square hysteresis loops and high curie temperatures, making them useful in coincident current memories of digital electronic computers.

B69-10720
BIOMEDICAL BULK DATA PROCESSING PROGRAM
SP05- INVENTOR NOT GIVEN /FLIGHT RES. CENTER/
DATE- NOV. 1969
FRC-10015 FRC-10016
Analog-to-digital computer accepts physiological flight data as three basic analog input signals — the ECG signal, the flowmeter signal which is a respiration monitor, and the accelerometer signal which measures the normal g-load on the subject.

B69-10760
ENGINEERING THERMAL ANALYZER /DATA 2/
SCATES, J. B. /BOEING CO./ STEINBERG, L. L. DATE- DEC. 1969
M-FS-15055
Computer program uses numerical methods to provide accurate heat transfer solutions to a wide variety of heat flow problems. This highly versatile program will solve steady state and transient problems in almost any situation that can be presented by a resistance-capacitance network.

B69-10723
OPTIMUM STRUCTURAL DESIGN BASED ON RELIABILITY AND PROOF-LOAD TESTING
SHINDO, B. YANG, J. M. DATE- DEC. 1969
NFO-11228
Proof-load test eliminates structures with strength less than the proof load and improves the reliability value in analysis. It truncates the distribution function of strength at the proof load, thereby alleviating verification of a fitted distribution function at the lower tail portion where data are usually nonexistent.
### Subject Index

The title of each Tech Brief is listed under several selected subject headings to provide the user with a variety of approaches in his search for specific information. The Tech Brief number, e.g., 869-10062, is located under and to the right of the title and is followed by a two-digit number, e.g., 05, which designates the subject category in which the entire entry can be found.

#### Abbreviations

- Liquid microscopy chamber and microsyringe designs allow more efficient microinjections
  - ARG-251
  - B67-10305 04
- Aerial-image enables diagrams and animation to be inserted in motion pictures
  - ARG-166
  - B67-10398 02
- Improved method of optical design
  - GSFC-10743
  - B69-10405 02

#### Ablation

- Computational procedure for finite difference solution of one-dimensional heat conduction problem reduces computer time
  - KSC-1120
  - B66-10566 01
- Sensors measure surface ablation rate of reentry vehicle heat shield
  - NASA-287
  - B66-10592 01
- Multidimensional reaction kinetic ablation program /BEKAP/
  - B67-10495 06

#### Ablative Materials

- Computer simulation program is adaptable to industrial processes
  - LEWIS-240
  - B66-10426 01
- Improved method facilitates debalking and curing of phenolic impregnated asbestos
  - MSC-949
  - B66-10459 05
- High intensity radiation heat source is capable of sustained operation
  - ARC-61
  - B66-10547 02
- New class of thermosetting plastics has improved strength, thermal and chemical stability
  - LEWIS-10108
  - B67-10197 03
- Improved compression molding process
  - NASA-10027
  - B67-10302 03
- Fire retardant foams developed to suppress fuel fires
  - ARC-10098
  - B66-10358 03

### New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
- LEWIS-10576
- B69-10118 03

### Anomalities

- Phase plane displays detect incipient failure in servo system testing
  - EQ-10018
  - B67-10662 01
- Investigation of temperature dependence of development and aging
  - ARG-10145
  - B69-10022 04
- Modified cryogenic storage tank subsystem
  - KSC-10380
  - B69-10556 02

### Abrasion

- Epoxy-coated containers easily opened by wire band
  - M-FS-992
  - B66-10174 05
- Portable sandblaster cleans small areas
  - M-523
  - B66-10242 05
- Grit blasting nozzle fabricated from mild tool steel proves satisfactory
  - M-1420
  - B66-10597 05
- Abrasion and fracture testing in a high-pressure hydrogen environment
  - NF-10468
  - B69-10457 03

### Abrasion Resistance

- Epoxy blanket protects milled part during explosive forming
  - M-FS-307
  - B66-10029 03
- Polytetrafluoroethylene lubricates ball bearings in vacuum environment
  - M-379
  - B66-10081 03
- Electrical cabling withstands severe environmental conditions
  - M-1585
  - B66-10427 01
- Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area
  - MUC-10007
  - B67-10538 01

### Abrasives

- Stringent cleaning technique assures reliable epoxy bond
  - GSFC-176
  - B64-10142 03
- Device spot-laps spheres to very close tolerances
  - JPL-SC-119
  - B66-10175 05
- Cracks in glass electrical connector headers removed by dry blasting with fine abrasive
  - LEWIS-381
  - B67-10148 03
- Improved atmospheric particle analyzer
  - MNC-33
  - B67-10231 01
- Technique for abrasive cutting of thick-film conductors for hybrid circuits
ABSORBENTS

Purification train produces ultrapure hydrogen gas
M-PS-1913 867-10078 03

Tritiated alumina serves as reagent for self-labeling analysis
ARG-209 867-10315 03

Two systems developed for purifying inert atmospheres
ARG-10234 869-10026 03

ABSORBENTS (EQUIPMENT)

Bellows joint absorbs torsional deflections in duct system
N-PS-682 866-10332 04

Electron beam standby absorber system
N-PS-14108 867-10650 01

Pressure variable orifice for hydraulic control valve
MSC-11323 866-10120 05

ABSORBENTS (MATERIALS)

Bidirectional torque filter eliminates backlash
GSFC-335 865-10748 05

Mossbauer vibration calibration systems evaluated
N-PS-20014 869-10125 01

Improved fire resistant radio frequency anechoic materials
N-PS-16600 869-10450 05

ABSORPTANCE

Technique for measuring absorptance and emittance by using cyclic incident radiation
LEWIS-321 866-10630 02

ABSORPTION

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures
N-PS-892 866-10319 03

Removable well in reaction flask facilitates carbon dioxide collection
ARC-47 865-10316 03

Bore saw drill attachment has zero force reaction
MSC-543 866-10604 05

Microprobe investigation of brittle segregates in aluminum EIG and TIG welds
N-PS-14720 868-10334 03

Investigation of spacecraft coatings
N-PS-20458 869-10181 06

Microdetermination of urea in urine using p-Dimethylaminobenzaldehyde /DDAB/
NFO-10715 869-10317 04

ABSORPTION SPECTRA

A radiometer-pyrometer
LEWIS-284 866-10606 01

Status of ultrasonic analysis for semiconductors
M-PS-2254 867-10138 03

Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry
ARG-210 867-10236 03

Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
MSC-11018 867-10252 04

Infrared spectroradiometer for rocket exhaust analysis

SUBJECT INDEX

M-PS-14357 868-10081 02

Optometric system facilitates colorimetric and fluorometric measurements
NFO-10233 868-10316 01

Miniaturized King furnace permits absorption spectroscopy of small samples
ARG-10177 868-10418 02

Study of actinide chemistry in saturated potassium fluoride solution
ARG-10204 869-10004 03

Coordination chemistry in fused-salt solutions
ARG-10469 869-10381 06

ABSORPTIVITY

Special coatings control temperature of structures
GSFC-444 865-10337 03

Blackbody cavity radiometer has rapid response
JPL-521 866-10679 01

Vibration analysis utilizing Mossbauer effect
N-PS-11978 867-10339 01

Practical new method of measuring thermal-neutron fluence
NCC-10086 867-10352 02

Novel RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127 867-10362 01

Method prevents secondary radiation in radiographic inspection
N-PS-13383 867-10391 02

Properties of optics at high temperature and their measurement, a study
N-PS-14696 868-10240 02

Technique for predicting temperature distribution in gases
LEWIS-10918 869-10329 01

Prediction of thermal radiation from a rocket's exhaust plane
N-PS-20414 869-10371 02

ABUNDANCE

Ion-retarding lens improves the abundance sensitivity of tased mass spectrometers
ARG-10365 869-10166 02

ACCELERATORS

Method for measuring alternator voltage transients
LEWIS-10373 868-10513 01

ACCELERATING AGENTS

New shield for gamma-ray spectrometry
ARG-10388 869-10344 02

ACCELERATION

Chain friction system gives positive, reversible drive
ARC-B 863-10009 05

Design concept for pressure switch calibrator
HQ-36 866-10598 01

Computer optimization programs finds values for several independent variables that minimize a dependent variable
N-PS-13032 867-10328 06

Internal velocity factors
MSC-35002 868-10403 06

ACCELERATION (PHYSICS)

Novel shock absorber features varying yield strengths

X-2
SUBJECT INDEX

ACCUMULATORS

MSC-636  B66-10138  03

Solid state detectors monitor relay contacts
JPL-785  B66-10196  01

Design concept for pressure switch calibrator
HQ-36  B66-10598  01

A power-spectral-density computer program
NPO-10126  B67-101060  01

A modal combination computer program for
dynamic analysis of structures
NPO-10129  B67-10217  06

Rectilinear display gives acceleration load factor and velocity information
MSC-1045  B67-10248  01

Electron beam parallel X-ray generator
MSC-11022  B67-10372  02

Advances in light-gas gun technology
NFS-14270  B66-10286  05

Journal gas bearing for curved surfaces
NFS-20423  B69-10182  05

Report on a cryogenic gyroscope
NPO-11200  B69-10217  06

Miniaturized high-resolution mass/charge spectrograph /design study/
MSC-13279  B69-10554  02

ACCELERATION PROTECTION

Friction brake cushions acceleration and vibration loads
MSC-715  B66-10606  05

ACCELEROMETERS

New apparatus increases ion beam power density
LEWIS-73  B63-10440  01

Ultra-sensitive transducer advances micro-measurement range
ARC-26  B69-10004  01

Crystal measures short-term, large-magnitude forces
JPL-77  B66-10187  01

Simple device produces accelerometer calibration pulse
M-FS-363  B66-10285  01

Miniature servo accelerometer is force-balanced
JPL-155  B66-10340  01

Tool enables proper rating of accelerometer and cable connector
M-FS-611  B66-10208  05

Damping technique gives accelerometer flat frequency response
M-FS-471  B66-10293  01

Acceleration-compensated pressure transducer has fast response
LANGLEY-113  B66-10353  01

Rectilinear accelerometer possesses self-calibration feature
M-FS-1860  B66-10452  01

Instrument automatically selects peak acceleration signal from several accelerometers
JPL-816  B66-10462  01

Miniature capacitive accelerometer is especially applicable to telemetry

ACCUMULATORS

ARC-72  B66-10491  01

Low level accelerometer test methods are investigated
N-FS-908  B66-10510  01

Miniature piezoelectric triaxial accelerometer measures cranial accelerations
ARC-71  B66-10534  01

Instrument sequentially samples ac signals from several accelerometers
JPL-884  B66-10629  01

Fixture tests bellows reliability through repetitive pressure/temperature cycling
MSC-1176  B67-10111  01

Instrumentation monitors transported material through variety of parameters
N-FS-12938  B67-10545  01

Mass loading effects on vibrated ring and shell structures
N-FS-14979  B68-10532  03

Acceleration insensitive fluid expansion compensator
N-FS-10152  B69-10559  01

Mossbauer vibration calibration systems evaluated
N-FS-20014  B69-10125  01

Compensation of pulse-rebalanced inertial instruments
MSC-13098  B69-10216  01

Biomedical bulk data processing program
BFC-10015  B69-10720  06

ACCEPTABILITY

Failure rates for accelerated acceptance testing of silicon transistors
ERC-10198  B68-10541  01

Beryllium fastener technology
M-FS-20306  B69-10019  05

ACCEPTOR MATERIALS

Primary cells utilize halogen-organic charge transfer complex
JPL-926  B69-10682  02

Xenon fluoride solutions effective as fluorinating agents
ARG-217  B67-10133  03

ACCESS TIME

System monitors discrete computer inputs
N-FS-1021  B66-10389  01

ACCESSORIES

Depth indicator and stop aid machining to precise tolerances
N-FS-553  B66-10149  05

Versatile impact hand tool
M-FS-20140  B68-10371  05

ACCIDENT PREVENTION

Key-locked guard prevents accidental switch actuation
MSC-419  B66-10235  05

Proposed technique for vertical alignment of a crane’s cable
N-FS-16496  B69-10202  05

ACCIDENTS

Hydrodynamics of a new concept of primary containment by energy absorption
ARG-10242  B69-10046  05

ACCESSORIES

High-pressure regulating system prevents pressure surges
JPL-231  B63-10170  05
Nonresonant support facilitates vibration testing of structures [M-FS-224] B65-10039 05

Pulse height analyzer operates at high repetition rates, low power [WGO-046] B65-10041 01

Plastic bags in evacuated chamber make lightweight gas sampling system [FRC-31] B65-10264 01

Electronic average-hour integrator is accurate to one percent [GSFC-203] B65-10308 01

Centrifugal device separates liquid from gas [MSC-282] B65-10394 05

Pressure levels and pulsation frequencies can be varied on high pressure/frequency testing device [LEWIS-10205] B67-10360 05

Potassium plasma cell facilitates thermionic energy conversion process [ARG-10010] B67-10399 01

Design for high-temperature /1800 deg F/ liquid metal pressure transducer [LEWIS-10144] B67-10458 01

Tool samples subsurface soil free of surface contaminants [MSC-10988] B67-10473 05

Accumulator isolator prevents malfunctioning of faulty hydraulic system [M-FS-1415] B67-10528 05

Air sampler collects and protects minute particles [HQ-10037] B67-10661 01

Accumulator for shaft encoder [M-FS-13599] B66-10093 01

Performance of low-pressure thermionic converter is evaluated [ARG-10276] B69-10090 01

Integrated circuit with multiple collector current source [M-FS-20177] B69-10126 01

Torsion system for creep testing with multiple stress reversals [HQ-10039] B69-10147 03

Positive and negative output circuits [LEWIS-10175] B69-10151 01

Sealing a rubber bladder between two sections of an accumulator [M-FS-20403] B69-10355 05

A simple electrometer for measuring small photocell currents [GSFC-10603] B69-10734 01

Fluid sample collection and storage device [MSC-10962] B69-10816 05

ACCUALTORS (COMPUTERS)

Logic circuit exhibits optimum performance [LANGLEY-129] B65-10193 01

ACCURACY

Modified gas bearing is adjustable to optimum stiffness ratio [M-FS-145] B66-10050 05

Metal-bending track facilitates lightweight, close-tolerance fabrication [ARC-29] B66-10069 05

Electron-beam deflection controlled by digital signals [GSFC-385] B65-10283 02

Optical output enhances flowmeter accuracy [M-PS-462] B65-10395 02

Special mount improves remote transducer accuracy [LEWIS-269] B66-10021 01

Circuit operates as sine function generator [MSC-255] B66-10038 01

Calorimeter accurately measures thermal radiation energy [LANGLEY-173] B66-10058 02

Specimen holder design improves accuracy of X-ray powder analysis [JPL-SC-165] B66-10075 02

Corrosion of metal samples rapidly measured [NU-0041] B66-10140 03

Hollow needle used to cut metal honeycomb structures [MSC-1086] B66-10244 05

Potassium plasma cell facilitates thermionic energy conversion process [ARG-10010] B67-10399 01

Instrument calculates moments of inertia of complex plane figures [ISC-628] B66-10306 01

Design for high-temperature /800 deg F/ liquid metal pressure transducer [LEWIS-10144] B67-10458 01

Densitometer system for liquid hydrogen has high accuracy, fast response [I-FS-909] B66-10438 01

Tool samples subsurface soil free of surface contaminants [MSC-10988] B67-10473 05

Study compares methods for the numerical solution of ordinary differential equations [M-PS-830] B65-10466 01

Subroutine allows easy computation in extended precision arithmetic [M-PS-1136] B66-10504 01

A radiometer-pyrometer [LEWIS-208] B66-10606 01

Automated microsyringe is highly accurate and reliable [NPO-10142] B67-10203 01

Computer subroutine ISUDS accurately solves large system of simultaneous linear algebraic equations [NUC-10051] B67-10344 06

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning [NUC-10073] B67-10348 06

Transducer measures embedded stresses in electronic modules [M-FS-13486] B67-10367 01

Areas of irregular, discontinuous patterns rapidly and accurately measured [GSFC-10603] B67-10674 01

Synchronized circuit improves accuracy of fluid transfer measurements [KSC-11167] B66-10057 05

Performance statistics of the FORTRAN 4/Library for the IBM System/360 [ARG-3099] B66-10057 06

Gage provides audible signal to facilitate checkout of connector pins [KSC-10335] B65-10173 01

ACETALDEHYDE

Adherent protective coatings plated on magnesium-lithium alloy [M-FS-365] B65-10294 03

Aerial-image enables diagrams and animation to be inserted in motion pictures [ARG-165] B67-10398 02

Study of behavior of sterols at interfaces [ARG-10085] B68-10281 03
ACETIC ACID
Copper and nickel adherently electroplated on titanium alloy
M-FS-13952
Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces
M-FS-10254
B69-10689
01

ACETONE
Metals plated on fluorocarbon polymers
JPL-544
B63-10612
03

Fabrication method produces high-grade alumina crucibles
M-FS-216
B65-10078
05

Freon provides heat transfer for solid C02 calibration standard
M-FS-644
B66-10257
02

Spray-on electrodes enable EKG monitoring of physically active subjects
FRC-36
B66-10649
04

Viscosity and density of methanol/water mixtures at low temperatures
M-FS-14991
B68-10274
03

ACETYL COMPOUNDS
Electric arc heater is self starting
LANGLEY-208
B66-10230
03

ACIDS
Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination
ARG-262
B67-10421
02

Acid spray technique Mills aluminum alloy materials without immersion
M-FS-12500
B67-10463
03

High-temperature bearing lubricants
LEWIS-10408
B68-10249
04

Electrolytic separation of crystals of transition-metal oxides
ARG-10506
B69-10431
02

ACOUSTIC ATTENUATION
Transistor biased amplifier minimizes diode discriminator threshold attenuation
ARG-163
B67-10311
01

Power consumption in acoustic amplifiers under conditions of maximum stable gain
GSFC-10067
B68-10327
01

Improved communication system for large operations center
M-FS-15016
B68-10529
01

Thick transducers used for generating short-duration stress pulses in this specimens
ARG-10232
B69-10045
01

A comparison of two methods of measuring particle size of Al2O3 produced by a small rocket actor
NFO-11198
B69-10572
03

ACOUSTIC IMPEDANCE
Active frequency control system for argon FN laser
M-FS-14908
B69-10099
02

Energy-storage of a prescribed impedance
ARG-10428
B69-10431
02

ACOUSTIC MEASUREMENTS
Small fozed polystyrene shield protects low-frequency microphones from wind noise
M-FS-123
B63-10579
01

System enables more complete calibrations of dynamic-pressure transducers
M-FS-2063
B67-10099
01

Edge-type connectors evaluated by electrical noise measurement
M-FS-2243
B67-10125
01

Electronic dummy for acoustical testing
MSC-206
B67-10298
01

Automatic device facilitates noise checks and electronic calibrations
LEWIS-10173
B67-10467
01

Transient sensor development
M-FS-13370
B67-10471
01

Noise figure measurement concept for acoustic amplifiers
GSFC-10066
B68-10272
01

Thick transducers used for generating short-duration stress pulses in this specimens
ARG-10232
B69-10045
01

Survey of man-made electrical noise affecting radio broadcasting
EQ-10290
B69-10308
01

Seismographic recording of large rocket engine operation
M-FS-20545
B69-10756
01

ACOUSTIC PROPAGATION
Thick transducers used for generating short-duration stress pulses in this specimens
ARG-10232
B69-10045
01

ACOUSTIC PROPERTIES
Experiments to investigate particulate materials in reduced gravity fields
M-FS-13308
B67-10394
02

ACOUSTIC SIMULATION
Electronic dummy for acoustical testing
MSC-206
B67-10298
01

ACOUSTIC VELOCITY
Ultrasonic temperature measuring device
LEWIS-10446
B69-10319
01

Instabilities encountered during heat transfer to a supercritical fluid
ARG-10266
B69-10042
02

Thick transducers used for generating short-duration stress pulses in this specimens
ARG-10232
B69-10045
01

An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10187
B69-10082
01

Generation of sonic power during welding
M-FS-20335
B69-10404
05

ACOUSTICS
Study made of acoustical monitoring for mechanical checkout
M-FS-13372
B67-10430
02

Noise study of single stage compressor rotor-stator interaction
LANGLEY-137
B67-10516
02

Sonic boom propagation in stratified atmosphere
LANGLEY-10480
B69-10391
06

Proposed acousto-optic filter
EQ-10440
B69-10466
02

ACQUISITION
An investigation of phase-lock loop swept-frequency synchronization
M-FS-656
B66-10423
01

Acquisition of pseudonoise signals by sequential estimation
ACRYLIC ACID

Eeparin insolubilized with crosslinking agent
NPO-10834

ACRYLIC RESINS

Circular, explosion-proof lamp provides uniform illumination
MSC-382

Electrically conductive fibers thermally isolate temperature sensor
GSPC-456

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54

Scribable coating for plastic films
MSC-11194

ACTUATORS

Stepping switch with simple actuator provides many contacts in small space
JPL-122

Blade valve isolates compartment in pipe, opens to allow free flow
JPL-585

Explosives actuate nonmagnetic indexing device
GSPC-237

Stepping motor drive circuit designed for low power drain
JPL-585

Device disconnects several couplings simultaneously
JPL-226

Electrically conductive fibers thermally isolate temperature sensor
GSPC-237

Explosives actuate nonmagnetic indexing device
GSPC-237

Stepping motor drive circuit designed for low power drain
JPL-585

Device disconnects several couplings simultaneously
JPL-226

ACTINIDE SERIES

Study of actinide chemistry in saturated potassium fluoride solution
ABG-10204

ACTINIDE SERIES COMPOUNDS

Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods
ARG-10065

ACTINUM

Daughter growth in freshly separated Ra-226, Ac-227 and U-232
ARG-10226

ACTIVATION

Study made of Raney nickel technology
N-PS-2054

Preparation of silver-activated zinc sulfide thin films
GSPC-10667

Versatile impact hand tool
N-PS-20140

ACTIVATION ANALYSIS

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes
MSC-10143

ACTIVATION ENERGY

Solenoid permits remote control of stop watch and assures restarting
FRC-17

Electrically controlled optical latch and switch requires less current
JPL-SC-117

Hydrated multivalent cations are new class of molten salt mixtures
ARG-211

ACTUATION

Level of super-cold liquids automatically maintained by leveling
JPL-397

Simple mechanism combines positive locking and quick-release features
WGO-4

One-shot valve may be remotely actuated
WGO-195

Key-locked guard prevents accidental switch actuation
MSC-419

Rugged switch responds to minute pressure differentials
N-PS-12704

Simple switch actuated by force applied
N-PS-12704

SUBJECT INDEX

over wide solid angle
IWP-09808

ANTICIPATORS

Stepping switch with simple actuator provides many contacts in small space
JPL-122

Blade valve isolates compartment in pipe, opens to allow free flow
JPL-585

Explosives actuate nonmagnetic indexing device
GSPC-237

Stepping motor drive circuit designed for low power drain
JPL-585

Device disconnects several couplings simultaneously
JPL-226

Device disconnects several couplings simultaneously
JPL-226

Selenium bond decreases ON resistance of light-activated switch
MSC-589

Quick-closing valve is actuated by explosive discharge
MSC-589

Three-position rocker switch actuator has positive centering
MS-261

Fingertip current control facilitates use of arc welding gun
MSC-10143

Three-position rocker switch actuator has positive centering
MSC-261

Compact actuator converts rotary to linear motion
JPL-786

Special sandrel permits uniform welding of out-of-round tubing
N-PS-706

Friction loading device enables accurate testing of brittle materials
NU-0051

Pneumatic binary encoder replaces multiple solenoid systems
N-PS-665

Matching flow characteristics of standard shutoff valves eliminates need for custom fabricated valves
N-PS-1069

Quick-response servo amplifies small hydraulic pressure differences
ARG-99

In-tank shutoff valve is provided with maximum blast protection
I-PS-1556

Fluid logic control circuit operates motor
MSC-1046

Fuel and oxidizer valve assembly employs single solenoid actuator
MSC-1046

Actuator device schedules rate of valve closure
N-PS-1556

Low speed, long term tracking electric drive system has zero backlash
NPO-10173

Pressure levels and pulsation frequencies can be varied on high pressure/frequency
N-PS-10468
<table>
<thead>
<tr>
<th>SUBJECT INDEX ADAPTIVE CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>testing device</strong></td>
</tr>
<tr>
<td>LEWIS-10205</td>
</tr>
<tr>
<td><strong>Movable RF probe eliminates need for calibration in plasma accelerators</strong></td>
</tr>
<tr>
<td>LEWIS-1027</td>
</tr>
<tr>
<td><strong>Proposed method of rotary dynamic balancing by laser</strong></td>
</tr>
<tr>
<td>M-FS-12422</td>
</tr>
<tr>
<td><strong>Combined actuator and latch for cartridge powered actuator</strong></td>
</tr>
<tr>
<td>MSC-11242</td>
</tr>
<tr>
<td><strong>Butterfly valve with metal seals controls flow of hydrogen from cryogenic through high temperatures</strong></td>
</tr>
<tr>
<td>M-FS-12998</td>
</tr>
<tr>
<td><strong>Flat cable insulation stripping machine</strong></td>
</tr>
<tr>
<td>M-FS-13776</td>
</tr>
<tr>
<td><strong>Dynamic captive plastic seal</strong></td>
</tr>
<tr>
<td>M-FS-12998</td>
</tr>
<tr>
<td><strong>Air sampler collects and protects minute particles</strong></td>
</tr>
<tr>
<td>HQ-10037</td>
</tr>
<tr>
<td><strong>Phase plane displays detect incipient failure in servo system testing</strong></td>
</tr>
<tr>
<td>HQ-10038</td>
</tr>
<tr>
<td><strong>Quick-attach clamp</strong></td>
</tr>
<tr>
<td>XPB-05421</td>
</tr>
<tr>
<td><strong>High-voltage pulse generator developed for wide-gap spark chambers</strong></td>
</tr>
<tr>
<td>ARC-1116</td>
</tr>
<tr>
<td><strong>Conceptual hermetically sealed elbow actuator</strong></td>
</tr>
<tr>
<td>M-FS-14710</td>
</tr>
<tr>
<td><strong>Conceptual apparatus for detecting leaks of nonconductive liquids</strong></td>
</tr>
<tr>
<td>M-FS-14713</td>
</tr>
<tr>
<td><strong>Indium adhesion provides quantitative measure of surface cleanliness</strong></td>
</tr>
<tr>
<td>SAI-10024</td>
</tr>
<tr>
<td><strong>Automatic patient respiration failure detection system with wireless transmission</strong></td>
</tr>
<tr>
<td>ARC-10174</td>
</tr>
<tr>
<td><strong>Pyrotechnic-actuated cable release</strong></td>
</tr>
<tr>
<td>XNP-10849</td>
</tr>
<tr>
<td><strong>Electromechanical rotary actuator operates over wide temperature range</strong></td>
</tr>
<tr>
<td>M-FS-18402</td>
</tr>
<tr>
<td><strong>Remotely-actuated biomedical switch</strong></td>
</tr>
<tr>
<td>ARC-10105</td>
</tr>
<tr>
<td><strong>Torsion system for creep testing with multiple stress reversals</strong></td>
</tr>
<tr>
<td>HQ-10039</td>
</tr>
<tr>
<td><strong>Electrothermal linear actuator</strong></td>
</tr>
<tr>
<td>NPO-10637</td>
</tr>
<tr>
<td><strong>Remote control thermal actuator</strong></td>
</tr>
<tr>
<td>LEWIS-10673</td>
</tr>
<tr>
<td><strong>Separation simulator</strong></td>
</tr>
<tr>
<td>KSC-67-15</td>
</tr>
<tr>
<td><strong>Calibratable solid-state pressure switch</strong></td>
</tr>
<tr>
<td>M-FS-20476</td>
</tr>
<tr>
<td><strong>Piezoelectric linear actuator</strong></td>
</tr>
<tr>
<td>MSC-13194</td>
</tr>
<tr>
<td><strong>Testing the flammability of materials exposed to arcs</strong></td>
</tr>
<tr>
<td>MSC-15225</td>
</tr>
</tbody>
</table>

**ADAPTATION**

**Single projector accommodates slides of different size and format**

**X-ray source uses interchangeable anodes to vary X-ray wavelength**

**Movable RF probe eliminates need for calibration in plasma accelerators**

**Phase plane displays detect incipient failure in servo system testing**

**Indium adhesion provides quantitative measure of surface cleanliness**

**Automatic patient respiration failure detection system with wireless transmission**

**Pyrotechnic-actuated cable release**

**Electromechanical rotary actuator operates over wide temperature range**

**Remotely-actuated biomedical switch**

**Torsion system for creep testing with multiple stress reversals**

**Electrothermal linear actuator**

**Remote control thermal actuator**

**Separation simulator**

**Calibratable solid-state pressure switch**

**Piezoelectric linear actuator**

**Testing the flammability of materials exposed to arcs**

**ADAPTIVE CONTROL**

**Adaptive control circuit prevents amplifier saturation**
**ADDIBG CIRCUITS**

**I**mproved circuit minimizes generation time of pseudonoise check bits
JPL-698 B65-10275 01

**Simple circuit performs binary addition and subtraction**
GSFC-399 B65-10335 01

**Linear signal noise summer accurately determines and controls S/N ratio**
JPL-SC-152 B66-10433 01

**Security warning system monitors up to fifteen remote areas simultaneously**
KSC-66-39 B66-10548 01

**Self-correcting, synchronizing ring counter using integrated circuit devices**
N-PS-13901 B68-10067 01

**METHOD**

**ADDITIVE**

Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application
LANGLEY-6A B63-10318 03

Didymium compound improves nickel-cadmium cell
GSFC-295 B65-10083 03

Run-in with chemical additive protects gear surface
M-PS-548 B66-10069 05

Aluminum doping improves silicon solar cells
LEWIS-206 B66-10181 02

Chromium oxide coatings improve thermal emissivity of alumina
WOO-263 B66-10227 03

Photosensitive filler minimizes internal stresses in epoxy resins
N-PS-1600 B67-10227 03

Process controls introduction of selected impurities into semiconductor wafers
GSFC-523 B67-10303 01

Steel test panel helps control additives in pyrophosphate copper plating
LEWIS-10101 B67-10358 05

High-temperature bearing lubricants
LEWIS-10408 B68-10249 05

Ignition of binary alloys of uranium
ARG-10057 B68-10280 01

Precise doping of metals by small gas flows
LEWIS-10444 B68-10526 03

**ADDS**

Adhesive for cryogenic temperature applications
LEWIS-10264 B69-10074 03

**ADDSIVERY**

Refractory thermal insulation for smooth metal surfaces
N-PS-160 B64-10099 03

Multilayer refractory nozzles produced by plasma-spray process
WOO-318 B66-10611 05

Repeparable, high-density microelectronic module provides effective heat sink
N-PS-13075 B67-10356 01

Technique for measuring magnetic tape interlayer adhesion
NFO-10011 B67-10477 03

Copper and nickel adherently electroplated on titanium alloy
N-PS-13952 B67-10532 03

**SUBJECT INDEX**

Method of disjoining adhesively bonded electronic cordwood modules
MSC-12060 B68-10086 01

Indium adhesion provides quantitative measure of surface cleanliness
SAM-10024 B68-10342 01

Gun facilitates adhesive bonding of studs to surfaces
N-PS-20299 B69-10009 05

Effect of interparticle forces on the fluidization of fine particles
ARG-10264 B69-10195 03

Pulsed high-voltage dc RF sputtering
LEWIS-10920 B69-10699 01

ADHESION TESTS

Ultrasonic emission method enables testing of adhesive bonds
M-PS-799 B66-10341 01

Dot patterns provide reproducible flaw areas for study of adhesive bonds
M-PS-062 B66-10367 05

Nondestructive determination of cohesive strength of adhesive-bonded composites
N-PS-20397 B69-10464 03

ADHESIVES

Portable flooring protects finished surfaces, is easily moved
M-PS-15 B63-10387 05

Improved electrode gives high-quality biological recordings
MSC-17 B64-10025 04

Screening technique makes reliable bond at room temperature
M-PS-227 B65-10004 03

Improved conductive paste secures biomedical electrodes
MSC-107 B65-10015 03

Adhesive for vacuum environments resists shock and vibration
MSC-56 B65-10016 03

Peel resistance of adhesive bonds accurately measured
GSFC-320 B65-10173 03

Electronic modules easily separated from heat sink
MSC-142 B65-10186 02

Fastener distributes stress evenly from sandwich-panel-hung items
MSC-236 B65-10358 05

Adhesive-backed terminal board eliminates mounting screws
MSC-173 B65-10396 01

Polymer film exhibits thermal and radiation stability
LANGLEY-100 B66-10043 03

Improved electrode paste provides reliable measurement of galvanic skin response
MSC-146 B66-10494 04

Calibrated clamp facilitates pressure application
MSC-290 B66-10059 05

Storage-stable foamable polyurethane is activated by heat
LANGLEY-187 B66-10111 03

Integral skin electrode for electrocardiography is expendable
MSC-299 B66-10118 08

**X-8**
SUBJECT INDEX

Compound improves thermal interface between thermocouple and sensed surface
   NH-0028   B66-10121  02

Insulation for cryogenic tanks has reduced thickness and weight
   M-FS-326   B66-10183  02

Improved adhesive for cryogenic applications 
   cures at room temperature
   WOO-132   B66-10185  03

Rubber-coated bellows improves vibration damping in vacuum lines
   LEWIS-273   B66-10187  02

Coating permits use of strain gage in water and liquid hydrogen
   M-FS-596   B66-10192  01

Tool permits damage-free removal of solar cell
   GSPC-467   B66-10219  05

Substituted silane-diol polymers have improved thermal stability
   M-FS-469   B66-10259  03

Electrolytic etching process provides effective bonding surface on stainless steel
   GSPC-488   B66-10299  03

Inexpensive insulation is effective for cryogenic transfer lines
   MSC-618   B66-10348  02

Impact and puncture resistant material protects parts from damage
   M-SC-747   B66-10375  05

Mylar film eliminates silk screening of equipement panels
   MSC-799   B66-10455  05

Adhesive for polyester films cures at room temperature, has high initial tack
   M-FS-938   B66-10487  03

Film coating permits low-force scribing
   MSC-990   B66-10609  03

Silver-palladium braze alloy recovered from masking materials
   M-FS-1865   B66-10631  03

Gas leak detector is simple and inexpensive
   M-FS-1206   B66-10669  01

Process sequence produces strong, lightweight reflectors of excellent quality
   LEWIS-331   B67-10010  05

Miniature capacitor functions as pressure sensor
   JPL-903   B67-10020  01

Resistance heating releases structural adhesive
   M-FS-1607   B67-10045  05

Nonwoven glass fiber mat reinforces polyurethane adhesive
   M-FS-2309   B67-10113  03

New class of thermosetting plastics has improved strength, thermal and chemical stability
   LEWIS-10108   B67-10197  03

Photosensitive filler minimizes internal stresses in epoxy resins
   M-FS-1880   B67-10227  03

Inexpensive cryogenic insulation replaces vacuum jacketed line
   NUC-10061   B67-10264  02

Flowmeter determines mix ratio for viscous adhesives

M-FS-2308   B67-10378  01

Scribable coating for plastic films
   MSC-11194   B67-10409  03

Adhesives for laminating polyimide insulated flat conductor cable
   M-FS-12066   B67-10429  03

Proposed method of rotary dynamic balancing by laser
   M-FS-12822   B67-10452  02

Solvent permits solid curing agents to be used at room temperatures
   M-FS-13434   B67-10593  03

Synthesis of pure aromatic glycidyl esters for use as adhesives
   M-FS-12705   B67-10647  03

Miniature pressure transducer for stressed member application
   MSC-11869   B68-10246  01

Fiber glass reinforced structural materials for aerospace application
   M-FS-14806   B68-10360  03

Improved radiographic image amplifier panel
   M-FS-14522   B68-10363  02

High-emittance coatings on metal substrates
   LEWIS-10325   B68-10381  03

Battery-package design provides for cell cooling and constraint
   MSC-11859   B68-10398  05

Frangible electrochemical cell and sealing technique
   XGS-10010   B69-10056  01

Adhesive for cryogenic temperature applications
   LEWIS-10264   B69-10074  03

Tools for applying lead tape to flat conductor cabling for chemical stripping
   M-FS-20429   B69-10190  05

Novel terminal strips for transformers
   M-FS-20405   B69-10246  01

Instrumentation for nondestructive testing of composite honeycomb materials
   M-FS-20405   B69-10366  03

Quick-set temporary bonding clamps
   M-FS-10695   B69-10406  03

Heat-shrinkable jacket holds fluid in contact with tensile test specimen
   M-SC-13195   B69-10495  05

Improved primer for bonding polyurethane adhesives to metals
   M-FS-30591   B69-10540  03

ADIABATIC CONDITIONS

Computer program HCAP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solid
   NUC-10043   B67-10457  06

Thermal Network Analyzer Program
   NUC-10540   B69-10239  06

ADJUSTING

Modified gas bearing is adjustable to optimum stiffness ratio
   M-FS-145   B64-10050  05

Buckle joins web straps quickly, adjusts easily
   LABLER-21   B64-10119  05

Calibrated clamp facilitates pressure application
<table>
<thead>
<tr>
<th><strong>SUBJECT INDEX</strong></th>
<th><strong>ADSORPTION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC-298</td>
<td>B66-10059 05</td>
</tr>
<tr>
<td>T-handle wrench has torque-limiting action</td>
<td>MSC-280</td>
</tr>
<tr>
<td>Auxiliary coil controls temperature of RF induction heater</td>
<td>GSPC-428</td>
</tr>
<tr>
<td>Fixture aids soldering of electronic components on circuit board</td>
<td>ARC-56</td>
</tr>
<tr>
<td>Multisurface fixture permits easy grinding of tool bit angles</td>
<td>M-FS-586</td>
</tr>
<tr>
<td>Lifting clamp positively grips structural shapes</td>
<td>M-FS-593</td>
</tr>
<tr>
<td>Tool post modification allows easy turret lathe cutting-tool alignment</td>
<td>M-FS-598</td>
</tr>
<tr>
<td>Automatic reel controls filler wire in welding machines</td>
<td>MSC-416</td>
</tr>
<tr>
<td>Adjustable knife cuts honeycomb material to specified depth</td>
<td>MSC-475</td>
</tr>
<tr>
<td>Lathe chuck key incorporates safety feature</td>
<td>MSC-506</td>
</tr>
<tr>
<td>Device facilitates centering of workpieces in lathe chuck</td>
<td>M-FS-605</td>
</tr>
<tr>
<td>Concealed hinge permits flush mounting of doors and hatches</td>
<td>MSC-623</td>
</tr>
<tr>
<td>Versatile machine mills, saws light materials</td>
<td>M-FS-827</td>
</tr>
<tr>
<td>Motion drive system is accurately controlled in the 1-micron range</td>
<td>JPL-864</td>
</tr>
<tr>
<td>Tool facilitates installation of Warner clamps</td>
<td>M-FS-2039</td>
</tr>
<tr>
<td>A calibration means for spectrum analyzers</td>
<td>MSC-10987</td>
</tr>
<tr>
<td>Eccentric drive mechanism is adjustable during operation</td>
<td>M-FS-2576</td>
</tr>
<tr>
<td>Apparatus makes klystron operating frequency adjustable from remote point</td>
<td>NPO-09831</td>
</tr>
<tr>
<td>Electron beam standby absorber system</td>
<td>M-FS-14108</td>
</tr>
<tr>
<td>Tunable bandpass filter with variable selectivity</td>
<td>ARC-10191</td>
</tr>
<tr>
<td>Adjustable wrench for electronic connectors</td>
<td>M-FS-18547</td>
</tr>
<tr>
<td>Tool simplifies machining of pipe ends for precision welding</td>
<td>KSC-10361</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ADSORPTION</strong></th>
<th><strong>SUBJECT INDEX</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Radioactive method enables determination of surface areas rapidly and accurately</td>
<td>MSC-0088</td>
</tr>
<tr>
<td>Separation of traces of metal ions from sodium matrices</td>
<td>ARG-10341</td>
</tr>
<tr>
<td>Detection of molecular infrared spectra</td>
<td>BQ-10377</td>
</tr>
<tr>
<td>Separation of the rare earths by anion-exchange in the presence of lactic acid</td>
<td>ARG-10436</td>
</tr>
<tr>
<td>Improved cure method for single component silicone rubber</td>
<td>MSC-12230</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ADVANCED VIDEON CAMEA SYSTEM (AVCS)</strong></th>
<th><strong>AERATION</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Master linearity of video cameras calibrated with precision tester</td>
<td>GSPC-200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERATION</strong></th>
<th><strong>ADVANCED VIDEON CAMEA SYSTEM (AVCS)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous microbial cultures maintained by electronically-controlled device</td>
<td>ARG-177</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERIAL EXPLOSIONS</strong></th>
<th><strong>AERIAL PHOTOGRAPHY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumentation for nondestructive testing of composite honeycomb materials</td>
<td>M-PF-20405</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERIAL PHOTOGRAPHY</strong></th>
<th><strong>AERODYNAMIC BALANCE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerial-image enables diagrams and animation to be inserted in motion pictures</td>
<td>ARG-165</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERODYNAMIC CHARACTERISTICS</strong></th>
<th><strong>AERODYNAMIC COEFFICIENTS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds</td>
<td>LANGLEY-1091</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERODYNAMIC CHARACTERISTICS</strong></th>
<th><strong>AERODYNAMIC COEFFICIENTS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified Multihop lifting surface loading program</td>
<td>LANGLEY-10375</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERODYNAMIC CHARACTERISTICS</strong></th>
<th><strong>AERODYNAMIC COEFFICIENTS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental program to investigate transonic flow around protuberances</td>
<td>M-FS-20037</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERODYNAMIC CHARACTERISTICS</strong></th>
<th><strong>AERODYNAMIC COEFFICIENTS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimum structural design based on reliability and proof-load testing</td>
<td>NPO-11228</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERODYNAMIC COEFFICIENTS</strong></th>
<th><strong>AERODYNAMIC CHARACTERISTICS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>New anemometer has fast response, measures dynamic pressure directly</td>
<td>LANGLEY-28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERODYNAMIC COEFFICIENTS</strong></th>
<th><strong>AERODYNAMIC CHARACTERISTICS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer program analyzes and designs supersonic wing-body combinations</td>
<td>ARC-10141</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AERODYNAMIC COEFFICIENTS</strong></th>
<th><strong>AERODYNAMIC CHARACTERISTICS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified Multihop mean camber computer program</td>
<td>LANGLEY-10376</td>
</tr>
</tbody>
</table>
AERODYNAMIC CONFIGURATIONS
Averaging probe reduces static-pressure sensing errors
LANGLEY-36 B65-10114 05
Computer program analyses and designs supersonic wing-body combinations
ABC-10141 B68-10335 06

AERODYNAMIC DRAG
Rough surface improves stability of air-sounding balloons
N-PS-320 B65-10326 05
Simple key locks turbine rotor blades
WOC-103 B66-10023 05

AERODYNAMIC FORCES
Flexure support system protects thermally and dynamically loaded models
LANGLEY-39 B65-10042 05
Aerodynamic forces of fluttering cylindrical and/or planar structures
N-PS-20497 B69-10781 02

AERODYNAMIC HEATING
Insulation for cryogenic tanks has reduced thickness and weight
N-PS-326 B66-10183 02
Instrument accurately measures small temperature changes on test surface
LANGLEY-174 B66-10637 01
CINDA - Chrysler Improved Numerical Differencing Analyzer computer program
N-PS-2298 B67-10270 06

AERODYNAMIC LOADS
Internal cooling increases range of immersion-type temperature probe
LEWIS-171 B65-10157 02
Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
LANGLEY-10791 B67-10666 06

AERODYNAMIC NOISE
Study of hot wire techniques in low density flows with high turbulence levels
N-PS-1269 B66-10687 01

AERODYNAMIC STABILITY
Rough surface improves stability of air-sounding balloons
N-PS-320 B65-10326 05

ABRODYNAMICS
Computer program analyzes and designs supersonic wing-body combinations
ABC-10141 B68-10335 06

ABRONAUTICS
Titanium treatment improves brazed joints
MSC-127 B65-10153 05

ABROSOLS
Solvent residue content measured by light scattering technique
N-PS-856 B66-10320 01
Cleanroom air sampler counts, categorizes, and records particle data
N-PS-2221 B67-10076 01
Improved atmospheric particle analyzer
BRC-33 B67-10231 01
Nozzles for size reclassification of microfog particles
LEWIS-10705 B69-10076 05
Health hazards of ultrafine metal and metal oxide powders
LEWIS-10878 B69-10268 04
Conditioning of pulses from aerosol-particle detectors
BRC-10250 B69-10691 01

AEROSPACE ENGINEERING
Pressure transducer system is force-balanced, has digital output
N-PS-154 B65-10174 05
Improved electro-optical tracking system
N-PS-14791 B68-10311 01
An overview of electromagnetic interference problems in spacecraft
NPS-11170 B69-10362 01
System for computing operational probability equations
N-PS-16410 B69-10566 06

AEROSPACE ENVIRONMENTS
Test device prevents molecular bounce-back
GSFC-82 063-10546 03
Modular Porous Plate Sublimator /MPS/ requires only water supply for coolant
N-PS-1374 B66-10409 01
Study made of explosive cutting in simulated space environments
N-PS-1597 B67-10040 01
Study indicates fluid digital computation systems are feasible
N-PS-520 B67-10181 01
Environmental study of miniature slip rings
N-PS-2443 B67-10210 05

AEROSPACE INDUSTRY
Lightweight magnesium-lithium alloys show promise
N-PS-2349 B67-10301 03
Standards for compatibility of printed circuit and component lead materials
N-PS-14531 B66-10310 01
Materials data handbook, aluminum alloy 7075
N-PS-20381 B69-10065 03
Diffusion bond method of joining steel and a TFE-bronce composite
N-PS-20482 B69-10237 03

AEROSPACE INDUSTRY
Lightweight magnesium-lithium alloys show promise
N-PS-17 B63-10389 03
Bench vise adapter grips tubing securely and safely
MSC-279 B66-10056 05
Study to minimize hydrogen embrittlement of ultrahigh-strength steels
N-PS-2455 B67-10141 03
Computer program performs rectangular fitting stress analysis
N-PS-13010 B67-10520 06
Weight Control System
N-PS-15028 B69-10041 06
Countersunk head screw retainer
N-PS-16481 B69-10282 05
Removal of retaining washers of the waffle-spring type
MSC-15531 B69-10350 05
Tool for reading psychrometric charts
KSC-10358 B69-10527 05
Silphenylene elastomers have high thermal stability and tensile strength
N-PS-20256 B69-10580 03
ABBOSPACE SYSTEMS

An investigation of phase-lock loop swept-frequency synchronization M-FS-656 B66-10423 01

Fiber glass reinforced structural materials for aerospace application M-FS-18006 B66-10360 03

Thermal expansion properties of aerospace materials M-FS-18335 B66-10055 03

Diffusion of trace gases for leak detection A study M-FS-20294 B66-10067 03

A new method for the determination of particulate contamination levels for surface cleanliness of fluid systems KSC-10267 B69-10520 02

ABBOSPACE VEHICLES

Study of hydrogen slush-hydrogen gel utilization M-FS-13068 B67-10413 02

Precise gimballing mechanism NPO-11057 B69-10270 01

Optimum structural design based on reliability and proof-load testing NPO-11228 B69-10723 31

ABOSBONE

Addition of solid oxidizer increases liquid fuel specific impulse JPL-861 B67-10058 03

Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer HSC-924 B67-10083 03

AFTERBURNING

Ultraviolet photographic pyrometer used in rocket exhaust analysis M-FS-499 B66-10095 02

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons LEWIS-263 B66-10104 03

AGE FACTOR

Study of radiation effects on mammalian cells in vitro ARG-10191 B68-10294 02

AGGLOMERATION

Experiments to investigate particulate materials in reduced gravity fields M-FS-13308 B67-10394 02

AGGREGATES

Aggregation of metallochlorophylls - Examination by spectroscopy ARG-10273 B69-10163 04

AGING

Development of technology for hot-drape forming of large torus sections M-FS-12141 B67-10341 05

Magnesium-lithium alloys developed for low temperature use M-FS-1541 B67-10365 03

Scribable coating for plastic films KSC-11194 B67-10409 03

AGING (BIOLOGY)

Investigation of temperature dependence of development and aging ARG-10145 B69-10022 04

RAPID and precise analysis for calcium in blood serum ARG-10246 B69-10160 04

AGING (METALLURGY)

Thermal stress-relief treatments for 2219 aluminum alloy are evaluated M-FS-1219 B66-10448 03

Treatment increases stress-corrosion resistance of aluminum alloys M-FS-1840 B66-10595 05

New weldable high strength aluminum alloy developed for cryogenic service M-FS-737 B66-10613 05

Heat treatment study of aluminum casting alloy M-45 M-FS-2397 B67-10159 03

Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures NUC-10084 B67-10349 03

Stress-corrosion characteristics of aluminum casting alloy M-45 M-FS-14817 B68-10184 03

Resistivity measurements of neutron-irradiated pure metals and Al-Zn alloys ARG-10108 B68-10200 03

Strain-age cracking in Rene 41 alloy M-FS-1865C B69-10605 03

AGITATION

Large volume continuous counterflow dialyzer has high efficiency EQ-10055 B67-10395 04

Shortened processing time technique for color industrial radiography ARG-10235 B69-10001 02

AGRICULTURE

Sampling and handling of desert soils NPO-11171 B69-10304 04

AIR

Rapid helium-air analyzer can measure other binary gas mixtures LANGLEY-16 B63-10557 03

Sniffer used as portable hydrogen leak detector M-FS-846 B66-10356 01

Brazing retort manifold design concept may minimize air contamination and enhance uniform gas flow M-FS-707 B66-10371 05

Air bearing provides friction-free support for shaker system slip table WU-0086 B66-10708 05

High conductance vapor thermal switch GSFC-10109 B68-10519 02

Prediction of friction coefficients for gases LEWIS-10774 B69-10112 02

Plasma-heating by induction LEWIS-10528 B69-10185 02

Properties of air and combustion products of fuels with air LEWIS-11030 B69-10711 03

Chromatographic detection and analysis of traces of hydrocarbons KSC-10386 B69-10716 02

AIR CONDITIONING

New nut and sleeve improve flared connections
Bench vise adapter grips tubing securely and safely
MSC-279 B66-10056 05
Tool for reading psychrometric charts
KSC-10358 B69-10527 05

AIRCRAFT

Electron beam seals outer surfaces of porous bodies
NSC-562 B66-10033 03
Noise study of single stage compressor rotor-stator interaction
LANGLEY-137 B67-10516 02
Vacuum probe sampler removes micron-sized particles from surfaces
SAN-10003 B68-10231 04
Modified sine bar device measures small angles with high accuracy
KSC-438 B69-10322 02
Analysis of annular combustors
LWIS-10399 B69-10356 06
Automatic patient respiration failure detection system with wireless transmission
ARC-10174 B69-10365 01
An investigation of particle mixing in a gas-fluidized bed
ARB-10182 B69-10407 05
Combination probe for airflow measurements
LWIS-10281 B68-10558 01
Propagation of density disturbances in air-water flow
ARB-10260 B69-10043 02
Instrumentation for nondestructive testing of composite honeycomb materials
NSC-20405 B69-10366 03

AIR POLLUTION

Improved atmospheric particle analyzer
ERC-33 B67-10231 01
Analytical technique characterizes all trace contaminants in water
MSC-11032 B67-10243 03
Air sampler collects and protects minute particles
HQ-10037 B67-10661 01
Repetitively pulsed, wavelength-selective carbon dioxide laser
ERC-10178 B68-10564 02
Health hazards of ultrafine metal and metal oxide powders
LWIS-10878 B69-10268 04
Development and test of flexible film coupon strips for use as a sampling technique
M-PS-20448 B69-10339 03
Automatic filter-blowback systems used with sintered-metal filters
ARB-10324 B69-10342 05
Conditioning of pulses from aerosol-particle detectors
ERC-10250 B69-10691 01

AIR PURIFICATION

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures
MSC-118 B64-10319 03

AIR SAMPLING

Cleanroom air sampler counts, categorizes, and records particle data
Flexible rivet-set M-PS-20317 B69-10459 05
Nondestructive determination of cohesive strength of adhesive-bonded composites M-PS-20397 B69-10464 03
Literature review on pickling inhibitors and cadmium electroplating processes M-PS-10421 B69-10606 03
Explosive bonding of metal-matrix composites M-PS-20657 B69-10804 05
AIRCRAFT INSTRUMENTS
FM/CW system measures aircraft attitude M-PS-276 B65-10290 01
Alternating current electromagnetic servo induction meter XPR-03838 B68-10100 01
AIRCRAFT MODELS
New anemometer has fast response, measures dynamic pressure directly LANGLEY-28 B63-10530 05
AIRCRAFT STRUCTURES
Drill bit design assures clean holes in laminated materials WOO-098 B65-10386 05
Program computes zero lift wave drag of entire aircraft LANGLEY-10079 B67-10530 06
AERIALS
Program computes zero lift wave drag of entire aircraft LANGLEY-10079 B67-10530 06
AERONAUTICS
Material fatigue data obtained by card-programmed hydraulic loading system LANGLEY-10042 B67-10491 03
AIRPORTS
Scanning photometer system automatically determines atmospheric layer height MSC-245 B66-10170 01
ALBINO
M-PS and O-PS neutron and gamma ray albedo model scatter shield analysis program NUC-10126 B67-10536 06
ALCOHOLs
Surfaceant for dye- penetrant inspection is insensitive to liquid oxygen M-PS-475 B66-10131 03
Gas chromatographic column enables analysis of propellant hydrazines MSC-1161 B66-10586 03
Preparation of silver-activated zinc sulfide thin films GSPC-10667 B68-10271 03
Measurement of gas flow at extremely low pressures HSC-13261 B69-10522 03
ALKYHYDEs
Microdetermination of urea in urine using p-dimethylaminobenzaldehyde /PDAB/ FPO-10715 B69-10317 04
ALGEHIS
Improved electrode paste provides reliable measurement of galvanic skin response MSC-146 B66-10049 04

SUBJECT INDEX

ALGAE
Cytology is advanced by studying effects of deuterium environment ARG-205 B67-10304 04
The preparation, identification and properties of chlorophyll derivatives ARG-10205 B67-10409 03

ALGEBRA
Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors M-PS-1587 B67-10359 04
Technique for predicting temperature distribution in gases LEWIS-10918 B67-10329 01
Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices ARG-10445 B67-10415 02
COGENT programming manual ARG-10463 B67-10856 06

ALGORITHMS
Binary sequence detector uses minimum number of decision elements JPL-673 B66-10264 01
Computer program calculates monotonic maximum likelihood estimates using method of reversals M-PS-1516 B67-10136 01
Computer program provides linear sampled-data analysis for high order systems M-PS-12821 B67-10267 06
Digital filter synthesis computer program ARC-10130 B67-10164 01
Linear system of equations solved using mathematical algorithms ARC-10146 B68-10292 06
Computer program for parameter optimization ARC-10166 B68-10453 06
Improved first order interpolator RCS-11085 B69-10291 02
Sonic boom propagation in stratified atmosphere LANGLEY-10480 B69-10391 06
Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices ARG-10445 B67-10415 02
Fast Fourier Transform Spectral Analysis program M-PS-15062 B67-10834 06
Special purpose computer provides programmable digital filter for sampled-data control systems M-PS-20290 B69-10454 06

ALIGNMENT
Design of valve permits sealing even if the stem is misaligned LEWIS-38 B63-10381 05
Novel clamps align large rocket cases, eliminate back-up bars M-PS-1 B63-10376 05
Mirror device aligns machine surface perpendicular to sight lines WOO-5 B63-10421 02
Tool facilitates sealing of metal fill tubes MSC-24 B63-10519 05
Guide for extrusion dies eliminates straightening operation LEWIS-152 B64-10014 05
Pressure transducer 3/8-inch in size can be faired into surface W00-065 B64-10021 05

Attachment converts microscope to point source autocollimator JPL-499 B64-10124 05

Simple optical system used to align spectograph LANGLEY-92 B65-10071 02

New coupling compensates for shaft misalignment W0-0015 B65-10077 05

Light ray modulation controls optical alignment GSFC-171 B65-10211 02

Voltage controlled oscillator is easily aligned, has low phase noise JPL-510 B65-10223 01

Lightweight coaxial cable connector reduces signal loss JPL-720 B65-10244 01

Oil-damped mercury pool makes precise optical alignment tool GSFC-353 B65-10253 02

Titanium diaphragm makes excellent anplitron cathode support GSFC-394 B65-10298 01

Modified procedure speeds camera copy layout for offset printing GSFC-324 B65-10373 02

Photosensors used to maintain welding electrode-to-joint alignment MSC-243 B65-10401 05

Instrument quickly transposes ground reference target to eye level MSC-275 B66-10061 05

Threaded pilot insures cutting tool alignment M-FS-527 B66-10074 05

Tool post modification allows easy turret lathe cutting-tool alignment M-FS-581 B66-10191 05

Mount enables precision adjustment of optical-instrumentation mirror MSC-184 B66-10199 02

Tool enables proper rating of accelerometer and cable connector M-FS-611 B66-10208 05

Adjustable cutting guide aligns and positions stacks of material MSC-321 B66-10210 05

Fastener provides for bolt misalignment and quick release of flange W0-0074 B66-10275 05

Friction loading device enables accurate testing of brittle materials W0-0051 B66-10345 05

Direction indicator system does not require complicated optics W00-305 B66-10407 01

Alignment tool facilitates pin placement on irregular horizontal surfaces LANGLEY-219 B66-10410 05

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill M-FS-1084 B66-10411 05

Simplified fixture permits precision alignment of an optical target M-FS-1181 B66-10556 01

Turbine blade root design concept promises superior alignment M-FS-1685 B66-10620 05

Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line W0-0077 B66-10702 05

Visual attitude orientation and alignment system MSC-647 B67-10120 02

Spherical joint connects axially misaligned flanges M-FS-2238 B67-10273 05

Precision metal molding M-FS-13305 B67-10423 05

Lamb waves increase sensitivity in nondestructive testing ARG-10009 B67-10605 02

Tensile testing grips are easily assembled under liquid nitrogen MSC-16524 B67-10628 05

Connector shorting cap provides pin alignment, inspection, and stray voltage protection M-FS-13111 B67-10635 01

Reconnect mechanism M-FS-12968 B67-10670 05

Telescope mount with azimuth-only primary WPO-10468 B67-10671 02

Laser-Doppler gas-velocity instrument M-FS-20039 R68-10039 02

Machining technique prevents undercutting in tensile specimens LANGLEY-10281 B68-10352 05

High-torque precision stepping drive M-FS-14772 B68-10549 05

Ring laser angle encoder MSC-13099 B69-10115 01

Proposed technique for vertical alignment of a crane's cable M-FS-16496 B69-10202 05

Technique for anchoring fasteners to honeycomb panels LEWIS-10888 B69-10265 03

Precision mounting for instrument optical elements provided by polypide bonding M-FS-20293 B69-10310 05

Improved design of items in high speed rotating machinery M-FS-18441 B69-10373 05

Quick-acting backup tool for welding ducts M-FS-18404 B69-10396 05

Method of directing a laser beam with very high accuracy NPO-11087 B69-10508 02

Improved cameras for better X-ray powder photographs N0-10424 B69-10537 01

ALIPHATIC COMPOUNDS Flowmeter determines mix ratio for viscous adhesives M-FS-2308 B67-10378 01

ALKALI HALIDES Zone purification of potassium chloride
ALKALI METAL COMPOUNDS

ARG-10377 B69-10241 03
Self-discharge in bimetallic cells containing alkali metal
ARG-10347 B69-10631 01

ALKALI METAL COMPOUNDS

Double gloves reduce contamination of dry box atmosphere
LEWIS-211 B65-10147 03
Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol
N-PS-14962 B69-10636 03

ALKALI METALS

Elastomers bonded to metal surfaces seal electrochemical cells
GSPC-168 B64-10113 03
Apparatus enables accurate determination of alkali oxides in alkali metals
LEWIS-256 B66-10296 03
Process for preparing dispersions of alkali metals
JPL-734 B66-10639 03
Radiation counting technique allows density measurement of metals in high-pressure/high-temperature environment
ARG-124 B67-10316 02
Precise doping of metals by small gas flows
LEWIS-10444 B68-10526 03
Performance of low-pressure thermionic converters in evaluated
ARG-10276 B69-10090 01
Separation of traces of metal ions from sodium matrices
ARG-10341 B69-10168 03
Zone purification of potassium chloride
ARG-10377 B69-10241 03
Channel-wall limitations in the magnetohydrodynamic induction generator
ARG-10128 B69-10255 02
Production of solvated electrons
ARG-10416 B69-10430 03
Self-discharge in bimetallic cells containing alkali metal
ARG-10347 B69-10631 01
Device separates hydrogen from solution in water at ambient temperatures
NESC-13335 B69-10635 03

ALKALIES

Method of welding joint in closed vessel improves quality of seam
JPL-170 B63-10139 05
Electroless nickel resist used in alkali etching of aluminia
GSPC-284 B65-10162 03
Chemical milling solution produces smooth surface finish on aluminia
NESC-549 B66-10332 03
Primary radical yield in pulse irradiated alkaline aqueous solution
ARG-10322 B69-10167 02

ALKALINE BATTERIES

Apparatus measures swelling of membranes in electrochemical cells
GSPC-280 B65-10087 01
Composite seal reduces alkaline battery leakage
GSPC-337 B65-10271 01
Hermetically sealed cells protected from internal gas pressure
GSPC-555 B66-10692 01
Battery-package design provides for cell cooling and constraint
NESC-11839 B68-10398 05
Separator for alkaline batteries
GSPC-10175 B68-10557 03

ALKALINE BARTH OXIDES

Electrolytic separation of crystals of transition-metal oxides
ARG-10506 B69-10642 03

ALKALINES

Xenon fluorides show potential as fluorinating agents
ARG-113 B67-10185 03

ALKYL COMPOUNDS

Substituted silane-diol polymers have improved thermal stability
N-PS-469 B66-10259 03

ALLOCATIONS

Probabilistic approach to long range planning of manpower
NESC-11524 B67-10510 06

ALLOWANCES

Static seal concept to accommodate seat tolerances
N-PS-1854 B67-10285 05

ALLOYS

New method used to fabricate light-weight heat exchanger for rocket motor
LEWIS-43 B63-10346 02
Integral coolant channels supply made by melt-out method
N-PS-91 B63-10497 05
New alloy brazes titanium to stainless steel
NESC-102 B65-10060 05
New braze alloy eliminates metal-stress cracking
WOO-249 B65-10397 03
Braze alloys used as temperature indicators
N-0063 B66-10274 01
Union would facilitate joining of tubing, minimize braze contamination
NESC-777 B66-10311 05
Use of steel and tantalum apparatus for molten Ca-Nb-Zn alloys
ARG-199 B66-11594 03
Thermoelectric metal comparator determines composition of alloys and metals
ARG-235 B67-10035 01
Recommended values of the thermophysical properties of eight alloys, their major constituents and oxides
N-0095 B67-10062 03
Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique
ARG-277 B68-10024 03
Braze joint quality tested electromagnetically
N-PS-12755 B67-10333 01
Development of technology for hot-drape forming of large torus sections
N-PS-12141 B67-10341 05
Study made of procedures for externally loading and corrosion testing stress corrosion specimens
N-PS-12064 B67-10451 03

SUBJECT INDEX

internal gas pressure
GSPC-555 B66-10692 01
Battery-package design provides for cell cooling and constraint
NESC-11839 B68-10398 05
Separator for alkaline batteries
GSPC-10175 B68-10557 03
Electrolytic separation of crystals of transition-metal oxides
ARG-10506 B69-10642 03
Xenon fluorides show potential as fluorinating agents
ARG-113 B67-10185 03
Substituted silane-diol polymers have improved thermal stability
N-PS-469 B66-10259 03
Probabilistic approach to long range planning of manpower
NESC-11524 B67-10510 06
Static seal concept to accommodate seat tolerances
N-PS-1854 B67-10285 05
New method used to fabricate light-weight heat exchanger for rocket motor
LEWIS-43 B63-10346 02
Integral coolant channels supply made by melt-out method
N-PS-91 B63-10497 05
New alloy brazes titanium to stainless steel
NESC-102 B65-10060 05
New braze alloy eliminates metal-stress cracking
WOO-249 B65-10397 03
Braze alloys used as temperature indicators
N-0063 B66-10274 01
Union would facilitate joining of tubing, minimize braze contamination
NESC-777 B66-10311 05
Use of steel and tantalum apparatus for molten Ca-Nb-Zn alloys
ARG-199 B66-11594 03
Thermoelectric metal comparator determines composition of alloys and metals
ARG-235 B67-10035 01
Recommended values of the thermophysical properties of eight alloys, their major constituents and oxides
N-0095 B67-10062 03
Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique
ARG-277 B68-10024 03
Braze joint quality tested electromagnetically
N-PS-12755 B67-10333 01
Development of technology for hot-drape forming of large torus sections
N-PS-12141 B67-10341 05
Study made of procedures for externally loading and corrosion testing stress corrosion specimens
N-PS-12064 B67-10451 03
SUBJECT INDEX

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes NUC-10143 B67-10665 06

Twin solution calorimeter determines heats of formation of alloys at high temperatures ARG-10114 B68-10083 01

High temperature alloy LEWIS-10377 B68-10253 03

Dual wire weld feed proportioner N-PS-18037 B68-10332 05

Electrostatic series established for metals used in aerospace technology N-PS-16327 B68-10385 03

Levitation-melting technique for metals and alloys ARG-10240 B69-10006 03

Welding, brazing, and soldering handbook N-PS-20504 B69-10264 05

Metallic diffusion measured by a modified Knudsen technique HQ-10145 B69-10309 03

Improved method of producing oxide-dispersion-strengthened alloys EQ-10467 B69-10536 03

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys NUC-10554 B69-10707 02

ALPHA PARTICLES

Instrument performs nondestructive chemical analysis, data can be telemetered JPL-SC-078 B65-10317 01

Self-supported aluminum thin films produced by vacuum deposition process ARC-58 B66-10387 03

Status of ultrachemical analysis for semiconductors N-PS-2254 B67-10138 03

Alpha particle backscattering measurements used for chemical analysis of surfaces ARG-116 B67-10196 03

Aluminum-titanium hydride-borocarbide composite provides lightweight neutron shield material NUC-10069 B67-10265 03

Training course for radiation safety technicians ARG-216 B67-10477 02

Neutron irradiation of Am-241 effectively produces curium ARG-10030 B67-10501 03

Compilation of detection sensitivities in thermal-neutron activation ARG-10068 B67-10641 03

Isothermal drop calorimeter provides measurements for alpha active, pyrophobic materials ARG-10186 B69-10002 02

Recent development in organic scintillators ARG-10344 B69-10198 03

ALPHANUMERIC CHARACTERS

Density trace made with computer printout GSPC-322 B65-10200 01

Automated drafting system uses computer techniques N-PS-788 B66-10362 01

Subroutines GEORGE and DRASTC simplify operation of automatic digital plotter NUC-10044 B67-10222 06

Encode/Decode facility for FORTRAN 4 ARG-10335 B65-10169 06

ALTERNATING CURRENT

Dc to ac converter operates efficiently at low input voltages GSPC-139 B65-10178 01

Logic circuit exhibits optimum performance LANGLET-129 B65-10193 01

Field effect transistor presents high input impedance in ac amplifier JPL-500 B65-10232 01

High-speed square-wave current limiter operates efficiently JPL-SC-073 B65-10233 01

Added diodes increase output of balanced mixer circuit GSPC-354 B65-10276 01

Electrostatically driven dynamic capacitor employs capacitive feedback JPL-771 B65-10293 01

Vibrating diaphragms measure high electrostatic field strengths BSC-189 B65-10352 01

Noncontacting vibration transducer has constant sensitivity LANGLET-95 B65-10392 01

Dual-voltage power supply has increased efficiency LEWIS-107A B66-10002 01

Two-light circuit continuously monitors ac ground, phase, and neutral wires BSC-356 B66-10163 01

Substituting transistor for diode improves rectifying means GSPC-874 B66-10295 01

Solid state detectors monitor relay contacts JPL-705 B66-10396 01

Electronic bidirectional valve circuit prevents crossover distortion and threshold effect BSC-193 B66-10420 01

Remote preamplifier circuit maintains stability over wide temperature range NUC-273 B66-10432 01

Shaft encoder presents digital output JPL-SC-191 B66-10436 01

Thermionic scanner pinpoints work function of emitter surfaces JPL-SC-177 B66-10444 01

Rectilinear accelerometer possesses self-calibration feature N-PS-1480 B66-10452 01

Instrument automatically selects peak acceleration signal from several accelerometers JPL-916 B66-10462 01

Solid state circuit switches ac load JPL-798 B66-10465 01

Simple technique determines ac properties of hard superconductive materials N-PS-1818 B66-10567 02

Instrument sequentially samples ac signals from several accelerometers JPL-884 B67-10029 01

I-17
Plotter design simplifies determination of image sensor transfer characteristic
MFC-1016

Glow discharge density sensor probe life is extended
MFS-1707

Improved television signal processing system
MFO-10140

Vibrator elapsed time is automatically controlled
MFS-2573

Portable spectrometer monitors inert gas shield in welding process
MFS-12144

General purpose computer program for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions
MFS-13094

High power dc/dc and dc/ac electrical power conversion techniques developed
MFS-13227

Stable ac phase and amplitude comparator
MFS-13086

Precision bolometer bridge
MSC-11473

Semiconductor ac static power switch
LEWIS-10344

Analysis and design of a class-D amplifier
MFS-14803

Concept to convert electrical power
GSFC-10222

Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation
ARCO-10268

Plasma-heating by induction
LEWIS-10528

Generation of sonic power during welding
MFS-20339

Synchronous charge-constrained electroquasistatic generator
HQ-10231

ALTIMETERS

Frequency offset in linear FM/CW transponder eliminates clutter
MFS-249

ALTITUDE

Scanning photometer system automatically determines atmospheric layer height
MSC-245

ALUMINUM

Refractory thermal insulation for smooth metal surfaces
MFS-160

Chemical milling solution produces smooth surface finish on aluminum
MSC-549

Chain friction system gives positive, reversible drive
ARC-6

Method of welding joint in closed vessel improves quality of seam
JPL-170

Helium tube separates nitrogen gas from liquid nitrogen

SUBJECT INDEX

JPL-398 B65-10251 05

Novel clamps align large rocket cases, eliminate back-up bars
MFS-31 B65-10376 05

Flexible honeycomb structure can bend to fit compound curves
MFS-13 B65-10385 05

Portable flooring protects finished surfaces, is easily moved
MFS-15 B65-10387 05

Improved sensor counts micrometeoroid penetrations
LEWIS-76 B65-10443 01

Built-in templates speed up process for making accurate models
LANGLEY-23 B65-10526 05

Hot-air soldering technique prevents overheating of electrical components
GSFC-91 B65-10536 01

Unamended seismometer levels self, corrects drift errors
GSFC-100 B65-10551 01

Plastic molds reduce cost of encapsulating electric cable connectors
MFS-69 B65-10568 05

Simple transducer measures low heat-transfer rates
JPL-466 B64-10122 01

Stringent cleaning technique assures reliable epoxy bond
GSFC-161 B64-10142 03

Solder flux leaves corrosion-resistant coating on metal
JPL-111 B64-10206 03

Fine-mesh screen made by simplified method
WCC-104 B64-10282 03

Thermistor connector assembly increases accuracy of measurements
LANGLEY-62 B65-10045 01

Microparticle impact sensor measures energy directly
GSFC-252 B65-10048 01

Magnetic field test coils are temperature compensated
GSFC-294 B65-10081 02

Transducer sensors displacements of panels subjected to vibration
ARC-37 B65-10085 01

Lightweight aluminum casting alloy is useful at cryogenic temperatures
MFS-267 B65-10092 03

Cutter and stripper reduces coaxial cable connection time
ARC-39 B65-10098 05

Magnets position X-ray film for weld inspection
MFS-253 B65-10110 05

Galvanic corrosion reduced in aluminum fabrications
MFS-272 B65-10140 03

Electroless nickel resist used in alkali etching of aluminum
GSFC-288 B65-10162 03

Epox-resin patterns speed skin-molding of aluminum parts
MFS-303 B65-10177 05
Weld leaks rapidly and safely detected
I-FS-362  B65-10265  01
Anodization process produces opaque, reflectice coatings on aluminum
I-FS-348  B65-10336  03
Electromagnetic hammer removes weld distortions from aluminum tanks
I-FS-287  B65-10342  05
Paste in distributes stress evenly from sandwich-panel-hung items
ESC-236  B65-10358  05
Improved wire memory matrix uses very little power
JPL-SC-167  E65-10361  03
High-intensity flashing beacon powered by mercury cells
LANGLEY-60  B65-10361  01
PTFE-aluminum films serve as neutral density filters
LANGLEY-189  B66-10017  02
Flexible protective coatings made from silicon-nitrogen materials
I-FS-528  B66-10027  03
Reflective insulator layers separated by bonded silica beads
ESC-215  B66-10070  03
New television camera eliminates vidicon tube
H-FS-472  B66-10112  01
Chart case opens to form briefing easel
ESC-349  B66-10135  05
Cryogenic trap valve has no moving parts
H-FS-467  B66-10136  05
Bismuth alloy potting seals aluminum connector in cryogenic application
NU-260  B66-10136  03
Aluminum doping improves silicon solar cells
ESC-206  B66-10161  02
Insulation for cryogenic tanks has reduced thickness and weight
II-FS-326  B66-10183  02
Adjustable knife cuts honeycomb material to specified depth
ESC-475  B66-10237  05
Jig protects transistors from heat while tinning leads
ESC-515  B66-10240  05
Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
I-FS-640  B66-10247  05
Critical parts are stored and shipped in environmentally controlled reusable container
I-FS-703  B66-10258  05
High-speed furnace uses infrared radiation for controlled brazing
MU-9007  B66-10268  02
Fixed vacuum plate clamps styrofoam for machining
II-FS-603  B66-10268  02
Chemical milling solution produces smooth surface finish on aluminum
JPL-SC-117  B66-10342  03
Hollow spherical rotors fabricated by electroplating
I-FS-117  B66-10366  05
Self-supported aluminum thin films produced by vacuum deposition process
HSC-1189  B67-10337  02

ARC-56  B66-10387  03
System for etching thick aluminum layers
H-FS-1366  B66-10400  03
Special tool kit aids heavily garmented workers
ESC-163  B66-10403  05
New backup-bar groove configuration improves heliarc welding of 2014-T6 aluminum
ESC-806  B66-10443  05
Rectilinear accelerometer possesses self-calibration feature
H-FS-1980  B66-10452  01
Heat treatment stabilizes welded aluminum jigs and tool structures
ESC-800  B66-10458  03
Eighth-intensity flashing beacon powered by mercury cells
LANGLEY-80  B66-10017  03
Heat flux sensor design reduces extraneous source effects
ESC-400  B66-10531  02
Nonelectrolytic tantalum capacitors developed
I-FS-1546  B66-10552  01
Device accurately measures and records low gas-flow rates
H-FS-1077  B66-10569  01
Lateral ring metal elastic wheel absorbs shock loading
ESC-1312  B66-10663  05
Mechanism facilitates coating of inner surfaces of metal cylinders
ESC-515  B66-10698  05
Air bearing provides friction-free support for shaker system slip table
MU-9006  B66-10708  05
Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
BL-232  B67-10032  03
Nonwoven glass fiber mat reinforces polyurethane adhesive
ESC-209  B67-10113  03
Silver plating ensures reliable diffusion bonding of dissimilar metals
H-FS-1975  B67-10124  03
Cryogenic seal remains leaktight during thermal displacement
ARG-96  B67-10134  02
Thin film process forms effective electrical contacts on semiconductor crystals
ESC-2943  B67-10142  01
Inexpensive cryogenic insulation replaces vacuum jacketed line
ESC-10061  B67-10264  02
Aluminum-titanium hydride-boron carbide composite provides lightweight neutron shield material
ESC-10069  B67-10265  03
Pipe joints reinforced in place with fitted aluminum sleeves
ESC-1109  B67-10271  05
Method of improving contact bonds in silicon integrated circuits
ESC-1753  B67-10335  01
Low-energy gamma ray inspection of brazed aluminum joints
ESC-1189  B67-10337  02
Crack growth measured on flat and curved surfaces at cryogenic temperatures
ESC-703  B67-10348  02

X-19
<table>
<thead>
<tr>
<th>INDEX</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALUMINUM ALLOYS</td>
<td>Break-up of metal tube makes one-time shock absorber, bars rebound</td>
</tr>
<tr>
<td></td>
<td>UNSOLI-18</td>
</tr>
<tr>
<td>Study made of anodized aluminum circuit boards</td>
<td>An improved atomic hydrogen frequency and time standard</td>
</tr>
<tr>
<td>E-FS-13580</td>
<td>GSFC-10706</td>
</tr>
<tr>
<td>Aluminum beat sink enables power transistors to be mounted integrally with printed circuit board</td>
<td>Improved high-temperature-strength nickel-base superalloy</td>
</tr>
<tr>
<td>E-FS-13663</td>
<td>LEWIS-10874</td>
</tr>
<tr>
<td>Aluminum and stainless steel tubes joined by simple ring and welding process</td>
<td>One-handed hammer-spanner for chucks</td>
</tr>
<tr>
<td>E-FS-13120</td>
<td>N-PS-18581</td>
</tr>
<tr>
<td>Tool samples subsurface soil free of surface contaminants</td>
<td>Radiographic threshold detection levels of aluminum weld defects</td>
</tr>
<tr>
<td>MSC-10988</td>
<td>M-PS-20487</td>
</tr>
<tr>
<td>Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel</td>
<td>A method for precision anodize stripping</td>
</tr>
<tr>
<td>NUC-10008</td>
<td>MSC-15040</td>
</tr>
<tr>
<td>Study of corrosion of 1100 aluminum</td>
<td>Sprayed shielding of plastic-encapsulated electronic modules</td>
</tr>
<tr>
<td>ARG-10045</td>
<td>M-PS-13570</td>
</tr>
<tr>
<td>Laminted sheet composites reinforced with modular filament sheet</td>
<td>Electron interaction in matter</td>
</tr>
<tr>
<td>E-FS-14575</td>
<td>M-PS-14886</td>
</tr>
<tr>
<td>Study reveals effect of aluminum on saturation moment of Fe-Si alloys</td>
<td>Reducing contact resistance at semiconductor metal to aluminum interfaces</td>
</tr>
<tr>
<td>ARG-90259</td>
<td>N-PS-10254</td>
</tr>
<tr>
<td>Conceptual dead weight device to provide pressure calibration</td>
<td>Mixed ether bath for electrodeposition of aluminum</td>
</tr>
<tr>
<td>N-FS-14720</td>
<td>LANGLEY-10200</td>
</tr>
<tr>
<td>Compressible sleeve provides automatic centering for grinding or turning of cylinders</td>
<td>Surface-renewal models for heat-transfer between walls and fluidized beds</td>
</tr>
<tr>
<td>SAE-10021</td>
<td>ARG-10372</td>
</tr>
<tr>
<td>Microprobe investigation of brittle segregates in aluminum KIS and TIG welds</td>
<td>Lightweight aluminum casting alloy is useful at cryogenic temperatures</td>
</tr>
<tr>
<td>E-FS-14720</td>
<td>N-PS-267</td>
</tr>
<tr>
<td>X-ray film holder permits single continuous picture of tubing joint</td>
<td>Aluminum alloys protected against stress-corrosion cracking</td>
</tr>
<tr>
<td>LEWIS-10382</td>
<td>M-PS-235</td>
</tr>
<tr>
<td>Nickel base alloy with improved stress capture properties</td>
<td>Anodization process produces opaque, reflective coatings on aluminum</td>
</tr>
<tr>
<td>LEWIS-10283</td>
<td>M-PS-348</td>
</tr>
<tr>
<td>One-dimensional two-phase reacting gas nonequilibrium performance program</td>
<td>Aluminum oxide filler prevents obstructions in tubing during welding</td>
</tr>
<tr>
<td>MSC-11780</td>
<td>MSC-222</td>
</tr>
<tr>
<td>Heat-load simulator for heat sink design</td>
<td>Diffusion technique stabilizes resistor values</td>
</tr>
<tr>
<td>BSC-15170</td>
<td>MSC-205</td>
</tr>
<tr>
<td>Isothermal drop calorimeter provides measurements for alpha active, pyrophoric materials</td>
<td>White primer permits a corrosion-resistant coating of minimum weight</td>
</tr>
<tr>
<td>ARG-10186</td>
<td>M-PS-304</td>
</tr>
<tr>
<td>Electrochemical study of aluminum corrosion in boiling high purity water</td>
<td>Nickel-base superalloys developed for high-temperature applications</td>
</tr>
<tr>
<td>ARG-10306</td>
<td>LEWIS-226</td>
</tr>
<tr>
<td>High strength, superplastic superalloy</td>
<td>Brazing process using Al-Si filler alloy reliably bonds aluminum parts</td>
</tr>
<tr>
<td>LEWIS-10805</td>
<td>M-PS-448</td>
</tr>
<tr>
<td>Masking of aluminum surface against anodizing</td>
<td>Aluminum/steel wire composite plates exhibit high tensile strength</td>
</tr>
<tr>
<td>M-PS-12964</td>
<td>M-PS-401</td>
</tr>
</tbody>
</table>

**ALUMINUM ALLOYS**

- Break-up of metal tube makes one-time shock absorber, bars rebound
- An improved atomic hydrogen frequency and time standard
- Improved high-temperature-strength nickel-base superalloy
- One-handed hammer-spanner for chucks
- Radiographic threshold detection levels of aluminum weld defects
- A method for precision anodize stripping
- Sprayed shielding of plastic-encapsulated electronic modules
- Electron interaction in matter
- Reducing contact resistance at semiconductor metal to aluminum interfaces
- Mixed ether bath for electrodeposition of aluminum
- Surface-renewal models for heat-transfer between walls and fluidized beds
- Lightweight aluminum casting alloy is useful at cryogenic temperatures
- Aluminum alloys protected against stress-corrosion cracking
- Anodization process produces opaque, reflective coatings on aluminum
- Aluminum oxide filler prevents obstructions in tubing during welding
- Diffusion technique stabilizes resistor values
- White primer permits a corrosion-resistant coating of minimum weight
- Nickel-base superalloys developed for high-temperature applications
- Brazing process using Al-Si filler alloy reliably bonds aluminum parts
- Aluminum/steel wire composite plates exhibit high tensile strength
- Differential expansion provides pressure for diffusion bonding of large diameter rings
- Valve seat pores sealed with thermosetting monomer
ALUMINUM CHLORIDES

Corrosion protection of aluminum alloys in contact with other metals
M-PS-18526 B69-10998 03

Mixing weld gases offers advantages
M-PS-16413 B69-10145 05

Renewal of corrosion protection of coated aluminum after welding
M-PS-20361 B69-10150 05

Astronaut's tool for withdrawing/replacing computer cards
M-PS-20453 B69-10183 05

Detecting hydrogen-containing contaminants on metal surfaces
M-PS-20456 B69-10192 03

Tool simplifies machining of pipe ends for precision welding
KSC-10361 B69-10231 05

Handbook for design of containers of fluids and gases for spacecraft
M-PS-20502 B69-10279 05

A biaxial weld strength prediction method
M-PS-20019 B69-10471 05

Boron fiber-reinforced aluminum alloy tubing/experimental/M-PS-15633 B69-10509 05

Testing the flammability of materials exposed to arc
KSC-15225 B69-10531 03

Explosive bonding of metal-matrix composites
M-PS-20657 B69-10804 05

ALUMINUM OXIDES

Crack detection method is safe in presence of liquid oxygen
M-PS-236 B65-10107 03

Nixed ether bath for electrodeposition of aluminum
LANGLEY-10200 B69-10737 03

Fresnel cup reflector directs maximum energy from light source
JPL-426 B63-10263 03

Aluminized fiber glass insulation conforms to curved surfaces
M-PS-477 B66-10024 03

Spray-on technique simplifies fabrication of complex thermal insulation blanket
M-PS-497 B66-10053 03

Process sequence produces strong, lightweight reflectors of excellent quality
LEWIS-331 B67-10010 05

Aluminized thin-window proportional-counter tube is stronger, more responsive in long wavelength region
JPL-669 B67-10015 01

Cone and column solar energy concentrator
LANGLEY-210 B67-10517 01

Gage measures total radiation, including vacuum UV, from ionized high-temperature gasses
IMP-09802 B69-10028 02

ALUMINUM COMPOUNDS

Inorganic paint is durable, fireproof, easy to apply
GSFC-366 B65-10156 03

Chromium oxide coatings improve thermal emissivity of alumina
W0-263 B66-10227 03

Dry film lubricant is effective at extreme loads
M-PS-628 B66-10256 03

Xenon fluoride solutions effective as fluorinating agents
ABO-217 B67-10133 03

Coating protects magnesium-lithium alloys against corrosion
M-PS-2046 B67-10149 03

Tritiated alumina serves as reagent for self-labeling analysis
ABO-209 B67-10315 03

Metal flame spray coating protects electrical cables in extreme environments
M-SC-10077 B67-10351 03

Flame sprayed dielectric coatings improve heat dissipation in electronic packaging
M-PS-13565 B67-10534 01

A ceramic composite thermal insulation
M-PS-13991 B67-10608 03

Multichip packaging with thermal insulation
M-PS-14076 B68-10119 02

Manganese-alumina-ceramic glass eliminates
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>AMERICIUM 241</th>
</tr>
</thead>
<tbody>
<tr>
<td>rigid controls necessary in bonding metals to ceramics</td>
<td>Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes</td>
</tr>
<tr>
<td>Characteristics of fluidized-packed beds</td>
<td>(ARG-10274)</td>
</tr>
<tr>
<td>Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide</td>
<td>Materials data handbook, aluminum alloy</td>
</tr>
<tr>
<td>New bimetallc EMF cell shows promise in direct energy conversion</td>
<td>A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux</td>
</tr>
<tr>
<td>High dielectric thick films for screened circuit capacitors</td>
<td>Development and test of flexible film coupon strips for use as a sampling technique</td>
</tr>
<tr>
<td>Characteristics of fluidized-packed beds</td>
<td>Self-lubricating gear</td>
</tr>
<tr>
<td>Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide</td>
<td>Nondestructive determination of cohesive strength of adhesive-bonded composites</td>
</tr>
<tr>
<td>New bimetallc EMF cell shows promise in direct energy conversion</td>
<td>Inhibition of browning in foodstuffs</td>
</tr>
<tr>
<td>High dielectric thick films for screened circuit capacitors</td>
<td>Epitaxial crystalline growth upon cold substrates</td>
</tr>
<tr>
<td>Corrosion reduction of aluminum alloys in flowing high-temperature water</td>
<td>A new method for fabrication of flexible vacuum purge jackets</td>
</tr>
<tr>
<td>Abrasion and resistant discharge valve developed</td>
<td>Balloon batteries, charged and heated by solar energy</td>
</tr>
<tr>
<td>High temperature coatings for gas bearings</td>
<td>Device separates hydrogen from solution in water at ambient temperatures</td>
</tr>
<tr>
<td>Improved method of producing oxide-dispersion-strengthened alloys</td>
<td>Thermal conductivity probe</td>
</tr>
<tr>
<td>Aluminum silicates</td>
<td>AMBIGUITY</td>
</tr>
<tr>
<td>Improved thermal insulation materials made of foamed refractory oxides</td>
<td>Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart</td>
</tr>
<tr>
<td>Aluminum and stainless steel tubes joined by simple ring and welding process</td>
<td>AMBULANCES</td>
</tr>
<tr>
<td>Transplantation elements processed from rock debris of underground detonations</td>
<td>Electrocadiograph transmitted by RF and telephone links in emergency situations</td>
</tr>
<tr>
<td>Aluminum silicates</td>
<td>AMERICIUM</td>
</tr>
<tr>
<td>Improved thermal insulation materials made of foamed refractory oxides</td>
<td>Apparatus for fabrication of americium-berryllium neutron sources prevents capsule contamination</td>
</tr>
<tr>
<td>Aluminum and stainless steel tubes joined by simple ring and welding process</td>
<td>Portable, high intensity isotopic neutron source provides increased experimental accuracy</td>
</tr>
<tr>
<td>Transplantation elements processed from rock debris of underground detonations</td>
<td>Study of actinide chemistry in saturated potassium fluoride solution</td>
</tr>
<tr>
<td>Aluminum silicates</td>
<td>AMERICIUM 241</td>
</tr>
<tr>
<td>Improved thermal insulation materials made of foamed refractory oxides</td>
<td>Alpha particle backscattering measurements used for chemical analysis of surfaces</td>
</tr>
<tr>
<td>Aluminum and stainless steel tubes joined by simple ring and welding process</td>
<td>Low-energy gamma ray inspection of brazed aluminum joints</td>
</tr>
<tr>
<td>Transplantation elements processed from rock debris of underground detonations</td>
<td>Neutron irradiation of Am-241 effectively produces curium</td>
</tr>
<tr>
<td>Aluminum silicates</td>
<td>Detection sensitivities in 3-8 MeV Alpha particle backscattering measurements used for chemical analysis of surfaces</td>
</tr>
<tr>
<td>Subject Index</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>Anthesiostatics</td>
<td>SUBJECT INDEX</td>
</tr>
<tr>
<td>Neutron activation</td>
<td>Selenium bond decreases ON resistance of light-activated switch JPL-SC-101 B65-10324 01</td>
</tr>
<tr>
<td>Anthesiostatics</td>
<td>Argent</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytical</td>
<td>Amplitization</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amplifier design</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amplifiers</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SUBJECT INDEX

Improved insertion-loss tester
JPL-358 B64-10080 01

Field-effect transistor improves electrometer amplifier
ARC-36 B64-10143 01

Field effect transistors used as voltage controlled resistors
H-PS-174 B64-10163 01

Digital cardiometer computes and displays heartbeat rate
MSC-93 B64-10258 01

Radiation-detector optical-imaging device is of simplified construction
GSFC-251 B64-10299 01

Voltage generator sweeps oscillator frequency linearly with time
H-PS-174 B64-10320 01

Bandwidth switching in transient-free, avoids loss of loop lock
VCO-054 B64-10349 01

Circuit converts AM signals to FM for magnetic recording
GSFC-227 B65-10001 01

Inexpensive, stable circuit measures heart rate
MSC-95 B65-10010 01

Stepping motor drive circuit designed for low power drain
GSFC-198 B65-10026 01

Synchronized pulse generator needs no external power
GSFC-274 B65-10072 01

System measures angular displacement without contact
LANGLEY-46 B65-10073 01

Photoelectric sensor output controlled by eyeball movements
H-PS-274 B65-10079 01

Phase detector circuit synthesizes own reference signal
H-PS-247 B65-10080 01

System selects framing rate for spectrophotograph camera
LANGLEY-55 B65-10086 01

Digital system accurately controls velocity of electromechanical drive
GSFC-267 B65-10096 01

Variable voltage supply uses Zener diode as reference
GSFC-262 B65-10097 01

Simple circuit functions as frequency discriminator for FM signals
GSFC-267 B65-10102 01

Traveling-wave tube circuit simplifies microwave relay
GSFC-299 B65-10127 01

Instrument calibrates low gas-rate flowmeters
MSC-134 B65-10137 01

Logarithmic amplifier uses field effect transistors
JPL-509 B65-10185 01

Instrument accurately measures extremely low air densities
H-PS-193 B65-10221 01

Electrometer has automatic zero bias control

AMPLIFIERS CONT

Electromechanical flowmeter accurately monitors fluid flow
GSFC-357 B65-10242 01

Hybrid circuit achieves pulse regeneration with low power drain
GSFC-382 B65-10273 01

Frequency discriminator with binary output eliminates tuned circuits
H-PS-174 B65-10349 01

Seismometer designed for remote operation in random orientation
JPL-320 B66-10085 01

Single-sideband modulator accurately reproduces phase information in 2-Hz signals
H-PS-664 B66-10437 01

Instrument automatically selects peak acceleration signal from several accelerometers
JPL-816 B66-10462 01

Digital system provides superregulation of nanosecond amplifier-discriminator circuit
ARG-61 B66-10500 01

Helmet system broadcasts electroencephalograms of wearer
ARC-70 B66-10536 01

Monitoring circuit accurately measures movement of solenoid valve
H-PS-1829 B66-10568 01

Electronic circuit provides accurate sensing and control of dc voltage
NU-0089 B66-10591 01

Fluid logic control circuit operates nutator actuator motor
LEWIS-294 B66-10593 05

Miniature telemetry system accurately measures pressure
ARC-74 B66-10624 01

Electrometer amplifier operates over dynamic range of five orders of magnitude
MSC-11007 B67-10199 01

Solid state phase detector replaces bulky transformer circuit
MSC-11007 B67-10253 01

Absolute frequency stabilization of laser oscillator against laser amplifier
H-PS-2559 B67-10255 01

SiC/Si diode trigger circuit provides automatic range switching for log amplifier
H-PS-1879 B67-10318 01

Field effect transistors improve buffer amplifier
H-PS-916 B67-10334 01

Accuracy of laser measurements improved by pulse autocorrelator electronic system
MSC-10033 B67-10338 01

Vibration analysis utilizing Hulsbaumer effect
H-PS-11974 B67-10339 01

Digital-to-analog converter operates from low level inputs
JPL-307 B67-10357 01

Machine tests slow-speed sliding friction in high vacuum
H-PS-12341 B67-10379 05

Control apparatus for spectral energy source

X-25
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple, accurate automatic frequency control circuit</td>
<td>B69-10323</td>
</tr>
<tr>
<td>Design of a strain-gage probe</td>
<td>B69-10343</td>
</tr>
<tr>
<td>Pressure transducer</td>
<td>B69-10364</td>
</tr>
<tr>
<td>Accurate nine-decade temperature-compensated logarithmic amplifier</td>
<td>B69-10429</td>
</tr>
<tr>
<td>Nondestructive determination of cohesive strength of adhesive-bonded composites</td>
<td>B69-10464</td>
</tr>
<tr>
<td>Magnetic field mapper</td>
<td>B69-10476</td>
</tr>
<tr>
<td>Radiometric temperature reference</td>
<td>B69-10507</td>
</tr>
<tr>
<td>Seismographic recording of large rocket engine operation</td>
<td>B69-10756</td>
</tr>
<tr>
<td>AMPLITUDE DISTRIBUTION ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>Hybrid computer technique yields random signal probability distributions</td>
<td></td>
</tr>
<tr>
<td>Cardiotachometer with linear beat-to-heat frequency response</td>
<td></td>
</tr>
<tr>
<td>Improved traveling wave laser amplifier</td>
<td></td>
</tr>
<tr>
<td>Noise figure measurement concept for acoustic amplifiers</td>
<td></td>
</tr>
<tr>
<td>Viscosity and density of methanol/water mixtures at low temperatures</td>
<td></td>
</tr>
<tr>
<td>Analysis and design of a class-D amplifier</td>
<td></td>
</tr>
<tr>
<td>Temperature or pressure controller</td>
<td></td>
</tr>
<tr>
<td>Improved radiographic image amplifier panel</td>
<td></td>
</tr>
<tr>
<td>Improved communication system for large operations center</td>
<td></td>
</tr>
<tr>
<td>Active rc filter permits easy trade-off of amplifier gain and sensitivity to gain</td>
<td></td>
</tr>
<tr>
<td>Design of dissipative linear phase filters</td>
<td></td>
</tr>
<tr>
<td>Microelectronic oscillator</td>
<td></td>
</tr>
<tr>
<td>Electronic visualization of gas bearing behavior</td>
<td></td>
</tr>
<tr>
<td>Active frequency control system for argon fm laser</td>
<td></td>
</tr>
<tr>
<td>Improved phase-shift-keyed detector</td>
<td></td>
</tr>
<tr>
<td>One hundred mhz voltage-controlled oscillator</td>
<td></td>
</tr>
<tr>
<td>Multichannel analyzers at high rates of input</td>
<td></td>
</tr>
<tr>
<td>Self-shielding printed circuit boards for high frequency amplifiers and transmitters</td>
<td></td>
</tr>
<tr>
<td>Field Effect Transistor /FET/ circuit for variable gin amplifiers</td>
<td></td>
</tr>
<tr>
<td>AMPLITUDE MODULATION</td>
<td></td>
</tr>
<tr>
<td>Solid-state laser transmitter is amplitude modulated</td>
<td></td>
</tr>
<tr>
<td>Electronic bidirectional valve circuit prevents crossover distortion and threshold effect</td>
<td></td>
</tr>
<tr>
<td>Neon isotopes cancel errors in gas laser</td>
<td></td>
</tr>
<tr>
<td>Optical superheterodyne receiver uses laser for local oscillator</td>
<td></td>
</tr>
<tr>
<td>Monitor assures availability and quality of communication channels</td>
<td></td>
</tr>
<tr>
<td>Absolute frequency stabilization of laser oscillator against laser amplifier</td>
<td></td>
</tr>
<tr>
<td>Multichannel pulse height analyzer is inexpensive, features low power requirements</td>
<td></td>
</tr>
<tr>
<td>Stable ac phase and amplitude comparator</td>
<td></td>
</tr>
<tr>
<td>Facsimile video enhancement device</td>
<td></td>
</tr>
<tr>
<td>Synthesis of electro-optic modulators for amplitude modulation of light</td>
<td></td>
</tr>
<tr>
<td>Improved limiter for turn-on current transient</td>
<td></td>
</tr>
<tr>
<td>New passive telemetry system</td>
<td></td>
</tr>
</tbody>
</table>
SUBJECT INDEX

ANALOG CIRCUITS

Field-effect transistor replaces bulky transformer in analog-gate circuit
GSFC-351  B65-10284  01

Circuit measures hysteresis loop areas at 30 Hz
N-PS-13069  B67-10519  01

Analog buffer isolates high impedance source from low impedance load
N-PS-13941  B67-10544  01

AMPLITUDES

Increased performance reliability obtained with dual/redundant oscillator systems
GSFC-36  B63-10027  01

Device calibrates vibration transducer at amplitudes up to 20 g
N-PS-86  B63-10572  01

Simple device produces accelerometer calibration pulse
N-PS-363  B65-10269  01

Noncontacting vibration transducer has constant sensitivity
LANGLEY-99  B65-10392  01

Instrument automatically selects peak acceleration signal from several accelerometers
JPL-816  B66-10462  01

Antenna simulator permits preinstallation system checkout
GSFC-522  B66-10518  01

System precisely controls oscillation of vibrating mass
N-PS-1875  B67-10276  01

Multiplexer uses insulated gate-field effect transistors
N-PS-13096  B67-10396  01

Transient sensor development
N-PS-13370  B67-10471  01

Amplitude and frequency readout overlay
GSFC-10183  B66-10054  01

Large-amplitude inviscid fluid motion in an accelerating container
MCC-11560  B68-10170  02

Electro-optic modulator for infrared laser using gallium arsenide crystal
GSFC-10686  B68-10255  02

Positive and negative output circuits
LEWIS-10715  B69-10151  01

Instrumentation for nondestructive testing of composite honeycomb materials
N-PS-20405  B69-10366  03

Magnetic forming of resistive materials
N-PS-20417  B69-10397  03

A theoretical study of radar backscatter from distributed targets with emphasis on polarization dependence
N-PS-13775  B69-10560  02

Pulse-height analyzer with digital readout
ARS-10503  B69-10640  01

AMPOULES

Radon gas, useful for medical purposes, safely fixed in quartz
AMS-2  B66-10468  04

ANALOG CIRCUITS

Field-effect transistor replaces bulky transformer in analog-gate circuit
GSFC-351  B65-10284  01

Circuit measures hysteresis loop areas at 30 Hz
N-PS-13069  B67-10519  01

Analog buffer isolates high impedance source from low impedance load
N-PS-13941  B67-10544  01

Electronic shearing circuit monitors exact position of object underwater
BSC-10146  B67-10629  01

Pneumatic analog-to-pulse frequency converter
LEWIS-10345  B69-10276  02

Current-switching technique for analog pulse circuits
ARG-10479  B69-10445  01

ANALOG COMPUTES

Zener diode function generator requires no external reference voltage
JPL-0031  B65-10131  01

Hybrid computer technique yields random signal probability distributions
ARC-39  B65-10208  01

Scanning photometer system automatically determines atmospheric layer height
MCC-245  B66-10170  01

FEV comparator detects analog signal levels without loading analog device
N-PS-503  B66-10224  01

Instrument calculates moments of inertia of complex plane figures
MCC-628  B66-10306  01

Himan transfer functions used to predict system performance parameters
LANGLEY-203  B66-10379  01

Automatic system determines moments of inertia of asymmetrical objects
N-PS-1769  B66-10636  01

Fluidic oscillator used as humidity sensor
LEWIS-340  B67-10063  05

CTFDA - Chrysler Improved Numerical Differentiating Analyzer computer program
N-PS-2296  B67-10278  06

Analog voicing detector responds to pitch
GSFC-10085  B67-10571  01

Versatile analog pulse height computer performs real-time arithmetic operations
ARG-10052  B66-10626  06

Digital computer technique for setup and checkout of an analog computer
N-PS-13969  B68-10576  06

Electronic visualization of gas bearing behavior
LEWIS-10711  B69-10073  01

Reducing quantizer deadband with a range switching** digital filter
N-PS-20415  B65-10259  01

Electronic analog equalization for vibrational testing
MCC-10946  B69-10472  01

Water-glycol system volume calculation
MCC-15193  B69-10563  02

Airborne Fraunhofer Line Discriminator
MCC-13446  B69-10594  02

ANALOG DATA

Auxiliary circuit enables automatic monitoring of EG&amp;G
BSC-106  B65-10142  01

Plant respirometer enables high resolution of oxygen consumption rates
HR-47  B66-10406  04

MOSET analog memory circuit achieves long duration signal storage
N-PS-860  B66-10603  01
**ANALOG SIMULATION**

- Fast-response frequency-to-analog converter
- Multiplexer uses insulated gate-field effect transistors
- Study made of acoustical monitoring for mechanical checkout
- Automatic testing device facilitates noise checks and electronic calibrations
- Computer program for Video Data Processing System /FDP5/
- Dynamic linearity measurement technique
- Two devices for analysis of nystagmus
- Improved VHF direction finding system
- Battery charge-discharge controller

**PRODUCT INDEX**

- Computer program performs statistical analysis for random processes
- Monitoring system determines amplitude and time of vibration channel peaks
- A conceptual, parallel operating data compression processor
- Multiplexer uses insulated gate-field effect transistors
- Automatic telemetry checkout system
- Simple first order data compression processor concept
- Improved digital TV encoding and decoding system
- Computer program for Video Data Processing System /FEP5/
- Linear analog dc voltage-to-pulse-width converter
- Small, low power analog-to-digital converter
- High resolution Ge/Li/ spectrograph reduces rate-dependent distortions at high counting rates
- Automatic calibration apparatus for telemetry systems
- Mossbauer-effect data-collection system
- Improved phase-shift-keyed detector
- Linear voltage-to-frequency converter
- Highly linear, sensitive analog-to-digital converter
- Data processing method for a weak, moving telemetry signal
- Pulse-height analyzer with digital readout
- Biomedical bulk data processing program

**ANALOGS**

- Rocket engine analog simulation

**ANALOG TO DIGITAL CONVERTERS**

- Computer determines high-frequency phase stability
- Field effect transistors used as voltage controlled resistors
- Pneumotachometer counts respiration rate of human subject
- Analog-to-digital converter has increased reliability and reduced power consumption
- Simple pulse counting circuit computes sum of squares
- Electronic charmeter provides direct digital output
- Nonlinear feedback reduces analog-to-digital converter error
- Variable word length encoder reduces TV bandwidth requirements
- Control system maintains selected liquid level
- PET comparator detects analog signal levels
SURFACE INDEX

ANGLES (GEOMETRY)

Instrumentation for nondestructive testing of composite honeycomb materials
M-FS-20405  B69-10366  03

Sonic boom propagation in stratified atmosphere
LANGLEY-10480  B69-10391  06

Root-cubing and general root-powering methods for finding the zeros of polynomials
ARG-10444  B69-10424  02

Energy-storage of a prescribed impedance
ARG-10428  B69-10431  02

Optimizing solar-cell grid geometry
EQ-10417  B69-10460  01

ANALYTIC FUNCTIONS

An orthonormalization procedure for multivariable function approximation
M-FS-1313  B66-10579  01

Analytical drafting curves provide exact equations for plotted data
LANGLEY-285  B67-10601  02

Analysis of magnetically-controlled processes in pulse-modulation systems
GSFC-10248  B67-10070  01

Prediction of thermal radiation from a rocket's exhaust plane
M-FS-20414  B69-10371  02

ANALYTIC GEOMETRY

Instrument calculates moments of inertia of complex plane figures
M-FS-620  B66-10306  01

Analytical drafting curves provide exact equations for plotted data
LANGLEY-285  B67-10601  02

ANALYTICAL CHEMISTRY

Reusable chelating resins concentrate metal ions from highly dilute solutions
JPL-758  B66-10451  03

Xenon forms stable compound with fluorine
ANG-4  B66-10467  03

Product identification techniques used as training aids for analytical chemists
SAM-10025  B68-10373  03

ANALYZERS

Servo system facilitates photoelastic strain measurements on resins
JPL-504  B64-10280  01

Pulse height analyzer operates at high repetition rates, low power
WOO-044  B65-10041  01

Multiaxial analyzer detects low-energy electrons
GSFC-329  B67-10213  01

Highly sensitive solids mass spectrometer uses inert-gas ion source
ERC-11  B66-10114  02

New electron microscope employs new video display technique
ARG-158  B67-10312  03

Analytical techniques for determining boron in graphite
ARG-10087  B68-10102  03

Welder analyzer
MSC-12066  B68-10242  01

Harmonic distortion analyzer speeds setup of magnetic tape recorders
GSFC-10198  B68-10254  01

Mossbauer-effect data-collection system

ANGLES (GEOMETRY)

Analyzing

Computer program performs flow analysis through turbines
LEWIS-236  B66-10496  01

System automatically supplies precise analytical samples of high-pressure gases
M-FS-1014  B69-10090  01

Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks
NPO-10031  B67-10319  06

Spectrophotometric technique quantitatively determines NaNBT inhibitor in ethylene glycol-water solutions
MSC-11496  B67-10573  03

Hastelloy X properties, data, and metallurgical characteristics
NUC-10302  B68-10023  03

Qualitative and quantitative analysis of mixtures of compounds containing both hydrogen and deuterium
ARG-10312  B69-10177  04

Application of cryanalytic techniques to the analysis of SiC space batteries
GSFC-10569  B69-10731  01

ANCHORS (FASTENERS)

Oceanborne transponder platform has good stability
M-FS-177  B65-10035  05

Expandable insert serves as screw anchor
MSC-301  B66-10132  05

Rock anchors restore broken swamp anchors economically
WLP-10004  B67-10498  05

Novel terminal strips for transformers
NPO-10842  B69-10246  01

ANCHOIC CHAMBERS

Improved fire resistant radio frequency anechoic materials
M-FS-1660C  B69-10450  05

ANOMETERS

New anemometer has fast response, measures dynamic pressure directly
LANGLEY-28  B63-10530  05

Fast-response cup anemometer features cosine response
ARG-90193  B68-10202  01

Compact rotating cup anemometer
NPO-10563  B68-10436  01

Dewpoint temperature inversions analyzed
ARG-10316  B69-10057  02

ANEURYSM

Sickle cell anemia should relieve hematoma pressure
MSC-599  B67-10332  04

ANEUROLOGY

Test monkeys anesthetized by routine procedure
EQ-18  B65-10332  04

ANEURSTIC

A technique for making animal restraints
ARC-25  B63-10564  05

ANGLES (GEOMETRY)

Reference black body is compact, convenient to use

I-29
ANGULAR ACCELERATION

ARC-3 B63-10004 03
Setting of angles on machine tools speeded by magnetic protractor
ARC-5 B63-10006 01
Spherical model provides visual aid for cubic crystal study
LDW-10 B65-10065 03
Beam splitter used in dual filming technique
N-PF-501 B66-10072 02
Specimen holder design improves accuracy of X-ray powder analysis,
JPL-SC-165 B66-10075 02
Sertant measures spacecraft altitude without gravitational reference
MSC-200 B66-10143 02
Multisurface fixture permits easy grinding of tool bit angles
M-PF-506 B66-10171 05
Mount enables precision adjustment of optical-instrumentation mirror
MSC-184 B66-10199 02
Adjustable cutting guide aligns and positions stacks of material
MSC-321 B66-10210 05
Tool forms right angles in component leads
N-PF-722 B66-10346 05
Versatile machine mills, saws light materials
N-PF-827 B66-10364 05
Effect of welding position on porosity formation in aluminum alloy welds
N-PF-2318 B67-10177 05
System enables dimensional inspection of very large structures
M-PF-2477 B67-10214 05
Flow liner extends operating life of high-angulation bellows
N-PF-12023 B67-10512 05
Precision trimmer aids in preparing biomedical specimen blocks for ultrathin sectioning
ARG-242 B67-10541 05
Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing
MSC-10010 B67-10542 02
Flare angles measured with ball gage
N-PF-14690 B66-10030 01
Modified size bar device measures small angles with high accuracy
GSFC-438 B66-10322 02
Automatic star-horizon angle measurement system
MSC-11585 B69-10597 01
Electron interaction in matter
N-PF-14886 B69-10674 02
Photomicrometrology
N-PF-14556 B69-10736 01

ANGULAR ACCELERATION

Angular acceleration measured by deflection in sensing ring
MSC-250 B66-10105 01
Switching mechanism senses angular acceleration
GSFC-462 B66-10158 01
Precision CW laser automatic tracking system investigated
M-PF-1606 B66-10629 01

ANGULAR CORRELATION

Ring laser angle encoder
MSC-13099 B69-10115 01

ANGULAR DISTRIBUTION

Device measures reaction engine thrust vector deviations
JPL-SC-163 B66-10642 05
Helical tape forming device
GSFC-10830 B69-10137 05

ANGULAR VELOCITY

System measures angular displacement without contact
LANGLEY-46 B65-10073 01
Variable-capacitance tachometer eliminates troublesome magnetic fields
GSFC-435 B66-10126 01
Mount enables precision adjustment of optical-instrumentation mirror
MSC-184 B66-10199 02
Modified hydraulic braking system limits angular acceleration to safe values
GSFC-476 B66-10310 05
Flexible arms provide constant force for pressure switch calibration
EQ-38 B66-10317 05
Spherical pipe joint delivers loads equally to mating flange
N-PF-827 B66-10665 05
Motion drive system is accurately controlled in the 1-micron range
JPL-864 B66-10695 05
Gimbal angle sensor
GSFC-10305 B66-10315 01
Precisely repeatable rotary mechanism
NPO-10679 B69-10696 05

ANHYDRIDES

Xenon fluoride solutions effective as fluorinating agents
ABG-217 B67-10133 03
Synthesis of pure aromatic glycidyl esters for use as adhesives
N-PF-12705 B67-10647 03
Quick 4cm-decif electrode pastes
MSC-13249 B69-10598 04

ANILINE

Substituted silane-diol polymers have improved thermal stability
N-PF-469 B66-10259 03

ANIMALS

A technique for making animal restraints
ARC-25 B63-10564 05
Miniature bioelectric device accurately measures and telemeters temperature
ARC-52 B66-10057 01
Uranyl phthalocyanines show promise in the treatment of brain tumors
AMB-100 B67-10188 04
Experimental study and evaluation of radioprotective drugs
ARG-10196 B68-10320 04
Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ba-226 in aquatic fauna
AMB-10345 B69-10258 02
Automatic bird watcher
ARG-10342 B69-10286 02
SUBJECT INDEX

ANIONS
Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination 886-262  E67-10421 03
Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods 886-10515  E67-10425 03
Separation of the rare earths by anion-exchange in the presence of lactic acid 886-10446  E69-10377 03

ANESELE
Mixed ether bath for electrodeposition of aluminum 886-10200  E69-10737 03

ANISOTROPIC MEDIA
Finite element analysis of compressible solids with nonlinear material properties 886-10342  E69-10238 06
Proposed acousto-optic filter 886-10446  E69-10466 02
Production of crystalline polymers via liquid crystal monomers 886-10235  E69-10744 03

ANISOTROPIC SHELLS
Buckling strength of filament-wound cylinders under axial compression is investigated 886-10042  E67-10659 03

ANISOTROPY
Test device prevents molecular bounce-back 886-10546  E69-10546 03
Ignition of binary alloys of uranium 886-10057  E68-10280 01
Study of behavior of sterols at interfaces 886-10085  E68-10281 03
Correction for losses in optical birefringent networks, a concept 886-20088  E68-10571 02
Measurements of thermoelectric power in annealed and quenched gold-platinum alloys 886-10303  E69-10206 03

ANNALING
Integral ribs formed in metal panels by cold-press extrusion 886-230  E65-10161 05
Angular glass tubing drawn from round tubing 886-20  E65-10235 05
Etching process mills PH 14-8 Mo alloy steel to precise tolerances 886-270  E66-10110 03
Gage of 6.5 per cent Si-Fe sheet is chemically reduced 886-537  E66-10454 03
Process yield Co-Fe alloys with superior high temperature magnetic properties 886-333  E66-10535 03

Treatemnt increases stress-corrosion resistance of aluminum alloys 886-1840  E66-10595 05
Machining heavy plastic sections 886-12720  E67-10381 03
Aluminum and stainless steel tubes joined by simple ring and welding process 886-13120  E67-10472 05
Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area 886-10007  E67-10538 01

Weld microcracking in Inconel 718 minimized by minor elements 886-18185  E68-10251 03
Consolidation and fabrication techniques for vanadium-20 w/o titanium 886-10488  E69-10360 03
Inverted grounding technique for electron beam heating 886-10411 03
Conditioning flat conductors for flat conductor cable production 886-14914  E69-10429 01

Superconductivity in zirconium-rhodium alloys 886-10223  E69-10010 03
Measurements of thermoelectric power in annealed and quenched gold-platinnum alloys 886-10303  E69-10206 03
Evaluation of magnetic materials for static inverters and converters 886-10306  E69-10541 05

Production of crystalline polymers via liquid crystal monomers 886-20380  E69-10605 03
Evaluation of magnetic materials for static inverters and converters 886-10541  E69-10541 05

ANISOTROPIC SHEELS
Buckling strength of filament-wound cylinders under axial compression is investigated 886-10032  E67-10659 03

Baseline metallography of deformed pyrolytic carbon 886-11196  E69-10488 03
Strain-age cracking in Rene 41 alloy 886-10650  E69-10605 03

ANNULAR FLOW
Fluid check valve has fail-safe feature 886-10546  E69-10207 05
Miniature valve accurately controls small volume fluid flow 886-66  E66-10473 05
Cryogenic fluid flow instabilities in heat exchangers 886-20436  E69-10541 02

ANNULAR NOZZLES
Hydraulic calipers 886-18052  E69-10399 05

ANNULAR PLATES
Sleeve and cutter simplify disconnecting welded joint in tubing 886-384  E69-10240 05

ANNUL
Analysis of annular combustors 886-10399  E69-10541 03
Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated 886-10261  E69-10091 02

Single-element coaxial injector for rocket fuel 886-11095  E69-10587 05

ANODES
High purity electroforming yields superior metal models 886-10007  E69-10007 05
Ring counter may be advanced or retarded by command signal 886-10144  E69-10144 01
Tantalum cathode improves electron-beam evaporation of tantalum 886-10175  E69-10175 03
Titanium diaphragm makes excellent amplifier cathode support 886-10298 01
New energy storage concept uses tapes
LEWIS-239 B66-10098 02

Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio
GSPC-509 B66-10347 01

Electrochemical milling removes burrs and solder from tubing ends
N-PS-714 B66-10358 03

Electroplating eliminates gas leakage in brazed areas
N-PS-923 B66-10015 05

Nixie tube display unit employs time-shared logic
ARG-117 B66-10512 01

Water cooled anode increases life of high temperature arc lamp
NPO-10180 B67-10247 02

Control apparatus for spectral energy source
LEWIS-291 B67-10048 01

Development of low temperature battery
LEWIS-10326 B67-10546 01

Application of the solid lubricant molybdenum disulfide by sputtering
LEWIS-10544 B68-10340 03

Inverted grounding technique for electron beam heating
LEWIS-10543 B68-10411 01

Magneton tuner has locking feature
NPO-09771 B69-10119 05

Magnetically coupled emission regulator
GSPC-10056 B69-10213 01

High-temperature, gas-filled ceramic rectifiers, thyratrons, and voltage-reference tubes
LEWIS-90271 B69-10376 01

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
ARG-10452 B69-10613 01

ANODIC COATINGS
Anodization process produces opaque, reflective coatings on aluminum
N-PS-348 B65-10336 03
Gelatin coated electrodes allow prolonged bioelectronic measurements
MSC-153 B66-10088 01
Silver plating ensures reliable diffusion bonding of dissimilar metals
N-PS-1975 B67-10124 03
Study made of anodized aluminum circuit boards
N-PS-1358C B67-10425 01
Copper and nickel adherently electroplated on titanium alloy
N-PS-13952 B67-10532 03
Effects of surface preparation on quality of aluminum alloy weldments
N-PS-13152 B68-10302 03
Corrosion protection of aluminum alloys in contact with other metals
N-PS-10526 B69-10098 03
Advances in aluminum anodizing
N-PS-1460C B69-10144 05

ANTENNA ARRAYS
Modified interelement spacing improves Yagi antenna array
LANGLEY-130 B65-10183 01
Antenna configurations provide polarization diversity
GSPC-74 B66-10066 01
A thirty-six element array antenna system
N-PS-20435 B69-10390 01
An interferometer tracking radar system
MSC-10956 B69-10523 01

ANTENNA FEEDS
Omnidirectional antennas transmit and receive over large bandwidth
GSPC-436 B66-10133 01
Feed-through connector couples RF power into vacuum chamber
NPO-0096 B67-10027 01
Evaporant feed device facilitates flash vapor deposition process in vacuum
NPO-10232 B67-10320 03
Computer programs for antenna feed system design and analysis
NPO-10359 B67-10504 06
Reflectometer for receiver input system
NPO-10843 B67-10657 01

ANTENNA RADIATION PATTERNS
Modified interelement spacing improves Yagi antenna array
LANGLEY-130 B65-10183 01
Broadband choke suppresses spurious currents in antenna structure
MSC-10013 B67-10675 01
Computer program for machine design of Cassegrain feed systems
NPO-10588 B68-10421 06

ANTENNAS
Polychart contour plotter enables data extrapolation from multiple plotting charts
N-PS-57 B64-10406 05
Helical coaxial-resonator makes excellent RF filter
GSPC-243 B65-10012 01
Oceanborne transponder platform has good

AMDIZI SIG
New energy storage concept uses tapes
LEWIS-239 B66-10098 02

Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio
GSPC-509 B66-10347 01

Electrochemical milling removes burrs and solder from tubing ends
N-PS-714 B66-10358 03

Electroplating eliminates gas leakage in brazed areas
N-PS-923 B66-10015 05

Nixie tube display unit employs time-shared logic
ARG-117 B66-10512 01

Water cooled anode increases life of high temperature arc lamp
NPO-10180 B67-10247 02

Control apparatus for spectral energy source
LEWIS-291 B67-10048 01

Development of low temperature battery
LEWIS-10326 B67-10546 01

Application of the solid lubricant molybdenum disulfide by sputtering
LEWIS-10544 B68-10340 03

Inverted grounding technique for electron beam heating
LEWIS-10543 B68-10411 01

Magneton tuner has locking feature
NPO-09771 B69-10119 05

Magnetically coupled emission regulator
GSPC-10056 B69-10213 01

High-temperature, gas-filled ceramic rectifiers, thyratrons, and voltage-reference tubes
LEWIS-90271 B69-10376 01

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
ARG-10452 B69-10613 01

ANODIC COATINGS
Anodization process produces opaque, reflective coatings on aluminum
N-PS-348 B65-10336 03
Gelatin coated electrodes allow prolonged bioelectronic measurements
MSC-153 B66-10088 01
Silver plating ensures reliable diffusion bonding of dissimilar metals
N-PS-1975 B67-10124 03
Study made of anodized aluminum circuit boards
N-PS-1358C B67-10425 01
Copper and nickel adherently electroplated on titanium alloy
N-PS-13952 B67-10532 03
Effects of surface preparation on quality of aluminum alloy weldments
N-PS-13152 B68-10302 03
Corrosion protection of aluminum alloys in contact with other metals
N-PS-10526 B69-10098 03
Advances in aluminum anodizing
N-PS-1460C B69-10144 05

ANTENNA ARRAYS
Modified interelement spacing improves Yagi antenna array
LANGLEY-130 B65-10183 01
Antenna configurations provide polarization diversity
GSPC-74 B66-10066 01
A thirty-six element array antenna system
N-PS-20435 B69-10390 01
An interferometer tracking radar system
MSC-10956 B69-10523 01

ANTENNA FEEDS
Omnidirectional antennas transmit and receive over large bandwidth
GSPC-436 B66-10133 01
Feed-through connector couples RF power into vacuum chamber
NPO-0096 B67-10027 01
Evaporant feed device facilitates flash vapor deposition process in vacuum
NPO-10232 B67-10320 03
Computer programs for antenna feed system design and analysis
NPO-10359 B67-10504 06
Reflectometer for receiver input system
NPO-10843 B67-10657 01

ANTENNA RADIATION PATTERNS
Modified interelement spacing improves Yagi antenna array
LANGLEY-130 B65-10183 01
Broadband choke suppresses spurious currents in antenna structure
MSC-10013 B67-10675 01
Computer program for machine design of Cassegrain feed systems
NPO-10588 B68-10421 06

ANTENNAS
Polychart contour plotter enables data extrapolation from multiple plotting charts
N-PS-57 B64-10406 05
Helical coaxial-resonator makes excellent RF filter
GSPC-243 B65-10012 01
Oceanborne transponder platform has good
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>APERTURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>stability N-FS-171</td>
<td>B65-10035 05</td>
</tr>
<tr>
<td>Solid-state laser transmitter is amplitude modulated MSC-121</td>
<td>B65-10238 01</td>
</tr>
<tr>
<td>Extendable mast used in one shot soil penetrometer JPL-685</td>
<td>B66-10146 05</td>
</tr>
<tr>
<td>Modified hydraulic braking system limits angular deceleration to safe values GSFC-476</td>
<td>B66-10310 05</td>
</tr>
<tr>
<td>Antenna simulator permits preinstallation system checkout GSFC-522</td>
<td>B66-10518 01</td>
</tr>
<tr>
<td>Movable RF probe eliminates need for calibration in plasma accelerators LWIS-10127</td>
<td>B67-10362 01</td>
</tr>
<tr>
<td>Range recording technique enables four-way polarization measurements N-PS-12847</td>
<td>B67-10460 01</td>
</tr>
<tr>
<td>Broadband choke suppresses spurious currents in antenna structure MSC-10013</td>
<td>B67-10675 01</td>
</tr>
<tr>
<td>Diversity RF receiving system with improved phase-lock characteristics XGS-01222</td>
<td>B68-10068 01</td>
</tr>
<tr>
<td>Astronaut space suit communication antenna MSC-12101</td>
<td>B68-10238 01</td>
</tr>
<tr>
<td>Deep space PM system, a concept MSC-11825</td>
<td>B68-10289 01</td>
</tr>
<tr>
<td>High-torque precision stepping drive N-PS-10772</td>
<td>B68-10549 05</td>
</tr>
<tr>
<td>Technique for tuning antenna systems producing negligible signal radiation KSC-10060</td>
<td>B69-10215 01</td>
</tr>
<tr>
<td>RF noise suppression using the photodielectric effect in semiconductors MSC-12259</td>
<td>B69-10225 01</td>
</tr>
<tr>
<td>High-power microwave power divider concept NRO-11031</td>
<td>B69-10290 01</td>
</tr>
<tr>
<td>Combination ranging system and mapping radar NRO-11001</td>
<td>B69-10325 01</td>
</tr>
<tr>
<td>The effect of mismatched components on microwave noise-temperature calibrations NRO-11163</td>
<td>B69-10333 01</td>
</tr>
<tr>
<td>Energy-storage of a prescribed impedance NRO-10303</td>
<td>B69-10380 01</td>
</tr>
<tr>
<td>Improved circularly polarized planar-array antenna NRO-10301</td>
<td>B69-10382 01</td>
</tr>
<tr>
<td>Improved fire resistant radio frequency anechoic materials N-PS-16600</td>
<td>B69-10450 05</td>
</tr>
<tr>
<td>Measurement technique for the determination of antenna directivity N-PS-12799</td>
<td>B69-10677 01</td>
</tr>
<tr>
<td>A sterilizable high-impact antenna NRO-10231</td>
<td>B69-10697 01</td>
</tr>
<tr>
<td>ANTICOAGULANTS</td>
<td></td>
</tr>
<tr>
<td>Heparin insolubilized with crosslinking agent NPO-10634</td>
<td>B69-10299 03</td>
</tr>
<tr>
<td>ANTIFREEZING AGENTS</td>
<td></td>
</tr>
<tr>
<td>Optically exciting a magnetic memory - A feasibility study</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APERTURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoride coatings make effective lubricants in molten sodium environment LWIS-229</td>
</tr>
<tr>
<td>Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics LWIS-320</td>
</tr>
<tr>
<td>Low friction servo valve LEWIS-10574</td>
</tr>
<tr>
<td>Fluid power-transmitting gas bearing EBC-10097</td>
</tr>
<tr>
<td>ANTIRADIATION DRUGS</td>
</tr>
<tr>
<td>Experimental study and evaluation of radioprotective drugs ANG-10196</td>
</tr>
<tr>
<td>ANTISEPTICS</td>
</tr>
<tr>
<td>Improved pH buffering agent for sodium hypochlorite MSC-15443</td>
</tr>
<tr>
<td>ANTIVIRALS</td>
</tr>
<tr>
<td>Self-sealing disconnect for tubing forms metal seal after breakaway JPL-354</td>
</tr>
<tr>
<td>Low power heating element provides thermal control during swaging operations N-PS-457</td>
</tr>
<tr>
<td>APERTURES</td>
</tr>
<tr>
<td>Variable light source with a million-to-one intensity ratio JPL-WCO-008</td>
</tr>
<tr>
<td>Microslicing produces optical apertures to micron dimensions GSFC-206</td>
</tr>
<tr>
<td>Wide-aperture solar energy collector is light in weight JPL-SC-055</td>
</tr>
<tr>
<td>Improved system measures output energy of pyrotechnic devices WCO-256</td>
</tr>
<tr>
<td>Submicron holes in thin films increase sampling range of mass spectrometers JPL-SC-097</td>
</tr>
<tr>
<td>A radiometer-pyrometer LEWIS-284</td>
</tr>
<tr>
<td>A conceptual, parallel operating data compression processor NRO-10060</td>
</tr>
<tr>
<td>Self-sealing closure enables access to several fluid containers NRO-10123</td>
</tr>
<tr>
<td>Fresnel diffraction plates are simple and inexpensive N-PS-12731</td>
</tr>
<tr>
<td>Modified blackbody device emits high-density radiation N-PS-12744</td>
</tr>
<tr>
<td>Aerial-image enables diagrams and animation to be inserted in motion pictures ANG-165</td>
</tr>
<tr>
<td>Infrared radiometer N-PS-13373</td>
</tr>
<tr>
<td>Telescope mount with azimuth-only primary NRO-10460</td>
</tr>
<tr>
<td>Electronic aperture control devised for solid state imaging system</td>
</tr>
</tbody>
</table>
APOLLO PROJECT

M-PS-12428 B69-10028 01
Electro-optic modulator for infrared laser using gallium arsenide crystal
GSPC-10686 B69-10255 02

Spherical ion source
XNP-08898 B69-10186 01

Energy-storage of a prescribed impedance
NPO-10303 B69-10380 01

Improved circularly polarized planar-array antenna
NPO-10301 B69-10382 01

Proposed acousto-optic filter
NQ-10440 B69-10466 02

Method of directing a laser beam with very high accuracy
NPO-11087 B69-10508 02

Fine-line sensitivity for holographic interferograms
NQ-10348 B69-10663 02

Deposition monitor and control
NPO-10706 B69-10722 01

APOLLO PROJECT

Automatic reel controls filler wire in welding machines
MSC-416 B66-10236 05

Logic system aids in evaluation of project readiness
MSC-407 B66-10547 05

Spiral spring/strain gage combination accurately measures shock induced deflection
MSC-759 B66-10488 01

New method for critical failure prediction of complex systems
M-PS-14133 B69-10252 02

APOLLO SPACECRAFT

Predicting surface heating rates and pressures resulting from hot exhaust gases
MSC-971 B66-10633 05

Star/horizon simulator used to test space guidance systems
MSC-807 B67-10110 02

Analytical technique characterizes all trace contaminants in water
MSC-11032 B67-10243 03

Computer program provides steady state analysis for liquid propellant propulsion systems
MSC-10064 B67-10414 06

APOLLO TELESCOPE MOUNT

Improved phase-shift-keyed detector
M-PS-20064 B69-10101 01

APPLICATIONS OF MATHEMATICS

Contact stresses calculated for miniature slip rings
M-PS-280 B65-10998 05

Study of random process theory aids digital data processing
M-PS-1475 B67-10309 06

Controllability of distributed-parameter systems
M-PS-14929 B68-10346 02

Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated
ARG-10261 B69-10991 02

Reducing quantizer deadband with a range switching digital filter

APPLICATIONS TECHNOLOGY SATELLITES

An overview of electromagnetic interference problems in spacecraft
NPO-11170 B69-10362 01

APPROXIMATION

An orthonormalization procedure for multivariable function approximation
M-PS-1313 B66-10579 01

Linear circuit analysis program for IBM 1620 Monitor 2, 1311/1443 data processing system /CIRCS/
NPO-10131 B67-10173 06

Calculation of resonance neutron absorption in two-region problems /the GAROL code/
NUC-10045 B67-10223 06

Computer program simplifies design of rotating components of turbomachinery
NUC-10046 B67-10235 06

Quantum mechanical calculations of reactive scattering cross sections in bimolecular encounters
M-PS-13594 B67-10527 03

The X square statistic and goodness of fit test
GSPC-10547 B68-10136 02

Independent doubly truncated gamma variables
M-PS-20143 B68-10345 02

General series solution technique for bending of irregular laterally loaded flat plates
NUC-10170 B69-10035 06

Advanced mission analysis programs
GSPC-10575 B69-10171 06

ARC CHAMBERS

Electric arc heater is self starting
LANGLEY-208 B66-10230 03

ARC DISCHARGES

Improved carbon electrode reduces arc sputtering
MSC-219 B66-10026 01

Electric arc heater is self starting
LANGLEY-2C8 B66-10230 03

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum
ARG-109 B66-10899 02

System measures arc energy dissipated in relay contact cycling

I-34
Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation

ARC GENERATORS
Magnetic field controls carbon arc tail flame
Control apparatus for spectral energy source

ARC HEATING
Carbon arc ignition improved by simple auxiliary circuit
Segmented electrode increases operating pressure of MHD accelerator
Experimental investigation of megawatt dc arc heating of nitrogen
Laboratory arc furnace features interchangeable hearths

ARC LAMPS
Igniting system for mercury lamps protects transistorized sustaining supply
Water cooled anode increases life of high temperature arc lamp
Protective clothing for workers with 5-kw and 20-kw short-arc lamps

ARC HEATING
Lower-cost tungsten-rhenium alloys
Process yield Co-Fe alloys with superior high temperature magnetic properties
High-strength tungsten alloy with improved ductility

ARC SPRAYING
Intergranular metal phase increases thermal shock resistance of ceramic coating

ARC WELDING
Welding procedures improve quality of welds, offers other advantages
Photosensors used to maintain welding electrode-to-joint alignment
Fingertip current control facilitates use of arc welding gun
Standard arc welders provide high asperrity direct current source
Opposed arcs permit deep weld penetration with only one pass
Power arc welder touch-started with consumable electrode
Portable machine welding head automatically controls arc

Boron carbide whiskers produced by vapor deposition
Tungsten wire and tubing joined by nickel brazing
Argon purge gas cooled by chill box
Cold trap increases sensitivity of gas chromatography
Process yield Co-Fe alloys with superior high temperature magnetic properties
High intensity radiation heat source is capable of sustained operation
Process reduces secondary resonant emission in electronic components
An improved soft X-ray photoionization detector
Oxide film on metal substrate reduced to form metal-oxide-metal layer structure
ARGON LASERS

Welding torch and wire feed manipulator
N-PS-13102  B67-10385  05

Protected, high-temperature connecting cable
LEWIS-10149  B67-10461  01

Study made of heat transfer and pressure drop through tubes with internal interrupted fins
LEWIS-10280  B67-10555  05

Development of dual solid cryogens for high reliability refrigeration system
GSFC-10188  B67-10644  02

Reducing bubbles in glass coatings improves electrical breakdown strength
LEWIS-10278  B68-10214  03

Laser-Doppler gas-velocity instrument
N-PS-20039  B68-10349  02

Two systems developed for purifying inert atmospheres
ARG-10234  B69-10026  03

Preparation of thorium magnesium-zinc reduction
ARG-10245  B69-10079  03

Active frequency control system for argon F2 laser
N-PS-14988  B69-10099  02

Mixing weld gases offers advantages
N-PS-16413  B69-10145  05

Plasma-heating by induction
LEWIS-10528  B69-10185  02

A new solid lubricant
LEWIS-10812  B69-10250  03

Improved retort for cleaning metal powders with hydrogen
LEWIS-10716  B69-10468  03

Epitaxial crystalline growth upon cold substrates
MSC-11196  B69-10079  03

Pulsed high-voltage dc RF sputtering
LEWIS-10920  B69-10699  01

ARGON LASERS

Laser system generates single-frequency light
N-PS-2556  B67-10288  02

Method of directing a laser beam with very high accuracy
NFO-11087  B69-10506  02

ARITHMETIC

Subroutine allows easy computation in extended precision arithmetic
N-PS-1136  B66-10504  01

Versatile analog pulse height computer performs real-time arithmetic operations
ARG-10052  B67-10626  06

ARITHMETIC AND LOGIC UNITS

Transfluxor circuit amplifies sensing current for computer memories
JPL-406  B69-10100  05

Digital data averager improves conventional measurement system performance
MSC-12078  B66-10018  01

Special purpose computer provides programmable digital filter for sampled-data control systems
N-PS-20290  B69-10454  06

ARRAYS

Guidance/Decode facility for FORTRAN II
ARG-10335  B66-10504  01

Journal gas bearing for curved surfaces
N-PS-20423  B69-10102  05

Phase multiplying electronic scanning array
NFO-10302  B67-10381  01

ARSENATES

High-energy, high-power, long-life battery
LEWIS-10724  B69-10131  01

ARSENIC

As integrated circuit switch
LEWIS-10837  B69-10320  05

AROMATIC COMPOUNDS

Irradiation improves properties of an aromatic polyester
LANGLEY-115  B65-10164  03

Substituted silane-diol polymers have improved thermal stability
N-PS-2375  B66-10259  03

Process for preparing dispersions of alkali metals
JPL-318  B66-10639  03

Isostatic compression process converts polyaromatics into structural material
JPL-892  B67-10168  03

ARGON LASERS

Rotor position sensor switches currents in brushless dc motors
N-PS-18194  B68-10299  05

Improved electromechanical master-slave manipulator
ARG-10297  B68-10372  05

Hermetically sealed pump
LEWIS-10837  B69-10320  05

Improved solenoid valve design
GSFC-10607  B69-10704  05
blood pressure research
ABC-53  B65-10325  01

ARTIFACTS
Neutron activation analysis traces copper artifacts to geographical point of origin
ABC-119  B65-10036  02

ARTIFICIAL INTELLIGENCE
Review of research and development in fluid logic elements
M-FS-420  B67-10438  01

ASBESTOS
Refractory thermal insulation for smooth metal surfaces
M-FS-160  B64-10099  03
Air-cured ceramic coating insulates against high heat fluxes
M-FS-150  B65-10357  03
Spray-on technique simplifies fabrication of complex thermal insulation blanket
M-FS-497  B66-10053  03
Aluminum oxide filler prevents obstructions in tubing during welding
MSC-222  B66-10125  05
Improved method facilitates debulking and curing of phenolic impregnated asbestos
MSC-949  B66-10459  05

ASTRONOMICAL TELESCOPES
Seal allows blind assembly and thermal expansion of components
NO-0005  B65-10053  05
Assembly jig assures reliable solar cell modules
GSCF-455  B66-10040  05
Expandable insert serves as screw anchor
MSC-301  B66-10132  05
Rotating mandrel speeds assembly of plastic inflatables
LANGLEY-155  B66-10137  05
Solar cell submodule design facilitates assembly of lightweight arrays
JPL-728  B66-10231  02
Seal surfaces protected during assembly
NO-0067  B66-10266  05
Miniature paint-spray gun for recensed areas
MSC-13060  B68-10387  05
Materials data handbook, aluminum alloy 6061
MSC-20381  B69-10065  03

ASTRONAUT LOCOMOTION
Two devices for analysis of nystagmus
EQ-10273  B69-10224  01

ASTRONAUT TRAINING
Technique simulates effect of reduced gravity
LANGLEY-44  B64-10146  04
Integrated mobility measurement and notation system
MSC-726  B67-10114  04

ASTRONOMICAL TELESCOPES
Glancing incidence telescope for far ultraviolet and soft X-rays
JPL-195  B63-10247  05
SUBJECT INDEX

ASTRONOMY

Binary system generates sidereal rate from standard solar rate
GSPC-190  B64-10200  01

Electron beam parallel X-ray generator
HSC-11522  B67-10372  02

A new method for producing optical mirrors
NQ-10227  B69-10529  02

Spacecraft Thermal Radiation Environment
Computer Program
H-FS-15054  B69-10574  06

ASTROPHYSICS

Method for determining properties of microinstabilities of a magnetized plasma
PU-10447  B69-10462  02

ASTRONOMY

Automatic system determines moments of inertia of asymmetrical objects
H-FS-1769  B66-10636  01

Torque meter aids study of hysteresis
Motor rings
H-FS-12119  B67-10412  01

SSAL /Subnetwork Enumeration And Listing/
H-FS-10116  B68-10227  06

ASTRONOMY

High temperature thermocouple operates in reduced atmosphere
HD-0046  B66-10134  01

High voltage pulse generator
MRC-12178  B69-10548  01

ATMOSPHERIC ATTENUATION

Optical automatic gain channel
H-FS-1550  B66-10596  02

Millimeter-wave atmospheric loss prediction method
HBO-11054  B69-10584  01

ATMOSPHERIC COMPOSITION

Improved atmospheric particle analyzer
EBC-33  B67-10231  01

Testing the flammability of materials exposed to arcs
HSC-15225  B69-10531  03

ATMOSPHERIC DENSITY

Pneumatic power is transmitted through air
bearing
MRC-8  B64-10141  05

Coatings decrease metal fatigue failure
ABC-10015  B69-10176  03

ATMOSPHERIC ENTRY

High intensity radiation heat source is capable of sustained operation
ABC-61  B66-10547  02

ATMOSPHERIC ENTRY SIMULATION

Colloidal suspension simulates linear dynamic pressure profile
WGO-266  B66-10214  05

ATMOSPHERIC MODELS

Design of multilayer insulation system
ABC-10166  B69-10615  05

ATMOSPHERIC PRESSURE

Segmented electrode increases operating pressure of MD accelerator

ATOMIC PHYSICS

Handbook explaining the fundamentals of nuclear and atomic physics
MBC-10330  B69-10705  02

ATOMIC SPECTRA

Status of ultrachemical analysis for semiconductors
H-FS-225A  B67-10138  03

Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry
ABO-210  B67-10236  03

ATOMIC STRUCTURE

Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique
ABO-277  B67-10324  03

Study reveals effect of aluminum on saturation moment of Fe-Ni alloys
ABO-90259  B68-10172  03

Improved atomic resonance gas cell for use in frequency standards
MBC-11666  B68-10230  01

ATOMIZERS

Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application
LANGLEY-6A  B63-10318  03

Miniature paint-spray gun for recessed areas
MSC-13060  B68-10387  05

ATOMIZING

Two-fluid, impinging-sheet injector
SUBJECT INDEX

1. **AUDIO**
   - **FREQUENCIES**
     - Bodies spatially
     - Three-axis attitude and direction reference instrument has only one moving part
     - Improved head-controlled TV system produces high-quality remote image

2. **ATTITUDE CONTROL**
   - Knob linkage permits one-hand control of several operations
   - Plated nickel wire mesh makes superior catalyst bed
   - Visual attitude orientation and alignment system
   - Rectilinear display gives acceleration load factor and velocity information
   - Precise gimballed mechanism
   - Two-step rocket engine bipropellant valve concept

3. **ATTITUDE INDICATORS**
   - Hydraulic device provides accurate displacements to microinches
   - FRC/CW system measures aircraft attitude
   - Developmental instrument supplies accurate attitude and attitude-rate data
   - Visual attitude orientation and alignment system
   - Instrumentation monitors transported material through variety of parameters
   - Proposed technique for vertical alignment of a crane's cable
   - A polar graphic method for determining the attitude of rocket vehicles

4. **AUDIO EQUIPMENT**
   - High-voltage amplifier has excellent stability and low power consumption
   - Solid-state laser transmitter is amplitude modulated
   - Phonocardiograph microphone is rugged and moistureproof
   - Literal readout of identification signals in Morse code

5. **ATTITUDE (INCLINATION)**
   - Lifting clamp positively grips structural shapes
   - Analog solar system model relates celestial

6. **ATTACHMENT**
   - Quick-attach clamp
   - Microwave technique measures plasma characteristics
   - Remote rapidly varying pressures accurately measured
   - Current pulse amplifier transmits detector signals with minimum distortion and attenuation
   - Shock and vibration response of multistage structure
   - Rotary antenna attenuator

7. **ATTENUATION COEFFICIENTS**
   - The response of monoenergetic gamma rays in finite media are investigated

8. **ATTENUATORS**
   - Variable light source with a million-to-one intensity ratio
   - Small foamed polystyrene shield protects low-frequency microphones from wind noise
   - Nonlinear feedback reduces analog-to-digital converter error
   - Linear signal noise summer accurately determines and controls S/N ratio
   - Electrode amplifier operates over dynamic range of five orders of magnitude

9. **ATTITUDE (INCLINATION)**
   - Dielectric prisms would improve performance of quasi-optical microwave components
   - Combined actuator and latch for cartridge powered actuator
   - Laser-Doppler gas-velocity instrument
   - Optima PM pre-emphasis
   - A compact rotary valve attenuator

10. **ATTITUDE (INCLINATION)**
    - Lifting clamp positively grips structural shapes
    - Analog solar system model relates celestial
AUDITORY SIGNALS

- Sinusoidal pressure generator
- Ultrasonic emission method enables testing of adhesive bonds

AUDITORY SIGNALS

- Speed-sensing device aids crane operators
- Device detects unbonded areas in plastic laminates
- Microphone multiplex system provides multiple outlets from single source
- Phonocardiograph microphone is rugged and moistureproof

AUTONOMYC STAINLESS STEELS

- Stainless-steel elbows formed by spin forging

AUTOCLAYING

- Composite bulkhead fabrication development

AUTOCLAVING

- Scanning photometer system automatically determines atmospheric layer height
- PH acquisition demodulator achieves automatic synchronization of a telemetry channel
- Accuracy of laser measurements improved by pulse autocorrelator electronic system

AUTOMATIC CONTROL

- Elastic orifice automatically regulates gas bearings
- Level of super-cold liquids automatically maintained by levelometer
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>AUTOMATIC FREQUENCY CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSC-66-44</td>
<td>Telescope dome control system automatically tracks sun</td>
</tr>
<tr>
<td></td>
<td>MSC-10966 [B68-10521]</td>
</tr>
<tr>
<td>MOSFET analog memory circuit achieves long duration signal storage</td>
<td>Welding skate with computerized controls</td>
</tr>
<tr>
<td>E-PS-860</td>
<td>M-PS-20224 [B68-10566]</td>
</tr>
<tr>
<td>Rigid-body motion extracted from total motion of a flexible body</td>
<td>Self-starting circuit for switching regulators</td>
</tr>
<tr>
<td>ABC-63</td>
<td>LEWIS-10666 [B69-10128]</td>
</tr>
<tr>
<td>Electronic circuitry used to automate paper chromatography</td>
<td>Apparatus automatically measures soluble residue content of volatile solvents</td>
</tr>
<tr>
<td>JP-840</td>
<td>SM-10032 [B69-10292]</td>
</tr>
<tr>
<td>Automated microsyringe is highly accurate and reliable</td>
<td>Four-bar linkage for thermal compensation in test mounts for structures</td>
</tr>
<tr>
<td>NPO-10142</td>
<td>NPO-11059 [B69-10298]</td>
</tr>
<tr>
<td>Automated urinalysis technique determines concentration of creatine and creatinine by colorimetry</td>
<td>Automatic filter-blowback systems used with sintered-metal filters</td>
</tr>
<tr>
<td>NPO-10149</td>
<td>ARG-10324 [B69-10342]</td>
</tr>
<tr>
<td>Tester automatically checks insulation of individual conductors in multiple-strand cables</td>
<td>Pressure-control purge panel for automatic butt welding</td>
</tr>
<tr>
<td>E-PS-10668</td>
<td>M-PS-18465 [B69-10403]</td>
</tr>
<tr>
<td>Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi</td>
<td>Automatic tuning of hydrogen masers</td>
</tr>
<tr>
<td>NUC-10067</td>
<td>GSFC-10127 [B69-10452]</td>
</tr>
<tr>
<td>Tester automatically checks paper tape punch and reader after maintenance</td>
<td>Life detection</td>
</tr>
<tr>
<td>ABC-66</td>
<td>NPO-10510 [B69-10475]</td>
</tr>
<tr>
<td>Self-balancing line-reversal pyrometer automatically measures gas temperatures</td>
<td>Rate of heat extraction controller for environmental control</td>
</tr>
<tr>
<td>LEWIS-348</td>
<td>EQ-10318 [B69-10516]</td>
</tr>
<tr>
<td>Portable machine welding head automatically controls arc</td>
<td>Automatic sample rotator for metallographic polishing</td>
</tr>
<tr>
<td>N-PS-12763</td>
<td>NPO-11035 [B69-10596]</td>
</tr>
<tr>
<td>Vibrator elapsed time is automatically controlled</td>
<td>Live-time method of automatic dead-time correction for precision counting</td>
</tr>
<tr>
<td>N-PS-2573</td>
<td>ARG-10478 [B69-10612]</td>
</tr>
<tr>
<td>Device enables calibration of microphones at high sound pressure levels</td>
<td>Highly stable high-rate discriminator for nuclear counting</td>
</tr>
<tr>
<td>E-PS-11960</td>
<td>ARG-10483 [B69-10614]</td>
</tr>
<tr>
<td>Battery charge regulator is coulometer controlled</td>
<td>AUTOMATIC CONTROL VALVES</td>
</tr>
<tr>
<td>GSFC-561</td>
<td>Cryogenic trap valve has no moving parts</td>
</tr>
<tr>
<td></td>
<td>E-PS-487 [B66-10136]</td>
</tr>
<tr>
<td>General frequency response program calculates frequency response of system, open at any specified element</td>
<td>Pneumatic shutoff and time-delay valve operates at controlled rate</td>
</tr>
<tr>
<td>E-PS-12817</td>
<td>E-PS-602 [B69-10189]</td>
</tr>
<tr>
<td>Automatic transducer switching provides accurate wide range measurement of pressure differential</td>
<td>Shock-operated valve would automatically protect fluid systems</td>
</tr>
<tr>
<td>E-PS-12521</td>
<td>N-PS-801 [B66-10335]</td>
</tr>
<tr>
<td>Automatic protective vent has fail-safe feature</td>
<td>Automatic protective vent has fail-safe feature</td>
</tr>
<tr>
<td>NUC-10001</td>
<td>LANGLEY-218 [B66-10369]</td>
</tr>
<tr>
<td>Recharge unit provides for optimum discharging of battery cells</td>
<td>Pneumatic binary encoder replaces multiple solenoid system</td>
</tr>
<tr>
<td>GSFC-10688</td>
<td>N-PS-665 [B66-10374]</td>
</tr>
<tr>
<td>Dual wire weld feed proportioner</td>
<td>Remotely operated high pressure valve protects test personnel</td>
</tr>
<tr>
<td>E-PS-16037</td>
<td>KSC-11010 [B67-10291]</td>
</tr>
<tr>
<td>Closed circuit TV system automatically guides welding arc</td>
<td>Low friction servo valve</td>
</tr>
<tr>
<td>N-PS-20088</td>
<td>LEWIS-10574 [B68-10440]</td>
</tr>
<tr>
<td>Automatic patient respiration failure detection system with wireless transmission</td>
<td>Integral valve provides automatic relief and remote venting</td>
</tr>
<tr>
<td>ARC-10174</td>
<td>M-PS-12134 [B69-10545]</td>
</tr>
<tr>
<td>Automatic system nondestructively monitors and records fatigue crack growth</td>
<td>AUTOMATIC FREQUENCY CONTROL</td>
</tr>
<tr>
<td>LANGLEY-10091</td>
<td>Concept for automatic Doppler compensation in two-way communication systems</td>
</tr>
<tr>
<td>NPO-10360</td>
<td>GSFC-10213 [B67-10643]</td>
</tr>
<tr>
<td>Automatic calibration apparatus for telemetry systems</td>
<td>Simple, accurate automatic frequency control circuit</td>
</tr>
<tr>
<td>NPO-10560</td>
<td>KSC-10393 [B69-10323]</td>
</tr>
</tbody>
</table>
AUTOMATIC GAIP CONTROL

An improved atomic hydrogen frequency and time standard
GSPC-10760 B69-10341 02

AUTOMATIC GAIN CONTROL

Automatic gain control circuit handles wide input range
MSC-166 B66-10089 01

Linear signal noise summer accurately determines and controls S/N ratio
JPL-SC-152 B66-10433 01

Optical automatic gain channel
m-ps-1550 B66-10596 02

Ultraminiature television camera
H-PS-19267 B67-10469 01

New passive telemetry system
H-20214 B69-10312 01

Field Effect Transistor /FET/ circuit for variable gain amplifiers
GSFC-10116 E69-10322 01

Offset lenses add versatility to phototypesetting machine
H-9 B66-10173 02

Tape reading fixture
H-PS-14146 B69-10008 05

AUTOMATION

Automated design of optical systems by digital computer
NPO-10265 B67-10632 06

Microprobe investigation of brittle segregates in aluminum Mg and TiG welds
N-PS-14720 B66-10334 03

Microdetermination of areas in urine using p-dimethylaminobenzaldehyde /PDAB/
H-PS-10715 B69-10317 04

Determination of quadratic equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas
m-ps-15043 B69-10435 06

AUTOMOBILES

Design of a strain-gage probe
ARS-10338 B69-10343 05

AUTORADIOGRAPHY

Foot-operated cell-counter
ARS-10315 B69-10351 01

AUXILIARY POWER SOURCES

Thermionic diode switching has high temperature application
NPO-10404 B67-10672 01

Zinc-oxygen primary cell yields high energy density
N-PS-16661 B68-10218 01

AVALANCHE DIODES

Temperature-sensitive network drives astable multivibrator
GSPC-137 B63-10609 01

Blocking oscillator uses low triggering voltage
MSC-58 B64-10017 01

Zener diode function generator requires no external reference voltage
JPL-0031 B65-10013 01

Zener diode is starter for transistor regulated power supply
H-0015 B65-10052 01

Synchronized pulse generator needs no external power

SUBJECT INDEX

GSPC-274 B65-10072 01

Variable voltage supply uses Zener diode as reference
GSPC-262 B65-10697 01

Boron trifluoride nuclear detector preamplifier uses single-cable connection
LWIS-178 B65-10255 01

Zener diode controls switching of large direct currents
MSC-180 B65-10350 01

Circuit exhibits power efficiency greater than 75 percent
MSC-258 B66-10034 01

Complementary monostable circuits achieve low power drain and high reliability
GSPC-433 B66-10179 01

Circuit protects regulated power supply against overload current
GSPC-453 B66-10292 01

Electronic circuit provides accurate sensing and control of dc voltage
NU-0089 B66-10591 01

Electrometer amplifier operates over dynamic range of five orders of magnitude
ARC-75 B67-10199 01

High power dc/dc and dc/ac electrical power converter techniques developed
N-PS-13227 B67-10390 01

Development of reliability prediction technique for semiconductor diodes
GSPC-10231 B67-10651 06

Current-limiting voltage regulator
MSC-11824 B68-10305 01

Solid state high-voltage pulser operates with low supply voltage
N-PS-14034 B68-10308 01

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110 B68-10328 01

Low-cost, fast-response drive circuit for electromagnetic torque motors
LEWIS-10143 B68-10386 01

Method for measuring alternator voltage transients
LEWIS-10373 B68-17513 01

Self-starting circuit for switching regulators
LEWIS-10686 B69-10128 05

Low-cost voltage-level detector
LEWIS-10885 B69-10217 01

Improved dc voltage regulator
KXS-06467 B69-10369 01

Punch-magnet delay eliminated by modification of circuit
ARS-10333 B69-10416 01

High voltage pulse generator
MSC-12178 B69-10588 01

AVALANCHE

Improved frequency divider employs transistor avalanche effect
NPO-10008 B67-10575 01

AVERAGE

Computer program generates averaged value data tapes
N-PS-12728 B67-10411 06
## SUBJECT INDEX

<table>
<thead>
<tr>
<th>Topic</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital filter suppresses effects of nonstatistical noise bursts on multichannel scaler digital averaging systems</td>
<td>ARS-90143 B68-10193 06</td>
</tr>
<tr>
<td>AXIAL STRESS</td>
<td></td>
</tr>
<tr>
<td>Gas diffuser facilitates withdrawal of cryogenic liquids from tanks</td>
<td>B66-10342 05</td>
</tr>
<tr>
<td>Segmented, arch-bound carbon seal is pressure loaded</td>
<td>B67-10325 05</td>
</tr>
<tr>
<td>Noise study of single stage compressor rotor-stator interaction</td>
<td>B67-10516 02</td>
</tr>
<tr>
<td>Dynamics of moving bubbles in single and binary component systems</td>
<td>B68-10339 02</td>
</tr>
<tr>
<td>Computer programs for axial flow compressor design</td>
<td>B69-10174 06</td>
</tr>
</tbody>
</table>

| AXIAL FLOW PUMPS | |
| Pressure probe compensates for dimensional tolerance variations | LEWIS-302 B67-10599 01 |
| Improved design of item in high speed rotating machinery | B69-10373 05 |

| AXIAL FLOW TURBINES | |
| Geometry and design point performance of axial flow turbines | LEWIS-10471 B69-10111 06 |

| AXIAL LOADS | |
| V-slotted screw head and matching driving tool facilitate insertion and removal of screw fasteners | FRC-16 B63-10023 05 |
| Fluid pressure used to test turbopump bearings | NQ-0001 B65-10024 03 |
| Fatigue tester achieves true axial motion through flex plates and bars | NQ-0021 B66-10164 01 |
| Flexible coiled spline securely joins mating cylinders | WOO-270 B66-10172 05 |
| Friction brake cushions acceleration and vibration loads | MSC-715 B66-10058 05 |
| Investigation of pressurized toroidal shells | SQ-27 B67-10117 05 |
| Journal gas bearing for curved surfaces | NQ-20823 B69-10182 02 |
| A biaxial weld strength prediction method | NQ-20019 B69-10471 02 |

| AXIAL STRAIN | |
| Computer programs for determination of natural frequencies of closed spherical sandwich shells | MSC-1246 B67-10279 06 |
| Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules | LEWIS-102C1 B67-10359 01 |
| Transducer measures embed stress in electronic modules | NQ-13486 B67-10367 01 |

| AXIAL COMPRESSION LOADS | |
| Analysis of stability-critical orthotropic cylinders subjected to axial compression | NQ-12865 B67-10375 03 |
| Buckling strength of filament-wound cylinders under axial compression is investigated | NQ-10032 B67-10659 03 |
| Shell design computer program | LEWIS-10734 B69-10175 06 |

| AXIAL FLOW | |
| Modified gas bearing is adjustable to optimum stiffness ratio | NQ-1185 B48-10050 05 |

| AXIAL STRESS | |
| Gas diffuser facilitates withdrawal of cryogenic liquids from tanks | B66-10342 05 |
| Segmented, arch-bound carbon seal is pressure loaded | B67-10325 05 |
| Noise study of single stage compressor rotor-stator interaction | B67-10516 02 |
| Dynamics of moving bubbles in single and binary component systems | B68-10339 02 |
| Computer programs for axial flow compressor design | B69-10174 06 |
| Pressure probe compensates for dimensional tolerance variations | LEWIS-302 B67-10599 01 |
| Improved design of item in high speed rotating machinery | B69-10373 05 |

| AXIAL FLOW PUMPS | |
| Pressure probe compensates for dimensional tolerance variations | LEWIS-302 B67-10599 01 |
| Improved design of item in high speed rotating machinery | B69-10373 05 |

| AXIAL FLOW TURBINES | |
| Geometry and design point performance of axial flow turbines | LEWIS-10471 B69-10111 06 |

| AXIAL LOADS | |
| V-slotted screw head and matching driving tool facilitate insertion and removal of screw fasteners | FRC-16 B63-10023 05 |
| Fluid pressure used to test turbopump bearings | NQ-0001 B65-10024 03 |
| Fatigue tester achieves true axial motion through flex plates and bars | NQ-0021 B66-10164 01 |
| Flexible coiled spline securely joins mating cylinders | WOO-270 B66-10172 05 |
| Friction brake cushions acceleration and vibration loads | MSC-715 B66-10058 05 |
| Investigation of pressurized toroidal shells | SQ-27 B67-10117 05 |
| Journal gas bearing for curved surfaces | NQ-20823 B69-10182 02 |
| A biaxial weld strength prediction method | NQ-20019 B69-10471 02 |
Thin plastic sheet eliminates need for expensive plating
M-FS-1896 B66-10681 03

Single-source mechanical loading system
produces biaxial stresses in cylinders
M-FS-12530 B67-10380 05

Development of biaxial test fixture
includes cryogenic application
M-FS-14185 B68-10070 01

Manual of typical low temperature
mechanical properties of several materials
M-FS-18331 B69-10179 03

Semiautomatic device tests components with
biaxial leads
MSC-516 B66-10337 03

Computer program simplifies design of
rotating components of turbomachinery
NCC-1046 B67-10235 06

Computer program provides improved
longitudinal response analysis for
axisymmetric launch vehicles
LANLEY-10093 B67-10531 06

Finite element analysis of compressible
solids with nonlinear material properties
NCC-10342 B69-10238 06

Axisymmetric two-phase perfect gas
performance program
MSC-11774 B68-10374 06

Optical automatic gain channel
N-FS-1550 B66-10596 02

Three-axis attitude and direction reference
instrument has only one moving part
N-FS-1819 B66-10644 01

Telescope mount with azimuth-only primary
NFO-10468 B67-10671 02

Improved electromechanical master-slave
manipulator
ARG-10027 B68-10372 05

Improved combustion chamber optical probe
MSC-10593 B69-10142 02

Preferred-orientation analysis of
crystalline materials
NFO-10604 B69-10336 02

L.M. lookangle program
MSC-13179 B69-10370 06

An interferometer tracking radar system
MSC-10956 B69-10523 01

Measurement technique for the determination
of antenna directivity
M-FS-12799 B69-10677 01

Point-source light sensor circuit is
insensitive to background light
JPL-778 B66-10502 01

New shield for gamma-ray spectrometry
ARG-10388 B69-10344 02

Monopole mass spectrometer with improved
sensitivity and reduced background
NFO-10476 B69-10666 01

Training course for radiation safety
technicians
ARG-216 B67-10477 02

Alpha particle backscattering measurements
used for chemical analysis of surfaces
ARG-116 B67-10166 03

Method of welding joint in closed vessel
improves quality of seam
JPL-170 B65-10139 05

New backup-groove configuration improves
helical welding of 2014-T6 aluminum
MSC-806 B66-10483 05

Fuel cell life improved by metallic sinter
activation after electrode assembly
welding
MSC-10965 B67-10436 03

Gelatin coated electrodes allow prolonged
bioelectronic measurements
MSC-153 B66-10088 01

Microorganisms detected by enzyme-catalyzed
reaction
JPL-782 B66-10117 04

Cytology is advanced by studying effects
of deuterium environment
ARG-205 B67-10304 04

Bacteriostatic conformal coating for
electronic components
GSPC-10007 B67-10599 03

Vacuum probe sampler removes micron-sized
particles from surfaces
SAN-10003 B66-10231 04

Electrolytic silver ion cell sterilizes
water supply
MSC-11027 B66-10555 01

Internal and ancestral controls of
cell-generation times
ARG-10326 B69-10205 04

Sterilization training manual
M-FS-20437 B69-10277 04

Mass culture of photobacteria to obtain
luciferase
GSPC-10563 B69-10294 04

Radiation effects on bacterial cells
ARG-10064 B66-10169 04

Automated microorganism Sample Collection
Module
EQ-10421 B69-10223 04

Fine-particle filter prevents damage to vacuum
pumps
DWA-106 B63-10489 05

Test device prevents molecular bounce-back
GSPC-82 B63-10546 03

Uniform reflective films deposited on large
surfaces
GSPC-507 B66-10483 02

A method of determining combustion gas
flow
M-FS-13757 B67-10455 03

Flexible ring baffles for damping liquid
slosh
LANLEY-90194 B66-10064 05

Antiglare improvement for optical imaging
systems
NFO-10337 B66-10090 02

Calibrated water tank facilitates proof-
loading of cranes and derricks
M-PS-15059  B69-10109  05

BAKING
Baking enables McLeod gauge to measure in ultrahigh vacuum range GSPC-440  B65-10329  01

Thermal and bias cycling stabilizes planar silicon devices RSC-48  B67-10176  01

Liquid gallium rotary electric contract LEWIS-10828  B69-10138  03

Improved high-temperature silicide coatings LEWIS-10817  B69-10266  03

BALANCE
System measures unidirectional forces, excludes extraneous forces LEWIS-170  B65-10154  05

Simple key locks turbine rotor blades WOO-103  B66-10023  05

Proposed method of rotary dynamic balancing by laser M-PS-12422  B67-10452  02

Digital servo readout system increases recording accuracy of servo-balance scales NUC-10125  B67-10496  01

Remote balance weighs accurately aaid high radiation ABG-10387  B69-10242  05

A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux ARC-10025  B69-10295  05

Automatic leveling and equalizing hoist device M-PS-16549  B69-10514  05

BALANCING
Trinitiated alumina serves as reagent for self-labeling analysis ARG-209  B67-10315  03

Laser system used for dynamic balancing of gyro M-PS-12718  B68-10225  05

BALL BEARINGS
Device transmits rotary motion through hermetically sealed wall JPL-301  B63-10198  05

Quick-acting clutch disengages idle drive motor GSPC-143  B64-10028  05

Bearing transmits rotary and axial motion LANGLY-27  B64-10130  05

Ball bearing used in design of rugged flowmeter LEWIS-159  B64-10170  05

Miniature bearings lubricated by sonic dispersion method M-PS-202  B65-10106  03

Control of component differential hardness increases bearing life LEWIS-190  B65-10251  05

Friction device damps linear motion of rotating shaft WOO-214  B66-10030  05

Polytetrafluoroethylene lubricates ball bearings in vaccum environment M-PS-379  B66-10081  03

Intermediate rotating ring improves reliability of dynamic shaft seal

M-PS-575  B66-10197  05

Bearing pulley facilitates removal and replacement of bearing assemblies M-PS-1538  B66-10418  05

Spherical pipe joint delivers loads equally to mating flange M-PS-807  B66-10665  05

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment LEWIS-389  B66-10678  05

Swing-out rail system separates overhead crane rails NW-0094  B66-10713  05

Tester for study of rolling element bearings LEWIS-305  B67-10009  01

Design concept to decrease relative speed of ball bearings M-PS-2003  B67-10212  05

Line adapter provides quick disconnect under moderate side loading M-PS-2159  B67-10256  05

Concept for modifying drafting instruments to minimize smearing KSC-10056  B67-10283  05

Vacuum-jacketed transfer line installation technique M-PS-14496  B66-10125  05

High-temperature bearing lubricants LEWIS-10408  B66-10249  05

Dynamic-reservoir lubricating device M-PS-14652  B66-10261  05

High-speed pulse camera KSC-11353  B68-10329  02

Evaluation of lubricants for ball bearings at high temperatures LEWIS-10578  B66-10032  05

Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings M-PS-18453  B67-10178  05

Study of high-speed angular-contact ball bearings under dynamic load M-PS-20562  B69-10367  05

Flexible rivet-set M-PS-20317  B69-10459  05

BALLAST (MASS)
Ballast barge concept for underwater structures KSC-10196  B68-10168  05

BALLASTS (IMPEDEANCES)
Increased junction lead inductance ballasts high-frequency transistors GSPC-387  01

BALLISTIC MISSILES
Computer program for mass optimal solutions of some endpoint trajectory problems M-PS-12976  B67-10310  06

BALLOON FLIGHT
Balloon batteries, charged and heated by solar energy GSPC-10769  B66-10585  01

BALLOON SOUNCING
Multichannel pulse height analyzer is inexpensive, features low power requirements NQM-10020  B67-10258  01
Balloons

New anemometer has fast response, measures dynamic pressure directly
LANGLEY-28  B63-10530  01

Rough surface improves stability of air-sounding balloons M-PS-320  B65-10326  05

Balloons

Flexible fastener allows thermal expansion
LANGLEY-40  B64-10145  05

Ball and socket joints provide accurate biaxial gimbals
JPL-658  B65-10205  05

Polytetrafluoroethylene lubricates ball bearings in vacuum environment M-PS-379  B66-10081  03

Segmented ball valve is easy to open and close
WOO-248  B66-10195  05

Torque wrench allows readings from inaccessible locations N-PS-596  B66-10204  05

Submicron metal powders produced by ball milling with grinding aids NEW-186  B66-10221  03

Braking mechanism is self actuating and bidirectional M-PS-1290  B66-10434  05

Solenoid valve design has one moving part NPO-10039  B67-10219  05

Flare angles measured with ball gage N-PS-14690  B68-10030  01

Balloon

Effects of sterilization on the energy-dissipating properties of balsa wood WOO-11207  B69-10592  03

Band Structure of Solids

Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique ABE-277  B67-10324  03

Bandpass Filters

Frequency-shift-keyer circuit improves PCM conversion for radio transmission GSFC-80  B63-10511  01

Traveling-wave tube circuit simplifies microwave relay GSFC-299  B65-10127  01

Auxiliary circuit enables automatic monitoring of EKG's MSC-106  B65-10142  01

Device detects unbonded areas in plastic laminates WOO-206  B65-10360  01

Thin carbon film serves as UV bandpass filter ERC-8  B66-10060  02

FM acquisition demodulator achieves automatic synchronization of a telemetry channel JPL-612  B66-10271  01

High-performance RC bandpass filter is adapted to miniaturized construction ARC-60  B66-10309  01

Infrared television used to detect hydrogen fires M-PS-654  B66-10363  01

Composite filter steepens rejection slopes in microwave application GSFC-400  B66-10393  01

Subject Index

Monitor assures availability and quality of communication channels KSC-66-38  B67-10028  01

Electronic filter discriminates between true and false reflections EQ-55  B67-10071  02

TV synchronization system features stability and noise immunity JPL-915  B67-10116  01

Infrared radiometer N-PS-13373  B67-10422  01

Stable ac phase and amplitude comparator N-PS-13086  B67-10459  01

Analog voicing detector responds to pitch GSPC-10085  B67-10571  01

Unique frequency-shift-keyed demodulation system GSFC-217  B67-10668  01

Improved relay optical element for spectroradiometer using cryogenically cooled detector KSC-11688  B68-10265  02

Thermal protective visor for entering high temperature areas KSC-10285  B68-10277  05

Method of reducing time base error in digital magnetic recorders GSFC-10108  B68-10317  01

Design of dissipative linear phase filters N-PS-14988  B68-10572  01

Simple demodulator for telemetry phase-shift keyed subcarriers NPO-10050  B69-10095  01

Active frequency control system for argon PI laser N-PS-14988  B69-10099  02

Tunable bandpass filter with variable selectivity ARC-10191  B69-10130  01

RF noise suppression using the photodielectric effect in semiconductors KSC-12259  B69-10225  01

Resonant microwave dichroic surface GSFC-10658  B69-10274  01

An infrared television system for hydrogen flame detection KSC-10368  B69-10354  01

Proposed acousto-optic filter EQ-10440  B69-10466  02

Bandwidth

Bandwidth switching is transient-free, avoids loss of loop lock WOO-054  B64-10349  01

Superconductor magnets used for stagger-tuning traveling-wave maser GSFC-292  B65-10165  01

Field effect transistor prevents high input impedance in ac amplifier JPL-500  B65-10232  01

Solid-state laser transmitter is amplitude modulated IN-121  B65-10236  01

Variable word length encoder reduces TV bandwidth requirements
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>BARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANGLEY-67 B65-10345</td>
<td>01</td>
</tr>
<tr>
<td>Single-sideband modulator accurately reproduces phase information in 2-afc signals M-PS-664 B66-10437</td>
<td>01</td>
</tr>
<tr>
<td>Optical automatic gain channel M-PS-1250 B66-10596</td>
<td>02</td>
</tr>
<tr>
<td>Parametric up-converter increases flexibility of maser KSC-67-98 B67-10104</td>
<td>01</td>
</tr>
<tr>
<td>Field effect transistors improve buffer amplifier M-PS-916 B67-10334</td>
<td>01</td>
</tr>
<tr>
<td>Current pulse amplifier transmits detector signals with minimum distortion and attenuation NUC-10055 B67-10347</td>
<td>01</td>
</tr>
<tr>
<td>Rugged switch responds to minute pressure differentials M-PS-12704 B67-10389</td>
<td>01</td>
</tr>
<tr>
<td>Transient sensor development M-PS-13370 B67-10471</td>
<td>05</td>
</tr>
<tr>
<td>Study made of thin-walled pipe response to turbulent fluids M-PS-1321 B67-10548</td>
<td>05</td>
</tr>
<tr>
<td>Concept for automatic Doppler compensation in two-way communication systems GSPC-10213 B67-10583</td>
<td>01</td>
</tr>
<tr>
<td>Astronaut space suit communication antenna ASC-12101 B68-10238</td>
<td>01</td>
</tr>
<tr>
<td>Improved traveling wave maser amplifier NFO-10548 B68-10244</td>
<td>01</td>
</tr>
<tr>
<td>Technique developed for measuring transmittance of optical birefringent networks M-PS-14267 B68-10260</td>
<td>02</td>
</tr>
<tr>
<td>Deep space FM system, a concept ASC-11825 B68-10289</td>
<td>01</td>
</tr>
<tr>
<td>One hundred MHz voltage-controlled oscillator NFO-11004 B69-10133</td>
<td>01</td>
</tr>
<tr>
<td>PCM hit detection with correction for interstripal interference GSPC-10155 B69-10153</td>
<td>01</td>
</tr>
<tr>
<td>Reducing quantizer deadband with a <strong>range switching</strong> digital filter M-PS-20449 B69-10259</td>
<td>01</td>
</tr>
<tr>
<td>Resonant microwave dichroic surface GSPC-10658 B69-10274</td>
<td>01</td>
</tr>
<tr>
<td>Sweep frequency detector NFO-10669 B69-10289</td>
<td>01</td>
</tr>
<tr>
<td>High-power microwave power divider concept NFO-11031 B69-10290</td>
<td>01</td>
</tr>
<tr>
<td>Survey of man-made electrical noise affecting radio broadcasting HQ-10290 B69-10308</td>
<td>01</td>
</tr>
<tr>
<td>A method for reducing sampling jitter in digital control systems NFO-11088 B69-10338</td>
<td>01</td>
</tr>
<tr>
<td>Prediction of thermal radiation from a rocket's exhaust plume M-PS-20449 B69-10371</td>
<td>02</td>
</tr>
<tr>
<td>Phase multiplying electronic scanning array NFO-10362 B69-10381</td>
<td>01</td>
</tr>
<tr>
<td>Proposed acousto-optic filter HQ-10440 B69-10466</td>
<td>02</td>
</tr>
<tr>
<td>Data processing method for a weak, moving telemetry signal NPO-11003 B69-10639</td>
<td>01</td>
</tr>
<tr>
<td>A sterilizable high-impact antenna NFO-10231 B69-10697</td>
<td>01</td>
</tr>
<tr>
<td>Pocket-sized tone-modulated FM transmitter NFO-11180 B69-10725</td>
<td>01</td>
</tr>
<tr>
<td>Method prevents secondary radiation in radiographic inspection M-PS-13383 B67-10391</td>
<td>02</td>
</tr>
<tr>
<td>Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte ARG-10453 B69-10627</td>
<td>03</td>
</tr>
<tr>
<td>Crack detection method is safe in presence of liquid oxygen M-PS-236 B65-10107</td>
<td>03</td>
</tr>
<tr>
<td>Fluoride coatings make effective lubricants in molten sodium environment LEWIS-229 B66-10005</td>
<td>03</td>
</tr>
<tr>
<td>Evaluation of lubricants for ball bearings at high temperatures LEWIS-10578 B69-10025</td>
<td>03</td>
</tr>
<tr>
<td>Solid-fill lubricant is effective at high temperatures in vacuum LEWIS-228 B66-10087</td>
<td>03</td>
</tr>
<tr>
<td>Glass formulation has high coefficient of thermal expansion NU-0084 B66-10705</td>
<td>03</td>
</tr>
<tr>
<td>Purification train produces ultrapure hydrogen gas M-PS-1913 B67-10078</td>
<td>03</td>
</tr>
<tr>
<td>High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes LEWIS-90271 B69-10376</td>
<td>01</td>
</tr>
<tr>
<td>High purity electroforming yields superior metal models AEC-6 B63-10007</td>
<td>05</td>
</tr>
<tr>
<td>High-voltage pulse generator developed for wide-gap spark chambers AEC-1036 B68-10283</td>
<td>01</td>
</tr>
<tr>
<td>High-dielectric thick films for screened circuit capacitors LANGLEY-10294 B68-10542</td>
<td>01</td>
</tr>
<tr>
<td>Low-cost seal compensates for surface irregularities NU-0016 B65-10160</td>
<td>05</td>
</tr>
<tr>
<td>Vacuum-type backup bar speeds weld repairs N-PS-12 B63-10384</td>
<td>05</td>
</tr>
<tr>
<td>Portable display paneling has wide use, easy take down and assembly AEC-17 B63-10435</td>
<td>05</td>
</tr>
<tr>
<td>Mounting for diodes provides efficient heat sink M-PS-197 B64-10283</td>
<td>01</td>
</tr>
<tr>
<td>Fatigue tester achieves true axial motion through flex plates and bars NU-0021 B66-10164</td>
<td>01</td>
</tr>
<tr>
<td>System enables dimensional inspection of very large structures</td>
<td>01</td>
</tr>
</tbody>
</table>

I-47
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>BREFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests show that aluminum welds are improved by bead removal</td>
<td>M-PS-2477</td>
</tr>
<tr>
<td>M-PS-1817</td>
<td>B67-10014</td>
</tr>
<tr>
<td>Effect of welding position on porosity formation in aluminum alloy welds</td>
<td>Precision metal molding</td>
</tr>
<tr>
<td>M-PS-2318</td>
<td>GSPC-430</td>
</tr>
<tr>
<td>Class bead peening retards stress corrosion failure of titanium tanks</td>
<td>Modified sine bar device measures small angles with high accuracy</td>
</tr>
<tr>
<td>LANGLEY-319</td>
<td>Automatic leveling and equalizing hoist device</td>
</tr>
<tr>
<td>B67-10198</td>
<td>Preparing rock powder specimens of controlled size distribution</td>
</tr>
<tr>
<td>M-PS-16549</td>
<td>Thermal conductivity and dielectric constant of silicate materials</td>
</tr>
<tr>
<td>B67-10177</td>
<td>Space-saving hoist for tank manholes</td>
</tr>
<tr>
<td>B67-10023</td>
<td>Ultrasonic cleaning restores depth-type filters</td>
</tr>
<tr>
<td>M-PS-540</td>
<td>Stringent cleaning technique assures reliable epoxy bond</td>
</tr>
<tr>
<td>B67-10077</td>
<td>Manganese-56 coincidence-counting facility precisely measures neutron-source strength</td>
</tr>
<tr>
<td>B67-10514</td>
<td>Circuit prevents overcharging of secondary cell batteries</td>
</tr>
<tr>
<td>Battery charge regulator is coulometer controlled</td>
<td>Battery chargers</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Converter provides constant electrical power at various output voltages</td>
</tr>
<tr>
<td>B67-10692</td>
<td>BATTERY THEOREMS</td>
</tr>
<tr>
<td>Optimum structural design based on reliability and proof-load testing</td>
<td>BATTERIES</td>
</tr>
<tr>
<td>WFO-11228</td>
<td>Ultrasonic cleaning restores depth-type filters</td>
</tr>
<tr>
<td>B69-10723</td>
<td>BATTERYS ENSURES</td>
</tr>
<tr>
<td>Circuit prevents overcharging of secondary cell batteries</td>
<td>Interferometer construction assures parallelism of critical components</td>
</tr>
<tr>
<td>M-PS-540</td>
<td>Interferometer combines laser light source and digital counting system</td>
</tr>
<tr>
<td>B66-10492</td>
<td>Unique construction makes interferometer insensitive to mechanical stresses</td>
</tr>
<tr>
<td>Battery charge regulator is coulometer controlled</td>
<td>Beam splitter used in dual filming technique</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Sortant measures spacecraft altitude without gravitational reference</td>
</tr>
<tr>
<td>GSPC-454</td>
<td>M-PS-540</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Converter provides constant electrical power at various output voltages</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>Interferometer construction assures parallelism of critical components</td>
<td>B67-10120</td>
</tr>
<tr>
<td>JPL-704</td>
<td>Visual attitude orientation and alignment system</td>
</tr>
<tr>
<td>Unique construction makes interferometer insensitive to mechanical stresses</td>
<td>M-PS-1747</td>
</tr>
<tr>
<td>B67-10692</td>
<td>Method of directing a laser beam with very high accuracy</td>
</tr>
<tr>
<td>B67-10108</td>
<td>Laser interferometer micrometer system</td>
</tr>
<tr>
<td>Ultrasonic cleaning restores depth-type filters</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>B66-10492</td>
<td>M-PS-540</td>
</tr>
<tr>
<td>Battery charge regulator is coulometer controlled</td>
<td>Laser interferometer micrometer system</td>
</tr>
<tr>
<td>GSPC-454</td>
<td>Method of directing a laser beam with very high accuracy</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Laser interferometer micrometer system</td>
</tr>
<tr>
<td>M-PS-540</td>
<td>Interferometer construction assures parallelism of critical components</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Interferometer construction assures parallelism of critical components</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Laser interferometer micrometer system</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Interferometer combines laser light source and digital counting system</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Interferometer combines laser light source and digital counting system</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Interferometer combines laser light source and digital counting system</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Interferometer combines laser light source and digital counting system</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
<tr>
<td>M-PS-561</td>
<td>Interferometer combines laser light source and digital counting system</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>Optical frequency waveguide and ion transmission system</td>
</tr>
</tbody>
</table>
Twin helix system produces fast scan in infrared detector
M-PS-1598 B66-10638 02

Local measurements in turbulent flows through cross correlation of optical signals
M-PS-1268 B67-10030 01

Beam profiles measured with thermoluminescent dosimeters
ARG-10229 B69-10024 02

Laser microprobe facility used in the elemental analysis of small feature of a sample
ARG-10359 B69-10165 02

Identification and evaluation of linear damping models in beam vibrations
ARG-10275 B69-10247 02

Simplified system displays complex curves corresponding to input data
Nq-10073 B69-10247 01

Multilayer infrared beamsplitter film system
XGS-11036 B69-10260 02

Energy-storage of a prescribed impedance
MFO-10303 B69-10380 01

Crossed-beam technique for measuring horizontal winds
M-PS-20160 B69-10447 02

Technique for pinpointing submicron particles in the electron microprobe
Hq-10043 B69-10465 01

Long range holographic contour mapping concept
Hq-10350 B69-10700 02

BEAMS (SUPPORTS)
Setting of angles on machine tools speeded by magnetic protractor
ARC-5 B63-10006 01

Self-balancing beam permits safe, easy load handling under overhang
M-PS-84 B63-10571 05

Universal bellows joint restraint permits angular and offset movement
WGO-102 B65-10371 05

Concealed hinge permits flush mounting of doors and hatches
RSC-623 B66-10336 03

Cut-throughContributor accurately measures insulation failure rates
M-PS-12506 B67-10354 03

Rugged switch responds to minute pressure differentials
M-PS-12704 B67-10389 01

Fatigue of reinforced concrete beams under dynamic loading
M-PS-14980 B68-10515 05

Compound taper milling machine
RSC-15174 B69-10018 05

Two-axis winch installer for heavy ducts in confined space
M-PS-14254 B69-10062 05

Calibrated water tank facilitates proof-loading of cranes and derricks
M-PS-15059 B69-10109 05

BEARING Device measures curved surface finish on gear teeth
WGO-112 B65-10064 05

BEARING (DIRECTION)
System locates randomly placed remote objects
LANGLIT-259 B66-10315 01

Improved head-controlled TV system provides high-quality remote image
ARG-128 B67-10317 01

BEARING ALLOYS
Gallium alloy films investigated for use as boundary lubricants
LEWIS-12 B63-10337 03

Molybdenum disulfide mixtures make effective high-vacuum lubricants
M-PS-54 B63-10853 03

Fluid pressure used to test turbopump bearings
NO-0001 B65-10024 03

Nonresonant support facilitates vibration testing of structures
M-PS-224 B65-10039 05

Shock mount isolates pressure transducers from vibration
JPL-631 B65-10113 05

Apparatus permits flexure testing of specimens at cryogenic temperatures
M-PS-257 B65-10129 02

Modified power tool rapidly drives series torque bolts
MGC-221 B66-10054 05

Fatigue tester achieves true axial motion through flex plates and bars
NU-0021 B66-10164 01

Flexible coiled spline securely joins mating cylinders
WGO-270 B66-10172 05

Composites of porous metal and solid lubricants increase bearing life
LEWIS-307 B67-10007 03

Resilient bearing supports are gas controlled
LEWIS-10169 B67-10364 05

Concept for cryogenic liquid reclamation system
NFO-10322 B67-10420 02

Cryogenic seal concept for static and dynamic conditions
M-PS-12906 B67-10673 05

High-temperature bearing cage materials
LEWIS-10463 B68-10176 05

Between-bearing shaft seal, a concept
M-PS-18179 B68-10286 05

Low cost techniques for fabricating lobed bearings
LEWIS-10296 B68-10441 05

Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing
MOC-10308 B65-10034 06

Shock-absorbent mountings for bearings
NPO-10626 B69-10331 05

One-handed hammer-spanner for chucks

I-49
BEAT FREQUENCIES

Segmented ball valve is easy to open and close
BSC-258 866-10398 05

Automatic leveling and equalizing hoist device
XGS-276 866-10348 01

BEAT FREQUENCIES

Synchronizing redundant power oscillators
GSC-529 866-10598 01

Deposition monitor and control
M-FS-14256 866-10722 01

BEDS (PROCESS ENGINEERING)

Characteristics of fluidized-packed beds
ARG-10049 866-10278 03

BEHAVIOR

Experiments to investigate particulate materials in reduced gravity fields
M-FS-13908 866-10394 02

BELLOWS

Device transmits rotary motion through hermetically sealed wall
JPL-303 863-10198 05

Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems
LEWIS-67 866-10368 05

Low-cost tape system measures velocity of acceleration
GSC-128 863-10512 01

Filler device for handling hot corrosive materials
M-FS-13908 863-10166 03

Fastener provides cooling and compensates for thermal expansion
M-FS-10033 866-10338 05

Mouthpiece adapter for pipettes protects mouth from harmful liquids
LANGLEY-47 863-10443 03

Metal bellows custom-fabricated from tubing
LEWIS-192 865-10150 05

Hydraulic device provides accurate displacements to microinches
MFC-112 865-10230 05

One-shot valve may be remotely actuated
WOO-195 865-10266 05

Lightweight hinged bellows restraint has high load capacity
WOO-151 865-10341 03

Universal bellows joint restraint permits angular and offset movement
WOO-102 865-10371 05

Transmission system isolates pressure transducer from severe environment
WOO-239 866-10064 01

Mount makes liquid nitrogen-cooled gamma ray detector portable
LEWIS-259 866-10103 01

Extendable mast used in one shot soil penetrometer
JPL-685 866-10146 05

Dual regulator controls two gases from a single reference
MFC-227 866-10167 05

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 866-10187 02

Bellows design features low spring rate and long life
M-FS-521 866-10190 05

SEGMENTED BALL VALVE IS EASY TO OPEN AND CLOSE

WOO-248 866-10195 05

DEVICE WITHOUT ELECTRICAL CONNECTIONS IN TANK MEASURES LIQUID LEVEL

WOO-225 866-10722 01

PORTABLE SANDBLASTER CLEANS SMALL AREAS

BSC-523 866-10424 05

FLUID DAMPING REDUCES BELLOWS SEAL FATIGUE FAILURES

M-FS-565 866-10249 05

EXTERNAL LINKAGE TIE PERMITS REDUCTION IN DUCTING SYSTEM FLANGE THICKNESS

M-FS-823 866-10326 05

BELLOWS JOINT ABSORBS TORSIONAL DEFLECTIONS IN DUCT SYSTEM

M-FS-882 866-10332 04

FLUID DYNAMICS CONTROL CIRCUIT OPERATES ACTUATOR

LEWIS-294 866-10593 05

METHOD FOR PREDICTING FRICTIONAL LOSS IN METAL BELLOWS

M-FS-883 866-10662 05

SIMPLE PUMP MAINTAINS LIQUID HELIUM LEVEL IN CRYOSTAT

M-FS-1763 867-10039 05

VACUUM CHAMBER IS REMOTELY SEALED BY ELECTRIC RESISTANCE\n
NU-0091 867-10059 05

METHOD FOR PREDICTING FRICTIONAL LOSS IN METAL BELLOWS

M-FS-883 866-10662 05

SIMPLE PUMP MAINTAINS LIQUID HELIUM LEVEL IN CRYOSTAT

M-FS-1763 867-10039 05

VACUUM CHAMBER IS REMOTELY SEALED BY ELECTRIC RESISTANCE

NU-0091 867-10059 05

FLEXURE TESTS BELLOWS RELIABILITY THROUGH REPEATED PRESSURE/THERMAL CYCLING

MFC-112 867-10111 01

METHOD FOR X-RAY STUDY UNDER EXTREME TEMPERATURE AND PRESSURE CONDITIONS

MSC-10232 867-10474 02

FLOW LIFER EXTENDS OPERATING LIFE OF HIGH-ANGLULATION BELLOWS

M-FS-12023 867-10512 05

FEED-THRU CONDUIT MINIMIZES HEAT PICKUP

JPL-847 867-10619 05

PREDICTING FATIGUE LIFE OF METAL BELLOWS

M-FS-14096 868-10026 05

VISCOS DAMPER

MSC-12072 868-10110 05

EFFECT OF SURFACE IRREGULARITIES ON BELLOWS FATIGUE LIFE

M-FS-14480 868-10299 05

CONCEPTUAL HERMETICALLY SEALED ELBOW ACTUATOR

M-FS-14710 868-10390 05

MULTIPLE-ORIFICE THROTTLE VALVE

JSP-09699 869-10030 05

TWO-AXIS WINCH INSTALLER FOR HEAVY DUCTS IN CONFINED SPACE

M-FS-14254 869-10062 05

FATIGUE FAILURE IN METAL BELLOWS DUE TO FLOW-INDUCED VIBRATIONS

M-FS-18383 869-10071 05

MAGNETRON TUNER HAS LOCKING FEATURE

WOO-09771 869-10119 05

TPF-FLUOROCARBON LINERS FOR FLEXIBLE HOSES

M-FS-16480 869-10288 05

INTEGRAL VALVE PROVIDES AUTOMATIC RELIEF AND REMOTE VENTING

M-FS-12134 869-10545 05

A SIMPLE ELECTROMETER FOR MEASURING SMALL

I-50

SUBJECT INDEX

SEGMENTED BALL VALVE IS EASY TO OPEN AND CLOSE

WOO-248 866-10195 05

DEVICE WITHOUT ELECTRICAL CONNECTIONS IN TANK MEASURES LIQUID LEVEL

WOO-225 866-10198 01

PORTABLE SANDBLASTER CLEANS SMALL AREAS

BSC-523 866-10242 05

FLUID DAMPING REDUCES BELLOWS SEAL FATIGUE FAILURES

M-FS-565 866-10249 05

EXTERNAL LINKAGE TIE PERMITS REDUCTION IN DUCTING SYSTEM FLANGE THICKNESS

M-FS-823 866-10326 05

BELLOWS JOINT ABSORBS TORSIONAL DEFLECTIONS IN DUCT SYSTEM

M-FS-882 866-10332 04

FLUID DYNAMICS CONTROL CIRCUIT OPERATES ACTUATOR

LEWIS-294 866-10593 05

METHOD FOR PREDICTING FRICTIONAL LOSS IN METAL BELLOWS

M-FS-883 866-10662 05

SIMPLE PUMP MAINTAINS LIQUID HELIUM LEVEL IN CRYOSTAT

M-FS-1763 867-10039 05

VACUUM CHAMBER IS REMOTELY SEALED BY ELECTRIC RESISTANCE

NU-0091 867-10059 05

METHOD FOR X-RAY STUDY UNDER EXTREME TEMPERATURE AND PRESSURE CONDITIONS

MSC-10232 867-10474 02

FLOW LINER EXTENDS OPERATING LIFE OF HIGH-ANGLULATION BELLOWS

M-FS-12023 867-10512 05

FEED-THRU CONDUIT MINIMIZES HEAT PICKUP

JPL-847 867-10619 05

PREDICTING FATIGUE LIFE OF METAL BELLOWS

M-FS-14096 868-10026 05

VISCOS DAMPER

MSC-12072 868-10110 05

EFFECT OF SURFACE IRREGULARITIES ON BELLOWS FATIGUE LIFE

M-FS-14480 868-10299 05

CONCEPTUAL HERMETICALLY SEALED ELBOW ACTUATOR

M-FS-14710 868-10390 05

MULTIPLE-ORIFICE THROTTLE VALVE

JSP-09699 869-10030 05

TWO-AXIS WINCH INSTALLER FOR HEAVY DUCTS IN CONFINED SPACE

M-FS-14254 869-10062 05

FATIGUE FAILURE IN METAL BELLOWS DUE TO FLOW-INDUCED VIBRATIONS

M-FS-18383 869-10071 05

MAGNETRON TUNER HAS LOCKING FEATURE

WOO-09771 869-10119 05

TPF-FLUOROCARBON LINERS FOR FLEXIBLE HOSES

M-FS-16480 869-10288 05

INTEGRAL VALVE PROVIDES AUTOMATIC RELIEF AND REMOTE VENTING

M-FS-12134 869-10545 05

A SIMPLE ELECTROMETER FOR MEASURING SMALL
SUBJECT INDEX

photoelectric currents
GSPC-10603  B69-10734  01

BENDING
Metal-bending brake facilitates lightweight, close-tolerance fabrication
ARC-29  B66-10059  05

Hand tool bends component leads accurately
N-PS-308  B65-10181  05

Plastic tubing protects flexible copper hose
N-PS-772  B66-10058  05

Pressure probe compensates for dimensional tolerance variations
LEWIS-302  B66-10599  01

Hydraulically controlled flexible arm can bend in any direction
MSC-66-20  B66-10626  05

Method for predicting frictional loss in metal bellows and flexible hose
N-PS-883  B66-10662  05

Technique cuts time and cost of bending jacketed piping
#50-333  B67-10018  05

Jacketed cryogenic piping in stress relieved condition
N-PS-905  B67-10308  05

Application of distorted models in developing scaled structural models
N-PS-2540  B67-10321  05

High-strength tungsten alloy with improved ductility
LEWIS-10257  B67-10340  03

Transducer measures embedded stresses in electronic modules
N-PS-13466  B67-10367  01

Astronaut space suit communication antenna
MSC-12101  B66-10238  01

Conceptual hermetically sealed elbow actuator
N-PS-15470  B60-10300  05

Design of fluid-duct bends with low pressure loss
N-PS-20176  B68-10395  05

Improved technique for digital simulation of bending and slosh phenomena
N-PS-14786  B60-10570  02

General series solution technique for bending of irregular laterally loaded flat plates
NRC-10170  B69-10035  06

Improved method of dicing integrated circuit wafers into chips
NRC-10138  B69-10441  01

Boron fiber-reinforced aluminum alloy tubing/experimental/
M-PS-15633  B69-10509  05

Two-functional seal for hose connection
N-PS-14062  B69-10588  05

An electrical connector pin protector
MSC-15660  B69-10742  01

BENDING FATIGUE
Machine tests crease durability of sheet materials
JPL-604  B64-10178  05

Effect of surface irregularities on bellows fatigue life
N-PS-14480  B68-10229  05

BEYONDIUM
Multiple test chamber exposes materials to various environments
MSC-179  B65-10268  01

Specimen holder design improves accuracy of X-ray powder analysis
JPL-SC-165  B66-10075  02

Composition improves thermal interface between thermocouple and sensed surface
NU-0028  B66-10121  02

Friction loading device enables accurate testing of brittle materials
NU-0051  B66-10345  05

Silver-base ternary alloy proves superior for slip ring lead wires
N-PS-1540  B66-10540  03

Accurate depth control provided for thermocouple junction locations
LAB-19-209  B66-10632  01

Miniature capacitor functions as pressure sensor
JPL-903  B67-10020  01

An improved soft X-ray photoionization detector
GSPC-540  B66-10072  02

Detection of entrapped moisture in honeycomb sandwich structures
MSC-1103  B67-10116  01

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
ARG-184  B67-10202  05

Porous mandrels provide uniform deformation in hydrostatic powder
BERYLLIUM ALLOYS

metallurgy
S-FS-1972 B67-10209 03

Electron beam parallel X-ray generator
SSC-11022 B67-10372 02

Method for X-ray study under extreme
temperature and pressure conditions
SSC-11232 B67-10474 02

Test system accurately determines tensile
properties of irradiated metals at cryogenic
temperatures
NUC-10521 B67-10617 02

Environmental control system for cryogenic
testing of tensile specimens
NUC-10523 B67-10618 02

Tensile testing grips are easily assembled
under liquid nitrogen
NUC-10524 B67-10626 05

Multilayer plated wire shows promise as
memory device
SSC-11587 B67-10205 01

Portable, high intensity isotopic neutron
source provides increased experimental
accuracy
ARG-90250 B66-10243 02

Detection sensitivities in 3-8 MeV
neutron activation
ARG-10210 B66-10298 02

High-speed pulse camera
SSC-11353 B66-10329 02

One-dimensional two-phase reacting gas
acnequilibrium performance program
NUC-11760 B66-10376 06

High-emittance coatings on metal substrates
LEWIS-10325 B66-10381 03

Temperature controlled strain gaged
extensometer
LEWIS-10353 B66-10543 01

Contact-spring forming machine for flat
conductor cable receptacles
S-FS-20126 B66-10550 05

Beryllium fastener technology
S-FS-20306 B66-10019 05

Impressing of confining sites for cell
cultures on thermoplastic substrates
LARGELT-10495 B69-10236 04

Development of structural test articles
from magnesium-lithium and beryllium
S-FS-14059 B69-10417 03

New type pressure transducer for severe
thermal environments
S-FS-20208 B69-10652 01

Electron interaction in matter
S-FS-14886 B69-10674 02

BERYLLIUM ALLOYS

Titanium treatment improves brazed joints
SSC-127 B65-10153 05

Compact retractor protects cabling loops
S-FS-561 B66-10018 05

Sheet metal strip unrolls to form circular
boom
SSFC-423 B66-10032 05

High-pressure, low temperature electrical
connector makes no-leak seal
MSC-276 B66-10079 02

Aluminum core structures brazed without use of
flux

SUBJECT INDEX

BERYLLIUM ALLOYS

N-FS-659 B66-10360 05

Fused diode provides visual indication of
crase condition
KSC-67-16 B67-10230 01

Beryllium fastener technology
S-FS-20306 B65-10019 05

Helical recorder
SSFC-10614 B69-10340 01

Modular packaging technique for combining
integrated circuits and discrete components
SSFC-10366 B65-10453 01

BERYLLIUM COMPOUNDS

Metal strip forms 21 foot boom, rolls up for
compact storage
SSFC-151 B64-10011 05

BERYLLIUM FLUORIDES

Beryllium fluoride film protects beryllium
against corrosion
LEWIS-363 B67-10026 03

BERYLLIUM OXIDES

Indium foil with beryllia washer improves
transistor heat dissipation
SSFC-42 B63-10033 01

Carbon-arc rod holder has long life, reduces
arc splatter
MSC-144 B65-10095 03

Ceramic materials purified by experimental
method
LEWIS-225 B65-10270 03

High temperature thermocouple operates in
reduction atmosphere
NUC-0086 B66-10134 01

Mounting improves heat-sink contact with
beryllia washer
MSC-159 B66-10144 01

Crucible cast from beryllium oxide and
refractory cement is impervious to flux
and solutes metal
ARG-22 B66-10527 03

Study made of anodized aluminum circuit
boards
S-FS-1358C B67-10425 01

Flame spray coated dielectric coatings improve
heat dissipation in electronic packaging
S-FS-13565 B67-10534 01

BETA PARTICLES

Self-supported aluminum thin films produced by
vacuum deposition process
ARC-58 B66-10387 03

Ion exchange determines iodine-131
concentration in aqueous samples
ARG-208 B67-10129 04

Computer program FPIP-REV calculates
fission product inventory for U-235
NUC-10089 B67-10450 06

Training course for radiation safety
technicians
ARG-216 B67-10477 02

Compilation of detection sensitivities in
thermal-neutron activation
ARG-10068 B67-10641 03

Combustion method for assay of biological
materials labeled with carbon-14 or tritium,
or double-labeled
ARG-10331 B65-10208 04

Conceptual techniques for reducing
parasitic current gain of lateral pnp
transistors B69-10244 01
Direct determination of lead-210 by liquid-scintillation counting ARB-10462 B69-10611 03
Manganese-56 coincidence-counting facility precisely measures neutron-source strength ARB-0266 B69-10621 01

BIAS
Constant-current regulator improves tunnel diode threshold-detector performance GSPC-239 B65-10282 01
Thermal and bias cycling stabilizes planar silicon devices SRC-48 B67-10176 01
Low speed, long term tracking electric drive system has zero backlash B69-10220 01
Glow discharge density sensor probe life is extended M-PS-1707 B67-10229 01
Adaptive control circuit prevents amplifier saturation SRC-0026 B67-10648 02
Magnetic field mapper LWIS-10762 B69-10476 01

BIBLIOGRAPHIES
Properties of optics at high temperature and their measurement, a study J-PS-14696 B68-10240 02
Chemistry laboratory safety manual available SAN-10030 B68-10179 02
Investigation of spacecraft coatings M-PS-20858 B69-10181 06

BILLIETS
Rapid billet loader aids extrusion of refractory metals LWIS-50 B63-10354 05
Isostatic compression process converts polyaromatic into structural material JPL-892 B67-10168 03
Extrusion of small-diameter, thin-wall tungsten tubing LWIS-90335 B67-10355 05
Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing ARB-10100 B68-10284 05
Training manuals for nondestructive testing using magnetic particles M-PS-20187 B68-10391 03

BIMETALS
Simple device produces accelerometer calibration pulse M-PS-363 B65-10269 01
Thermal motor positions magnetometer sensors ARC-51 B66-10078 05
Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures M-PS-890 B66-10325 02
Tube-to-header joint for bimetalic construction LWIS-10282 B67-10464 05
Aluminum and stainless steel tubes joined by simple ring and welding process M-PS-13120 B67-10472 05

Bimetal sensor averages temperature of monofilaments profile LWIS-10362 B68-10007 01
Tensile testing grips ensure uniform loading of bimetal tubing specimens LWIS-10267 B68-10248 05
Lithium-tellurium bimetallic cell has increased voltage ARB-10141 B68-10400 01
New bimetallic EMF cell shows promise in direct energy conversion ARB-10183 B68-10415 01
Technical report on galvanic cells with fused-salt electrolytes ARB-10297 B69-10155 01
Remote control thermal actuator LWIS-10873 B69-10307 01
Temperature-controlled resistor TPO-10713 B69-10440 01
Self-discharge in bimetallic cells containing alkali metal ARG-10347 B69-10631 01

BINARY ALLOYS
Solubility data are compiled for metals in liquid zinc ARG-149 B67-10191 03
Ignition of binary alloys of uranium ARB-10057 B68-10280 01
Self-discharge in bimetallic cells containing alkali metal ARG-10347 B69-10631 01

BINARY CODES
Frequency divider is free of spurious outputs GSPC-308 B65-10334 05
Binary sequence detector uses minimum number of decision elements JPL-673 B66-10264 01
Pneumatic binary encoder replaces multiple solenoid system M-PS-665 B66-10374 01
Shaft encoder presents digital output JPL-50-191 B66-10436 01
Digital system detects binary code patterns containing errors GSPC-541 B66-10516 01
Run numbering system for use with data recorders M-PS-2557 B67-10215 01
Digital servo readout system increases recording accuracy of servo-balance scales MDC-1025 B67-10496 01
Unique frequency-shift-keyed demodulation system GSPC-217 B67-10668 01

BINARY DATA
Logic redundancy improves digital system reliability JPL-50-069 B65-10025 01
Analog-to-digital converter has increased reliability and reduced power consumption GSPC-246 B65-10194 01
Electronic chopper provides direct digital output GSPC-363 B65-10274 01
Delayed ripple counter simplifies square-root computation GSPC-398 B65-10343 01
**BAYARY DIGITS**

- Frequency discriminator with binary output eliminates tuned circuits
  - H-FS-376
  - B65-10349

- Binary counter accumulates time by complementary preset
  - HFS-369
  - B66-10062

- FORTRAN program flow chart is automatically produced
  - B65-10399

- Low-power ring counter drives high-level loads
  - GSFC-431
  - B66-10106

- Simplified circuit corrects faults in parallel binary information channels
  - JPL-20039
  - B66-10261

- Binary sequence detector uses minimum number of decision elements
  - JPL-673
  - B66-10264

- Subroutine allows easy computation in extended precision arithmetic
  - H-FS-1136
  - B66-10504

- Computer routine adds plotting capabilities to existing programs
  - GSFC-490
  - B66-10511

- Numerical data frame readout system used in testing telemetry systems
  - GSFC-551
  - B67-10175

- Digital-to-analog converter operates from low level inputs
  - JPL-907
  - B67-10357

- Pocket-size manual tape reader device aids computer tape checking
  - ESC-10085
  - B67-10361

- Oscillator circuit operates as digitally controlled frequency synthesizer
  - GSFC-570
  - B67-10447

- Simplified, high-speed binary data decoder
  - NPO-10118
  - B68-10058

- Digital filter suppresses effects of nonstatistical noise bursts on multichannel scaler digital averaging systems
  - ARG-10250
  - B69-10194

- High-speed pulse camera
  - ESC-11353
  - B68-10329

- Simultaneous message framing and error detection
  - ESC-12001
  - B68-10330

- LM lookangle program
  - ESC-13179
  - B69-10370

- Pulse-code-modulation baseline correction for low signal-to-noise ratios
  - ESC-15268
  - B69-10750

**BAYARY TO DECIMAL CONVERTERS**

- Simplified, reliable circuit sorts binary numbers in order of magnitude
  - NPO-10112
  - B69-10503

**BAYARY DIGITS (MATERIALS)**

- Two techniques enable remapping of filtered and unfiltered molten metals
  - ARG-10250
  - B69-10034

- Axisymmetric reacting gas nonequilibrium performance program
  - ARG-10251
  - B69-10377

**BAYARY SYSTEMS (MATERIALS)**

- A method for observing gas evolution during plastic laminate cure
  - HSC-15592
  - B69-10530

**BAYARY FLUIDS**

- Fluid-thermochromic display device
  - EBC-10031
  - B68-10350

**BAYARY INTEGRATION**

- Circuit counts pulses and indicates time of occurrence of slow pulses
  - EBC-10034
  - B69-10313

- Pulse-code-modulation baseline correction for low signal-to-noise ratios
  - ESC-13268
  - B69-10750

**BAYARY MIXTURES**

- Rapid helium-air analyzer can measure other binary gas mixtures
  - LANGLEY-16
  - B63-10557

- Dynamics of moving bubbles in single and binary component systems
  - HPS-14845
  - B68-10339

- One-dimensional reacting gas nonequilibrium performance program
  - HSC-11777
  - B68-10375

- One-dimensional two-phase reacting gas nonequilibrium performance program
  - HSC-11780
  - B68-10376

**BAYARY TO DECIMAL CONVERTERS**

- Simple BCD circuit accurately counts to 24
  - GSFC-317
  - B65-10225

**BAYARY FLUIDS**

- Solid-film lubricant is effective at high temperatures in vacuum
  - LNWS-228
  - B66-10087

- Dry film lubricant is effective at extreme loads
  - H-FS-628
  - B66-10256

- Application of the solid lubricant molybdenum disulfide by sputtering
  - LNWS-15244
  - B68-10340

- Improved high-temperature silicide coatings
  - HSC-10917
  - B69-10266

- Adding calcium improves lithium ferrite core
  - HSC-10936
  - B69-10686

**BINDING**

- Buckle joins web straps quickly, adjusts easily
  - LANGLEY-21
  - B64-10195

**BINARY DIGITS**

- A conceptual, parallel operating data compression processor
  - NPO-10068
  - B67-10204

- Multichannel pulse height analyzer is inexpensive, features low power requirements
  - EQR-10002
  - B67-10258

- Simple quasi-exponential slope generator
  - NPO-11130
  - B69-10439

**BINARY TO DECIMAL CONVERTERS**

- Simple BCD circuit accurately counts to 24
  - GSFC-317
  - B65-10225

**BINDING**

- Journal gas bearing for curved surfaces
  - H-FS-20423
  - B69-10182

- Breakaway electrical connector
  - NPO-11140
  - B69-10474

**BINOCULARS**

- Multipurpose binocular scanning apparatus
  - NPO-11502
  - B69-10311

**BINOCULARS**

- A method for observing gas evolution during plastic laminate cure
  - HSC-15592
  - B69-10530

**BINARY DIGITS**

- Queuing register uses fluid logic elements
  - H-FS-317
  - B66-10100

- A conceptual, parallel operating data compression processor
  - NPO-10068
  - B67-10204

- Multichannel pulse height analyzer is inexpensive, features low power requirements
  - EQR-10002
  - B67-10258

- Simple quasi-exponential slope generator
  - NPO-11130
  - B69-10439

- Simplified, reliable circuit sorts binary numbers in order of magnitude
  - NPO-10112
  - B69-10503

**BINARY TO DECIMAL CONVERTERS**

- Simple BCD circuit accurately counts to 24
  - GSFC-317
  - B65-10225

**BINDING**

- Journal gas bearing for curved surfaces
  - H-FS-20423
  - B69-10182

- Breakaway electrical connector
  - NPO-11140
  - B69-10474

**BINOCULARS**

- A method for observing gas evolution during plastic laminate cure
  - HSC-15592
  - B69-10530
SUBJECT INDEX

BIOASSAY
Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331 B69-10208 04
Direct in-vial collection for liquid-scintillation assay of carbon-14 and tritium
ARG-10424 B69-10412 03

BIOCHEMISTRY
Reusable chelating resins concentrate metal ions from highly dilute solutions
JPL-758 B66-10451 03
Self-sealing closure enables access to several fluid containers
NPO-10123 B67-10207 04
Ultraviolet microscopy aids in cytological and biomedical research
ARG-178 B67-10590 04
Study of radiation effects on mammalian cells in vitro
ARG-10191 B68-10294 02
Micromnes and computers combined for analysis of chromosomes
ARG-10256 B69-10088 04
Qualitative and quantitative analysis of mixtures of compounds containing both hydrogen and deuterium
ARG-10312 B69-10177 04
Nutron therapy of cancer
ARG-10310 B69-10203 04

BIODYNAMICS
Integrated mobility measurement and notation system
MSC-726 B67-10114 04

BIOELECTRICITY
Subminiature biotelemetry unit permits remote physiological investigations
ARC-39 B64-10171 01

BIOINSTRUMENTATION
New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation
ARC-2 B63-10003 04
Improved electrode gives high-quality biological recordings
MSC-17 B64-10025 04
Subminiature biotelemetry unit permits remote physiological investigations
ARC-39 B64-10171 01
Inexpensive, stable circuit measures heart rate
MSC-95 B65-10010 01
Improved conductive paste secures biomedical electrodes
MSC-107 B65-10015 03
Photoelectric sensor output controlled by eyeball movements
MSC-274 B65-10079 01

SIMULATOR produces physiological waveforms
MSC-94 B65-10091 01
Tiny biomedical amplifier combines high performance, low power drain
ARC-41 B65-10203 01
Rugged pressed disk electrode has low contact potential
MSC-158 B65-10320 01
Direct force-measuring transducer used in blood pressure research
ARC-53 B65-10325 01
Improved electrode paste provides reliable measurement of galvanic skin response
MSC-146 B66-10049 04

MINIATURE bioelectric device accurately measures and telemeters temperature
ARC-52 B66-10057 01
Gelatin coated electrodes allow prolonged bioelectronic measurements
MSC-153 B66-10088 01
Phonocardiograph system monitors heart sounds
MSC-185 B66-10154 04
Semiconductor forms biomedical radiation probe
MSC-320 B66-10252 04
Plant respirometer enables high resolution of oxygen consumption rates
EQ-47 B66-10406 04

Multidimensional Reaction Kinetic Ablation Program /FEKAP/
MSC-193 B66-10495 05
Spray-on electrodes enable EKG monitoring of physically active subjects
MSC-36 B66-10645 04
Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 ampere to 10 to the minus 3 ampere
MSC-0007 B66-10706 01
Review of biological mechanisms for application to instrument design
EQ-33 B67-10663 04
Ultraminiature manometer-tipped cardiac catheter
ARC-10054 B67-10669 01
Nosepiece respiration monitor
MSC-10136 B68-10438 01
Pressure-sensitive bonded junction transducers
MSC-10087 B68-10563 01
Remotely-actuated biomedical switch
ARC-10105 B69-10117 01
Foot-operated cell-counter
ARC-10315 B69-10351 01

BIOLOGICAL EFFECTS
Cytology is advanced by studying effects of deuterium environment
ARG-205 B67-10304 04
Training course for radiation safety technicians
ARG-216 B67-10477 02
New passive telemetry system
EQ-10218 B69-10312 01

BIOLOGY
Purification and characterization of two fully deuterated enzymes
ARC-10314 B69-10207 04
BIOLUMINESCENCE

Quantitative determination of flavin nucleotide using the bacterial bioluminescent reaction
GSPC-10565 B69-10715 04

BIOMICS

Review of research and development in fluid logic elements
H-FS-420 B67-10438 01

BIOPHYSICS

Neutron therapy of cancer
ARG-10310 B69-10203 04

Direct determination of lead-210 by liquid- scintillation counting
ARG-10462 B69-10611 03

BIOSYNTHESIS

Qualitative and quantitative analysis of mixtures of compounds containing both hydrogen and deuterium
ARG-10312 E69-10177 04

BIOTELEMETRY

Analog device simulates physiological waveforms
MSC-51 B64-10109 01

Subminiature biotelemetry unit permits remote physiological investigations
ARC-39 B64-10171 01

Miniature telemetry system accurately measures pressure
ARC-74 B66-10624 01

A phonocardiogram simulator
MSC-67-94 B67-10239 01

Automated urinalysis technique determines concentration of creatine and creatinine by colorimetry
NFO-10169 B67-10245 04

Multichannel implantable telemetry system
ARG-10083 B68-10065 01

Automated patient monitoring system
M-FS-14552 B68-10131 01

New passive telemetry system
HQ-10214 B69-10312 01

BIRDS

Compound equation developed for postnatal growth of birds and mammals
ARG-10192 E68-10427 04

BIREFRINGENCE

Servo system facilitates photoelastic strain measurements on resins
JPL-504 B64-10280 01

Technique developed for measuring transmittance of optical birefringent networks
M-FS-14267 B69-10260 02

Synthesis of electro-optic modulators for amplitude modulation of light
M-FS-14268 B68-10275 02

Correction for losses in optical birefringent networks, a concept
M-FS-20088 B68-10571 02

BIREFRINGENT COATINGS

Sprayable birefringent coating enables strain measurements on large surfaces
M-FS-1488 B66-10578 03

BISMUTH

Dry film lubricant is effective at extreme loads
M-FS-628 B66-10256 03

Development of Curie point switching for this film, random access, memory device

SUBJECT INDEX

WO-10402 B67-10633 02

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
ARG-10220 B69-10211 02

Induction probe determines levels of liquid metals
ARG-10348 B69-10256 03

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
ARG-10452 B69-10613 01

BISMUTH ALLOYS

Bismuth alloy potting seals aluminum connector in cryogenic application
WO-260 B66-10138 03

Vacuum chamber is remotely sealed by eutectic metal
NU-0091 B67-10059 05

New bimetallic EMF cell shows promise in direct energy conversion
ARG-10183 B68-10415 01

Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation
ARG-10288 B69-10081 03

BISMUTH OXIDES

Th-transmission glasses formed from oxides of bismuth and tellurium
M-FS-279 B65-10190 03

BISMUTH TELLURIDES

Modular thermoelectric cell is easily packaged in various arrays
GSPC-339 B65-10199 01

BISTABLE CIRCUITS

Automatic system determines moments of inertia of asymmetrical objects
M-FS-1769 B66-10636 01

Solid-state time-to-pulse-height converter developed
ARG-170 B67-10053 01

Random access-random release relay switching matrix
M-FS-12590 B68-10301 01

BISTATIC REFLECTIVITY

Combination ranging system and mapping radar
NFO-11001 B69-10325 01

BI SYNCHRONIZATION

FM acquisition demodulator achieves automatic synchronization of a telemetry channel
JPL-612 B66-10271 01

Simultaneous message framing and error detection
MSC-12001 B68-10330 01

BITS

Improved circuit minimizes generation time of pseudonoise check bits
JPL-698 B65-10275 01

Queuing register uses fluid logic elements
M-FS-317 B66-10100 05

Multisurface fixture permits easy grinding of tool bit angles
M-FS-586 B66-10171 01

Tool separates sleeve-type unions without heat
MSC-497 B66-10253 05

Binary sequence detector uses minus number of decision elements
JPL-673 B66-10264 01
SUBJECT INDEX

System monitors discrete computer inputs
H-FS-1021 B66-10389 01

Numerical data frame readout system used in testing telemetry systems
GSFC-551 B67-10175 01

Simultaneous message framing and error detection
MSC-12001 B69-10330 01

Circuitry selectively limits data storage in general purpose computer
GSFC-10605 B69-10121 01

PCR bit detection with correction for intersymbol interference
HSC-12001 B68-10330 01

Pulse-code-modulation baseline correction for low signal-to-noise ratio
HSC-13268 B69-10153 01

BLOOD CIRCULATION

Study of random process theory aids digital data processing
I-PS-1475 E67-10309 06

Reference black body is compact, convenient to use
ARC-3 B63-10004 03

A radiometer-pyrometer
LEWIS-264 B66-10606 01

Inflatable bladder provides accurate calibration of pressure switch
M-FS-367 B65-10279 01

Welds chilled by liquid coolant manifold
M-FS-679 B66-10354 05

Knife cuts honeycomb material to specified depth
MSC-475 B66-10237 05

Tool separates sleeve-type unions without heat
MSC-497 B66-10253 05

New electrical plethysmograph monitors cardiac output
MSC-11447 B68-10220 01

BLOOD

Computer circuit calculates cardiac output
MSC-274 B66-10006 01

Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
MSC-11018 B67-10252 04

Improved sample capsule for determination of oxygen in hemolyzed blood
MSC-11017 B67-10408 04

Foot-operated cell-counter
ARG-10315 B69-10351 01

BLOOD CIRCULATION

A rotating, noncapillary heat pipe
LEWIS-10298 B69-10684 05

Rapid and precise analysis for calcium in blood serum
ARG-10246 B69-10160 04

Translator program converts computer printout into Braille language
M-PS-2061 B67-10087 01

Foot-operated cell-counter
ARG-10315 B69-10351 01

Electrical plethysmograph monitors cardiac output
MSC-11447 B68-10220 01
SUBJECT INDEX

BLOOD

Large volume continuous counterflow dialyzer has high efficiency
HQ-10055 B67-10395 04

BLOOD PRESSURE

Simulator produces physiological waveforms
MSC-94 B65-10091 01

Direct force-measuring transducer used in blood pressure research
ABC-53 B65-10325 01

Blood pressure reprogramming adapter assists signal recording
MSC-265 B67-10475 01

BLOOD VESSELS

Multidimensional Reaction Kinetic Ablation
Program /REAP/
MSC-143 B66-10325 01

Hand-held instrument should relieve hematoma pressure
MSC-599 B67-10332 04

BLOOD PRESSURE

Simulator produces physiological waveforms
MSC-94 B65-10091 01

Direct force-measuring transducer used in blood pressure research
ABC-53 B65-10325 01

Blood pressure reprogramming adapter assists signal recording
MSC-265 B67-10475 01

BLOOD VESSELS

Multidimensional Reaction Kinetic Ablation
Program /REAP/
MSC-143 B66-10325 01

Hand-held instrument should relieve hematoma pressure
MSC-599 B67-10332 04

BLOWERS

Portable detector set discloses helium leak rates
NPS-7733 B67-10065 01

BOATS

Discrimination of fish oil and mineral oil slicks on sea water
HQ-10412 B69-10673 02

BODIES OF REVOLUTION

Ellipsoidal optical reflectors reproduced by electroforming
GSFC-92 B63-10547 05

Averaging probe reduces static-pressure sensing errors
LANGLY-36 B65-10114 05

Program computes zero lift wave drag of entire aircraft
LANGLY-1079 B67-10530 06

Finite element analysis of compressible solids with nonlinear material properties
MSC-10342 B69-10238 06

BODY FLUIDS

Apparatus enables automatic microanalysis of body fluids
JPL-962 B66-10515 04

BODY MEASUREMENT (BIOLOGY)

Inexpensive, stable circuit measures heart rate
MSC-95 B65-10010 01

BODY TEMPERATURE

Simulator produces physiological waveforms
MSC-94 B65-10091 01

Miniature bioelectric device accurately measures and telemeters temperature
ABC-52 B66-10057 01

BOILERS

Oxygen-hydrogen torch is a small-scale steam generator
NU-0042 B66-10120 03

Pump simulator provides variable pressure-flow characteristics
LEWIS-10122 B67-10453 05

Channel-wall limitations in the magnetohydrodynamic induction generator
ARG-10128 B69-10255 02

BOILING

Control system maintains selected liquid level
N-PS-370 B66-10039 01

Cryogenic liquid transfer system reduces residual boiloff
LEWIS-274 B66-10157 02

Silazane elastomer remains resilient at 400 deg C
NS-1144 B66-10667 05

Cryogenic liquid level measuring probe
ABC-10136 B68-10291 01

Dynamics of moving bubbles in single and binary component systems
N-PS-14845 B66-10339 02

Heat transfer coefficients for liquid hydrogen turbopumps
N-PS-18345 B68-10517 02

Electrochemical study of aluminum corrosion in boiling high purity water
ABC-10356 B69-10033 03

BOILING WATER REACTORS

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
ABC-10061 B69-10620 02

BOLOGMETERS

Improved insertion-loss tester
JPL-358 B64-10080 01

Wedge immersed thermistor bolometer measures infrared radiation
GSFC-443 B65-10330 02

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSFC-422 B66-10051 01

Linear signal noise summer accurately determines and controls S/N ratio
JPL-SC-152 B66-10433 01

Detector measures power in 50 to 30,000 GHz radiation band
ERC-26 B66-10581 01

Infrared radiometer
N-PS-13373 B67-10422 01

Precision bolometer bridge
MSC-11473 B68-10156 01

BOLTS

Simple mechanism combines positive locking and quick-release features
WOO-4 B63-10420 05

Fastener provides cooling and compensates for thermal expansion
NU-0003 B65-10038 05

Screw locking cups quickly and neatly crimped
NU-0009 B65-10049 05

Lightweight door seals cryogenic container against diaphragm type loading
N-PS-476 B65-10402 05

O-ring tube fittings form leakproof seal in hydraulic systems
N-PS-481 B66-10020 05

Modified power tool rapidly drives series torque bolts
MSC-221 B66-10054 05

Calibrated clamp facilitates pressure application
MSC-296 B66-10059 05

Mechanism isolates load weighing cell during lifting of load
MSC-297 B66-10071 05

Hand drill adapter limits holes to desired depth
MSC-346 B66-10123 05

I-58
SUBJECT INDEX

Subject: Bonding

- Expandable insert serves as screw anchor
  MSC-301  B66-10132  05

- Pressure-welded flange assembly provides leak-tight seal at reduced bolt loads
  M-PS-640  B66-10247  05

- Diffusion bonding makes strong seal at flanged connector
  M-PS-637  B66-10250  05

- Fastener provides for bolt misalignment and quick release of flange
  BU-0074  B66-10275  05

- Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures
  M-PS-800  B66-10325  02

- Nondestructive test method accurately sorts mixed bolts
  M-PS-1426  B66-10574  01

- Multilayer refractory nozzles produced by plasma-spray process
  NUC-318  B66-10611  05

- Pneumatic wrench retains or discharges nuts or bolts as desired
  NU-0085  B66-10707  05

- Single wrench separates nuts from free-floating bolts
  NUC-10013  B67-10158  05

- Cable clamp bolt fixture facilitates assembly in close quarters
  KSC-67-80  B67-10244  05

- Spherical joint connects axially misaligned flanges
  M-PS-2238  B67-10273  05

- Study made of transfer of heat energy through metal joints in vacuum environment
  M-PS-12534  B67-10465  02

- Tensile testing grips ensure uniform loading of bimetal tubing specimens
  LEWIS-10267  B68-10240  05

- Machining technique prevents undercutting in tensile specimens
  LANGLY-10281  B68-10352  05

- Boydbolt, a positive-latch, simple-release fastener
  MSC-13061  B68-10512  05

- Pressure transducer
  NPO-10853  B69-10364  01

- BOLZMANN TRANSPORT EQUATION
  Structure of the isotropic transport operators in three independent space variables
  ARG-10486  B69-10432  06

- GAMBIT program
  NUC-10243  B69-10433  06

- BONDSTABILIZATION
  Multiple element soft X-ray source produces wide range of radiation
  GSPC-286  B65-10082  02

- Electron beam parallel X-ray generator
  MSC-11022  B67-10372  02

- BONDING
  New method forms bond line free of voids
  LANGLY-20  B63-10558  05

- Metals plated on fluorocarbon polymers
  JPL-548  B63-10612  03

- Elastomers bonded to metal surfaces seal electrochemical cells
  GSPC-168  B64-10113  03

- Screening technique makes reliable bond at room temperature
  M-PS-227  B65-10004  03

- Thermocompression bonding produces efficient surface-barrier diode
  JPL-SC-066  B65-10007  05

- Improved conductive paste secures biomedical electrodes
  MSC-107  B65-10015  03

- Adhesive for vacuum environments resists shock and vibration
  MSC-56  B65-10106  03

- Thermistor connector assembly increases accuracy of measurements
  LANGLY-62  B65-10045  01

- Thoriated nickel bonded by solid-state diffusion method
  LANGLY-116  B65-10324  01

- Selenium bond decreases ON resistance of light-activated switch
  JPL-SC-101  B65-10324  03

- Calibrated clamp facilitates pressure application
  M-PS-298  B66-10059  05

- Reflective insulator layers separated by bonded silica beads
  M-PS-560  B66-10070  03

- Storage-stable foamy polyurethane is activated by heat
  LANGLY-167  B66-10111  03

- Split glass tube assures quality in electron beam brazing
  M-PS-562  B66-10151  05

- Brazing process using Al-Si filler alloy reliably bonds aluminum parts
  MSC-440  B66-10241  05

- Electrolytic etching process provides effective bonding surface on stainless steel
  GSPC-404  B66-10299  03

- Ultrasonic emission method enables testing of adhesive bonds
  M-PS-799  B66-10341  01

- Dot patterns provide reproducible flaw areas for study of adhesive bonds
  M-PS-862  B66-10367  05

- Composite gaskets are compatible with liquid oxygen, resist compression set
  M-PS-455  B66-10395  03

- Adhesive for polyester films cures at room temperature, has high initial tack
  M-PS-938  B66-10487  03

- Braise alloy holds bonding strength over wide temperature range
  LANGLY-337  B66-10519  03

- Composite bulkhead fabrication development
  M-PS-1264  B66-10582  03

- Composite weld rod corrects individual filler weaknesses
  M-PS-1923  B67-10107  05

- Nonwoven glass fiber mat reinforces polyurethane adhesive
  M-PS-2309  B67-10113  03

- Porous mandrels provide uniform deformation in hydrostatic powder metallurgy
  M-PS-1972  B67-10209  03

- Liquid crystals detect voids in fiber glass

I-59
laminates
LEWIS-10104

Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique
ABG-203

Method of improving contact bonds in silicon integrated circuits
N-PS-1753

Metal flame spray coating protects electrical cables in extreme environment
NVC-10077

Flowmeter determines six ratio for viscous adhesives
N-PS-2308

Heavy-gage bonded honeycomb sandwich as primary load-bearing structure
N-PS-12060

Method of disjoining adhesively bonded electronic cordwood modules
MSC-12060

Glass coated single grid for charged particle acceleration
LEWIS-10106

Miniature pressure transducer for stressed member application
MSC-11869

Application of the solid lubricant polybenzen disulfide by sputtering
LEWIS-10544

Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
NASA-09802

Frangible electrochemical cell and sealing technique
XGS-10010

Adhesive for cryogenic temperature applications
LEWIS-10264

Miniaturization of magnetic logic circuitry
LANGLEY-10037

Diffusion bond method of joining steel and a TFE-bronze composite
N-PS-20482

Precision mounting for instrument optical elements provided by polyimide bonding
N-PS-20293

Quick-set temporary bonding clamps
NPO-10695

Nondestructive determination of cohesive strength of adhesive-bonded composites
N-PS-20397

Improved primer for bonding polyurethane adhesives to metals
N-PS-90591

A new method for fabrication of flexible vacuum purge jackets

SUBJECT INDEX

M-PS-12646

Instrumentation for bone density measurement
MSC-11388

Carbon offers advantages as implant material in human body
N-PS-18207

Concentrations of the naturally occurring radionucleides Pb-210, Po-210, and Ra-226 in aquatic fauna
ABG-10345

BOOLEAE ALGEBRA

Logic realization of simple majority voting connectives
JPL-727

Pneumatic analog-to-pulse frequency converter
LEWIS-10345

BOOLEAE FUNCTIONS

Veitch diagram plotter simplifies Boolean functions
JFL-385

Exclusive-or logic circuit has useful properties
LANGLEY-214

Scanning means for Cassegrainian antenna
JFL-946

BOOM

Apparatus of small size can be extended into long, rigid boom
JFL-305

BOOMS (EQUIPMENT)

Metal strip forms 21 foot boom, rolls up for compact storage
GSFC-151

Scoop attachment makes helicopter recoveries easier and safer
MSC-130

Sheet metal strip unrolls to form circular boom
GSFC-423

Fixture aids soldering of electronic components on circuit board
ARC-56

Diaphragm spring gives clutch over-center toggle effect
GSFC-459

Booting frame facilitates handling of large objects
N-PS-16166

Proposed technique for vertical alignment of a crane's cable
N-PS-16496

A mechanically extendible boom
NPO-11118

BOOSTER ROCKET ENGINES

Ramping technique gives accelerometer flat frequency response
N-PS-1777

Study made of large amplitude fuel sloshing
N-PS-12381

Fortran IV program for two-impulse rendezvous analysis
N-PS-13971

Shell design computer program

I-60
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>BORON OXIDES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEWIS-10734</td>
<td>Grain growth inhibitor for porous tungsten materials</td>
</tr>
<tr>
<td>B69-10175</td>
<td>B68-10527</td>
</tr>
<tr>
<td>BOOSTERS</td>
<td>High strength, superplastic superalloy</td>
</tr>
<tr>
<td>M-PS-12060</td>
<td>LEWIS-10865</td>
</tr>
<tr>
<td>B67-10427</td>
<td>B69-10293</td>
</tr>
<tr>
<td>BOOTS (POOTPEAT)</td>
<td>Boron fiber-reinforced aluminas alloy tubing/experimental/</td>
</tr>
<tr>
<td>M-PS-536</td>
<td>MSC-15633</td>
</tr>
<tr>
<td>B66-10201</td>
<td>B69-10509</td>
</tr>
<tr>
<td>BORATES</td>
<td>Boresightdate aligns machine surface</td>
</tr>
<tr>
<td>ARG-10459</td>
<td>B67-10547</td>
</tr>
<tr>
<td>B69-10647</td>
<td>03</td>
</tr>
<tr>
<td>BORELS</td>
<td>Self-contained clothing system provides protection against hazardous environments</td>
</tr>
<tr>
<td>ARG-10448</td>
<td>B66-10201</td>
</tr>
<tr>
<td>B69-10432</td>
<td>05</td>
</tr>
<tr>
<td>BOREIGHTS</td>
<td>Multi-feed cone for Cassegrainian antenna</td>
</tr>
<tr>
<td>M-PS-553</td>
<td>MSC-10539</td>
</tr>
<tr>
<td>B69-10269</td>
<td>B69-10269</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Borel sheath improves thermocouple using graphite in one leg</td>
</tr>
<tr>
<td>ARG-397</td>
<td>B66-10051</td>
</tr>
<tr>
<td>B67-10300</td>
<td>01</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Improved nickel plating of Inconel X-750</td>
</tr>
<tr>
<td>M-PS-18604</td>
<td>B65-10421</td>
</tr>
<tr>
<td>B69-10463</td>
<td>05</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Improved thermal insulation materials made of foamed refractory oxides</td>
</tr>
<tr>
<td>M-PS-14805</td>
<td>B65-10051</td>
</tr>
<tr>
<td>B68-10530</td>
<td>05</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Boron fiber-reinforced aluminas alloy tubing</td>
</tr>
<tr>
<td>MSC-11033</td>
<td>B66-10269</td>
</tr>
<tr>
<td>B67-10070</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Boron fiber-reinforced aluminas alloy tubing/experimental/</td>
</tr>
<tr>
<td>MSC-15633</td>
<td>B69-10509</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>M-PS-529</td>
<td>B69-10269</td>
</tr>
<tr>
<td>B66-10044</td>
<td>01</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Boron fiber-reinforced aluminas alloy tubing</td>
</tr>
<tr>
<td>M-PS-762</td>
<td>B68-10334</td>
</tr>
<tr>
<td>B66-10273</td>
<td>05</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Boron fiber-reinforced aluminas alloy tubing</td>
</tr>
<tr>
<td>MSC-10535</td>
<td>B68-10380</td>
</tr>
<tr>
<td>B66-10348</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Boron fiber-reinforced aluminas alloy tubing</td>
</tr>
<tr>
<td>MSC-10535</td>
<td>B69-10293</td>
</tr>
<tr>
<td>B68-10288</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Boron fiber-reinforced aluminas alloy tubing/experimental/</td>
</tr>
<tr>
<td>MSC-15633</td>
<td>B69-10509</td>
</tr>
<tr>
<td>B68-10102</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>M-PS-533</td>
<td>B66-10149</td>
</tr>
<tr>
<td>B68-10044</td>
<td>01</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Boron fiber-reinforced aluminas alloy tubing</td>
</tr>
<tr>
<td>M-PS-16196</td>
<td>B66-10123</td>
</tr>
<tr>
<td>B68-10530</td>
<td>05</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Boron fiber-reinforced aluminas alloy tubing</td>
</tr>
<tr>
<td>MSC-10535</td>
<td>B69-10293</td>
</tr>
<tr>
<td>B69-10293</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>M-PS-529</td>
<td>B66-10269</td>
</tr>
<tr>
<td>B66-10044</td>
<td>01</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>M-PS-533</td>
<td>B66-10149</td>
</tr>
<tr>
<td>B68-10044</td>
<td>01</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>M-PS-16196</td>
<td>B68-10530</td>
</tr>
<tr>
<td>B68-10044</td>
<td>01</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
<tr>
<td>BORIC ACIDS</td>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>MSC-10529</td>
<td>B69-10348</td>
</tr>
<tr>
<td>B66-10044</td>
<td>03</td>
</tr>
</tbody>
</table>
Thin-film ferrites vapor deposited by one-step process in vacuum

Neutron therapy of cancer

Electrodeless discharge lamp is easily started, has high stability

Substituting gold for silver improves electrical connections

Indium adhesion provides quantitative measure of surface cleanliness

Restricted-flow junction between liquids

Ionene membrane battery separator

Study made of relationship between growth and metabolism

Economical and maintenance-free gas system operates railroad switches

Self-sealing closure enables access to several fluid containers

Compact monitoring and control console for pressurized gas bottles

Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples

Equations provide tabular information on effects of uniform and variable loads on thin, flat, circular plates

General series solution technique for bending of irregular laterally loaded flat plates

Trajectory optimization using regularized variables

Experimental scaling study of fluid amplifier elements

Dynamics of moving bubbles in single and binary component systems

FORTRAN 4 program calculates velocities and streamlines in a tandem blade turbomachine

Thin-film gage measures low heat-transfer rates

Vacuum probe sampler removes micro-sized particles from surfaces

SAN-10003

Acoustic wave analysis

Instabilities encountered during heat transfer to a supercritical fluid

Experimental design for research on shock-turbulence interaction

Study of high temperature bearing materials

Controllability of distributed-parameter systems

Buckling of Shells Of Revolution with various wall constructions

Development of structural test articles from magnesium-lithium and beryllium

Double gloves reduce contamination of dry box atmosphere

Argon purge gas cooled by chill box

Epoxy-coated containers easily opened by wire band

Special tool kit aids heavily garmented workers

Inflatable bladder to facilitate handling of heavy objects - A concept

Compact retractor protects cabling loops

Camera lens adapter magnifies image

Tape reading fixture

Uranyl phthalocyanines show promise in the treatment of brain tumors

Frictional wedge shock mount is inexpensive, has good damping characteristics

Compressed gas system operates semitrailer brakes during winching operation

Air brake-dynamometer accurately measures torque

Calculations enable optimum design of magnetic brake

Modified hydraulic braking system limits angular deceleration to safe values

Braking mechanism is self actuating and
Emergency escape system uses self-braking mechanism on fixed cable

BRAKING
Compressed gas system operates semitrailer brakes during winching operation

Flexible honeycomb structure can bend to fit compound curves

Connector for thermocouple leads saves costly wire, makes reliable connectors

Mounting for diodes provides efficient heat sink

New alloy brazes titanium to stainless steel

Probe tests micro-weld strength

Titanium treatment improves brazed joints

Refractory metals welded or brazed with tungsten inert gas equipment

Inert-gas welding and brazing enclosure fabricated from sheet plastic

Brazing method produces solid-solution bond between refractory metals

Tungsten wire and tubing joined by nickel brazing

New brazing alloy eliminates metal-stress cracking

Improved tool easily removes brazed tube connectors

Split glass tube assures quality in electron beam brazing

Vacuum test fixture improves leakage rate measurements

Microminiature thermocouple monitors own installation

Braze alloy holds bonding strength over wide temperature range

Preformed stiffeners used to fabricate structural components for pressurized tanks

Silver plating technique seals leaks in thin wall tubing joints

Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables

Ultrasonics permits brazing complex stainless steel assembly without flux

High-strength braze joints between copper and steel

Aluminum and stainless steel tubes joined by simple ring and welding process

Tubing dimpling tool assures accurate dip-brazed joints

Evaluation of methods for nondestructive testing of brazed joints

Two-fluid, impinging-sheet injector

X-ray film bolter permits single continuous picture of tubing joint
**SUBJECT INDEX**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature or pressure controller</td>
<td>LEWIS-10297</td>
<td>B67-10653</td>
</tr>
<tr>
<td>Safety switch permits emergency bridge crane shutdown</td>
<td>M-PS-549</td>
<td>B66-10168</td>
</tr>
<tr>
<td>Square tubing reduces cost of telescoping bridge crane hoist</td>
<td>ARG-13</td>
<td>B67-10293</td>
</tr>
<tr>
<td>Electro-optic modulator for infrared laser using gallium arsenide crystal</td>
<td>GSFC-10686</td>
<td>B68-10255</td>
</tr>
<tr>
<td>Dielectric prisms would improve performance of quasi-optical microwave components</td>
<td>GSFC-10686</td>
<td>B68-10255</td>
</tr>
<tr>
<td>Auto-patient respiration failure detection system with wireless transmission</td>
<td>NPO-10238</td>
<td>B68-10502</td>
</tr>
<tr>
<td>Compound improves thermal interface between thermocouple and sensed surface</td>
<td>MSD-537</td>
<td>B66-10121</td>
</tr>
<tr>
<td>High-strength tungsten alloy with improved ductility</td>
<td>LEWIS-10257</td>
<td>B67-10340</td>
</tr>
<tr>
<td>Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures</td>
<td>NUC-10084</td>
<td>B67-10349</td>
</tr>
<tr>
<td>Steel test panel helps control additives in pyrophosphate copper plating</td>
<td>LEWIS-10101</td>
<td>B67-10358</td>
</tr>
<tr>
<td>Study made of anodized aluminum circuit boards</td>
<td>LEWIS-13586</td>
<td>B67-10425</td>
</tr>
<tr>
<td>Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing</td>
<td>ARG-10100</td>
<td>B69-10297</td>
</tr>
<tr>
<td>Nonreciprocal gain control for ring laser</td>
<td>EBC-26</td>
<td>B66-10585</td>
</tr>
</tbody>
</table>

**BREADBOARD MODELS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog buffer isolates high impedance source from low impedance load</td>
<td>AE-13481</td>
<td>B67-10544</td>
</tr>
<tr>
<td>Development of Electronic Data Processing/EDP/ augmented management system</td>
<td>I-PS-14715</td>
<td>B68-10287</td>
</tr>
<tr>
<td>Heated die facilitates tungsten forming</td>
<td>LEWIS-25A</td>
<td>B66-10047</td>
</tr>
<tr>
<td>Experimental prediction of performance by superconducting cables</td>
<td>ARG-10215</td>
<td>B66-10161</td>
</tr>
<tr>
<td>Improved method of dicing integrated circuit wafers into chips</td>
<td>HRC-10138</td>
<td>B66-10441</td>
</tr>
<tr>
<td>Breakaway electrical connector</td>
<td>NFO-11140</td>
<td>B68-10747</td>
</tr>
<tr>
<td>Device induces lungs to maintain known constant pressure</td>
<td>NSC-50</td>
<td>B68-10108</td>
</tr>
<tr>
<td>Respiratory transfer value has fail-safe feature</td>
<td>ARG-1</td>
<td>B65-10369</td>
</tr>
<tr>
<td>Self-contained clothing system provides protection against hazardous environments</td>
<td>HPS-535</td>
<td>B66-10201</td>
</tr>
<tr>
<td>Automatic patient respiration failure detection system with wireless transmission</td>
<td>ARG-10174</td>
<td>B68-10365</td>
</tr>
<tr>
<td>Remote balance weighs accurately and high radiation</td>
<td>ARG-10387</td>
<td>B68-10242</td>
</tr>
<tr>
<td>The response of monoeenergetic gamma rays in finite media are investigated</td>
<td>ARG-10295</td>
<td>B68-10080</td>
</tr>
<tr>
<td>Electronic interaction in matter</td>
<td>HPS-14886</td>
<td>B68-10674</td>
</tr>
<tr>
<td>Dielectric prisms would improve performance of quasi-optical microwave components</td>
<td>HRC-10011</td>
<td>B68-10416</td>
</tr>
<tr>
<td>Nonreciprocal gain control for ring laser</td>
<td>EBC-26</td>
<td>B66-10585</td>
</tr>
</tbody>
</table>

**BRENNSTOFFELE**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nondestructive testing of brazed rocket engine components</td>
<td>N-PS-18191</td>
<td>B68-10394</td>
</tr>
<tr>
<td>Tube welding and brazing</td>
<td>N-PS-20348</td>
<td>B69-10085</td>
</tr>
<tr>
<td>Repair of honeycomb panels with welded breakaway studs</td>
<td>NSC-15046</td>
<td>B69-10261</td>
</tr>
<tr>
<td>Welding, brazing, and soldering handbook</td>
<td>M-PS-20534</td>
<td>B68-10264</td>
</tr>
<tr>
<td>Shock-absorbent mountings for bearings</td>
<td>NFO-10626</td>
<td>B69-10331</td>
</tr>
<tr>
<td>Nondestructive testing of welds on thin-walled tubing</td>
<td>N-PS-18144</td>
<td>B69-10402</td>
</tr>
<tr>
<td>Generation of sonic power during welding</td>
<td>N-PS-20339</td>
<td>B69-10404</td>
</tr>
<tr>
<td>Improved nickel plating of Inconel X-750</td>
<td>N-PS-18604</td>
<td>B69-10463</td>
</tr>
</tbody>
</table>

**BRENNSTOFFELE**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature or pressure controller</td>
<td>LEWIS-10297</td>
<td>B67-10653</td>
</tr>
<tr>
<td>Safety switch permits emergency bridge crane shutdown</td>
<td>M-PS-549</td>
<td>B66-10168</td>
</tr>
<tr>
<td>Square tubing reduces cost of telescoping bridge crane hoist</td>
<td>ARG-13</td>
<td>B67-10293</td>
</tr>
<tr>
<td>Electro-optic modulator for infrared laser using gallium arsenide crystal</td>
<td>GSFC-10686</td>
<td>B68-10255</td>
</tr>
<tr>
<td>Dielectric prisms would improve performance of quasi-optical microwave components</td>
<td>GSFC-10686</td>
<td>B68-10255</td>
</tr>
<tr>
<td>Auto-patient respiration failure detection system with wireless transmission</td>
<td>NPO-10238</td>
<td>B68-10502</td>
</tr>
<tr>
<td>Compound improves thermal interface between thermocouple and sensed surface</td>
<td>MSD-537</td>
<td>B66-10121</td>
</tr>
<tr>
<td>High-strength tungsten alloy with improved ductility</td>
<td>LEWIS-10257</td>
<td>B67-10340</td>
</tr>
<tr>
<td>Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures</td>
<td>NUC-10084</td>
<td>B67-10349</td>
</tr>
<tr>
<td>Steel test panel helps control additives in pyrophosphate copper plating</td>
<td>LEWIS-10101</td>
<td>B67-10358</td>
</tr>
<tr>
<td>Study made of anodized aluminum circuit boards</td>
<td>LEWIS-13586</td>
<td>B67-10425</td>
</tr>
<tr>
<td>Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing</td>
<td>ARG-10100</td>
<td>B69-10297</td>
</tr>
<tr>
<td>Preparing rock powder specimens of controlled size distribution</td>
<td>NFO-10007</td>
<td>B68-10284</td>
</tr>
<tr>
<td>Manual of typical low temperature mechanical properties of several materials</td>
<td>N-PS-18331</td>
<td>B69-10179</td>
</tr>
</tbody>
</table>

**BROADBAND**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An investigation of phase-lock loop swept-frequency synchronization</td>
<td>M-PS-696</td>
<td>B68-10423</td>
</tr>
<tr>
<td>Detector measures power in 50 to 30,000 GHz radiation band</td>
<td>EBC-26</td>
<td>B66-10585</td>
</tr>
<tr>
<td>SUBJECT INDEX</td>
<td>BUFFERS</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>Optical superheterodyne receiver uses laser for local oscillator</td>
<td>N-P3-1605</td>
<td>B66-10584</td>
</tr>
<tr>
<td>High frequency wide-band transformer uses coax to achieve high turn ratio and flat response</td>
<td>ARG-107</td>
<td>B66-10600</td>
</tr>
<tr>
<td>Shortened horn-reflector antenna</td>
<td>GSFC-502</td>
<td>B67-10017</td>
</tr>
<tr>
<td>Dielectric prisms would improve performance of quasi-optical microwave components</td>
<td>ZRC-10011</td>
<td>B67-10416</td>
</tr>
<tr>
<td>Broadband choke suppresses spurious currents in antenna structure</td>
<td>MSC-10013</td>
<td>B67-10675</td>
</tr>
<tr>
<td>Solid state high-voltage pulser operates with low supply voltage</td>
<td>S-P3-14034</td>
<td>B60-10308</td>
</tr>
<tr>
<td>Multilayer infrared beamsplitter film system</td>
<td>XGS-11036</td>
<td>B69-10260</td>
</tr>
<tr>
<td>BROADCASTING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey of man-made electrical noise affecting radio broadcasting</td>
<td>HQ-10290</td>
<td>B69-10308</td>
</tr>
<tr>
<td>System converts slow-scan to standard fast-scan TV signals</td>
<td>MSC-90534</td>
<td>B69-10748</td>
</tr>
<tr>
<td>BRONZE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone purification of potassium chloride</td>
<td>AGO-10377</td>
<td>B69-10241</td>
</tr>
<tr>
<td>Synthesis of perbromates</td>
<td>AGO-10459</td>
<td>B69-10647</td>
</tr>
<tr>
<td>BRONZES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermally conductive metal wool-silicone rubber material can be used as shock and vibration damper</td>
<td>JPL-321</td>
<td>B63-10207</td>
</tr>
<tr>
<td>Repairable, high-density microelectronic module provides effective heat sink</td>
<td>S-P3-13075</td>
<td>B67-10356</td>
</tr>
<tr>
<td>Diffusion bond method of joining steel and a TFE-bronze composite</td>
<td>S-P3-20422</td>
<td>B69-10237</td>
</tr>
<tr>
<td>Self-lubricating gear</td>
<td>S-P3-14971</td>
<td>B69-10408</td>
</tr>
<tr>
<td>Precisely repeatable rotary mechanism</td>
<td>NPO-10679</td>
<td>B69-10696</td>
</tr>
<tr>
<td>BRUSHES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved molybdenum disulfide-silver motor brushes have extended life</td>
<td>S-P3-64</td>
<td>B63-10479</td>
</tr>
<tr>
<td>Contact stresses calculated for miniature slip rings</td>
<td>S-P3-290</td>
<td>E65-10098</td>
</tr>
<tr>
<td>BUBBLE CHAMBERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cryogenic seal remains leaktight during thermal displacement</td>
<td>ARG-96</td>
<td>B67-10134</td>
</tr>
<tr>
<td>Cryogenic liquid level measuring probe</td>
<td>ARG-10138</td>
<td>B68-10291</td>
</tr>
<tr>
<td>BUBBLES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrument calibrates low gas-rate flowmeters</td>
<td>MSC-134</td>
<td>B65-10137</td>
</tr>
<tr>
<td>Reducing bubbles in glass coatings improves electrical breakdown strength</td>
<td>LEWIS-10278</td>
<td>B68-10214</td>
</tr>
<tr>
<td>Dynamics of moving bubbles in single and binary component systems</td>
<td>N-P3-14845</td>
<td>B68-10339</td>
</tr>
<tr>
<td>Determining gas leakage from bubble formations</td>
<td>N-P3-14841</td>
<td>B68-10393</td>
</tr>
<tr>
<td>Cryogenic fluid flow instabilities in heat exchangers</td>
<td>N-P3-20433</td>
<td>B69-10541</td>
</tr>
<tr>
<td>A method for using surface tension to determine the size of holes in hardware</td>
<td>MSC-15194</td>
<td>B69-10595</td>
</tr>
<tr>
<td>BUCKLING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis of stability-critical orthotropic cylinders subjected to axial compression</td>
<td>N-P3-12869</td>
<td>B67-10375</td>
</tr>
<tr>
<td>Heavy-gage bonded honeycomb sandwich as primary load-bearing structure</td>
<td>N-P3-12060</td>
<td>B67-10427</td>
</tr>
<tr>
<td>Buckling strength of filament-wound cylinders under axial compression is investigated</td>
<td>MQ-10032</td>
<td>B67-10659</td>
</tr>
<tr>
<td>Static structural analysis of shell-type structures</td>
<td>MSC-11555</td>
<td>B68-10066</td>
</tr>
<tr>
<td>Computer program analyzes Buckling Of Shells Of Revolution with various wall constructions, BOSOR</td>
<td>LANGLEY-10290</td>
<td>B68-10226</td>
</tr>
<tr>
<td>Buckling Of Shells Of Revolution /BOSOR/ with various wall constructions</td>
<td>LANGLEY-10441</td>
<td>B69-10300</td>
</tr>
<tr>
<td>BUDGETING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probabilistic approach to long range planning of manpower</td>
<td>NRC-11524</td>
<td>B67-10510</td>
</tr>
<tr>
<td>LABCON - Laboratory Job Control program</td>
<td>N-P3-18141</td>
<td>B69-10106</td>
</tr>
<tr>
<td>BUFFER STORAGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital-to-analog converter operates from low level inputs</td>
<td>JPL-907</td>
<td>B67-10357</td>
</tr>
<tr>
<td>Simultaneous message framing and error detection</td>
<td>MSC-12001</td>
<td>B68-10330</td>
</tr>
<tr>
<td>Encode/Decode facility for FORTRAN 4</td>
<td>ARG-10335</td>
<td>B69-10169</td>
</tr>
<tr>
<td>ECH synchronization by word stuffing</td>
<td>NPO-10688</td>
<td>B69-10695</td>
</tr>
<tr>
<td>BUFFERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased performance reliability obtained with dual /redundant/ oscillator system</td>
<td>GSFC-36</td>
<td>B63-10027</td>
</tr>
<tr>
<td>Intermediate rotating ring improves reliability of dynamic shaft seal</td>
<td>N-P3-575</td>
<td>B66-10197</td>
</tr>
<tr>
<td>Field effect transistors improve buffer amplifier</td>
<td>N-P3-915</td>
<td>B67-10334</td>
</tr>
<tr>
<td>Analog buffer isolates high impedance source from low impedance load</td>
<td>N-P3-13461</td>
<td>B67-10584</td>
</tr>
</tbody>
</table>
BUFFERS (CHEMISTRY)

BUFFERS (CHEMISTRY) Improved pH buffering agent for sodium hypochlorite MSC-15443 B69-10084 03

BUILDINGS Computer program conducts facilities utilization and occupancy survey NPO-10438 B68-10137 06

BULBS An improved atomic hydrogen frequency and time standard GSFC-10766 B69-10341 02

BULBHEADS Composite bulkhead fabrication development N-FS-1264 B66-10582 05

PORTABLE fixture facilitates pressure testing of instrumentation fittings N-FS-2032 B67-10121 03

Computer program performs rectangular fitting stress analysis N-FS-13010 B67-10520 06

Explosive-train initiated through solid bulkhead by pressure cartridge MSC-11395 B67-10589 03

BUBBLES Compact retractor protects cabling loops N-FS-561 B66-10018 05

BUBBLANCY Compact assembly generates plastic foam, inflates flotation bag LANGLY-96 B65-10090 05

Organic reactants rapidly produce plastic foam LANGLY-37 B65-10250 03

Device without electrical connections in tank measures liquid level WOO-235 B66-10198 01

Hydrostatic force used to handle oversized, heavy objects HQ-50 B67-10167 05

Pneumatic raft automatically reforms after rupture of buoyant member MSC-11562 B68-10011 05

BOOTS Oceanborne transponder platform has good stability N-FS-171 B65-10035 05

BOUTETTES Instrument calibrates low gas-rate flowmeters MSC-134 B65-10137 01

BURNERS Heated die facilitates tungsten forging LEWIS-251 B66-10047 05

BURNING RATE Burn-rate testing apparatus MSC-10947 B69-10740 03

BURNING TIME Fortran 4 program for two-impulse rendezvous analysis N-FS-13971 B67-10479 06

Control jet placement on spacecraft MSC-13365 B69-10671 01

BURNOUT Lamp automatically switches to new filament on burnout N-FS-698 B66-10046 01

BUS CONDUCTORS Solar cell submodule design facilitates assembly of lightweight arrays JPL-728 B66-10231 02

C CABLES

Clamp provides efficient connection for high-density currents N-FS-2417 B67-10140 01

BUFFERS Expandable insert serves as screw anchor MSC-301 B66-10132 05

Mounting facilitates removal and installation of flame-detector rods N-FS-555 B66-10150 05

Technique for anchoring fasteners to honeycomb panels LEWIS-10888 B69-10265 03

An improved method for electrical cable terminations NPO-10694 B69-10327 01

BUTADIENE Surfactant for dye-penetrant inspection is insensitive to liquid oxygen N-FS-675 B66-10131 03

Dispensing graduate for butadiene NPO-10076 B68-10524 03

BUTE JOINTS Welds chilled by liquid coolant manifold N-FS-679 B66-10354 05

Quick-acting backup tool for welding ducts N-FS-18404 B69-10396 05

Pressure-control purge panel for automatic butt welding N-FS-18465 B69-10403 05

BUTTERFLY VALVES Electropneumatic transducer automatically limits motor current LEWIS-253 B66-10160 01

Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment NMC-10083 B67-10350 03

BUTTONS Pocket-sized tone-modulated FM transmitter NPO-11180 B69-10725 01

BY-PRODUCTS Neutron irradiation of Am-241 effectively produces curium ARG-10030 B67-10501 03

BYPASSES Mounting method improves electrical and vibrational characteristics of screen electrodes N-FS-20165 B69-10097 01

C C BAND

Low-loss C-band parasitic probe KSC-09348 B69-10251 01

CABLES Shrinkable sleeve eliminates shielding gap in B7 cable WOO-207 B65-10387 01

Electrical cabling withstands severe environmental conditions N-FS-1585 B66-10427 01

Adhesive for polyester films cures at room temperature, has high initial tack N-FS-938 B66-10487 03

Logic circuitry used to automatically test shielded cables HQ-69 B66-10659 01

Multipurpose instrumentation cable provides

I-66
### SUBJECT INDEX

<table>
<thead>
<tr>
<th>Subject</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integral thermocouple circuit</td>
<td>B67-10046 01</td>
</tr>
<tr>
<td>Protected, high-temperature connecting cable</td>
<td>B67-10461 01</td>
</tr>
<tr>
<td>Experimental prediction of performance by superconducting cables</td>
<td>ARG-10215 B67-10161 01</td>
</tr>
<tr>
<td>Tools for applying lead tape to flat conductor cabling for chemical stripping</td>
<td>MB-FS-20429 B67-10190 05</td>
</tr>
<tr>
<td>Simple test indicates degree of cure of polyimide coatings</td>
<td>MSC-15487 B67-10461 03</td>
</tr>
<tr>
<td>Improved ferrous shielding for flat cables</td>
<td>MB-FS-18524 B67-10401 01</td>
</tr>
<tr>
<td>Generation of sonic power during welding</td>
<td>MB-FS-20339 B67-10404 05</td>
</tr>
<tr>
<td>Checking flat conductor cable spacing by means of a moire pattern</td>
<td>MB-FS-20426 B69-10456 05</td>
</tr>
<tr>
<td>Technique simulates effect of reduced gravity</td>
<td>LANGLER-64 B67-10146 04</td>
</tr>
<tr>
<td>Machine tests crease durability of sheet materials</td>
<td>JPL-604 B67-10178 05</td>
</tr>
<tr>
<td>Threading hook facilitates safe recovery of heavy loads</td>
<td>MSC-46 B67-10185 05</td>
</tr>
<tr>
<td>Spring loaded bended cable makes efficient wire puller</td>
<td>WOO-108 B67-10031 05</td>
</tr>
<tr>
<td>Extendible column can be stowed on drum</td>
<td>JPL-686 B67-10191 05</td>
</tr>
<tr>
<td>Mechanisms continuously measures static and dynamic cable loads</td>
<td>BSC-217 B67-10107 05</td>
</tr>
<tr>
<td>Tool enables proper mating of acclerometer and cable connector</td>
<td>MB-FS-611 B67-10208 05</td>
</tr>
<tr>
<td>Emergency escape system uses self-braking mechanism on fixed cable</td>
<td>KSC-66-44 B67-10575 05</td>
</tr>
<tr>
<td>Carriage system remotely moves drawer over extended distance</td>
<td>MB-0092 B67-10711 05</td>
</tr>
<tr>
<td>Post-stressed concrete foundation may reduce machinery vibration</td>
<td>ARG-130 B67-10237 05</td>
</tr>
<tr>
<td>Improved control system power unit for large parachutes</td>
<td>MSC-12052 B67-10677 05</td>
</tr>
<tr>
<td>Quick-attach clamp</td>
<td>XFR-05421 B68-10250 05</td>
</tr>
<tr>
<td>Pyrotechnic-actuated cable release</td>
<td>XNP-10489 B67-10535 05</td>
</tr>
<tr>
<td>Proposed technique for vertical alignment of a crane’s cable</td>
<td>MB-FS-16496 B67-10202 05</td>
</tr>
<tr>
<td>An improved method for electrical cable terminations</td>
<td>MPO-10694 B67-10327 01</td>
</tr>
<tr>
<td>Automatic leveling and equalizing hoist device</td>
<td>MB-FS-16549 B69-10514 05</td>
</tr>
</tbody>
</table>

### CABLES (ROPES)

| Technique simulates effect of reduced gravity | LANGLER-64 B67-10146 04 |
| Machine tests crease durability of sheet materials | JPL-604 B67-10178 05 |
| Threading hook facilitates safe recovery of heavy loads | MSC-46 B67-10185 05 |
| Spring loaded bended cable makes efficient wire puller | WOO-108 B67-10031 05 |
| Extendible column can be stowed on drum | JPL-686 B67-10191 05 |
| Mechanisms continuously measures static and dynamic cable loads | BSC-217 B67-10107 05 |
| Tool enables proper mating of acclerometer and cable connector | MB-FS-611 B67-10208 05 |
| Emergency escape system uses self-braking mechanism on fixed cable | KSC-66-44 B67-10575 05 |
| Carriage system remotely moves drawer over extended distance | MB-0092 B67-10711 05 |
| Post-stressed concrete foundation may reduce machinery vibration | ARG-130 B67-10237 05 |
| Improved control system power unit for large parachutes | MSC-12052 B67-10677 05 |
| Quick-attach clamp | XFR-05421 B68-10250 05 |
| Pyrotechnic-actuated cable release | XNP-10489 B67-10535 05 |
| Proposed technique for vertical alignment of a crane’s cable | MB-FS-16496 B67-10202 05 |
| An improved method for electrical cable terminations | MPO-10694 B67-10327 01 |
| Automatic leveling and equalizing hoist device | MB-FS-16549 B69-10514 05 |

### CABLES (ROPES)

| Technique simulates effect of reduced gravity | LANGLER-64 B67-10146 04 |
| Machine tests crease durability of sheet materials | JPL-604 B67-10178 05 |
| Threading hook facilitates safe recovery of heavy loads | MSC-46 B67-10185 05 |
| Spring loaded bended cable makes efficient wire puller | WOO-108 B67-10031 05 |
| Extendible column can be stowed on drum | JPL-686 B67-10191 05 |
| Mechanisms continuously measures static and dynamic cable loads | BSC-217 B67-10107 05 |
| Tool enables proper mating of acclerometer and cable connector | MB-FS-611 B67-10208 05 |
| Emergency escape system uses self-braking mechanism on fixed cable | KSC-66-44 B67-10575 05 |
| Carriage system remotely moves drawer over extended distance | MB-0092 B67-10711 05 |
| Post-stressed concrete foundation may reduce machinery vibration | ARG-130 B67-10237 05 |
| Improved control system power unit for large parachutes | MSC-12052 B67-10677 05 |
| Quick-attach clamp | XFR-05421 B68-10250 05 |
| Pyrotechnic-actuated cable release | XNP-10489 B67-10535 05 |
| Proposed technique for vertical alignment of a crane’s cable | MB-FS-16496 B67-10202 05 |
| An improved method for electrical cable terminations | MPO-10694 B67-10327 01 |
| Automatic leveling and equalizing hoist device | MB-FS-16549 B69-10514 05 |

### CALCIUM

| Lightweight aluminum casting alloy is useful at cryogenic temperatures | MB-FS-267 B65-10095 03 |
| Weldable aluminum alloy has improved mechanical properties | MB-FS-293 B66-10045 03 |
| Use of steel and tantalum apparatus for molten Cd-Mg-Zn alloys | ARG-199 B66-10594 03 |
| Abraded cadmium-plated cable connectors repaired by conversion coating | MB-FS-1824 B67-10014 03 |
| Frangible electrochemical cell and sealing technique | XGC-10010 B69-10056 01 |
| Reduction by monovalent zinc, cadmium, and nickel cations | ARG-10328 B67-10170 03 |
| Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid | GSPC-1076 B66-10227 05 |
| Induction probe determines levels of liquid metals | ARG-10348 B69-10056 03 |
| Literature review on pickling inhibitors and cadmium electroplating processes | MB-FS-18421 B69-10606 03 |

### CADMIUM SULFIDES

| Photoelectric sensor output controlled by eyeball movements | MB-FS-276 B65-10079 01 |
| Thick-film semiconductor rectifier has improved properties | BSC-207 B66-10012 01 |
| Improved radiographic image amplifier panel | MB-FS-18522 B69-10363 02 |

### CADMIUM SULFIDES

| Photoelectric sensor output controlled by eyeball movements | MB-FS-276 B65-10079 01 |
| Thick-film semiconductor rectifier has improved properties | BSC-207 B66-10012 01 |
| Improved radiographic image amplifier panel | MB-FS-18522 B69-10363 02 |

### CALCITE

| Electro-optic modulator for infrared laser using gallium arsenide crystal | GSPC-10686 B66-10255 02 |
| Technique developed for measuring transmittance of optical birefringent networks | MB-FS-14267 B69-10476 01 |

### CALCITE

| Electro-optic modulator for infrared laser using gallium arsenide crystal | GSPC-10686 B66-10255 02 |
| Technique developed for measuring transmittance of optical birefringent networks | MB-FS-14267 B69-10476 01 |

### CECIUM

| Image of a metal substrate reduced to form metal-oxide-metal layer structure | ARG-130 B67-10208 05 |

### CECIUM

| Image of a metal substrate reduced to form metal-oxide-metal layer structure | ARG-130 B67-10208 05 |

### CECIUM

| Image of a metal substrate reduced to form metal-oxide-metal layer structure | ARG-130 B67-10208 05 |

### CECIUM

| Image of a metal substrate reduced to form metal-oxide-metal layer structure | ARG-130 B67-10208 05 |

---

**I-67**
Device induces lungs to maintain known constant pressure
MSC-50  B64-10108  04
Attachment converts microscope to point source autocollimator
JPL-499  B64-10124  05
Ball bearing used in design of rugged flowmeter
LEWIS-159  B64-10170  05
Master linearity of video cameras calibrated with precision tester
GSFC-200  B64-10209  01
Micro machining produces optical apertures to micro dimensions
GSFC-206  B64-10211  05
Explosives actuate nonmagnetic indexing device
GSFC-237  B64-10211  05
Seismic transducer measures small horizontal displacements
N-PS-81  B65-10029  05
Gage measures electrical connector pin retention force
JPL-SC-071  B65-10034  03
Metal diaphragm used to calibrate miniature transducers
N-PS-207  B65-10059  01
Fuel cell serves as oxygen level detector
JPL-SC-072  B65-10066  01
Instrumnet calibrates low gas-rate flowmeters
MSC-134  B65-10137  01
Simple device produces accelerometer calibration pulse
N-PS-363  B65-10269  01
Inflatable bladder provides accurate calibration of pressure switch
N-PS-367  B65-10279  01
Volumetric system calibrates meters for large flow rates
WOO-130  B65-10323  05
Baking enables McLeod gauge to measure in ultrahigh vacuum range
GSFC-440  B65-10329  01
Noncontacting vibration transducer has constant sensitivity
LANGLEY-99  B65-10392  01
PTFE-aluminun films serve as neutral density filters
LANGLEY-189  B66-10017  02
Pressure transducers dynamically tested with sinusoidal pressure generator
LEWIS-268  B66-10031  01
Flowmeters measure low gas-flow rates
N-PS-215  B66-10036  01
Calibrated clamp facilitates pressure application
MSC-298  B66-10059  05
Transmission system isolates pressure transducer from severe environment
WOO-239  B66-10064  01
Hot-wire detector for chemically active materials used in gas chromatography
MSC-269  B66-10139  03
Adjustable knife cuts honeycomb material to specified depth
MSC-475  B66-10237  05
Freon provides heat transfer for solid CO2
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>CALIBRATING CONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>calibration standard</td>
<td>A calibration means for spectrum analyzers</td>
</tr>
<tr>
<td>B66-10257 02</td>
<td>MSC-10987 B67-10254 01</td>
</tr>
<tr>
<td>extensometer automatically measures elongation in elastomers</td>
<td>Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi</td>
</tr>
<tr>
<td>B66-10284 05</td>
<td>MSC-10067 B67-10263 01</td>
</tr>
<tr>
<td>simple scale interpolator facilitates reading of graphs</td>
<td>Electronic test instrument generates extremely small current signals</td>
</tr>
<tr>
<td>LEWIS-92 B66-10302 05</td>
<td>ABS-276 B67-10318 01</td>
</tr>
<tr>
<td>flexible arms provide constant force for pressure switch calibration</td>
<td>device enables calibration of microphones at high sound pressure levels</td>
</tr>
<tr>
<td>EQ-38 B66-10317 05</td>
<td>B67-10336 01</td>
</tr>
<tr>
<td>solvent residue content measured by light scattering technique</td>
<td>digital-to-analog converter operates from low level inputs</td>
</tr>
<tr>
<td>B66-10320 01</td>
<td>JPL-907 B67-10357 01</td>
</tr>
<tr>
<td>dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio</td>
<td>movable RF probe eliminates need for calibration in plasma accelerators</td>
</tr>
<tr>
<td>GSPC-509 B66-10347 01</td>
<td>LEWIS-10127 B67-10362 01</td>
</tr>
<tr>
<td>plant respirometer enables high resolution of oxygen consumption rates</td>
<td>electron beam parallel X-ray generator</td>
</tr>
<tr>
<td>EQ-47 B66-10406 04</td>
<td>MSC-11022 B67-10372 02</td>
</tr>
<tr>
<td>rectilinear accelerometer possesses self-calibration feature</td>
<td>circuit automatically calibrates flowmeter against liquid-level gage reference</td>
</tr>
<tr>
<td>B66-10452 01</td>
<td>M-PS-2194 B67-10376 01</td>
</tr>
<tr>
<td>high voltage potential divider calibrated by simple device</td>
<td>flowmeter determines mix ratio for viscous adhesives</td>
</tr>
<tr>
<td>ARG-83 B66-10497 01</td>
<td>B67-10370 01</td>
</tr>
<tr>
<td>pyroscopy handbook describes practical aspects of surface temperature measurements of opaque materials</td>
<td>modified blackbody device emits high-density radiation</td>
</tr>
<tr>
<td>LEWIS-349 B66-10520 01</td>
<td>B67-10388 02</td>
</tr>
<tr>
<td>design concept for pressure switch calibrator</td>
<td>multiplexer uses insulated gate-field effect transistors</td>
</tr>
<tr>
<td>HQ-36 B66-10598 01</td>
<td>B67-10396 01</td>
</tr>
<tr>
<td>volume-ratio calibration system for vacuum gages</td>
<td>automatic telemetry checkout system</td>
</tr>
<tr>
<td>LEWIS-303 B66-10640 01</td>
<td>E-PS-12580 B67-10402 01</td>
</tr>
<tr>
<td>three-axis attitude and direction reference instrument has only one moving part</td>
<td>infrared radiometer</td>
</tr>
<tr>
<td>B66-10644 01</td>
<td>B67-10422 01</td>
</tr>
<tr>
<td>blackbody cavity radiometer has rapid response</td>
<td>ultrasanics used to measure residual stress</td>
</tr>
<tr>
<td>JPL-521 B66-10679 01</td>
<td>B67-10428 02</td>
</tr>
<tr>
<td>study of hot wire techniques in low density flows with high turbulence levels</td>
<td>automatic testing device facilitates noise checks and electronic calibrations</td>
</tr>
<tr>
<td>B66-10687 01</td>
<td>LEWIS-10173 B67-10467 01</td>
</tr>
<tr>
<td>method accurately measures mean particle diameters of monodisperse polystyrene latexes</td>
<td>transient sensor development</td>
</tr>
<tr>
<td>ARG-207 B67-10054 02</td>
<td>B67-10370</td>
</tr>
<tr>
<td>system enables more complete calibrations of dynamic-pressure transducers</td>
<td>computer program reduces and provides profile plot of surface plate calibration data</td>
</tr>
<tr>
<td>E-PS-2063 B67-10099 01</td>
<td>B67-103866 B67-10492 06</td>
</tr>
<tr>
<td>calibrating ultrasonic test equipment for checking thin metal strip stock</td>
<td>performance of turbine-type flowmeters in liquid hydrogen</td>
</tr>
<tr>
<td>NUC-10059 B67-10127 01</td>
<td>LEWIS-10137 B67-10506 01</td>
</tr>
<tr>
<td>a theoretical model for determining turbine flowmeter sensitivity</td>
<td>precision triaxial aids in preparing biomedical specimen blocks for ultrathin sectioning</td>
</tr>
<tr>
<td>E-PS-1172 B67-10179 01</td>
<td>ABS-242 B67-10541 05</td>
</tr>
<tr>
<td>technique for strip chart recorder time notation</td>
<td>calibration technique for electromagnetic flowmeters</td>
</tr>
<tr>
<td>GSPC-473 B67-10196 01</td>
<td>LEWIS-10328 B67-10554 01</td>
</tr>
<tr>
<td>a phonocardiogram simulator</td>
<td>reflectometer for receiver input system</td>
</tr>
<tr>
<td>ESC-67-94 B67-10239 01</td>
<td>FPO-10843 B67-10657 01</td>
</tr>
<tr>
<td>analytical technique characterizes all trace contaminants in water</td>
<td>high-pressure gas facilitates calibration of turbine flowmeters for liquid hydrogen</td>
</tr>
<tr>
<td>B67-10243 03</td>
<td>LEWIS-10462 B67-10145 01</td>
</tr>
<tr>
<td></td>
<td>absolute low-pressure calibration system</td>
</tr>
<tr>
<td></td>
<td>B67-10305 B67-10160 02</td>
</tr>
<tr>
<td></td>
<td>liquid crystal calibrator</td>
</tr>
<tr>
<td></td>
<td>B67-10151 B68-10221 03</td>
</tr>
</tbody>
</table>

I-69
Harmonic distortion analyzer speeds setup of magnetic tape recorders
GSPC-10198 B66-10254 01

Conceptual dead weight device to provide pressure calibration
M-FS-14672 B66-10264 01

Computer graphics data conditioning
M-FS-14695 B66-10296 06

Modified sine bar device measures small angles with high accuracy
GSPC-438 B68-10264

Experiments with ceramic coatings
M-FS-18150 B68-10355 03

Detection of effect of deposits on optical windows of pyrometer measurements
LEWIS-10366 B68-10367 01

System measures response time of photomultiplier tubes
LEWIS-10437 B68-10382 01

Automatic calibration system for pressure transducers
M-PF-20127 B68-10412 01

Automatic calibration apparatus for telemetry systems
NPS-10560 B68-10514 01

Dispensing graduate for butadiene
NPS-10070 B68-10524 03

Calibrated water tank facilitates proof-loading of cranes and derricks
M-FS-15059 B69-10109 05

Surface temperature mapping with infrared photographic pyrometry
LEWIS-10763 B69-10113 01

Mossbauer vibration calibration systems evaluated
M-FS-20014 B69-10125 01

Calibration of a resistance thermometer down to 0.04 degrees K
ARG-10318 B69-10149 01

Direct reading of electrocardiograms and respiration rates
KSC-10233 B69-10188 04

Detecting hydrogen-containing contaminants on metal surfaces
N-FS-20456 B69-10192 03

Remote control thermal actuator
LEWIS-10873 B69-10307 01

The effect of mismatched components on microwave noise-temperature calibrations
NPS-11163 B69-10333 01

Thermal calibration target
LEWIS-10714 01

A compact rotary vane attenuator
M-FS-10562 B69-10427 01

Calibratable solid-state pressure switch
M-FS-20474 B69-10437 05

The Quetsyn, an improved quantum detector
ERC-10148 B69-10443 01

Calibration standard for dynamic evaluation of a profile-plotter
M-FS-16476 B69-10458 05

Nondestructive determination of cohesive strength of adhesive-bonded composites
M-FS-20397 B69-10464 03

Adjustable thermal tree
MSC-15556 B69-10484 01

Radiometric temperature reference
MSC-13276 B69-10507 01

Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ARG-90267 B69-10621 01

Design of printed circuit coils
NQ-10431 B69-10665 01

Natural gas flow through critical nozzles
LEWIS-11031 B69-10712 02

Vacuum gage calibration system for 10 to the minus 8th power to 10 torr
LEWIS-11032 B69-10713 01

A simple electrometer for measuring small photoelectric currents
GSPC-10603 B69-10734 01

Dynamic calibration of turbine flowmeters
LEWIS-11014 B69-10764 01

CALIFORNIA
Transplutonium elements processed from rock debris of underground detonations
ARG-10222 B69-10054 03

CALORIMETERS
Probe measures characteristics of hot gas stream
NFS-240 B65-10133 02

Servo calorimeter measures material heating rate
NU-0024 B65-10247 01

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSPC-422 B66-10051 01

Calorimeter accurately measures thermal radiation energy
LANGLEY-173 B66-10058 02

Accurate depth control provided for thermocouple junction locations
LANGLEY-269 B66-10632 01

Instrument accurately measures small temperature changes on test surface
LANGLEY-176 B66-10637 01

Sensing disks for slug-type calorimeters have higher temperature stability
N-FS-1067 B67-10161 01

Fast-acting calorimeter measures heat output of plasma gun accelerator
LEWIS-388 B67-10192 01

Movable RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127 B67-10362 01

Calibration technique for electromagnetic flowmeters
LEWIS-10328 B67-10554 01

Study of thermal effects on nickel-cadmium batteries
GSPC-10003 B67-10614 01

Improved calorimeter provides accurate thermal measurements of space batteries
GSPC-10003A B67-10615 01

Twin solution calorimeter determines heats of formation of alloys at high temperatures
ARG-10114 B68-10083 01

Electronic calorimetric computer
LEWIS-90254 B68-10130 01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>CAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady-state differential calorimeter measures gamma heating in reactor</td>
<td>B68-10182 01</td>
</tr>
<tr>
<td>Isothermal drop calorimeter provides measurements for alpha active, pyrophoric materials</td>
<td>B69-10002 02</td>
</tr>
<tr>
<td>Automated measurement of thermal conductivity</td>
<td>B69-10283 03</td>
</tr>
<tr>
<td>Automatic calorimetry system monitors RF power</td>
<td>B69-10384 01</td>
</tr>
<tr>
<td>CAMBERED WINGS</td>
<td>Modified Multihopp mean camber computer program</td>
</tr>
<tr>
<td>CAMERA SHUTTERS</td>
<td>Electronically operated camera shutter provides uniform exposure</td>
</tr>
<tr>
<td>Camera shutter is actuated by electric signal</td>
<td>ABC-20 B63-10560 05</td>
</tr>
<tr>
<td>Simple optical system used to align spectrophotometer</td>
<td>LANGLEY-92 B65-10071 02</td>
</tr>
<tr>
<td>Electronic shutter gates image orthicon on and off</td>
<td>EQ-96 B67-10270 01</td>
</tr>
<tr>
<td>Fluorescent particles enable visualization of gas flow</td>
<td>B-FS-14583 B68-10259 02</td>
</tr>
<tr>
<td>High-speed pulse camera</td>
<td>BSC-11353 B68-10329 02</td>
</tr>
<tr>
<td>A prototype high power portable lamp</td>
<td>B-FS-20229 B69-10189 02</td>
</tr>
<tr>
<td>CAMERA TUBES</td>
<td>Electronically operated camera shutter provides uniform exposure</td>
</tr>
<tr>
<td>Faster linearity of video cameras calibrated with precision tester</td>
<td>GSPC-200 B64-10209 01</td>
</tr>
<tr>
<td>Temperature-compensation circuit stabilizes performance of vidicons</td>
<td>JPL-486 B64-10226 01</td>
</tr>
<tr>
<td>Design concept for improved photo-scan tube</td>
<td>JFL-616 B67-10157 01</td>
</tr>
<tr>
<td>New camera tube improves ultrasonic inspection system</td>
<td>ABC-90237 B68-10088 01</td>
</tr>
<tr>
<td>Technique increases storage capacity in camera tube target</td>
<td>BSC-11599 B68-10213 01</td>
</tr>
<tr>
<td>Mounting method improves electrical and vibrational characteristics of screen electrodes</td>
<td>B-PF-20169 B69-10097 01</td>
</tr>
<tr>
<td>CAMERAS</td>
<td>System selects framing rate for spectrograph camera</td>
</tr>
<tr>
<td>Planetary camera control improves microfiche production</td>
<td>EQ-1 B65-10313 01</td>
</tr>
<tr>
<td>Modified procedure speeds camera copy layout for offset printing</td>
<td>GSPC-424 B65-10373 02</td>
</tr>
<tr>
<td>Beam splitter used in dual filming technique</td>
<td>H-FS-501 B66-10072 02</td>
</tr>
<tr>
<td>Gas pressure feeds film into camera at high speed</td>
<td>ABC-97 B66-10074 02</td>
</tr>
<tr>
<td>Photographic method measures particle size and velocity in fluid stream</td>
<td>H-FS-1356 B66-10680 01</td>
</tr>
<tr>
<td>Improved head-controlled TV system produces high-quality remote image</td>
<td>ABC-128 B67-10317 01</td>
</tr>
<tr>
<td>Aerial-image enables diagrams and animation to be inserted in motion pictures</td>
<td>ABC-165 B67-10398 02</td>
</tr>
<tr>
<td>Camera lens adapter magnifies image</td>
<td>B-FS-11955 B67-10831 02</td>
</tr>
<tr>
<td>Method for X-ray study under extreme temperature and pressure conditions</td>
<td>NPO-11232 B67-10474 02</td>
</tr>
<tr>
<td>Rocket engine nozzle photographic system</td>
<td>NFO-10174 B68-10113 02</td>
</tr>
<tr>
<td>Method of making conical fiber optical components</td>
<td>WFS-09745 B69-10020 02</td>
</tr>
<tr>
<td>Electronic visualization of gas bearing behavior</td>
<td>LEWIS-10711 B69-10073 01</td>
</tr>
<tr>
<td>Surface temperature mapping with infrared photographic pyrometry</td>
<td>LEWIS-10763 B69-10113 01</td>
</tr>
<tr>
<td>Camera mount for close-up stereo photographs</td>
<td>LANGLEY-10442 B69-10226 02</td>
</tr>
<tr>
<td>An infrared television system for hydrogen flame detection</td>
<td>KSC-10368 B69-10394 01</td>
</tr>
<tr>
<td>Improved camera for better X-ray powder photographs</td>
<td>HQ-10428 B69-10537 01</td>
</tr>
<tr>
<td>Electrooptical scanning of film</td>
<td>NPO-11106 B69-10568 01</td>
</tr>
<tr>
<td>Long range holographic contour mapping concept</td>
<td>HQ-10350 B69-10700 02</td>
</tr>
<tr>
<td>CAMS</td>
<td>Coincident switch closing reduces error in motor-driven timer</td>
</tr>
<tr>
<td>Camera shutter is actuated by electric signal</td>
<td>ABC-20 B63-10560 05</td>
</tr>
<tr>
<td>Speed-sensing device aids crane operators</td>
<td>WS-4 B64-10066 05</td>
</tr>
<tr>
<td>Metal-bending brake facilitates lightweight, close-tolerance fabrication</td>
<td>ABC-29 B64-10069 05</td>
</tr>
<tr>
<td>Cam-operated limit switch features safe fuse replacement</td>
<td>MBC-210 B65-10322 01</td>
</tr>
<tr>
<td>Respiratory transfer value has fail-safe feature</td>
<td>ABC-1 B65-10369 01</td>
</tr>
<tr>
<td>Braking mechanism is self actuating and bidirectional</td>
<td>H-FS-1299 B66-10484 05</td>
</tr>
<tr>
<td>Computer used to program numerically controlled milling machine</td>
<td></td>
</tr>
</tbody>
</table>
Cancer

- Eigh-performance RC bandpass filter is adapted to miniaturized construction
  B66-10309

- Astronaut’s tool for withdrawing/replacing computer cards
  M-PS-20453

- Neutron therapy of cancer
  ARS-10310

Canonical Forms

- Design techniques - Stochastic controllers
  MSC-11554

Cautious Beams

- Scoop attachment makes helicopter recoveries easier and safer
  MSC-130

- Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system
  ARC-73

- Identification and evaluation of linear damping models in beam vibrations
  ARS-10275

Cautious Members

- Heat exchanger tubes supported in high vibration environment
  M-PS-1407

- Swing-out rail system separates overhead crane rails
  NU-0094

- Conceptual dead weight device to provide pressure calibration
  M-PS-14672

Capacitance

- Welded pressure transducer made as small as 1/8th-inch in diameter
  ARC-11

- Economical fabrication process produces high quality junction transistors
  JPL-SC-065

- Circuit improvement produces monostable multivibrator with load-carrying capability
  GSPC-34A

- FM oscillator uses tetrode transistor
  JPL-92

- Vibrating-membrane electrometer has high conversion gain
  ARC-38

- Thin-film resistors used in functional electronic blocks
  GSPC-380

- Capacitive system detects and locates fluid leaks
  M-PS-478

- Low-power ring counter drives high-level loads
  GSPC-431

- Variable-capacitance tachometer eliminates troublesome magnetic fields
  GSPC-435

- Transducer measures force in vacuum environment
  LEWIS-218

- Large capacitor performs as a distributed parameter pulse line
  LEWIS-176

- High-performance RC bandpass filter is adapted to miniaturized construction
  B66-10309

- New computer program solves wide variety of heat flow problems
  B66-10404

- Solid-state switch increases switching speed
  WOO-298

- Miniature capacitive accelerometer is especially applicable to telemetry
  ARC-72

- Microcomputer preamplifier effectively compensates for input capacitance
  B66-10491

- Compound equation developed for postnatal growth of birds and mammals
  ABG-10192

- Solid-state switch increases switching speed
  ABC-60

- Neutron therapy of cancer
  ABG-10310

- Scoop attachment makes helicopter recoveries easier and safer
  MSC-130

- Electronic test instrument generates extremely small current signals
  ARG-276

- Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system
  ARC-73

- Miniature electrometer preamplifier effectively compensates for input capacitance
  B66-10549

- Electronic visualization of gas bearing behavior
  LEWIS-10711

- Capacitance-coupled wiper increases potentiometer life
  ARC-10060

- High-voltage pulse generator developed for wide-gap spark chambers
  ARS-10136

- Device for diode tuning in a stripline harmonic multiplier
  M-PS-20153

- Electronic visualization of gas bearing behavior
  LEWIS-10711

- Concept for a multifunctional oscilloscope probe
  M-PS-16390

- Circuit improvement produces monostable multivibrator with load-carrying capability
  GSPC-34A

- Remote control thermal actuator
  LEWIS-10873

- Engineering thermal analyzer
  B66-10760

Capacitance Switches

- Bandwidth switching is transient-free, avoids loss of loop lock
  WOO-054

- Improved sensor counts micrometeoroid penetrations
  LEWIS-76

- Circuit switches latching relay in response to signals of different polarity
  WOO-055

- Hot-air soldering technique prevents overheating of electrical components
  GSPC-91

- Unmanned seismometer levels self, corrects drift errors
  GSPC-100

- Transistorized trigger circuit is frequency-controllable
  GSPC-111

- High efficient square-wave oscillator
  WOO-054
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Capacitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSPC-112</td>
<td>LEWIS-178</td>
</tr>
<tr>
<td>B63-10554</td>
<td>B65-10255</td>
</tr>
<tr>
<td>Tiny sensor-transmitter can withstand extreme acceleration, gives digital output</td>
<td>Electrostatically driven dynamic capacitor employs capacitive feedback</td>
</tr>
<tr>
<td>ABC-22</td>
<td>JPL-771</td>
</tr>
<tr>
<td>Circuit controls transients in SCR inverters</td>
<td>Coaxial capacitor used to determine fluid density</td>
</tr>
<tr>
<td>GSPC-120</td>
<td>LEWIS-232</td>
</tr>
<tr>
<td>B63-10600</td>
<td>B65-10296</td>
</tr>
<tr>
<td>Nonstable circuit with tunnel diode has fast recovery</td>
<td>Electronic ampere-hour integrator is accurate to one percent</td>
</tr>
<tr>
<td>GSPC-132</td>
<td>GSPC-203</td>
</tr>
<tr>
<td>B63-10603</td>
<td>B65-10308</td>
</tr>
<tr>
<td>Low-power transistorized circuit provides staircase waveform</td>
<td>Electromagnetic hammer removes weld distortions from aluminum tanks</td>
</tr>
<tr>
<td>GSPC-48</td>
<td>K-FS-287</td>
</tr>
<tr>
<td>B64-10007</td>
<td>B65-10342</td>
</tr>
<tr>
<td>Efficient circuit triggers high-current, high-voltage pulses</td>
<td>Compact SCR trigger circuit for ignitron switch operates efficiently</td>
</tr>
<tr>
<td>MSC-14</td>
<td>B65-10347</td>
</tr>
<tr>
<td>B64-10024</td>
<td>B65-10347</td>
</tr>
<tr>
<td>Digital logic elements provide additional functions from analog input</td>
<td>Tazer diode controls switching of large direct currents</td>
</tr>
<tr>
<td>MSC-64</td>
<td>M-SC-186</td>
</tr>
<tr>
<td>B64-10064</td>
<td>B65-10350</td>
</tr>
<tr>
<td>Ring counter may be advanced or retarded by command signal</td>
<td>High-intensity flashing beacon powered by mercury cells</td>
</tr>
<tr>
<td>GSPC-109</td>
<td>LANGLEY-80</td>
</tr>
<tr>
<td>B64-10144</td>
<td>B65-10361</td>
</tr>
<tr>
<td>High-pass RF coaxial filter rejects dc and low frequency signals</td>
<td>Three-dimensional wire-mesh capacitor system measures fluid density</td>
</tr>
<tr>
<td>GSPC-73</td>
<td>WOC-194</td>
</tr>
<tr>
<td>B64-10173</td>
<td>B65-10379</td>
</tr>
<tr>
<td>Circuit converts AM signals to FM for magnetic recording</td>
<td>Variable-capacitance tachometer eliminates troublesome magnetic fields</td>
</tr>
<tr>
<td>GSPC-227</td>
<td>GSPC-435</td>
</tr>
<tr>
<td>B65-10001</td>
<td>B65-10126</td>
</tr>
<tr>
<td>Helical coaxial-resonator makes excellent RF filter</td>
<td>Mounting improves heat-sink contact with beryllia washer</td>
</tr>
<tr>
<td>GSPC-243</td>
<td>M-SC-194</td>
</tr>
<tr>
<td>B65-10012</td>
<td>B65-10144</td>
</tr>
<tr>
<td>Carbon arc ignition improved by simple auxiliary circuit</td>
<td>Large capacitor performs as a distributed parameter pulse line</td>
</tr>
<tr>
<td>MSC-103</td>
<td>LEWIS-176</td>
</tr>
<tr>
<td>B65-10018</td>
<td>B65-10291</td>
</tr>
<tr>
<td>Thermistor connector assembly increases accuracy of measurements</td>
<td>Tool forms right angles in component leads</td>
</tr>
<tr>
<td>LANGLEY-62</td>
<td>M-SC-722</td>
</tr>
<tr>
<td>B65-10045</td>
<td>B66-10346</td>
</tr>
<tr>
<td>Microparticle impact sensor measures energy directly</td>
<td>Basic suppression techniques are evaluated</td>
</tr>
<tr>
<td>GSPC-252</td>
<td>M-SC-867</td>
</tr>
<tr>
<td>B65-10048</td>
<td>B66-10449</td>
</tr>
<tr>
<td>Feedback oscillator functions as low-level pulse stretcher</td>
<td>Pulse generator using transistors and silicon controlled rectifiers produces high current pulses with fast rise and fall times</td>
</tr>
<tr>
<td>GSPC-261</td>
<td>MSC-405</td>
</tr>
<tr>
<td>B65-10069</td>
<td>B66-10456</td>
</tr>
<tr>
<td>Synchronized pulse generator needs no external power</td>
<td>Simple, one transistor circuit boosts pulse amplitude</td>
</tr>
<tr>
<td>GSPC-274</td>
<td>GSPC-501</td>
</tr>
<tr>
<td>B65-10172</td>
<td>B66-10480</td>
</tr>
<tr>
<td>Simple circuit functions as frequency discriminator for FM signals</td>
<td>Solid state circuit controls direction, speed, and braking of dc motor</td>
</tr>
<tr>
<td>GSPC-267</td>
<td>JPL-757</td>
</tr>
<tr>
<td>B65-10102</td>
<td>B66-10886</td>
</tr>
<tr>
<td>Improved magnetometer uses toroidal gaging coil</td>
<td>Electronic circuit delivers pulse of high interval stability</td>
</tr>
<tr>
<td>GSPC-249</td>
<td>MSC-673</td>
</tr>
<tr>
<td>B65-10103</td>
<td>B66-10501</td>
</tr>
<tr>
<td>Digital-output cardiostud vater measures rapid changes in heartbeat rate</td>
<td>Pulse stretcher has improved dynamic range and linearity</td>
</tr>
<tr>
<td>MSC-133</td>
<td>ABC-82</td>
</tr>
<tr>
<td>B65-10143</td>
<td>B66-10509</td>
</tr>
<tr>
<td>Circuit reduces distortion of FM modulator</td>
<td>Nonelectrolytic tantalum capacitors developed</td>
</tr>
<tr>
<td>GSPC-257</td>
<td>M-PS-1546</td>
</tr>
<tr>
<td>B65-10152</td>
<td>B66-10552</td>
</tr>
<tr>
<td>Voltage variable oscillator has high phase stability</td>
<td>MOSFET analog memory circuit achieves long duration signal storage</td>
</tr>
<tr>
<td>LANGLEY-123</td>
<td>K-FS-860</td>
</tr>
<tr>
<td>B66-10501</td>
<td>B66-10603</td>
</tr>
<tr>
<td>Voltage controlled oscillator is easily aligned, has low phase noise</td>
<td>Compact microwave mixer has high conversion efficiency</td>
</tr>
<tr>
<td>JPL-510</td>
<td>GSPC-197</td>
</tr>
<tr>
<td>B65-10204</td>
<td>B66-10625</td>
</tr>
<tr>
<td>Electrometer has automatic zero bias control</td>
<td>Power arc welder touch-started with consumable electrode</td>
</tr>
<tr>
<td>GSPC-350</td>
<td>K-FS-1485</td>
</tr>
<tr>
<td>B65-10242</td>
<td>B66-10641</td>
</tr>
</tbody>
</table>
| Boron trifluoride nuclear detector preamplifier uses single-cable connection | Thermocouples easily installed in hard-to-
CAPILLARY TUBBS

get-to places
M-PS-1946

Miniature capacitor functions as pressure sensor
JPL-903

Solid-state time-to-pulse-height converter developed
ARG-170

Integrator can easily be set and reset with an electronic switch
ARG-10002

Precision capacitor has improved temperature and operational stability
ARG-189

Study made of dielectric properties of promising materials for cryogenic capacitors
M-PS-13620

Signal generator converts direct current to multiphase supplies
MSC-11043

Multiple meter monitoring circuits served by single alarm
MSC-10984

Blood pressure reprogramming adapter assists signal recording
MSC-265

Long time constant timer requires no recovery time
MSC-10091

Thin film thermal detector
JPL-943

High-temperature /1100 degrees F/ capacitors operate without supplemental cooling
LEWIS-10324

Cardiotachometer with linear beat-to-beat frequency response
ARG-10033

Multipulse current source offers low power losses and high reliability
LEWIS-68

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135

Temperature-stabilized, triggerable microelectronic astable multivibrator starts reliably
MSC-1173

Eddy current disk valve
LEWIS-10123

Gyator-type circuits replace ungrounded inductors
MAC-10608

Improved process for making thin-film sodium niobate capacitors
MSC-11231

Miniature pressure transducer for stressed member application
MSC-11869

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110

Automatic patient respiration failure detection system with wireless transmission
ARG-10174

High dielectric thick films for screened circuit capacitors
LEWIS-10294

Microelectronic oscillator, 2
GSFC-10387

Microelectronic oscillator
GSFC-10375

Schmitt trigger multivibrator
MSC-10955

Proposed technique for vertical alignment of a crane's cable
M-PS-16496

Quality-weld parameters for microwelding techniques and equipment
M-PS-20484

Self-shielding printed circuit boards for high frequency amplifiers and transmitters
HG-10433

Foot-operated cell-counter
ARG-10315

Dielectric materials for use in thin-film capacitors
M-PS-20471

Magnetic forming of resistive materials
M-PS-20417

Phase-locked-loop phase modulator with high modulation index, low distortion
MSC-12247

Constant-frequency, variable-duty-cycle multivibrator
XGS-10033

Lateral PBP bipolar transistor with aiding field diffusions
MSC-13072

CAPILLARY TUBBS

Tensile-strength apparatus applies high strain-rate loading with minimum shock
JPL-28

Inspection of fine wires simplified by capillary tube wire holder
MSC-359

Electrochemical milling removes burrs and solder from tubing ends
M-PS-714

Automatic cryogenic liquid level controller is safe for use near combustible substances
LEWIS-195

Continuous microbial cultures maintained by electronically-controlled device
ARG-177

CAPS (EXPLOSIVES)

Connector shorting cap provides pin alignment, inspection, and stray voltage protection
M-PS-13111

CARBAMIDERS

Static electricity of polymers reduced by treatment with iodine
NPO-10062

CARBIDES

High temperature alloy
LEWIS-10377
Nickel-base superalloys* excellent properties promote its service to 2200 degrees F
LEWIS-10355 B68-10380 03
Cold machining of high density tungsten and other materials
ABG-10289 B69-10110 05
Study of high temperature bearing materials
LEWIS-10829 B69-10252 03
Improved retort for cleaning metal powders with hydrogen
LEWIS-10718 B69-10468 03
Strain-age cracking in Rene 41 alloy
N-PS-18650 B69-10605 03

CARBOXYLATES
Inhibition of browning in foodstuffs
HQ-10177 B69-10493 04

CARBON
Nickel solution prepared for precision electroforming
WOO-070 B65-10303 03
Improved carbon electrode reduces arc spattering
MSC-219 B66-10026 01
Thin carbon film serves as UV bandpass filter
ERG-0 B66-10060 02
Refractory coating protects intricate graphite elements from high-temperature hydrogen
HD-0027 B66-10094 01
Ultraviolet photographic pyrometer used in rocket exhaust analysis
N-ZS-499 B66-10095 02
Nickel-base superalloys developed for high-temperature applications
LEWIS-226 B66-10222 03
Chromium oxide coatings improve thermal emissivity of alumina
WOO-263 B66-10227 03
Standards for electron probe microanalysis of silicates prepared by convenient method
GSFC-469 B66-10234 03
New tungsten alloy has high strength at elevated temperatures
LEWIS-336 B66-10551 03
Primary cell uses neither liquid nor fused electrolytes
NPO-10001 B67-10275 01
High-strength tungsten alloy with improved ductility
LEWIS-10257 B67-10340 03
Steel test panel helps control additives in pyrophosphate copper plating
LEWIS-10101 B67-10358 05
Wear studies made of slip rings and gas bearing components
N-TS-12882 B67-10403 05
Development of low temperature battery
LEWIS-10326 B67-10546 01
Fiber glass reinforced structural materials for aerospace application
N-PS-14806 B68-10360 03
One-dimensional reacting gas nonequilibrium performance program
MSC-11777 B68-10375 06
One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780 B68-10376 06

ARCS
Carbon arc ignition improved by simple auxiliary circuit
MSC-103 B65-10018 01
Carbon arc rod holder has long life, reduces arc spatter
MSC-144 B65-10095 03
Magnetic field controls carbon arc tail flame
MSC-139 B65-10108 01
Light-intensity modulator withstands high heat fluxes
MSC-246 B66-10532 02
Segmented, arch-bound carbon seal is pressure loaded
N-PS-12777 B67-10325 05

CARBON COMPOUNDS
Substitution of stable isotopes in Chlorella
ARG-10258 B69-10197 04

CARBON DIOXIDE
A technique for making animal restraints
ARC-25 B63-10564 05
New inflatable liferaft is nontippable
MSC-44 B64-10001 05
Impurity diffusion process for silicon semiconductors is fast and precise
GSFC-397 B65-10300 01
Buoyant stokes litter assembly used for sea rescue operations
MSC-131 B66-10019 05
Self-inflating lifevest stores in small package
MSC-58 B66-10184 04
Freon provides heat transfer for solid CO2 calibration standard
N-PS-644 B66-10257 02
Flexible fastener effects airtight material closure
JPL-684 B66-10304 05
Development of dual solid cryogens for high reliability refrigeration system
GSFC-10188 B67-10644 02
Fluorescence radiation program
N-PS-13202 B68-10447 06
Repetitively pulsed, wavelength-selective
CARBOXYLIC ACIDS

Subject Index

CARBON DIOXIDE CONCENTRATIONS

carbon dioxide laser
MSC-10178 B68-10564 02

Techniques for controlling warpage and residual stresses in welded structures
M-PS-20307 B69-10086 05

Direct measurement of carbon-14 in carbon dioxide by liquid scintillation counting
ARG-10237 B69-10092 03

Prediction of friction coefficients for gases
LEWIS-10774 B69-10112 02

CARBON DIOXIDE LASERS

Design concepts using ring lasers for frequency stabilization
M-PS-2448 B67-10143 01

Absolute frequency stabilization of laser oscillator against laser amplifier
M-PS-2559 B67-10255 01

CARBON DIOXIDE REMOVAL

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures
MSC-118 B64-10319 03

CARBON STEELS

Aluminum/steel wire composite plates exhibit high tensile strength
M-PS-601 B66-10262 05

CARBON TETRACHLORIDE

Corrosion of aluminum alloys by chlorinated hydrocarbon/methanol mixtures
MSC-11365 B67-10442 03

CARBON 13

An improved nuclear magnetic resonance spectrometer
JPL-762 B67-10234 01

CARBON 14

Direct measurement of carbon-14 in carbon dioxide by liquid scintillation counting
ARG-10237 B69-10092 03

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331 B69-10143 01

Direct in-vial collection for liquid scintillation assay of carbon-14 and tritium
ARG-10424 B69-10412 03

CARBONATES

Modified developer increases line resolution in photosensitive resist
GSPC-386 B65-10270 01

Trace levels of metallic corrosion in water determined by emission spectrography
MSC-1193 B66-10701 03

Carbon offers advantages as implant material in human body
M-PS-18207 B69-10087 04

Primary radical yields in pulse irradiated alkaline aqueous solution
ARG-10322 B69-10167 02

CARBURIZING

Sensing disks for slug-type calorimeters have higher temperature stability
M-PS-1867 B67-10161 01

SUBJECT INDEX

CARDIAC VENTRICLES

Auxiliary circuit enables automatic monitoring of EKGs
MSC-106 B65-10142 01

CARDIOGRAPHY

Digital cardiometer computes and displays heartbeat rate
MSC-93 B64-10258 01

Digital-output cardiogasometer measures rapid changes in heartbeat rate
MSC-133 B65-10143 01

Ultraminiature manometer-tipped cardiac catheter
ARC-10054 B67-10669 01

CARDIOLOGY

Computer circuit calculates cardiac output
MSC-274 B66-10096 01

CARDIOTACHOMETERS

Auxiliary circuit enables automatic monitoring of EKGs
MSC-106 B65-10142 01

Ultraminiature manometer-tipped cardiac catheter
ARC-10054 B67-10669 01

CARDIOVASCULAR SYSTEM

Device induces lungs to maintain known constant pressure
MSC-50 B64-10108 04

Ultraminiature manometer-tipped cardiac catheter
ARC-10054 B67-10669 01

CARDS

Simple scale interpolator facilitates reading of graphs
LEWIS-92 B66-10302 05

Data retrieval system provides unlimited hardware design information
MSC-1144 B67-10170 01

Improved system for documenting measurement data
M-PS-18269 B69-10513 01

CARNOT CYCLE

Technical report on galvanic cells with fused-salt electrolytes
ARG-10297 B69-10155 01

CARRIAGES

Carriage system remotely moves drawer over extended distance
MU-0092 B66-10711 05

Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules
LEWIS-10201 B67-10359 01

Proposed method of rotary dynamic balancing by laser
M-PS-12422 B67-10852 02

Swing arm carrier protects flexible lines during test item rotation
MSC-11464 B68-10037 05

Two devices for analysis of nystagmus
ME-10273 B69-10224 01

CARRIER FREQUENCIES

Double emitter suppressed carrier modulator uses commercially available components
M-PS-2494 B67-10101 01

FM carrier deviation measured by
<table>
<thead>
<tr>
<th>SUBJECT INDEX CASTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>differential probability method</td>
</tr>
<tr>
<td>Absolute frequency stabilization of laser oscillator against laser amplifier</td>
</tr>
<tr>
<td>CARRIERS WAVES</td>
</tr>
<tr>
<td>An efficient, temperature-compensated subcarrier oscillator</td>
</tr>
<tr>
<td>Dynamic linearity measurement technique</td>
</tr>
<tr>
<td>Optically induced free carrier light modulator</td>
</tr>
<tr>
<td>Wide-band doubler and sine wave quadrature generator</td>
</tr>
<tr>
<td>CARRIERS</td>
</tr>
<tr>
<td>Rectilinear accelerometer possesses self-calibration feature</td>
</tr>
<tr>
<td>CARTESIAN COORDINATES</td>
</tr>
<tr>
<td>Single scale interpolator facilitates reading of graphs</td>
</tr>
<tr>
<td>Space trajectories program for IBM 7030</td>
</tr>
<tr>
<td>ASTRAJ on-site tracking prediction program</td>
</tr>
<tr>
<td>Buckling Of Shells Of Revolution /HOSO/ with various wall constructions</td>
</tr>
<tr>
<td>Automatic computation of data-set definitions</td>
</tr>
<tr>
<td>CARTRIDGES</td>
</tr>
<tr>
<td>Compact cartridge drives coded tape at constant readout speed</td>
</tr>
<tr>
<td>Polychart contour plotter enables data extrapolation from multiple plotting charts</td>
</tr>
<tr>
<td>Lathe attachment used to machine elliptical cones</td>
</tr>
<tr>
<td>Pulse technique provides more accurate checkout of exploding bridge wire device</td>
</tr>
<tr>
<td>Fused diode provides visual indication of fuse condition</td>
</tr>
<tr>
<td>Explosive-train initiated through solid bulkhead by pressure cartridge</td>
</tr>
<tr>
<td>Versatile impact hand tool</td>
</tr>
<tr>
<td>Autoasted microorganism Sample Collection Module</td>
</tr>
<tr>
<td>CASCADE CONTROL</td>
</tr>
<tr>
<td>Transistor circuit increases range of logarithmic current amplifier</td>
</tr>
<tr>
<td>Multichannel pulse height analyzer is inexpensive, features low power requirements</td>
</tr>
<tr>
<td>CASCADE FLOW</td>
</tr>
<tr>
<td>Compensation of pulse-rebalanced inertial instruments</td>
</tr>
<tr>
<td>FORTRAN 4 program calculates velocities and streamlines in a tandem blade turbomachine</td>
</tr>
<tr>
<td>CASES (CONTAINERS)</td>
</tr>
<tr>
<td>Compact cartridge drives coded tape at constant readout speed</td>
</tr>
<tr>
<td>Chart case opens to form briefing easel</td>
</tr>
<tr>
<td>Epoxy-coated containers easily opened by wire band</td>
</tr>
<tr>
<td>Fiberglass container shells for contamination-free storage units</td>
</tr>
<tr>
<td>Critical parts are stored and shipped in environmentally controlled reusable container</td>
</tr>
<tr>
<td>System locates randomly placed reusable remote objects</td>
</tr>
<tr>
<td>Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination</td>
</tr>
<tr>
<td>Battery case shear</td>
</tr>
<tr>
<td>CASING</td>
</tr>
<tr>
<td>Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control</td>
</tr>
<tr>
<td>CASSGRAIN ANTENNAS</td>
</tr>
<tr>
<td>Flange on microwave antenna subreflector cuts ground noise</td>
</tr>
<tr>
<td>Shortened horn-reflector antenna</td>
</tr>
<tr>
<td>Scanning means for Cassegrainian antenna</td>
</tr>
<tr>
<td>Computer programs for antenna feed system design and analysis</td>
</tr>
<tr>
<td>Computer program aids dual reflector antenna system design</td>
</tr>
<tr>
<td>Computer program for machine design of Cassegrain feed systems</td>
</tr>
<tr>
<td>Multi-feed cone for Cassegrainian antenna</td>
</tr>
<tr>
<td>Resonant microwave dichroic surface</td>
</tr>
<tr>
<td>CASSGRAIN OPTICS</td>
</tr>
<tr>
<td>Glancing incidence telescope for far ultraviolet and soft X-rays</td>
</tr>
<tr>
<td>CASTING</td>
</tr>
<tr>
<td>New cobalt alloys have high-temperature strength and long life in vacuums environments</td>
</tr>
<tr>
<td>Plastic molds reduce cost of encapsulating electric cable connectors</td>
</tr>
</tbody>
</table>
Molded elastomer provides compact ferrite-core holder, simplifies assembly
JPL-584  B64-10084  05

Plastic films for reflective surfaces reproduced from masters
GSPC-188  B64-10151  03

Pressure molding of powdered materials improved by rubber mold insert
WOO-100  B64-10270  03

Lightweight aluminum casting alloy is useful at cryogenic temperatures
M-PS-267  B65-10092  03

Epoxy-resin patterns speed shell-sanding of aluminum parts
M-PS-303  B65-10177  05

Epoxy blanket protects milled part during explosive forming
M-PS-307  B66-10029  03

Plug replaces weld filler as seal in complex casting
BU-0049  B66-10489  05

Laboratory arc furnace features interchangeable hearths
ARG-125  B67-10052  05

Multi-feed cone for Cassegrainian antenna
ARG-10025  B67-10484  03

Levitation-melting technique for metals and alloys
ARG-10240  B69-10006  03

Shaker slip-plate adapter
M-PS-14063  B69-10785  05

CASTINGS

Inspection of fine wires simplified by capillary tube wire holder
MSC-358  B66-10329  01

Heat treatment study of aluminum casting alloy
M-PS-2397  B67-10159  03

Study made of ductility limitations of aluminum-silicon alloys
M-PS-12524  B67-10392  03

Compressible sleeve provides automatic centering for grinding or turning of cylinders
SAP-10021  B68-10318  05

Modular packaging technique for combining integrated circuits and discrete components
GSPC-10349  B69-10455  01

CASTS

Adjustable hinge permits movement of knee in plaster cast
M-PS-1756  B67-10056  04

CATABOLISM

Study of behavior of sterols at interfaces
ARG-10085  B68-10281  03

CATALYSIS

Microorganisms detected by enzyme-catalyzed reaction
JPL-782  B66-10117  04

CATALYSTS

Cold solid propellant motor has stop-restart capability
JPL-836  B66-10673  03

Production of crystalline polymers via liquid crystal monomers
HQ-10235  B69-10744  03

Improved cure method for single component silicone rubber

CATALYTIC ACTIVITY

Cryopumping of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogen
LEWIS-15  B64-10340  05

Boron carbide whiskers produced by vapor deposition
HQ-24  B65-10261  03

Method of maintaining activity of hydrogen-sensing platinum electrode
M-PS-1422  B66-10049  03

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331  B66-10208  04

CATACOMBOMETERS

Testing device subjects elastic materials to biaxial deformations
JPL-616  B65-10189  03

Multiple test chamber exposes materials to various environments
MSC-179  B65-10268  01

CATHETER TIPS

Apparatus presents visual display of semiconductor surface characteristics
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>CAVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPL-665</td>
<td>Electrochemical milling removes burrs and solder from tubing ends M-PS-71A B66-10358 03</td>
</tr>
<tr>
<td>Infrared television used to detect hydrogen fires M-PS-654 B66-10363 01</td>
<td>Mixie tube display unit employs time-shared logic ARG-117 B66-10512 01</td>
</tr>
<tr>
<td>An improved method for testing performance of vidicons during vibration JPL-SC-113 B66-10442 01</td>
<td>Control apparatus for spectral energy source LEWIS-391 B66-10404 01</td>
</tr>
<tr>
<td>Digital computer processing of X-ray photos JPL-792 B67-10005 04</td>
<td>Development of low temperature battery LEWIS-10326 B67-10546 01</td>
</tr>
<tr>
<td>Electronic filter discriminates between true and false reflections HQ-55 B67-10071 02</td>
<td>Improved fuel-cell-type hydrogen sensor M-PS-16656 B68-10263 01</td>
</tr>
<tr>
<td>System automatically supplies precise analytical samples of high-pressure gases M-PS-1814 B66-10090 01</td>
<td>Solid state high-voltage pulser operates with low supply voltage M-PS-14034 B68-10308 01</td>
</tr>
<tr>
<td>Oscilloscope used as X-Y plotter or two-dimensional analyzer LEWIS-311 B67-10269 01</td>
<td>Inverted grounding technique for electron beam heating LEWIS-10543 B68-10411 01</td>
</tr>
<tr>
<td>Phase plane displays detect incipient failure in servo systems testing HQ-10018 B67-10662 01</td>
<td>Electrochemical study of aluminum corrosion in boiling high purity water ARG-10306 B69-10033 03</td>
</tr>
<tr>
<td>Luminescent screen composition for cathode ray tubes IBM-19 B68-10056 01</td>
<td>Preparation of high purity copper fluoride by fluorinating copper hydroxylfluoride LEWIS-10754 B69-10136 03</td>
</tr>
<tr>
<td>System measures arc energy dissipated in relay contact cycling M-PS-14541 B68-10312 01</td>
<td>Improved anode design for metal-oxygen cells LEWIS-10871 B69-10318 01</td>
</tr>
<tr>
<td>System for measuring spatial distribution of ejected droplets, a concept NPO-10185 B68-10402 01</td>
<td>High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes LEWIS-90271 B69-10376 01</td>
</tr>
<tr>
<td>Time-shared Cathode Ray Tube ISC-12238 E69-10243 06</td>
<td>Nondestructive determination of cohesive strength of adhesive-bonded composites M-PS-20397 B69-10464 03</td>
</tr>
<tr>
<td>Simplified system displays complex curves corresponding to input data HQ-10073 B69-10247 01</td>
<td>Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes ARG-10452 B69-10613 01</td>
</tr>
<tr>
<td>CATHODES</td>
<td>CAVITIES</td>
</tr>
<tr>
<td>High purity electroforming yields superior metal models ARC-6 B63-10007 05</td>
<td>Sensitive low-pressure relief valve has</td>
</tr>
<tr>
<td>Meter accurately measures flow of low-conductivity fluids JPL-0024 B63-10280 01</td>
<td></td>
</tr>
</tbody>
</table>
Device enables calibration of microphones at high sound pressure levels

Precision metal molding

Improved cavity-type absolute total-radiation radiometer

Shock-absorbing caster wheel is simple and compact

Device enables calibration of microphones at high sound pressure levels

Precision metal molding

Improved cavity-type absolute total-radiation radiometer

Shock-absorbing caster wheel is simple and compact

Pressure seated against leakage

Device enables calibration of microphones at high sound pressure levels

Precision metal molding

Improved cavity-type absolute total-radiation radiometer

Shock-absorbing caster wheel is simple and compact

Device enables calibration of microphones at high sound pressure levels

Precision metal molding

Improved cavity-type absolute total-radiation radiometer

Shock-absorbing caster wheel is simple and compact

Computer program PPID-RHY calculates fission product inventory for 0-235 fission

Assembly processor program converts symbolic programming language to machine language

Fully automatic telemetry data processor

Modified Mulhopp mean casmer computer program

Some numerical methods for integrating systems of first-order ordinary differential equations

GAMBIT program

Computer program PPID-RHY calculates fission product inventory for 0-235 fission

Assembly processor program converts symbolic programming language to machine language

Fully automatic telemetry data processor

Modified Mulhopp mean casmer computer program

Some numerical methods for integrating systems of first-order ordinary differential equations

GAMBIT program

Computer program PPID-RHY calculates fission product inventory for 0-235 fission

Assembly processor program converts symbolic programming language to machine language

Fully automatic telemetry data processor

Modified Mulhopp mean casmer computer program

Some numerical methods for integrating systems of first-order ordinary differential equations

GAMBIT program

Radioactivity in freshly separated Ra-226, Ac-227 and U-232

The response of monoenergetic gamma rays in finite media are investigated

Microscopes and computers combined for analysis of chromosomes

Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds

Liquid hydrogen-cooled, ultrahigh-speed ball bearings

Improved atomic resonance gas cell for use in frequency standards

Automatic tuning of hydrogen masers

Computer program calculates the effective temperature for a crystalline solid

Sonic boom propagation in stratified atmosphere

Improved anode design for metal-oxygen cells

Technical report on galvanic cells with fused-salt electrolytes

Improved anode design for metal-oxygen cells

Analysis of cell performance and thermal regeneration of a lithium-tin cell having
an immobilized fused-salt electrolyte
ARG-10453  B69-10627  03
Self-discharge in bimetallic cells containing alkali metal
ARG-10387  B69-10631  01

CELL CATHODES
High-energy, high-power, long-life battery
LEWIS-10724  B69-10131  01
Mass transport mechanisms in porous fuel cell electrodes
EQ-10343  B69-10135  01
Technical report on galvanic cells with fused-salt electrolytes
ARG-10297  B69-10627  03
Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte
ARG-10453  B69-10627  03
Self-discharge in bimetallic cells containing alkali metal
ARG-10387  B69-10631  01

CELL DIVISION
Internal and ancestral controls of cell-generation times
ARG-10326  B69-10205  04

CELEPHANE
Separator for alkaline batteries
GSPC-10173  B68-10557  03

CELS
Apparatus measures concentration of suspended droplets in gas streams
LANGLEY-31  B64-10237  01
Gas diffusion cell removes carbon dioxide from occupied airtight enclosures
MSC-140  B64-10319  03
Circuit prevents overcharging of secondary cell batteries
GSPC-454  B66-10492  01
Low energy ohmmeter can be used to test sensitive circuits, other meters
SAM-10013  B66-10269  01
Optinetric system facilitates colorimetric and fluorimetric measurements
NPO-10233  B68-10316  01

CELS (BIOLOGY)
Cytology is advanced by studying effects of deuterium environment
ARG-205  B67-10304  04
Study made of ductility limitations of aluminum-silicon alloys
M-PS-12526  B67-10392  03
Effect of preparation procedures on intensity of radioautographic labeling is studied
ARG-10032  B67-10500  04
Radiation effects on bacterial cells
ARG-10064  B68-10169  04
Study of radiation effects on mammalian cells in vitro
ARG-10191  B68-10294  02
Stratification of centrifuged amoeba nuclei investigated by electron microscopy
ARG-10161  B68-10366  04
A microlagoon technique for the culture of mammalian cells
LANGLEY-10407  B68-10554  04
Substitution of stable isotopes in Chlorella
CBUTRIPOGAL
PUMPS
SUBJECT INDEX

pressure loss B66-10395 05
Automated microorganism Sample Collection Module B69-10223 04
Improved design of item in high speed rotating machinery B69-10373 05
A rotating, noncapillary heat pipe LEWIS-10298 B69-10684 05

CENTRIFUGAL PUMPS
Ultrasonic cleaning restores depth-type filters B66-10298 03
Acoustic wave analysis B66-10265 02
Prediction of performance of centrifugal pumps during starts under pressure LEWIS-10900 B69-10263 05
Method for predicting pump cavitation performance LEWIS-10916 B69-10446 02

CENTRIFUGING
Automatic fluid separator supplies own driving power WOO-085 B66-10008 02
Combustion chamber inlet manifold separates vapor from liquid M-P-531 B66-10052 05
Stratification of centrifuged amoeba nuclei investigated by electron microscopy ARG-10161 B66-10366 04

CERAMIC BONDING
A ceramic composite thermal insulation M-P-13991 B67-10608 03

CERAMIC COATINGS
Gate valve with ceramic-coated base operates at high temperatures ABC-23 B63-10562 03
Insulatod weld tooling permits uniform, high quality weld MSC-42 B64-10058 05
Lead oxide ceramic makes excellent high-temperature lubricant LEWIS-144 B64-10116 03
Ceramic-coated boat is chemically inert, provides good heat transfer LANGLEY-90 B65-10063 05
Air-cured ceramic coating insulates against high heat fluxes M-P-150 B65-10357 03
Modified thermocouple is effective from minus 250 deg to 5000 deg F MSC-420 B66-10461 01
Newly developed foamed ceramic body shows promise as thermal insulation material at 3000 deg F M-P-11968 B67-10441 03
Experiments with ceramic coatings M-P-18150 B68-10355 03

CENTRIFUGAL PUMPS
Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns ABC-7 B63-10008 05
Radiant heater for vacuum furnaces offers high structural rigidity, low heat loss LEWIS-39 B63-10342 01
Refractory ceramic has wide usage, low fabrication cost M-P-67 B63-10461 03
Hot-air soldering technique prevents overheating of electrical components GSFC-91 B63-10536 01
Ultra-sensitive transducer advances micro-measurement range ARC-26 B64-10004 01
Modified RF coaxial connector ends vacuum chamber wiring problem GSFC-150 B64-10010 01
Mounting for diodes provides efficient heat sink M-P-197 B64-10283 01
Nitrogen dioxide produced by self-sustained pyrolysis of nitric oxide LANGLEY-32 B65-10074 05
Fabrication method produces high-grade alumina crucibles M-P-216 B65-10078 05
Refractory oxides evaluated for high-temperature use LANGLEY-121 B65-10167 03
Ceramic materials purified by experimental method LEWIS-225 B65-10270 03
Fibers of newly developed refractory ceramics produced by improved process WOO-169 B66-10196 03
Liquid trap seals thermocouple leads M-P-688 B66-10212 05
Magnetically operated limit switch has improved reliability, minimizes arcing MRC-422 B66-10270 01
Improved thermal insulation materials made of foamed refractory oxides M-P-735 B66-10288 03
Bypass rod transfers heat developed in thermionic diode JPL-SC-136 B66-10303 05
Friction loading device enables accurate testing of brittle materials WOO-0051 B66-10345 05
Radioactive method enables determination of surface areas rapidly and accurately WOO-0088 B66-10710 03
Xenon fluoride solutions effective as fluorinating agents ABC-217 B67-10133 03
Improved compression soldering process LANGLEY-1027 B67-10302 03
Development of technology for hot-drape forming of large torus sections M-P-12141 B67-10341 05
Rugged switch responds to minute pressure differentials M-P-12704 B67-10389 01
Dielectric prisms would improve performance of quasi-optical microwave components SRC-10011 B67-10416 01
Study made of anodized aluminum circuit boards M-P-13580 B67-10425 01
Protected, high-temperature connecting cable LEWIS-10149 B67-10611 01

X-82
Microphone multiplex system provides multiple outlets from single source
GSFC-426 B66-10308 01

Single channel pulse-height analyzer operates in subnanosecond range
LEWIS-267 B66-10377 01

Automatic channel switching device
MSC-832 B67-10086 01

Computer program samples digital data for CRT display
MSC-999 B67-10249 01

Multichannel pulse height analyzer is inexpensive, features low power requirements
BCE-10020 B67-10258 01

Unique frequency-shift-keyed demodulation system
GSFC-217 B67-10668 01

Multichannel analyzers at high rates of input
ARG-10555 B69-10214 02

Literal readout of identification signals in Morse code
LANELEY-10222 B69-10479 01

Optically driven switch turn-off time reduced by opaque coatings
JPL-SC-107 B66-10141 01

Optically induced free carrier light modulator
GSFC-10216 B69-10114 01

Computer programs calculate potential and charge distributions in a plasma
N-PS-571 B66-10553 01

Pulse-height analyzer with digital readout
ARG-10503 B69-10640 01

Primary cells utilize halogen-organic charge transfer complex
JPL-926 B66-10682 02

Primary cell uses neither liquid nor fused electrolytes
NPO-10001 B67-10275 01

Photovoltaic effect in organic polymer-iodine complex
NPO-10373 B67-10634 03

Fundamental electrode kinetics
ARG-10067 B68-10196 03

Synchronous charge-constrained electroquasistatic generator
HQ-10231 B69-10461 01

Electron multiplier has improved performance and stability
GSFC-546 B67-10060 01

Numerical least-square method for resolving complex pulse height spectra
GSFC-10142 B67-10480 06

The response of nonisotopic gases in finite media are investigated
ARG-10295 B69-10080 02

Circuit prevents overcharging of secondary cell batteries
GSFC-454 B66-10492 01

Precision capacitor has improved temperature and operational stability
ARG-189 B67-10313 01

Electrochemical cell has internal resistive heater element
GSFC-10356 B69-10325 01

Study made of pneumatic high pressure piping materials /10,000 psi/
KSC-10133 B67-10437 03

Manual of typical low temperature mechanical properties of several materials
N-PS-16331 B69-10179 03

Improved high-temperature-strength nickel-base superalloy
LEWIS-10874 B69-10352 03

Argon purge gas cooled by chill box
N-PS-560 B66-10153 02

Fire retardant foams developed to suppress fuel fires
ARC-10098 B68-10358 03

Chart case opens to form briefing easel
MSC-349 B66-10135 05

Automated drafting system uses computer techniques
N-PS-788 B66-10362 01

Chart system simplifies identification of complex design assemblies
MSC-752 B66-10460 05

Slide rule-type color chart predicts reproduced photo tones
MSC-1227 B66-10680 01

Moveable RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127 B67-10352 01

Test and inspection for process control of monolithic circuits
N-PS-13084 B67-10507 01

GMT/local-time conversion chart
GSFC-10521 B67-10548 01

Graphic visualization of program performance aids management review
MRC-10011 B67-10568 06

Charts designate probable future oceanographic research fields
N-PS-20202 B68-10397 01

Thermal expansion properties of aerospace materials
N-PS-18335 B69-10055 03

Design of a strain-gage probe
ARG-10338 B69-10343 05

Tool for reading psychrometric charts
ARG-10358 B69-10527 05

Modular chassis simplifies packaging and interconnecting of circuit boards
JPL-236A B69-10174 01

Hot-air soldering technique prevents overheating of electrical components
GSFC-91 B65-10536 01

Compressed gas system operates semitrailer brakes during winching operation
JPL-0036 B64-10306 05

Back mount device quickly inserts or extracts chassis units
SUBJECT INDEX

MSC-244  B65-10385  05
Insulator-holder protects transistors in dense electronic assemblies

MSC-214  B65-10389  01
Floating device aligns blind connections

MSC-256  B66-10007  05
Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board

MSC-244  B65-10385  05
Checking FORTRAN program flow chart is automatically produced

MSC-256  B66-10007  05
Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system

MSC-235  B67-10035  01
CHELATES
Reusable chelating resin concentrates metal ions from highly dilute solutions

JPL-758  B66-10451  03
Separation of traces of metal ions from sodium matrices

ARG-10341  B69-10168  03
CHEMICAL COMPOSITION
Lightweight aluminum casting alloy is useful at cryogenic temperatures

M-FS-267  B65-10092  03
Computer program determines chemical composition of physical system at equilibrium

MSC-11777  B66-10670  01
Controlled ferrite content improves weldability of corrosion-resistant steel

M-FS-568  B67-10069  03
CHEMICAL BONDS
Synthesis of various highly halogenated monomers and polymers

M-FS-2143  B69-10495  03
Microdetermination of uranium in tissue

ARG-10039  B67-10580  03
Calibration of a resistance thermometer down to 0.04 degrees K

ARG-10049  B69-10149  01
Primary radical yields in pulse irradiated alkaline aqueous solution

ARG-10322  B69-10167  02
Microdetermination of area in urine using p-dimethylaminobenzaldehyde /PDAB/

JPO-10715  B69-10317  04
Ionone membrane battery separator

JPO-11091  B69-10501  03
Chromatographic detection and analysis of traces of hydrocarbons

KSC-10388  B69-10716  02
Effects of high-pressure hydrogen on storage vessel materials

KSC-10335  B69-10173  01
Gage provides audible signal to facilitate checkout of connector pins

E69-10062  01
CHEMICAL ATTACK
Heat-shrinkable jacket holds fluid in contact with tensile test specimen

MSC-13195  B69-10495  05
CHEMICAL REACTION
Rotating magnetic poles used to pump mercury

LEWIS-276  B66-10434  05
Effects of surface preparation on quality of aluminum alloy weldments

M-FS-13152  B69-10302  03
Effects of hydrogen on metals

M-FS-20364  B69-10372  03
Improved nickel plating of Inconel X-750

M-FS-18604  B69-10463  05
Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers

MSC-15611  B69-10552  03
CHEMICAL CLEANING
Lightweight aluminum casting alloy is useful at cryogenic temperatures

M-FS-267  B65-10092  03
Computer program determines chemical composition of physical system at equilibrium

MSC-11777  B66-10670  01
Controlled ferrite content improves weldability of corrosion-resistant steel

M-FS-568  B67-10069  03
Elementary review of electron microprobe techniques and correction requirements

ARG-10062  B68-10195  03
One-dimensional reacting gas non equilibrium performance program

MSC-11777  B68-10375  06
One-dimensional two-phase reacting gas
CBEICAL

CBBIICAL

CBEMICAL

CBEICAL IBDICATIONS

Crack detection method is safe in presence of liquid oxygen.

Isostatic compression process converts polymeric into structural material.

Electronic circuitry used to automate paper chromatography.

Tritiated alumina serves as reagent for self-labeling analysis.

Product identification techniques used as training aids for analytical chemists.

Advances in aluminum anodizing are determined.

CHEMICAL COMPOUNDS

Equilibrium performance program
MSC-11780

Axisymmetric liquid-gas nonequilibrium performance.
MSC-11781

CHEMICAL COMPOUNDS

Crack detection method is safe in presence of liquid oxygen.

Isostatic compression process converts polymeric into structural material.

Electronic circuitry used to automate paper chromatography.

Tritiated alumina serves as reagent for self-labeling analysis.

Product identification techniques used as training aids for analytical chemists.

Advances in aluminum anodizing are determined.

CHEMICAL EFFECTS

Materials physically tested in variable-environment chamber.

CHEMICAL ELEMENTS

Compilation of detection sensitivities in thermal-neutron activation.

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes.

Ignition of binary alloys of uranium.

Detection sensitivities in 3-8 MeV neutron activation.

Zone purification of potassium chloride.

CHEMICAL ENGINEERING

Materials data handbook, aluminum alloy.

Handbook for design of containers of fluids and gases for spacecraft.

CHEMICAL EQUILIBRIUM

Computer program determines chemical equilibria in complex systems.

CHEMICAL FUELS

Handbook for design of containers of fluids and gases for spacecraft.

CHEMICAL INDICATORS

Test strips detect different CO2 concentrations in closed compartments.

CHEMICAL MACHINING

Electroless nickel resists used in alkaline etching of aluminum.

Reusable neoprene jacket protects parts for chemical milling.

SUBJECT INDEX

Epoxy blanket protects milled part during explosive forming.

Etching processills Fe 14-6 No alloy steel to precise tolerances.

Electrical upsetting of metal sheet forms weld edge.

Chemical milling solution produces smooth surface finish on aluminum.

Gary of 6.5 per cent Si-Fe sheet is chemically reduced.

Modified thermocouple is effective from minus 250 deg to 5000 deg F.

Continuous internal channels formed in aluminum fusion welds.

Chemical milling solution reveals stress corrosion cracks in titanium alloy.

Acid spray technique mills aluminum alloy materials without immersion.

Substituted silazene-diol polymers have improved thermal stability.

Silazene elastomer remains resilient at 400 deg C.

New class of thermosetting plastics has improved strength, thermal and chemical stability.

High strength nickel-base alloy with improved oxidation resistance up to 2200 degrees F.

Sintering characteristics and properties of PdS and PdP are determined.

Reduction by monovalent zinc, cadmium, and nickel cations.

Ceramic-coated boat is chemically inert.

Polymer films exhibit thermal and radiation stability.

Hot-wire detector for chemically active materials used in gas chromatography.

Silazene polymers show promise for high-temperature application.

Preem provides heat transfer for solid CO2.

Chemical regeneration of emitter surface increases thermal diode life.
treatment of brain tumors
ARG-100  B67-10188  04

Experiments shed new light on nickel-fluorine reactions
ARG-10008  B67-10397  03

Quantum mechanical calculations of reactive scattering cross sections in bimolecular encounters
M-FS-13594  B67-10527  03

New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
LEWIS-10576  B69-10118  01

Production of metals and compounds by radiation chemistry
LEWIS-10231  B69-10123  03

A new solid lubricant
LEWIS-10812  B69-10250  03

Coordination chemistry in fused-salt solutions
ARG-10469  B69-10423  03

Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol
M-FS-14962  B69-10636  03

Synthesis of perbromates
ABG-10459  B69-10647  03

CHEMICAL REACTORS
Oxide films on metal substrate reduced to form metal-oxide-metal layer structure
ARG-48  B67-10187  03

Abrasion and resistant discharge valve developed
ARG-10219  B69-10040  05

Automatic filter-blowback systems used with sintered-metal filters
ARG-10324  B69-10342  05

CHEMILUMINESCENCE
Porous glass makes effective substrate for ozone-sensing reagent
GSFC-388  B65-10364  03

Quantum mechanical calculations of reactive scattering cross sections in bimolecular encounters
M-FS-13594  B67-10527  03

CHEMISORPTION
Study made of Raney nickel technology
M-FS-2054  B67-10208  03

CHEMISTRY
Chemistry laboratory safety manual available
SAM-10030  B68-10419  03

Thermophysical properties of sodium
ARG-10363  B69-10240  03

CHIPS
Technique for abrasive cutting of thick-film conductors for hybrid circuits
MSC-13242  B69-10235  03

Improved method of dicing integrated circuit wafers into chips
HSC-10136  B69-10441  01

CHLORATES
Improved chlorate candle provides concentrated oxygen source
MSC-1137  B67-10095  03

CHLOROBENZILES
Substitution of stable isotopes in Chlorobenzile
ARG-10258  B69-10197  04

CHLORIDES
Trace levels of metallic corrosion in water determined by emission spectrography
MSC-1193  B66-10701  03

Thermo-couple-flexible cable connector insulator is highly reliable
NU-0082  B67-10703  06

Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232  B67-10032  03

Saran film is fire-retardant in oxygen atmosphere
MSC-11604  B68-10177  03

Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers
MSC-15611  B69-10552  03

CHELORINE
Chemical regeneration of emitter surface increases thermionic diode life
LEWIS-17  B66-10435  02

One-dimensional reacting gas nonequilibrium performance program
MSC-11777  B68-10375  06

One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780  B68-10376  06

Axisymmetric reacting gas nonequilibrium performance program
MSC-11781  B68-10377  06

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
ARG-10452  B69-10613  01

CHLORINE COMPOUNDS
Organic reactants rapidly produce plastic foam
LANLEY-37  B65-10280  03

Surfactant for dye-penetrant inspection is insensitive to liquid oxygen
M-FS-475  B66-10131  03

New class of compounds have very low vapor pressures
ARG-115  B67-10184  03

Corrosion of aluminum alloys by chlorinated hydrocarbon/methanol mixtures
MSC-11365  B67-10442  03

CHLOROBENZILES
Process produces chlorinated aromatic isocyanate in high yield
M-FS-1658  B66-10646  03

CHLOROETHYLENE
Solvent residue content measured by light scattering technique
M-FS-875  B66-10320  01

Degreasing of titanium to minimize stress corrosion
LEWIS-382  B67-10147  03

Liquid oxygen dicting cleaned by falling film method
M-FS-11816  B67-10299  03

Cold machining of high density tungsten and other materials
ARG-10289  B69-10110  05

CHLOROFORM
Corrosion of aluminum alloys by chlorinated hydrocarbon/methanol mixtures
MSC-11365  B67-10442  03
The preparation, identification and properties of chlorophyll derivatives
ARG-10205 B68-10409 03

Aggregation of metallochlorophylls - Examination by spectroscopy
ARG-10273 B69-10163 04

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10416 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10416 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03
SUBJECT INDEX

Application of the solid lubricant molybdenum disulfide by sputtering
LWIS-10544 E66-10340 03

Tungsten fiber-reinforced nickel superalloy
LWIS-10424 E66-10369 03

Evaluation of lubricants for ball bearings at high temperatures
LWIS-10578 E66-10025 03

Improved high-temperature silicide coatings
LWIS-10617 E66-10266 03

CHROMIUM CARBIDES
High temperature coatings for gas bearings
LWIS-10793 E66-10200 03

CHROMIUM OXIDES
Ceramic-coated boat is chemically inert, provides good heat transfer
LWIS-10544 E66-10063 05

Chromium oxide coatings improve thermal emissivity of aluminas
ABO-263 E66-10227 03

CHROMOSOMES
Study of radiation effects on mammalian cells in vitro
ARG-10191 E66-10294 02

Microscopes and computers combined for analysis of chromosomes
ARG-10256 E66-10088 04

CHRONOLOGY
Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ra-226 in aquatic fauna
ARG-10355 E66-10358 01

CERNOTRAFOGRAPHY
Crack growth measured on flat and curved surfaces at cryogenic temperatures
LWIS-369 E66-10384 01

CIRCLES (GEOMETRY)
Circular, explosion-proof lamp provides uniform illumination
MSC-382 E66-10156 02

CIRCUIT BOARDS
Modular chassis simplifies packaging and interconnecting of circuit boards
JPL-2368 E66-10174 01

Frost and back printed circuit layouts presented on single sheet
GSFC-93 E66-10596 01

Compact coaxial connector for printed circuit adds reliability
MSC-57 E66-10016 01

Screening technique makes reliable bond at room temperature
F-PB-227 E66-10004 03

Hand tool bends component leads accurately
R-FS-308 E66-10181 05

Hand tool facilitates extraction of circuit modules
LNGSLY-38 E66-10231 05

Assembly jig assures reliable solar cell modules
GSFC-455 E66-10040 05

New television camera eliminates vidicon tube
N-FS-472 E66-10112 01

Fixture aids soldering of electronic components on circuit board
ARC-56 E66-10162 01

Tool forms right angles in component leads
N-FS-722 E66-10346 05

Device serves as hinge and electrical connector for circuit boards
M-FS-743 E66-10359 01

Process produces accurate registry between circuit board prints
LWIS-268 E66-10660 02

Edge-type connectors evaluated by electrical noise measurement
N-FS-2243 E66-10125 01

Polarized light reveals stress in machined laminated plastics
LWIS-10018 E66-10383 03

Multiplexer uses insulated gate-field effect transistors
M-FS-13096 E66-10396 01

Study made of anodized aluminum circuit boards
M-FS-13586 E66-10425 01

Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board
M-FS-13663 E66-10426 01

Adhesives for laminating polyimide insulated flat conductor cable
M-FS-12964 E66-10429 03

Warpage eliminated in copper-clad microwave circuit laminates
M-FS-13892 E66-10454 03

Areas of irregular, discontinuous patterns rapidly and accurately measured
GSFC-10184 E66-10574 01

Inspection criteria ensure quality control of parallel-gap soldering
M-FS-14530 E66-10257 05

Random access-random release relay switching matrix
M-FS-1259C E66-10301 01

Standards for compatibility of printed circuit and component lead materials
M-FS-14531 E66-10310 01

Remotely-actuated biomedical switch
ARC-10105 E69-10117 01

New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
LWIS-10567 E66-10118 03

Self-shielding printed circuit boards for high frequency amplifiers and transmitters
NQ-10433 E66-10314 01

Folded stick module
NQ-10854 E66-10498 01

Circuit board hole coordinate locator concept
M-FS-14737 E66-10539 01

Development of improved potting and conformal coating compounds
M-FS-20219 E66-10559 03

Device for reflowing electrodeposited solder on terminals
M-FS-13021 E66-10670 01

Investigation of the development of cracks in solder joints
M-FS-20444 E66-10807 01

CIRCUIT BREAKERS
Solid-state recoverable fuse functions as circuit breaker
GSFC-560 E66-10691 01
Current-limiting voltage regulator
MSC-11824 B68-10305 01

Breakaway electrical connector
SPC-11140 B69-10476 01

Fuse protects circuit from voltage and current overloads
MSC-12125 B69-10900 01

CIRCUIT DIAGRAMS
Simple tunnel diode circuit for accurate zero crossing timing
ANG-10309 B69-10116 01

Self-starting circuit for switching regulators
NAY-10686 B69-10128 05

CIRCUIT PROTECTION
Single connector provides safety fuses for multiple lines
MSC-199 B66-10050 01

Bugged microelectronic module package supports circuitry on heat sink
MSC-813 B65-10245 01

Circuit protects regulated power supply against overload current
GFC-453 B66-10292 01

Electrical cabling withstands severe environmental conditions
M-FS-1585 B66-10427 01

Trispheric spark gap actsuates overvoltage relay
ABC-68 B66-10557 01

Solid-state recoverable fuse functions as circuit breaker
GFC-560 B66-10691 01

Fused diode provides visual indication of fuse condition
MSC-67-16 B67-10230 01

Circuit provides overcurrent protection to push-pull amplifier
MSC-12033 B67-10300 01

Bustotic fuse provides current and thermal protection under high vibration
M-FS-13664 B67-10535 01

Low energy ohmmeter can be used to test sensitive circuits, other meters
SAN-10013 B68-10269 01

Current-limiting voltage regulator
MSC-11824 B68-10305 01

Short circuit protection for a power distribution system
M-FS-14933 B68-10443 01

Method for measuring alternator voltage transients
NAY-10373 B68-10513 01

CIRCUIT RELIABILITY
Increased performance reliability obtained with dual /redundant/ oscillator system
GFC-103 B66-10027 01

Circuit reliability boosted by soldering pins of disconnect plug to sockets
JPL-447 B64-10002 01

Continuity tester screens out faulty socket connections
JPL-596 B64-10005 01

Circuit improvement produces monostable multivibrator with load-carrying capability
GFC-34A B65-10011 01

Logic circuit exhibits optimum performance

LANGLEY-129 B65-10193 01

Tester periodically registers dc amplifier characteristics
MSC-190 B66-10148 01

Two-light circuit continuously monitors ac ground, phase, and neutral wires
MSC-356 B66-10163 01

Complementary monostable circuits achieve low power drain and high reliability
GFC-833 B66-10179 01

Computer program detects transient malfunctions in switching circuits
MSC-604 B67-10002 01

Test and inspection for process control of monolithic circuits
M-FS-13084 B67-10507 01

Analog buffer isolates high impedance source from low impedance load
M-FS-13481 B67-10544 01

Multipulse current source offers low power losses and high reliability
LANGLEY-66 B67-10603 01

Improved compensation circuit for direct-coupled amplifiers
MSC-1116 B68-10133 01

Low energy ohmmeter can be used to test sensitive circuits, other meters
SAN-10013 B68-10269 01

Solid state high-voltage pulser operates with low supply voltage
M-FS-14034 B68-10308 01

Analysis and design of a class-D amplifier
M-FS-14803 B68-10313 01

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ANG-1011 B68-10328 01

Closed circuit TV system automatically guides welding arc
M-FS-20084 B68-10357 01

Microelectronic oscillator
GFC-10375 B69-10064 01

Analysis of magnetically-controlled processes in pulse-modulation systems
GFC-10241 B69-10070 01

Concept for a multifunctional oscilloscope probe
M-FS-16390 B69-10129 01

CIRCUITS
Small digital recording head has parallel bit channels, minimizes cross talk
JPL-029 B63-10280 01

Two-stage emitter follower is temperature stabilized
MSC-20 B63-10493 01

Circuit switches latching relay in response to signals of different polarity
WCO-055 B63-10508 01

Connector for thermocouple leads saves costly wire, makes reliable connectors
LANGLEY-26 B63-10529 01

Simple circuit provides adjustable voltage with linear temperature variation
JPL-WCO-029 B63-10537 01

High efficiency square-wave oscillator operates at high power levels
GFC-112 B63-10558 01
Computer determines high-frequency phase stability
GSFC-113  B63-10555  01

Tiny sensor-transmitter can withstand extreme acceleration, gives digital output
ARC-22  B63-10561  01

Simple circuit continuously monitors thermocouple sensor
M-PS-61  B63-10567  01

Device calibrates vibration transducer at amplitudes up to 20 g
M-PS-86  B63-10572  01

Circuit controls transients in SCR inverters
GSFC-120  B63-10600  01

Monostable circuit with tunnel diode has fast recovery
GSFC-132  B63-10603  01

Temperature-sensitive network drives astable multivibrator
GSFC-137  B63-10609  01

Blocking oscillator uses low triggering voltage
MSC-58  B64-10017  01

Efficient circuit triggers high-current, high-voltage pulses
MSC-14  B64-10024  01

Continuity tester screens out faulty socket connections
JPL-596  B64-10065  01

Improved insertion-loss tester
JPL-358  B64-10080  01

Emission tester for high-power vacuum tubes
JPL-628  B64-10158  01

Field effect transistors used as voltage controlled resistors
M-PS-174  B64-10163  01

PTC thermistor protects multiloaded power supplies
GSFC-236  B64-10281  01

Transistorized converter provides nondissipative regulation
GSFC-238  B64-10305  01

Voltage generator sweeps oscillator frequency linearly with time
M-PS-219  B64-10320  01

Bandwidth switching is transient-free, avoids loss of loop lock
WOO-054  B64-10349  01

Circuit converts AC signals to PM for magnetic recording
GSFC-227  B65-10001  01

Circuit improvement produces monostable multivibrator with load-carrying capability
GSFC-34A  B65-10011  01

Zener diode function generator requires no external reference voltage
JPL-0031  B65-10013  01

Use of tear ring permits repair of sealed nodal circuitry
M-PS-210  B65-10014  05

Carbon arc ignition improved by simple auxiliary circuit
MSC-103  B65-10018  01

Circuit detects errors in address currents for magnetic core arrays
M-PS-234  B65-10047  01

Pulse generator permits nondestructive testing of component breakdown voltage
MSC-122  B65-10054  01

FM oscillator uses tetrode transistor
JPL-82  B65-10055  01

Feed-through has polyterminal feature
H-PS-25  B65-10057  01

Sensitive level sensor made with spirit level, gives electrical output
LANGLEY-45  B65-10067  01

Feedback oscillator functions as low-level pulse stretcher
GSFC-261  B65-10069  01

Synchronized pulse generator needs no external power
GSFC-274  B65-10072  01

Light-sensitive potentiometer measures product of two variables
GSFC-240  B65-10076  01

Phase detector circuit synthesizes own reference signal
M-PS-247  B65-10080  01

Transducer senses displacements of panels subjected to vibration
ARC-37  B65-10085  01

Digital system accurately controls velocity of electromechanical drive
GSFC-297  B65-10096  01

Variable load automatically tests dc power supplies
GSFC-291  B65-10105  01

Unijunction frequency divider is free of backward loading
JPL-WDO-010  B65-10112  01

Simplified electrometer has excellent operating characteristics
JPL-413  B65-10125  01

Traveling-wave tube circuit simplifies microwave relay
GSFC-299  B65-10127  01

Piezoresistive gage tests pin-connector sockets
JPL-675  B65-10128  01

Simple circuit positions film frames in projector
JPL-508  B65-10132  02

Instrument calibrates low gas-rate flowmeters
MSC-134  B65-10137  01

High-gain amplifier has excellent stability and low power consumption
GSFC-272  B65-10138  01

Auxiliary circuit enables automatic monitoring of ECGs
MSC-106  B65-10142  01

Logarithmic amplifier uses field effect transistors
JPL-509  B65-10145  01

Instrument calibrates low gas-rate flowmeters
MSC-134  B65-10137  01

High-gain amplifier has excellent stability and low power consumption
GSFC-272  B65-10138  01

Auxiliary circuit enables automatic monitoring of ECGs
MSC-106  B65-10142  01

Logarithmic amplifier uses field effect transistors
JPL-509  B65-10145  01

Rear position sensor switched currents in brushless dc motors
GSFC-315  B65-10151  01

Circuit reduces distortion of FM modulator
GSFC-257  B65-10152  01

Phase shift frequency synthesizer is efficient, small in size
M-PS-250  B65-10169  01

Pressure transducer system is force-balanced,
has digital output
M-PS-154  B65-10174  01

DC to ac converter operates efficiently at
low input voltages
GSFC-130  B65-10178  01

Oscillator circuit measures liquid level in
tanks
M-PS-245  B65-10209  01

Detector circuit compensates for vidicon beam
current variations
GSFC-310  B65-10212  01

Simple ECD circuit accurately counts to 24
GSFC-317  B65-10225  01

Simple circuit produces high-speed, fixed
duration pulses
GSFC-285  B65-10228  01

Electrometer has automatic zero bias control
GSFC-350  B65-10242  01

Inductor flyback characteristic gives voltage
regulator fast response
GSFC-361  B65-10257  01

Gapped toroid provides infinite resolution
of delay-line pickup
GSFC-370  B65-10258  01

Electrometer preamplifier has drift correction
feedback
JPL-SC-074  B65-10267  01

Electronic chanzor provides direct digital
output
GSFC-363  B65-10274  01

Added diodes increase output of balanced
mixer circuit
GSFC-354  B65-10276  01

Circuit maintains digital decision threshold
at preset level
M-PS-331  B65-10281  01

Boron nitride housing cools transistors
WOO-079  B65-10289  01

Electrostatically driven dynamic capacitor
employs capacitive feedback
JPL-771  B65-10293  01

Hybrid circuit achieves pulse regeneration
with low power drain
GSFC-362  B65-10314  01

Compact SCR trigger circuit for ignitron
switch operates efficiently
M-PS-371  B65-10347  01

Frequency discriminator with binary output
eliminates tuned circuits
M-PS-376  B65-10349  01

Multiphase clock-pulse generator uses
simplified circuitry
M-PS-297  B65-10353  01

Adhesive-backed terminal board eliminates
mounting screws
MSC-173  B65-10396  01

Computer circuit calculates cardiac output
MCC-274  B66-10006  01

Portable self-powered device detects internal
flaws in tubular structures
NU-0019  B66-10028  01

Circuit operates as sine function generator
HS-255  B66-10038  01

Noncontacting transducer measures shaft torque
M-PS-474  B66-10048  01

Function generator eliminates necessity
of series summation
GSFC-214  B66-10351  01

Hydrogen fire detection system features sharp
discrimination
M-PS-643  B66-10368  01

Solid state detectors monitor relay contacts
JPL-785  B66-10396  01

Control circuit maintains unity power factor
of reactive load
MSC-192  B66-10431  01

Remote preamplifier circuit maintains
stability over wide temperature range
WOO-278  B66-10432  01

Shaft encoder presents digital output
JPL-SC-191  B66-10436  01

Semiconductors can be tested without
removing them from circuitry
M-PS-1163  B66-10447  01

Simple, one transistor circuit boosts pulse
amplitude
GSPC-501  B66-10480  01

Electronic circuit delivers pulse of high
interval stability
MSC-673  B66-10501  01

Point-source light sensor circuit is
insensitive to background light
JPL-778  B66-10502  01

Solid state annunciator facilitates complex
system troubleshooting
M-PS-1258  B66-10505  01

Antenna simulator permits preinstallation
system checkout
GSFC-522  B66-10518  01

Collector/collector guard ring balancing
circuit eliminates edge effects
JPL-SC-143  B66-10563  01

Electronic circuit provides accurate
sensing and control of dc voltage
NU-0089  B66-10591  01

MOSFET analog memory circuit achieves long
duration signal storage
M-PS-860  B66-10603  01

Electrical continuity scanner facilitates
identification of wires for soldering to
connectors
MSC-626  B66-10605  01

Resistance thermometer has linear
resistance-temperature coefficient at low
temperatures
WOO-190  B66-10612  01

Magnetoresistor monitors relay performance
M-PS-1754  B66-10650  01

Actuator device schedules rate of valve
closure
M-PS-1556  B66-10666  01

Polarimeter provides transient response
in nanosecond range
JPL-890  B67-10021  02

Multipurpose instrumentation cable provides
integral thermocouple circuit
NU-0108  B67-10046  01

Solid-state time-to-pulse-height converter
developed

I-92
Subject Index

ABC-170  B67-10053  01  
Control circuit ensures solar cell operation at maximum power  GSPC-402  B67-10061  01  
Portable detector set discloses helium leak rates  N-PS-1733  B67-10065  01  
Strain gage circuitry provides fatigue testing machine with accurate cycle count  BU-0114  B67-10093  01  
Heater control circuit provides both fast and proportional control  N-PS-906  B67-10097  01  
Personal communication system combines high performance with miniaturization  MSC-720  B67-10119  01  
Electrometer amplifier operates over dynamic range of five orders of magnitude  N-I-75  B67-10199  01  
Automated urinalysis technique determines concentration of creatine and creatinine by colorimetry  NO-10149  B67-10245  04  
Experimental coherent fractional frequency multiplier at S-band  N-PS-2427  B67-10250  01  
Fast-response frequency-to-analog converter  N-PS-709  B67-10257  01  
System precisely controls oscillation of vibrating mass  N-PS-1875  B67-10276  01  
Vibrator elapsed time is automatically controlled  N-PS-2573  B67-10284  01  
Circuit provides overcurrent protection to push-pull amplifier  MSC-12033  B67-10300  01  
Transistor biased amplifier minimizes diode discriminator threshold attenuation  N-PS-1063  B67-10311  01  
Electronic test instrument generates extremely small current signals  N-PS-276  B67-10318  01  
Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks  NO-10031  B67-10319  06  
Brake joint quality tested electromagnetically  N-PS-12795  B67-10333  01  
Field effect transistors improve buffer amplifier  N-PS-976  B67-10338  01  
Method of improving contact bonds in silicon integrated circuits  N-PS-1753  B67-10338  01  
Digital-to-analog converter operates from low level inputs  JPL-907  B67-10357  01  
Signal generator converts direct current to multiphase supplies  M-PS-11043  B67-10368  01  
Multiple meter monitoring circuits served by single alarm  MSC-10984  B67-10369  01  
Mechanical properties of wire insulation automatically determined  MSC-10983  B67-10370  01  
Circuit automatically calibrates flowmeter against liquid-level gauge reference  N-PS-2194  B67-10376  01  
Crack growth measured on flat and curved surfaces at cryogenic temperatures  LEWIS-389  B67-10384  01  
Computer program for network synthesis by frequency response fit  N-PS-12686  B67-10406  06  
Interference effects eliminated in random oriented space station antenna system  MSC-10004  B67-10435  01  
Stable ac phase and amplitude comparator  N-PS-13086  B67-10459  01  
Series transistors isolate amplifier from flyback voltage  MSC-11023  B67-10468  01  
Improved circuit for measuring capacitive and inductive reactances  N-PS-13083  B67-10488  01  
Improved circuit for measuring capacitive and inductive reactances  N-PS-13083  B67-10483  01  
Adaptive control circuit prevents amplifier saturation  NO-10026  B67-10484  01  
Electron beam deflected to determine focal point location  N-PS-14107  B67-10489  01  
One-shot pulse shaper circuit  KG-11379  B67-10514  01  
Synchronized circuit improves accuracy of fluid transfer measurements  MSC-11167  B67-10515  05  
Gyrator-type circuits replace ungrounded inductors  NAC-10608  B67-10584  01  
Circuit enhances vertical resolution in raster scanning systems  MSC-12123  B67-10649  01  
Compensation circuit improves operation of inductive coupling transformers  N-PS-13801  B67-10649  01  
Improved compensation circuit for direct-coupled amplifiers  NO-11167  B67-10649  01  
Tunnel diode circuit used as nanosecond-range time marker  NAC-10614  B67-10664  01  
Welder analyzer  MSC-12068  B67-10670  01  
Silicon strain sensors enable pressure measurement at cryogenic temperatures  N-PS-14703  B67-10670  01  
Improved fuel-cell-type hydrogen sensor  N-PS-14665  B67-10670  01  
Low energy chmmeter can be used to test sensitive circuits, other meters  SAN-10013  B67-10670  01
CIRCULAR CONES

System measures arc energy dissipated in relay contact cycling
M-PS-14541 B68-10312 01

Method of reducing time base error in digital magnetic recorders
GSFC-10106 B68-10317 01

Low-cont., fast-response drive circuit for electromagnetic torque motors
LEWIS-10143 B68-10386 01

Two-way digital driver/receiver uses one set of lines
N-PS-15001 B68-10448 06

Performance analysis of electrical circuits
/PANS/
N-PS-15001 B68-10448 06

Readout system for radiation detector
HSC-90180 B68-10501 01

Locating **sneak paths** in electrical circuitry
M-PS-15018 B68-10565 01

Welding skews with computerized controls
M-PS-20224 B68-10566 01

Device for diode tuning in a stripline varactor harmonic multiplier
N-PS-20153 B69-10013 01

Microelectronic oscillator, 2
GSFC-10387 B69-10063 01

Concept for a multifunctional oscilloscope probe
N-PS-16390 B69-10129 01

Schmitt trigger multivibrator
MSC-10935 B69-10143 01

Positive and negative output circuits
LEWIS-10715 B69-10151 01

A prototype high power portable lamp
M-PS-20229 B69-10189 02

Proposed technique for vertical alignment of a crane's cable
N-PS-16496 B69-10262 05

Technique for abrasive cutting of thick-film conductors for hybrid circuits
MSC-13242 B69-10235 03

Piezoelectric lock mechanism resists lockpicking
SAM-10037 B69-10281 01

Semiautomatic inspection of microfilm records
N-PS-20240 B69-10301 02

Circuit counts pulses and indicates time of occurrence of slow pulses
XMP-0623A B69-10313 01

Simple, accurate automatic frequency control circuit
KSC-10393 B69-10323 01

Improved dc voltage regulator
XRS-06667 B69-10369 01

A positive taper traveling-wave tube
LANGLEY-10263 B69-10407 01

Simplified, reliable circuit sorts binary numbers in order of magnitude
NPO-10414 B69-10503 01

Synchronizing redundant power oscillators
XOS-09377 B69-10546 01

High voltage pulse generator
MSC-12178 B69-10548 01

CIRCULAR CYLINDERS

Flexible coiled spline securely joins mating cylinders
WOO-270 B66-10172 05

Cylindrical claw clamp has quick release feature
M-PS-513 B66-10213 05

Special mandrel permits uniform welding of out-of-round tubing
M-PS-706 B66-10323 05

Friction loading device enables accurate testing of brittle materials
BD-0051 B66-10345 05

A design procedure for the weight optimization of straight finned radiators
GSFC-547 B66-10618 05

Metal flame spray coating protects electrical cables in extreme environment
NWC-10077 B66-10531 03

Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts
N-PS-13058 B67-10631 06

CIRCULAR ORBITS

Generalized Newton-Raphson trajectory optimization-generator 1
M-PS-15020 B68-10422 06

Equations provide tubular information on effects of uniform and variable loads on thin, flat, circular plates
ARG-151 B68-10501 05

Device enables calibration of microphones at high sound pressure levels
M-PS-11980 B67-10336 01

Computer program performs frequency analysis of nonuniform turbine disk subjected to temperature gradients
NWC-10301 B68-10006 06

CIRCULAR PLATES

Omnidirectional antennas transmit and receive over large bandwidth
GSFC-436 B66-10133 01

Improved circularly polarized planar-array antenna
NPO-10301 B69-10382 01

CIRCULAR SHELLS

Radial coolant channels fabricated by simplified method
BD-0070 B66-10267 05

CIRCULAR TUBES

Special mandrel permits uniform welding of out-of-round tubing
M-PS-706 B66-10323 05

SUBJECT INDEX

Flexible high-voltage supply for experimental electron microscope
ARG-10482 B69-10603 01

Pulse-height analyzer with digital readout
ARG-10503 B69-10640 01

Miniature backward-diode pressure sensor features stability and low power consumption
EHC-10229 B69-10690 01

Battery charge-discharge controller
N-PS-11837 B69-10747 01

Problem of oscillating cone in supersonic flow is solved by small perturbation techniques
M-PS-869 B66-10700 02

Cylindrical claw clamp has quick release feature
M-PS-513 B66-10213 05

Friction loading device enables accurate testing of brittle materials
BD-0051 B66-10345 05

A design procedure for the weight optimization of straight finned radiators
GSFC-547 B66-10618 05
SUBJECT INDEX

Niobium-uranium alloys with voids of predetermined size and total volume
ARG-10490 B69-10641 03

CIRCULATION
Fine-particle filter prevents damage to vacuum pumps
LEWIS-106 B63-10489 05
Welds chilled by liquid coolant manifold
M-PS-679 B66-10354 05
Two systems developed for purifying inert atmospheres
ARG-10234 B69-10026 03
Self-sustained hydrodynamic oscillations in a natural-circulation two-phase boiling loop
ARG-10461 B69-10620 02
Liquid-metal-piston MHD generator
ARG-10500 B69-10771 02

CIRCULATORS (PHASE SHIFT CIRCUITS)
Double-throw microwave device switches two lines quickly
JPL-410 B63-10258 01

CIRCULATORY SYSTEM
Improved sample capsule for determination of oxygen in hemolyzed blood
MSC-11017 B67-10408 04
Carbon offers advantages as implant material in human body
M-PS-18207 B69-10087 04

CITRIC ACID
Nonhazardous acid etches weld samples
M-PS-107 B66-10370 05
Improved pH buffering agent for sodium hypochlorite
MSC-15443 B69-10084 03

CLADDING
Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam
ARG-226 B67-10050 03
Study made of corrosion resistance of stainless steel and nickel alloys in nuclear reactor superheaters
ARG-230 B67-10051 03
Consolidation and fabrication techniques for vanadium-20 w/o titanium /IV-20/
ARG-10148 B66-10368 03

CLAMPING CIRCUITS
Increased performance reliability obtained with dual /redundant/ oscillator system
GSFC-36 B63-10027 01
Transistorized circuit clamps voltage with 0.1 percent error
GSFC-196 B65-10118 01
Simple circuit provides reliable multiple signal average and reject capability
NU-0069 B66-10282 01

CLAMPS
Reference black body is compact, convenient to use
ARC-3 B63-10004 03
Sleeve and cutter simplify disconnecting welded joint in tubing
JPL-384 B63-10240 05
Novel clamps align large rocket cases, eliminate back-up bars
M-PS-1 B63-10376 05
Buckle joins web straps quickly, adjusts easily

LANGLEY-21 B64-10119 05
Apparatus permits flexure testing of specimens at cryogenic temperatures
M-PS-257 B65-10129 02
Spiral heater coils hand-formed with fixture
LEWIS-208 B65-10192 05
Self-aligning fixture used in lathe chuck jaw refacing
NRC-21 B65-10196 05
Electrical cable connector-clamp has smooth exterior surface
MSC-154 B65-10201 05
Remotely operated clamping tool has positive grip
NU-0020 B65-10254 05
Die and telescoping punch forms convolutions in thin diaphragm
JPL-SC-135 B65-10393 05
Compact retractor protects cabling loops
M-PS-561 B66-10016 05
Resilient clamp holds fuel cell stack through resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05
Bench vise adapter grips tubing securely and safely
MSC-279 B66-10056 05
Calibrated clamp facilitates pressure application
MSC-298 B66-10059 05
Pipe cutting tool is useful in limited space
MSC-36 B66-10102 05
Chart case opens to form briefing easel
MSC-349 B66-10135 05
Split glass tube assures quality in electron beam brazing
M-PS-564 B66-10151 05
Fixture aids soldering of electronic components on circuit board
ARC-56 B66-10162 01
Multisurface fixture permits easy grinding of tool bit angles
M-PS-506 B66-10171 05
Lifting clamp positively grips structural shapes
M-PS-593 B66-10176 05
Cylindrical claw clamp has quick release feature
M-PS-513 B66-10213 05
Hand tool permits shrink sizing of assembled tubing
MSC-504 B66-10239 05
Fixed vacuum plate clamps styrofoam for machining
M-PS-683 B66-10283 05
Extensometer automatically measures elongation in elastomers
M-PS-517 B66-10284 05
Swiveling lathe jaw concept for holding irregular pieces
M-PS-783 B66-10321 05
Adapter assembly prevents damage to tubing during high pressure tests
MSC-563 B66-10330 02
Latching mechanism operates in limited access area

I-95
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>CLASSIFYING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welds chilled by liquid coolant manifold</td>
<td>MSC-230 B66-10338 05</td>
</tr>
<tr>
<td>Micromanipulation tool is easily adapted to many uses</td>
<td>JPL-129 B67-10004 05</td>
</tr>
<tr>
<td>Process sequence produces strong, lightweight reflectors of excellent quality</td>
<td>LWIS-331 B67-10010 05</td>
</tr>
<tr>
<td>Tool facilitates installation of Harmon clamps</td>
<td>H-FS-2039 B67-10105 05</td>
</tr>
<tr>
<td>Clamp provides efficient connection for high-density currents</td>
<td>H-FS-2417 B67-10140 01</td>
</tr>
<tr>
<td>Fixture facilitates helium leak testing of pipe welds</td>
<td>H-FS-12219 B67-10412 01</td>
</tr>
<tr>
<td>Cable clamp bolt fixture facilitates assembly in close quarters</td>
<td>KSC-67-80 B67-10244 05</td>
</tr>
<tr>
<td>Metal flute spray coating protects electrical cables in extreme environment</td>
<td>NOC-10077 B67-10351 03</td>
</tr>
<tr>
<td>Torque meter aids study of hysteresis motor rings</td>
<td>N-FS-12219 B67-10412 01</td>
</tr>
<tr>
<td>Clamp for detonating fuse</td>
<td>H-FS-13399 B67-10072 05</td>
</tr>
<tr>
<td>Improved traveling wave maser amplifier</td>
<td>NFO-10548 B68-10244 01</td>
</tr>
<tr>
<td>Quick-attach clamp</td>
<td>XPR-05421 B68-10250 05</td>
</tr>
<tr>
<td>Detachable caster adapter</td>
<td>MSC-91215 B69-10164 05</td>
</tr>
<tr>
<td>Sealing a rubber bladder between two sections of an accumulator</td>
<td>H-FS-20403 B69-10355 05</td>
</tr>
<tr>
<td>Improved design of item in high speed rotating machinery</td>
<td>H-FS-18447 B69-10373 05</td>
</tr>
<tr>
<td>Tool repairs tube components in situ</td>
<td>MSC-15340 B69-10379 05</td>
</tr>
<tr>
<td>Quick-set temporary bonding clamps</td>
<td>NFO-10695 B69-10406 03</td>
</tr>
<tr>
<td>Transplutonium elements processed from rock debris of underground detonations</td>
<td>ANG-10222 B69-10054 03</td>
</tr>
<tr>
<td>Visual task analysis /VISTA/</td>
<td>N-FS-14716 B69-10394 06</td>
</tr>
<tr>
<td>Colloidal suspension simulates linear dynamic pressure profile</td>
<td>WOO-266 B66-10214 05</td>
</tr>
<tr>
<td>Dispenser leak-tests and sterilizes rubber gloves</td>
<td>SSC-285 B66-10166 03</td>
</tr>
<tr>
<td>Fiberglass container shells form contamination-free storage units</td>
<td>WOO-275 B66-10217 05</td>
</tr>
<tr>
<td>Cleanroom air sampler counts, categorizes, and records particle data</td>
<td>H-FS-2221 B67-10076 01</td>
</tr>
<tr>
<td>Improved atmospheric particle analyzer</td>
<td>ERC-33 B67-10231 01</td>
</tr>
<tr>
<td>Fogging technique used to coat magnesium with plastic</td>
<td>LEWIS-10316 B67-10584 03</td>
</tr>
<tr>
<td>Locating and sealing air leaks in multicoated buildings</td>
<td>NOC-10304 B68-10024 05</td>
</tr>
<tr>
<td>Vacuum probe sampler removes micron-sized particles from surfaces</td>
<td>SAI-10003 B68-10231 04</td>
</tr>
<tr>
<td>Biological isolation garment</td>
<td>MRC-12206 B68-10500 04</td>
</tr>
<tr>
<td>Microbiological aspects of sterilization development laboratories</td>
<td>HPO-11979 B69-10593 04</td>
</tr>
<tr>
<td>Dispenser leak-tests and sterilizes rubber gloves</td>
<td>SSC-285 B66-10166 03</td>
</tr>
<tr>
<td>Apparatus automatically measures soluble residue content of volatile solvents</td>
<td>SAI-10002 B69-10292 03</td>
</tr>
<tr>
<td>A method for precision anodize stripping</td>
<td>MSC-15040 B69-10581 03</td>
</tr>
<tr>
<td>Metals plated on fluorocarbon polymers</td>
<td>JPL-544 B63-10612 03</td>
</tr>
<tr>
<td>Refractory thermal insulation for smooth metal surfaces</td>
<td>H-FS-160 B64-10099 03</td>
</tr>
<tr>
<td>Elastomers bonded to metal surfaces seal electrochemical cells</td>
<td>GSFC-168 B64-10113 03</td>
</tr>
<tr>
<td>Stringent cleaning technique assures reliable epoxy bond</td>
<td>GSFC-161 B64-10142 03</td>
</tr>
<tr>
<td>Ceramic-coated boat is chemically inert, provides good heat transfer</td>
<td>LANGLEY-96 B65-10063 05</td>
</tr>
<tr>
<td>Portable tool cleans pipes and tubing</td>
<td>MSC-238 B65-10375 05</td>
</tr>
<tr>
<td>Surfactant for dye- penetrant inspection is insensitive to liquid oxygen</td>
<td>H-FS-475 B66-10131 03</td>
</tr>
<tr>
<td>Portable sandblaster cleans small areas</td>
<td>MSC-523 B66-10242 05</td>
</tr>
<tr>
<td>Ultrasonic cleaning restores depth-type filters</td>
<td>H-FS-540 B66-10298 03</td>
</tr>
<tr>
<td>Solvent residue content measured by light scattering technique</td>
<td>H-FS-850 B66-10320 01</td>
</tr>
<tr>
<td>Grit blasting nozzle fabricated from mild tool steel proves satisfactory</td>
<td>H-FS-1820 B66-10597 05</td>
</tr>
<tr>
<td>Silver plating technique seals leaks in thin wall tubing joints</td>
<td>NU-0090 B66-10703 05</td>
</tr>
<tr>
<td>Silver plating ensures reliable diffusion bonding of dissimilar metals</td>
<td>H-FS-1975 B67-10124 03</td>
</tr>
<tr>
<td>Degreasing of titanium to minimize stress corrosion</td>
<td>LEWIS-392 B67-10147 03</td>
</tr>
<tr>
<td>Liquid oxygen diotting cleaned by falling</td>
<td></td>
</tr>
</tbody>
</table>
Simple BCD circuit accurately counts to 24

Nonlinear feedback reduces analog-to-digital converter error

Electronic phase-locked-loop speed control system is stable

FM carrier deviation measured by differential probability method

Vibrator elapsed time is automatically controlled

CLOSED CIRCUIT TELEVISION

Infrared television used to detect hydrogen fires

Junction connectors permit strategic placement of television cameras

Closed circuit TV system monitors welding operations

Thermal neutron image intensifier tube provides brightly visible radiographic patterns

Improved head-controlled TV system produces high-quality remote image

Closed circuit TV system automatically guides welding arc

Discrimination of fish oil and mineral oil slicks on sea water

CLOSED CYCLES

Closed fluid system without moving parts controls temperature

Gas-injection valve operates at high speed

Actuator device schedules rate of valve closure

CLOSED CYLINDERS

Valve designed with elastic seat

Flexible fastener effects airtight material closure

Inflatable O-ring seal would ease closing of hatch cover plate

Self-sealing closure enables access to several fluid containers

CLOWD COVER

Scanning photometer system automatically determines atmospheric layer height

Electronic shutter gates image orthicon on
CLOUDS

SUBJECT INDEX

- spectroradiometer using cryogenically cooled detector
  MSC-11688

- Food products for space applications
  MSC-11697

- Detection of effect of deposits on optical windows of pyrometer measurements
  LEWIS-10366

- Direct indication of particle size in fluidized beds
  ARG-10130

- Multilayer infrared beamsplitter film system
  XGS-11036

- Study of high-speed angular-contact ball bearings under dynamic load
  M-FS-20562

- COATINGS
- Wire winding increases lifetime of oxide coated cathodes
  LEWIS-158

- Titanium treatment improves brazed joints
  M-FS-20562

- Modified developer increases line resolution in photosensitive resist
  GSPC-386

- Adhesive protective coatings plated on magnesium-lithium alloy
  M-FS-365

- Special coatings control temperature of structures
  GSFC-444

- Polymer film exhibits thermal and radiation stability
  LEWIS-570

- Solid-film lubricant is effective at high temperatures in vacuum
  LEWIS-228

- Optically driven switch turn-off time reduced by opaque coatings
  JPL-SC-107

- Gallium alloys investigated for use as boundary lubricants
  LEWIS-245

- Rubber-coated bellows improves vibration damping in vacuum lines
  LEWIS-273

- Silazane polymers show promise for high-temperature application
  M-FS-466

- Chromium oxide coatings improve thermal emissivity of aluminia
  WGO-263

- Standards for electron probe microanalysis of silicates prepared by convenient method
  GSPC-469

- Electrically conductive fibers thermally isolate temperature sensor
  GSFC-456

- Film coating permits low-force scribing
  M-FS-902

- Improved method of edge coating flat ribbon wire
  JPL-934

- Process reduces secondary resonant emission in electronic components
  JPL-394

and off
HQ-96

CLOUDS

A piezo-bar pressure probe
LEWIS-393

LEWIS-393

Quick-acting clutch disengages idle drive motor
GSPC-143

Torque wrench designed for restricted areas
LEWIS-246

Diaphragm spring gives clutch over-center toggle effect
GSPC-499

Gear drive automatically indexes rotary table
M-FS-753

Electromechanical rotary actuator operates over wide temperature range
M-FS-10402

Volume offset in linear FM/AM transponder eliminates clutter
M-FS-249

Refractory thermal insulation for smooth metal surfaces
M-FS-160

Elastomers bonded to metal surfaces seal electrochemical cells
GSPC-166

Plastic films for reflective surfaces reproduced from masters
GSPC-198

Soldier flux leaves corrosion-resistant coating on metal
JPL-611

Flexible curtain shields equipment from intense heat fluxes
M-FS-48

Coating method enables low-temperature brazing of stainless steel
NU-0030

Pigmented coating resists thermal shock
JPL-SC-083

Gage of 6.5 per cent Si-Fe sheet is chemically reduced
MSC-537

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-64

Combination spacer and gasket provides effective static seal
M-FS-1397

Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
ARG-22

Multilayer refractory nozzles produced by plasma-spray process
M-FS-339

Study made of anodized aluminum circuit boards
M-FS-13580

A method of determining combustion gas flow
M-FS-10257

Improved relay optical element for
B67-10270 01

B67-10259 01

B64-10028 05

B66-10011 05

B66-10297 05

B66-10383 05

B69-10100 05

B65-10146 01

B64-10099 03

B64-10113 03

B64-10151 03

B64-10206 03

B65-10044 03

B65-10250 03

B65-10250 03

B65-10257 03

B66-10611 05

B67-10425 01

B67-10455 03

B68-10245 02

B68-10324 04

B68-10367 01

B69-10083 05

B69-10260 02

B69-10367 05

B65-10032 03

B65-10153 05

B66-10278 01

B65-10294 03

B65-10337 03

B66-10083 03

B66-10087 03

B66-10141 01

B66-10165 03

B66-10187 02

B66-10194 03

B66-10227 03

B66-10234 03

B66-10349 01

B66-10609 03

B66-10684 03

B66-10685 01


SUBJECT INDEX

Mechanism facilitates coating of inner surfaces of metal cylinders
GSFC-515 B66-10698 05

Abraded cadmium-plated cable connectors repaired by conversion coating
M-PS-1424 B67-10014 03

Dispersion of borax in plastic is excellent fire-retardant heat insulator
ARG-5 B67-10016 03

An improved soft X-ray photoionization detector
GSFC-540 B67-10072 05

Liquid crystals detect voids in fiber glass laminates
LEWIS-10104 B67-10286 03

Scribable coating for plastic films
MSC-11194 B67-10409 03

Flame sprayed dielectric coatings improve heat dissipation in electronic packaging
M-PS-13569 B67-10534 01

Bacterial organoclay conformal coating for electronic components
GSFC-10007 B67-10599 03

Application of the solid lubricant polybenzylsulfide by sputtering
LEWIS-10544 B68-10340 03

High-emittance coatings on metal substrates
LXAIS-10325 B68-10381 03

Method for making small pointed thermocouples
SAN-10014 B68-10389 01

Method of making conical fiber optical components
IMP-09745 B69-10020 02

Improved pH buffering agent for sodium hypochlorite
MSC-15443 B69-10084 03

Coatings decrease metal fatigue failure
ARC-10015 B69-10176 03

Investigation of spacecraft coatings
M-PS-20458 B69-10181 06

High temperature coatings for gas bearings
LEWIS-10793 B69-10200 03

Remote balance weights accurately amid high radiation
ARG-10387 B69-10242 05

Simple test indicates degree of cure of polyamide coatings
MSC-15487 B69-10330 03

Improved vacuum deposition apparatus
NPO-11109 B69-10365 02

Improved ferrous shielding for flat cables
M-PS-14524 B69-10401 01

Improved primer for bonding polyurethane adhesives to metals
M-PS-90591 B69-10540 03

Development of improved potting and conformal coating compounds
M-PS-20219 B69-10559 03

Investigation of the development of cracks in solder joints
M-PS-20444 B69-10807 01

COAXIAL CABLES

Modified filter prevents conduction of microwave signals along high-voltage power supply leads
JFL-63 B63-10091 01

Modified RF coaxial connector ends vacuum chamber wiring problem
GSFC-150 B64-10010 01

Compact coaxial connector for printed circuit adds reliability
MSC-57 B64-10016 01

High-pass RF coaxial filter rejects dc and low frequency signals
GSFC-73 B64-10173 01

Cutter and stripper reduces coaxial cable connection time
ARG-80 B65-10094 05

Lightweight coaxial cable connector reduces signal loss
JFL-720 B65-10244 01

Boron trifluoride nuclear detector preamplifier uses single-cable connection
LEWIS-178 B65-10255 01

Antenna configurations provide polarization diversity
GSFC-74 B66-10066 01

Semiconductor forms biomedical radiation probe
MSC-320 B66-10252 04

Junction connectors permit strategic placement of television cameras
KSC-66-22 B66-10391 01

Plug-in connector socket accepts coaxial cable end
ARG-9 B66-10476 01

High frequency wide-band transformer uses coax to achieve high turn ratio and flat response
ARG-107 B66-10600 01

Connector acts as quick coupling in coaxial cable application
JFL-803 B66-10621 01

Process reduces secondary resonant emission in electronic components
JFL-934 B66-10685 01

Current pulse amplifier transmits detector signals with minimum distortion and attenuation
MSC-10055 B67-10347 01

Coaxial cable stripping device facilitates RF cabling fabrication
NPO-10315 B67-10419 05

Adhesives for laminating polyamide insulated flat conductor cable
M-PS-12066 B67-10429 03

Broadband choke suppresses spurious currents in antenna structure
MSC-10013 B67-10675 01

Cryogenic liquid level measuring probe
ARG-10138 B68-10291 01

Coaxial cable stripper for confined areas
KSC-10167 B68-10444 05

COAXIAL FLOW

Seal allows blind assembly and thermal expansion of components
NU-0005 B65-10053 05

COBALT

Vibration analysis utilizing Mössbauer effect
M-PS-11974 B67-10339 01

Practical new method of measuring thermal-neutron fluence
COBALT ALLOYS

New cobalt alloys have high-temperature strength and long life in vacuum environments.
LEWIS-47  B67-10351  03

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics.
LEWIS-320  B66-10373  03

Process yield Co-Fe alloys with superior high temperature magnetic properties.
LEWIS-333  B66-10535  03

Cobalt-tungsten, ferromagnetic high-temperature alloy.
LEWIS-10378  B66-10095  03

High temperature alloy.
LEWIS-10377  B66-10253  03

Inspection criteria ensure quality control of parallel gap soldering.
N-FS-14530  B68-10257  05

Helical recorder.
GSFC-10614  B69-10340  01

High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes.
LEWIS-90271  B69-10376  01

COBALT COMPOUNDS

New class of compounds have very low vapor pressures.
ARC-115  B67-10184  03

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel.
NUC-10047  B67-10194  03

COBALT OXIDES

Solid-film lubricant is effective at high temperatures in vacuum.
LEWIS-228  B66-10087  03

Cobalt improves nickel hydroxide electrodes for batteries.
LEWIS-10760  B69-10228  01

COBALT 60

Irradiation improves properties of an aromatic polyester.
LANGLEY-115  B65-10164  03

CODER

Translator program converts computer printout into braille language.
M-FS-2061  B67-10087  01

DSN seven-day/twelve week schedule program.
NPO-10752  B68-10410  06

Cocks

Improved sample capsule for determination of oxygen in hemolyzed blood.
MSC-11017  B67-10406  04

CODERS

Transistor voltage comparator performs own sensing.
GSFC-228  B65-10028  01

Variable word length encoder reduces TV bandwidth requirements.
LANGLEY-87  B65-10345  01

Pneumatic binary encoder replaces multiple solenoid system.
N-FS-665  B66-10374  01

Shaft encoder presents digital output.
JPL-SC-191  B66-10436  01

Multiplexing control device enables handling of wide variations in sampling rates.
N-FS-1871  B67-10150  01

Acousalator for shaft encoder.
N-FS-13599  B68-10093  01

Color-televisioned medical microscopy.
MSC-13086  B68-10314  01

High-speed pulse cameras.
N-FS-11353  B68-10329  02

Simultaneous message framing and error detection.
MSC-12001  B68-10330  01

Ring laser angle encoder.
MSC-13099  B68-10115  01

Encode/Decode facility for FORTRAN 4.
ARG-10335  B69-10169  06

CODES

Pocket-size manual tape reader device aids computer tape checking.
KSC-10058  B67-10361  01

Design for a rapid automatic sync acquisition system.
NPO-10214  B69-10538  01

CODING

Uppercase and lowercase computer printout increases readability.
HQ-12  B65-10286  01

Tester periodically registers dc amplifier characteristics.
MSC-190  B66-10146  01

Detection system ensures positive alarm activation in digital message loss.
MSO-208  B66-10287  01

Automated drafting system uses computer techniques.
M-FS-788  B66-10362  01

Data retrieval system provides unlimited hardware design information.
MSC-1194  B67-10170  01

A conceptual, parallel operating data compression processor.
NPO-10069  B67-10204  01

Run numbering system for use with data recorders.
N-FS-2557  B67-10215  01

Coded photographic proof paper could serve as convenient densitometer.
N-FS-13374  B67-10443  02

Improved digital TV encoding and decoding system.
MSC-11147  B67-10562  01

Unique frequency-shift-keyed demodulation.

I-100
SUBJECT INDEX

SYSTEM
GSPC-217 B67-10668 01

LABCON - Laboratory Job Control program
M-FS-10141 B69-10106 06

Computer grading of examinations
ARG-10269 B69-10159 06

Piezoelectric lock mechanism resists lockpicking
SAN-10037 B69-10201 01

Wide-band doubler and sine wave quadrature generator
SFQ-11133 B69-10383 01

COEFFICIENT OF FRICTION
Kinetic-energy absorber employs frictional force between mating cylinders
LEWIS-75 B63-10442 05

Lateral ring metal elastic wheel absorbs shock loading
M-FS-10312 B66-10663 05

Land landing couch dynamics computer program
MSC-1210 B66-10383 01

Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment
NUC-10083 B67-10350 03

Device measures static friction of magnetic tape
GSFC-10360 B67-10586 03

Rolamite - A new mechanical design concept
SAN-10001 B66-10611 05

Prediction of friction coefficients for gases
LEWIS-10774 B69-10112 02

A new solid lubricant
LEWIS-10102 B69-10250 03

COEFFICIENTS
Radiation used to temperature compensate semiconductor strain gages
LANGLEY-207 B66-10186 02

Resistance thermometer has linear resistance-temperature coefficient at low temperatures
W0-190 B66-10612 01

Glass formulation has high coefficient of thermal expansion
W0-0084 B66-10705 03

Computer subroutine ISUDS accurately solves large system of simultaneous linear algebraic equations
NUC-10051 B67-10344 06

Computer program generates averaged value data tapes
M-FS-12728 B67-10411 06

Linear systems of equations solved using mathematical algorithms
ARG-10146 B68-10292 06

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys
NUC-102554 B69-10707 02

COERCIVITY
New sintering process adjusts magnetic value of ferrite cores
GSFC-129 B63-10666 01

Process yield Co-Fe alloys with superior high temperature magnetic properties
LEWIS-333 B66-10535 03

MINIATURIZATION OF MAGNETIC LOGIC CIRCUITRY
LANGLEY-10037 B69-10148 06

ADDING CALCIUM IMPROVES LITHIUM FERRITE CORE
ERC-10036 B69-10866 06

COHERENT LIGHT
Improvement in recording and reading holograms
ERC-10151 B68-10347 02

Repetitively pulsed, wavelength-selective carbon dioxide laser
ERC-10178 B68-10564 02

COHERENT RADIATION
Detector measures power in 50 to 30,000 GHz radiation band
ERC-26 B66-10581 01

COELED RADIATION
Device measures characteristics of hot gas stream
M-FS-240 B65-10130 05

A new solid lubricant
LEWIS-10812 B66-10250 03

High permeability semiconductors permit close-tolerance soldering
GSFC-319 B65-10134 05

Spiral heater coils hand-formed with fixture
LEWIS-208 B66-10792 05

Multiple test chamber exposes materials to various environments
MSC-179 B65-10268 01

Flexible coiled spline securely joins mating cylinders
W0-270 B66-10712 05

Rectilinear accelerometer possesses self-calibration feature
M-FS-1480 B66-10452 01

Heat exchanger tubes supported in high vibration environment
M-FS-14801 B66-10567 05

Rotational fluid coupling eliminates hose entanglements
MSC-312 B66-10585 05

Electronic circuit provides accurate sensing and control of dc voltage
W0-0089 B66-10591 01

Pressure probe compensates for dimensional tolerance variations
LEWIS-302 B66-10599 01

Braze joint quality tested electromagnetically
M-FS-12795 B67-10333 01

I-101
Simplified technique demonstrates magnetic domain switching
M-PS-13153 B67-10342 02

Series transistors isolate amplifier from flyback voltage
MSC-11023 B67-10046 01

Environmental control system for cryogenic testing of tensile specimens
SHC-10523 B67-10618 02

Noisy current disk valve
LWIS-10123 B67-10630 05

Quick-attach clamp
XTR-05421 B68-10250 05

Novel terminal strips for transformers
NRC-10842 B69-10246 01

Induction probe determines levels of liquid metals
ARG-10348 B69-10355 03

Design of printed circuit coils
HO-10431 B69-10665 01

Improved sensor counts micronetecoid penetrations
LWIS-76 B63-10443 01

Pressure sensor responds only to shock wave
M-PS-238 B65-10194 01

TV synchronization system features stability and noise immunity
JPL-915 B67-10118 01

Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ARG-90261 B69-10621 01

Cold cathodes
Cold cathode ionization gage has rigid metal housing
GSFC-445 B66-10041 01

Preparation of superconducting thin films of transition-metal interstitial compounds
HO-10445 B69-10470 01

Cold drawing
Copper-acrylatic enamel serves as lubricant for cold drawing of refractory metals
ARG-54 B66-10471 05

Cold pressing
Integral ribs formed in metal panels by cold-press extrusion
M-PS-230 B65-10141 05

Porous mandrels provide uniform deformation in hydrostatic powder metallurgy
M-PS-1972 B67-10299 03

Cold rolling
Radial coolant channels fabricated by simplified method
NU-0070 B66-10267 05

Process yield Co-Fe alloys with superior high temperature magnetic properties
LWIS-333 B66-10535 03

Cold traps
Liquid trap seals thermocouple leads
M-PS-686 B66-10212 05

Cold trap increases sensitivity of gas chromatography
M-PS-1617 B66-10517 03

Electronic circuit provides automatic level control for liquid nitrogen traps
KSC-10127 B66-10061 01

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331 B69-10208 04

Control for maintaining constant level of a cryogenic liquid
NUC-1177 B69-10573 05

Cold working
Upseting butt edge increases weld-joint strength
M-PS-175 B66-10164 05

New weldable high strength aluminum alloy developed for cryogenic service
M-PS-737 B66-10613 05

Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures
SHC-10084 B67-10349 03

Extrusion of small-diameter, thin-wall tungsten tubing
LWIS-9035 B67-10355 05

Stabilizing stainless steel components for cryogenic service
M-PS-13127 B67-10377 05

Cold machining of high density tungsten and other materials
ARG-10289 B69-10110 05

Collapse
Analysis of stability-critical orthotropic cylinders subjected to axial compression
M-PS-12069 B67-10375 03

Dynamics of moving bubbles in single and binary component systems
M-PS-14885 B68-10339 02

Collection
Technique for highly efficient recovery of microbiological contaminants
MSC-13250 B69-10273 04

Direct in-vial collection for liquid-scintillation assay of carbon-14 and tritium
ARG-10424 B69-10412 03

Collimation
Instrument performs nondestructive chemical analysis, data can be telemetered
JPL-SC-078 B65-10317 01

Small, high-intensity flasher permits continuous close-in photography
NU-0043 B66-10119 03

Thermionic scanner pinpoints work function of emitter surfaces
JPL-SC-177 B66-10444 01

Optical superfetheryne receiver uses laser for local oscillator
M-PS-1605 B66-10584 01

Neutron diffractometer allows both magnetic and crystallographic analyses
ARG-191 B67-10131 02

Wideband, high efficiency optical modulator requires less than 10 watts drive power
M-PS-12733 B67-10289 01

Improvement in recording and reading holograms
ERC-10151 B68-10347 02

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
ARG-10220 B69-10211 02

Laser action from a terbium beta-ketoenolate
at room temperature
GSFC-10593 B69-10324 02
Energy-storage of a prescribed impedance
NPO-10303 B69-10380 01
Oculometer for remote tracking of eye movement
JRC-10114  B69-10449 02.

COLLIMATORS
Attachment converts microscope to point source autocollimator
JPL-499 B64-10124 05
Sensitive level sensor made with spirit level, gives electrical output
LANGLEY- 49 B65-10067 01
Unique construction makes interferometer insensitive to mechanical stresses
JPL-725 B65-10295 02
Optical automatic gain channel
MSC-1550 B66-10596 02
Star/horizon simulator used to test space guidance system
MSC-607 B67-10110 02
Vibration analysis utilizing Nomhauer effect
M-PS-11974 B67-10339 01
Electron beam parallel X-ray generator
MSC-11022 B67-10372 02
Method for X-ray study under extreme temperature and pressure conditions
MSC-11232 B67-10479 02
Improved electro-optical tracking system
M-PS-14791 B68-10311 01
Modified sine bar device measures small angles with high accuracy
GSFC-438 B68-10322 02
Training manual on optical alignment
instruments
N-PS-20292 B68-10574 02
Ring laser angle encoder
MSC-13099 B69-10115 01
Method for copper staining of germanium crystals
ARG-10403 B69-10257 03
Precision mounting for instrument optical elements provided by polyimide bonding
M-PS-20293 B69-10310 05
Method of directing a laser beam with very high accuracy
N-PS-11087 B69-10508 02
Improved camera for better X-ray powder photographs
HQ-10424 B69-10537 01

COLLINEARITY
Proposed acousto-optic filter
HQ-10440 B69-10466 02

COLLOIDS
Magnetic fluid readily controlled in zero gravity environment
LEWIS-126 B65-10335 03
Colloidal suspension simulates linear dynamic pressure profile
WGO-266 B66-10214 05
Standards for electron probe microanalysis of silicates prepared by convenient method
GSFC-469 B66-10234 03
Uranyl phthalocyanines show promise in the treatment of brain tumors
ARG-100 B67-10180 04
Corrosion reduction of aluminum alloys in flowing high-temperature water
ARG-10244 B69-10299 03

COLOR
Inorganic paint is durable, fireproof, easy to apply
GSFC-366 B65-10156 03
Multicolor stroboscope pinpoints resonances in vibrating components
JPL-0033 B66-10422 01
Legibility of electroluminescent instrument panels investigated
MSC-494 B66-10316 02
Device to color modulate a stationary light source gives high intensity
EQ-44 B66-10876 01
Liquid crystals detect voids in fiber glass laminates
LEWIS-10104 B67-10286 03
New electron microscope employs new video display technique
ARG-155 B67-10312 03
Simplified technique demonstrates magnetic domain switching
M-PS-13153 B67-10342 02
Thermodynamic properties of saturated liquid parahydrogen charted for important temperature range
BRC-1001 B67-10346 03
Pocket-size manual tape reader device aids computer tape checking
MSC-10558 B67-10361 01
Use of color-coded sleeve shutters accelerates oscillograph channel selection
MSC-10599 B67-10382 01
Fuel cell life improved by metallic sinter activation after electrode assembly welding
MSC-10965 B67-10436 03
Luminescent screen composition for cathode ray tubes
MSC-19 B68-10056 01
Fluidic-thermochemical display device
BRC-10031 B68-10350 01
Production of solvated electrons
ARG-10416 B69-10430 03
Discrimination of fish oil and mineral oil slicks on sea water
HQ-10412 B69-10673 01

COLOR CENTERS
Some purification of potassium chloride
ARG-10377 B69-10241 03

COLOR PHOTOGRAPHY
Shortened procedure for obtaining reproducible copies of 35 mm color slides
ECS-09987 B68-10560 02
Shortened processing time technique for color industrial radiography
ARG-10235 B69-10001 02

COLOR TELEVISION
Video signal processing system uses gated current mode switches to perform high speed
COLOR VISION

multiplication and digital-to-analog conversion
MSC-761 B66-10429 01

scan rate converter for tape recording and playback of TV pictures
NPO-10166 B67-10676 01

Color-television medical microscopy
MSC-13086 B68-10314 01

COLOR VISION

Slide rule-type color chart predicts reproduced photo tones
MSC-1227 B66-10680 01

COLORIMETRY

Test strips detect different CO2 concentrations in closed compartments
MSC-210 B65-10390 03

Apparatus enables automatic microanalysis of body fluids
JPL-962 B66-10515 04

Automated urinalysis technique determines concentration of creatine and creatinine by colorimetry
NPO-10149 B66-10676 01

Simple colorimetric method determines uranium in tissue
ARG-10039 B67-10580 03

Optimetric system facilitates colorimetric and fluorometric measurements
MSC-10233 B68-10316 01

COLUMNS

Gas chromatographic column enables analysis of propellant hydrazines
MSC-1161 B66-10586 03

COLUMNS (PROCESS ENGINEERING)

Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735 B66-10182 01

Trace hydrazines in aqueous solutions accurately determined by gas chromatography
MSC-11222 B67-10290 03

Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03

COLUMNS (SUPPORTS)

Extendible column can be stowed on drum
JPL-686 B65-10191 05

Computer program simplifies selection of structural steel columns
NO-0046 B66-10097 01

Cone and column solar energy concentrator
LANGLEY-210 B67-10517 01

Deployable lattice column
NPO-10228 B68-10482 05

COMBINATORIAL ANALYSIS

Binary sequence detector uses minimum number of decision elements
JPL-673 B66-10264 01

COMBUSTION

Plastic bags in evacuated chamber make lightweight gas sampling system
FRC-31 B65-10264 01

Infrared television used to detect hydrogen fires
MSC-654 B66-10363 01

Computer program determines chemical equilibria in complex systems
LEWIS-281 B66-10671 01

TOROIDAL RING PREVENTS GAS IGNITION AT VENT STACK OUTLET

Conditions for conversion

Temperature or pressure controller
LEWIS-10297 B66-10337 01

Analysis of annular combustors
LEWIS-10359 B66-10356 06

Technique for assessing potential fire hazards
NPO-10279 B69-10287 03

Improved fire resistant radio frequency anechoic materials
NPO-16604 B69-10450 05

Life detection
NPO-10510 B69-10475 04

Burn rate testing apparatus
MSC-10947 B69-10740 03

CONSUMPTION CHAMBERS

Centrifugal device separates liquid from gas
MSC-282 B65-10394 05

Combustion chamber inlet manifold separates vapor from liquid
NPO-531 B66-10052 05

Microminiature thermocouple monitors own installation
NPO-11111 B66-10463 05

Combustion chamber struts can be effectively transpiration cooled
NPO-1830 B66-10643 03

Machining heavy plastic sections
NPO-12720 B67-10381 03

Analysis of annular combustors
LEWIS-10359 B68-10356 06

Improved combustion chamber optical probe concept
MSC-10951 B69-10280 05

Computer simulation of high-frequency combustion instability and its suppression
Eq-10391 B69-10368 06

Pneumatic flow comparator
NPO-18373 B69-10400 05

Single-element coaxial injector for rocket fuel
NPO-11095 B69-10547 05

New type pressure transducer for severe thermal environments
NPO-20208 B69-10652 01

COMBUSTION CONTROL

Development of detonation reaction engine
NPO-14020 B67-10652 01

Fuel element concept for long life high power nuclear reactors
LEWIS-10369 B69-10154 03

COMBUSTION EFFICIENCY

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331 B69-10208 04

COMBUSTION PRODUCTS

Improved system measures output energy of pyrotechnic devices
WGO-256 B66-10159 01

Hydrogen fire detection system features sharp discrimination
NPO-643 B66-10368 01

I-104
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>CORRESPONDING DOCUMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of detonation reaction engine</td>
<td>N-PS-14020 B67-10652 01</td>
</tr>
<tr>
<td>Properties of air and combustion products of fuels with air</td>
<td>LEWIS-11030 B69-10711 03</td>
</tr>
<tr>
<td><strong>COMBUSTION STABILITY</strong></td>
<td></td>
</tr>
<tr>
<td>Automatic cryogenic liquid level controller is safe for use near combustible substances</td>
<td>LEWIS-195 B66-10482 01</td>
</tr>
<tr>
<td>A method of determining combustion gas flow</td>
<td>N-PS-13757 B67-10455 03</td>
</tr>
<tr>
<td>Computer simulation of high-frequency combustion instability and its suppression</td>
<td>HQ-10391 B69-10368 06</td>
</tr>
<tr>
<td>Elimination of dissolved gases in hypergolic engine propellants</td>
<td>N-PS-16179 B69-10692 03</td>
</tr>
<tr>
<td><strong>COMETS</strong></td>
<td></td>
</tr>
<tr>
<td>Experiments to investigate particulate materials in reduced gravity fields</td>
<td>N-PS-13308 B67-10394 02</td>
</tr>
<tr>
<td><strong>CONFORT</strong></td>
<td></td>
</tr>
<tr>
<td>One-piece transparent shell improves design of helmet assembly</td>
<td>H-PS-13109 B67-10394 02</td>
</tr>
<tr>
<td><strong>COMMAND AND CONTROL</strong></td>
<td></td>
</tr>
<tr>
<td>Remote control electrical switching system has 1000-output capability</td>
<td>N-PS-380 B65-10318 01</td>
</tr>
<tr>
<td><strong>COMMAND GUIDANCE</strong></td>
<td></td>
</tr>
<tr>
<td>Polynomial manipulator AP-168</td>
<td>BSC-1231 B67-10103 01</td>
</tr>
<tr>
<td><strong>COMMAND MODULES</strong></td>
<td></td>
</tr>
<tr>
<td>Electronic circuit delivers pulse of high interval stability</td>
<td>HSC-637 B66-10501 01</td>
</tr>
<tr>
<td>Land landing couch dynamics computer program</td>
<td>BSC-1210 B67-10233 06</td>
</tr>
<tr>
<td>Analytical technique characterizes all trace contaminants in water</td>
<td>BSC-11032 B67-10243 03</td>
</tr>
<tr>
<td><strong>CONTRIBUTION</strong></td>
<td></td>
</tr>
<tr>
<td>Adding calcium improves lithium ferrite core</td>
<td>BSC-10036 B69-10686 06</td>
</tr>
<tr>
<td><strong>COMMUNICATING</strong></td>
<td></td>
</tr>
<tr>
<td>Interior servicing platform simplifies maintenance of storage tanks</td>
<td>N-PS-3300 B66-10425 05</td>
</tr>
<tr>
<td>Optical superheterodyne receiver uses laser for local oscillator</td>
<td>N-PS-1605 B66-10584 01</td>
</tr>
<tr>
<td>Wide-band doubler and sine wave quadrature generator</td>
<td>NPO-11133 B69-10383 01</td>
</tr>
<tr>
<td><strong>COMMUNICATION EQUIPMENT</strong></td>
<td></td>
</tr>
<tr>
<td>Simple circuit produces high-speed, fixed duration pulses</td>
<td>GSPC-285 B65-10228 01</td>
</tr>
<tr>
<td>Circuit maintains digital decision threshold at preset level</td>
<td>N-PS-331 B65-10261 01</td>
</tr>
<tr>
<td>Multicolor stroboscope pinpoints resonances in vibrating components</td>
<td>JPL-0033 B66-10223 01</td>
</tr>
<tr>
<td>One-piece transparent shell improves design of helmet assembly</td>
<td>HSC-187 B66-10390 05</td>
</tr>
<tr>
<td>Thin-film ferrites vapor deposited by one-step process in vacuum</td>
<td>BSC-299 B66-10398 03</td>
</tr>
<tr>
<td>Astronaut space suit communication antenna</td>
<td>BSC-12101 B68-10230 01</td>
</tr>
<tr>
<td>Improved traveling wave maser amplifier</td>
<td>NPO-10548 B68-10244 01</td>
</tr>
<tr>
<td>Optically induced free carrier light modulator</td>
<td>BSC-10216 B69-10114 01</td>
</tr>
<tr>
<td>Improved circularly polarized planar-array antenna</td>
<td>NPO-10301 B69-10382 01</td>
</tr>
<tr>
<td>Improved fire resistant radio frequency anechoic materials</td>
<td>BSC-1660C B69-10450 05</td>
</tr>
<tr>
<td>Folded stick module</td>
<td>NPO-10854 B69-10498 01</td>
</tr>
<tr>
<td>Pocket-sized tone-modulated FM transmitter</td>
<td>NPO-11180 B69-10725 01</td>
</tr>
<tr>
<td><strong>COMMUNICATION SATELLITES</strong></td>
<td></td>
</tr>
<tr>
<td>Omnidirectional antennas transmit and receive over large bandwidth</td>
<td>GSPC-438 B66-10133 01</td>
</tr>
<tr>
<td>Multi-feed cone for Cassegrainian antenna</td>
<td>NPO-10539 B69-10269 01</td>
</tr>
<tr>
<td>Design for a rapid automatic sync acquisition system</td>
<td>NPO-10244 B69-10538 01</td>
</tr>
<tr>
<td>Millimeter-wave atmospheric loss prediction method</td>
<td>NPO-11054 B69-10584 01</td>
</tr>
<tr>
<td><strong>COMPUTATION</strong></td>
<td></td>
</tr>
<tr>
<td>Magnetometer measures orthogonal components of magnetic fields</td>
<td>GSPC-395 B65-10315 01</td>
</tr>
<tr>
<td>An electronic circuit for sensing malfunctions in test instrumentation</td>
<td>KSC-10209 B69-10392 01</td>
</tr>
<tr>
<td><strong>COMPUTERS</strong></td>
<td></td>
</tr>
<tr>
<td>Explosives actuate nonmagnetic indexing device</td>
<td>GSPC-237 B65-10017 05</td>
</tr>
<tr>
<td>Rotor position sensor switches currents in brushless dc motors</td>
<td>GSPC-315 B65-10151 01</td>
</tr>
<tr>
<td>Brushless dc motor uses electron beam switching tube as commutator</td>
<td>GSPC-345 B65-10237 01</td>
</tr>
<tr>
<td>Brushless dc motor has high efficiency, long life</td>
<td>GSPC-181 B66-10355 01</td>
</tr>
<tr>
<td>Solid-state switch increases switching speed</td>
<td>WO-298 B66-10430 01</td>
</tr>
<tr>
<td>Security warning system monitors up to fifteen remote areas simultaneously</td>
<td>KSC-66-39 B66-10548 01</td>
</tr>
<tr>
<td>Thermocouples electrically checked while connected to data system</td>
<td>LANGLEY-182 B66-10623 01</td>
</tr>
<tr>
<td>Current steering commutator offers versatility</td>
<td>JPL-912 B67-10410 01</td>
</tr>
<tr>
<td>Computer memory access technique</td>
<td>NPO-10201 B67-10585 01</td>
</tr>
<tr>
<td>Bootstrap unloader</td>
<td></td>
</tr>
</tbody>
</table>
Electron beam seals outer surfaces of porous bodies

Isostatic compression process converts polyaromatics into structural material

Primary cell uses neither liquid nor fused electrolytes

Electromechanical flowmeter accurately monitors fluid flow

Electrical frequency discriminator

Solid state circuit averages multiple signals and rejects those varying significantly from the average

Highly linear, sensitive analog-to-digital converter

Simplified, reliable circuit sorts binary numbers in order of magnitude

Analog-to-digital converter has increased reliability and reduced power consumption

Nonlinear feedback reduces analog-to-digital converter error

System proportions fluid-flow in response to demand signals

FET comparator detects analog signal levels without loading analog device

System monitors discrete computer inputs

Digital system provides superregulation of nanosecond amplifier-discriminator circuit

Monitor assures availability and quality of communication channels

Thermoelectric metal comparator determines composition of alloys and metals

A conceptual, parallel operating data compression processor

FM carrier deviation measured by differential probability method

Run numbering system for use with data recorders

Tester automatically checks insulation of individual conductors in multiple-strand cables

Stable ac phase and amplitude comparator

Simple first order data compression processor concept

Optical system facilitates inspection of printed circuit boards

Closed circuit TV system automatically guides welding arc

Pulse-height analyzer with digital readout

Comparative chromatography of chloroplast pigment

Simple quasi-exponential slope generator

Control system maintains compartment at constant temperature

Device removes hydrogen gas from enclosed spaces

Reparable, high-density microelectronic module provides effective heat sink

Synthesis of various highly halogenated monomers and polymers

Consolidation and fabrication techniques for vanadium-20 w/o titanium

An overview of electromagnetic interference problems in spacecraft

Servo system facilitates photoelastic strain measurements on resins

Detector circuit compensates for vidicon beam current variations

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill

Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 ampere to 10 to the minus 3 ampere

Polarimeter provides transient response in nanosecond range

Modified univibrator compensates for output timing errors

Compensation circuit improves operation of inductive coupling transformers

Improved compensation circuit for direct-coupled amplifiers

Technique developed for measuring transmittance of optical birefringent
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B66-10260 02</td>
</tr>
<tr>
<td>Synthesis of electro-optic modulators for amplitude modulation of light</td>
<td>B66-10275 02</td>
</tr>
<tr>
<td>Acceleration insensitive fluid expansion compensator</td>
<td>B68-10559 01</td>
</tr>
<tr>
<td>Reducing quantizer deadband with a variable switch</td>
<td>B69-10259 01</td>
</tr>
<tr>
<td><strong>COMPILERS</strong></td>
<td><strong>COMPONENTS</strong></td>
</tr>
<tr>
<td>CINDA - Chrysler Improved Numerical Differencing Analyzer computer program</td>
<td>B67-10278 06</td>
</tr>
<tr>
<td>General purpose computer program for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions</td>
<td>B67-10331 06</td>
</tr>
<tr>
<td>Saturn S-2 Automatic Software System /SASS/</td>
<td>B67-10405 06</td>
</tr>
<tr>
<td>Compilation of detection sensitivities in thermal-neutron activation</td>
<td>B67-10641 03</td>
</tr>
<tr>
<td>JPLIE-JPL FORTRAN language with interval pre-processor</td>
<td>B69-10187 06</td>
</tr>
<tr>
<td>COGENT programming manual</td>
<td>B69-10556 06</td>
</tr>
<tr>
<td><strong>COMPONENT RELIABILITY</strong></td>
<td><strong>COMPONENTS</strong></td>
</tr>
<tr>
<td>Continuity tester screens out faulty socket connections</td>
<td>B66-10065 01</td>
</tr>
<tr>
<td>Improved insertion-loss tester</td>
<td>B66-10080 01</td>
</tr>
<tr>
<td>New nut and sleeve improve flared connections</td>
<td>B65-10180 05</td>
</tr>
<tr>
<td>Analog-to-digital converter has increased reliability and reduced power consumption</td>
<td>B65-10194 01</td>
</tr>
<tr>
<td>Control of component differential hardness increases bearing life</td>
<td>B65-10251 05</td>
</tr>
<tr>
<td>Interferometer construction assures parallelism of critical components</td>
<td>B65-10292 02</td>
</tr>
<tr>
<td>Apparatus presents visual display of semiconductor surface characteristics</td>
<td>B66-10200 01</td>
</tr>
<tr>
<td>Solar cell submodule design facilitates assembly of lightweight arrays</td>
<td>B66-10231 02</td>
</tr>
<tr>
<td>Magnetically operated limit switch has improved reliability, minimizes arcing</td>
<td>B66-10270 01</td>
</tr>
<tr>
<td>Semiconductor device tests components with biaxial leads</td>
<td>B66-10337 03</td>
</tr>
<tr>
<td>Device serves as hinge and electrical connector for circuit boards</td>
<td>B66-10359 01</td>
</tr>
<tr>
<td>Thermocouple-flexible cable connector</td>
<td>B66-10382 01</td>
</tr>
<tr>
<td>Fixture tests bellows reliability through repetitive pressure/temperature cycling</td>
<td>B67-10111 01</td>
</tr>
<tr>
<td>Study indicates fluid digital computer system are feasible</td>
<td>B67-10181 01</td>
</tr>
<tr>
<td>Analytical technique permits comparison of reliability of alternate mechanical designs</td>
<td>B67-10261 06</td>
</tr>
<tr>
<td>Stabilizing stainless steel components for cryogenic service</td>
<td>B67-10377 05</td>
</tr>
<tr>
<td>Study made of acoustical monitoring for mechanical checkout</td>
<td>B67-10430 02</td>
</tr>
<tr>
<td>Vibration damping composition has flush-away feature</td>
<td>B67-10432 03</td>
</tr>
<tr>
<td>Composite solar cell matrix is reliable, lightweight and flexible</td>
<td>B67-10503 01</td>
</tr>
<tr>
<td>Dynamic valve seal is reliable at cryogenic temperatures</td>
<td>B67-10526 05</td>
</tr>
<tr>
<td>Jet engine powers large, high-temperature wind tunnel</td>
<td>B67-10621 02</td>
</tr>
<tr>
<td>Development of dual solid cryogens for high reliability refrigeration system</td>
<td>B67-10644 02</td>
</tr>
<tr>
<td>Development of reliability prediction technique for semiconductor diodes</td>
<td>B67-10651 06</td>
</tr>
<tr>
<td>Solenoid valve design minimizes vibration and sliding wear problem</td>
<td>B67-10667 05</td>
</tr>
<tr>
<td>New method for critical failure prediction of complex systems</td>
<td>B68-10252 02</td>
</tr>
<tr>
<td>Low energy chmmeter can be used to test sensitive circuits, other meters</td>
<td>B68-10269 01</td>
</tr>
<tr>
<td>Electronic component reliability analysis by data reduction system</td>
<td>B68-10243 05</td>
</tr>
<tr>
<td>Concept for a multifunctional oscilloscope probe</td>
<td>B68-10507 05</td>
</tr>
<tr>
<td>Exact signal-state system reliability analysis</td>
<td>B69-10409 06</td>
</tr>
<tr>
<td>Breakaway electrical connector</td>
<td>B69-10474 01</td>
</tr>
<tr>
<td>System for computing operational probability equations</td>
<td>B69-10566 06</td>
</tr>
</tbody>
</table>

**COMPONENTS**

Chart system simplifies identification of component design assemblies | B66-10460 05

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning | B67-10348 06

Computer program analyzes generalized
**COMPOSITE MATERIALS**

- Environmental control and life support systems
  - MSC-1157
  - B67-10415

- Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes
  - AGC-10274
  - B67-10047

- Reidentifying hardware after loss of serial number
  - M-FS-18133
  - B69-10059

- Investigation of the development of cracks in solder joints
  - M-FS-20444
  - B69-10807

**COMPOSITE MATERIALS**

- Boron carbide whiskers produced by vapor deposition
  - HQ-24
  - B65-10261

- Aluminum/steel wire composite plates exhibit high tensile strength
  - M-FS-401
  - B66-10262

- Composite gaskets are compatible with liquid oxygen, resist compression set
  - M-FS-485
  - B66-10395

- Tungsten fiber-reinforced copper composites form high strength electrical conductors
  - LEWIS-338
  - B66-10572

- Intergranular metal phase increases thermal shock resistance of ceramic coatings
  - M-FS-1862
  - B66-10651

- Composites of porous metal and solid lubricants increase bearing life
  - LEWIS-307
  - B67-10007

- Composite weld rod corrects individual filler weaknesses
  - M-FS-1923
  - B67-10107

- Alumina-titanium hydride-boron carbide composite provides lightweight neutron shield material
  - NUC-10069
  - B67-10265

- A ceramic composite thermal insulation
  - M-FS-13991
  - B67-10608

- Study made of mechanics of deformation and fracture of fibrous composites
  - HQ-10035
  - B67-10560

- Reinforced thermal-shock resistant ceramics
  - LEWIS-10376
  - B68-10085

- Fiber glass reinforced structural materials for aerospace applications
  - M-FS-14806
  - B68-10360

- Tungsten fiber-reinforced nickel superalloy
  - LEWIS-10424
  - B68-10369

- Self-lubricating gear
  - M-FS-14971
  - B69-10408

- Improved method of producing oxide-dispersion-strengthened alloys
  - HQ-1061
  - B69-10536

- Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites
  - ZBC-10161
  - B69-10732

- Explosive bonding of metal-matrix composites
  - M-FS-20657
  - B69-10804

**COMPOSITE STRUCTURES**

- Composite seal reduces alkaline battery leakage
  - GSFC-337
  - B65-10271

**SUBJECT INDEX**

- Flexible coiled spline securely joins mating cylinders
  - WO-270
  - B66-10172

- Composite bulkhead fabrication development
  - M-FS-1264
  - B66-10582

- A modal combination computer program for dynamic analysis of structures
  - WO-10129
  - B67-10217

- Composite solar cell matrix is reliable, lightweight and flexible
  - WO-10821
  - B67-10503

- Nondestructive testing techniques used in analysis of honeycomb structure bond strength
  - M-FS-1214
  - B67-10574

- Evaluation of superconducting magnets, a study
  - M-FS-14808
  - B66-10396

- Adhesive for cryogenic temperature applications
  - LEWIS-10264
  - B69-10074

- Boron carbide whiskers produced by vapor deposition
  - 89-24
  - B65-10261

- Evaluation of superconducting magnets, a study
  - LEWIS-188
  - B66-10221

- Aluminum/steel wire composite plates exhibit high tensile strength
  - I-FS-401
  - B66-10262

- Adhesive for cryogenic temperature applications
  - LEWIS-10264
  - B66-10221

- Composite gaskets are compatible with liquid oxygen, resist compression set
  - M-FS-485
  - B66-10395

- Composite seal reduces alkaline battery leakage
  - GSFC-337
  - B65-10271
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>COMPRRESSOR BLADES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of dynamic systems with DAP 4E computer program</td>
<td>a nickel or silver grid GSFC-10764 B69-10227 05</td>
</tr>
<tr>
<td>Water-glycol system volume calculation</td>
<td>Temperature-controlled resistor NPO-10713 B69-10440 01</td>
</tr>
<tr>
<td>COMPRESSING</td>
<td>Two-functional seal for hose connection N-P 14062 B69-10588 05</td>
</tr>
<tr>
<td>Thermo-compression bonding produces efficient surface-barrier diode JPL-SC-066</td>
<td></td>
</tr>
<tr>
<td>Bench vise adapter grips tubing securely and safely MSC-279</td>
<td></td>
</tr>
<tr>
<td>T-handle wrench has torque-limiting action MSC-280</td>
<td></td>
</tr>
<tr>
<td>Pneumatic shutoff and time-delay valve operates at controlled rate M-P 602</td>
<td></td>
</tr>
<tr>
<td>A conceptual design for squeeze film bearings M-P 573</td>
<td></td>
</tr>
<tr>
<td>Device facilitates centering of workpieces in lathe chuck N-P 695</td>
<td></td>
</tr>
<tr>
<td>High pressure tube coupling requires no threads or flares MSC-600</td>
<td></td>
</tr>
<tr>
<td>Tool pre-tensions covers prior to lacing MSC-621</td>
<td></td>
</tr>
<tr>
<td>Torus elements used in effective shock absorber WO-114</td>
<td></td>
</tr>
<tr>
<td>Bellows joint absorbs torsional deflections in duct system N-P 682</td>
<td></td>
</tr>
<tr>
<td>Shock-operated valve would automatically protect fluid systems M-P 801</td>
<td></td>
</tr>
<tr>
<td>Conected hinge permits flush mounting of doors and hatches MSC-623</td>
<td></td>
</tr>
<tr>
<td>Inexpensive insulation is effective for cryogenic transfer lines MSC-618</td>
<td></td>
</tr>
<tr>
<td>Gas-injection valve operates at high speed HQ-89</td>
<td></td>
</tr>
<tr>
<td>Composite gaskets are compatible with liquid oxygen, resist compression set N-P 455</td>
<td></td>
</tr>
<tr>
<td>Combination double door high-vacuum valve provides access to vacuum chamber JPL-849</td>
<td></td>
</tr>
<tr>
<td>Isostatic compression process converts polynaramics into structural material JPL-892</td>
<td></td>
</tr>
<tr>
<td>Post-stressed concrete foundation may reduce machinery vibration ASG-130</td>
<td></td>
</tr>
<tr>
<td>Improved compression holding process LANGLEY-10027 B67-10302 03</td>
<td></td>
</tr>
<tr>
<td>Fluorocarbon seal replaces metal piston ring in low density gas environment LEWIS-10277</td>
<td></td>
</tr>
<tr>
<td>Development of helical seal for high temperature /2000 degrees F/ application N-P 13304</td>
<td></td>
</tr>
<tr>
<td>Electrochemical sintering process for producing electrodes from cadmium felt and</td>
<td></td>
</tr>
<tr>
<td>SUBJECET INDEX</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>Two devices for analysis of nystagmus</td>
<td>B69-10224</td>
</tr>
<tr>
<td>A method for predicting interfacial freezing of a liquid flowing over a cold surface</td>
<td>B69-10321</td>
</tr>
<tr>
<td>Determination of quadratic equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas</td>
<td>B69-10435</td>
</tr>
<tr>
<td>Method reduces computer time for smoothing functions and derivatives through ninth order polynomials</td>
<td>B69-10524</td>
</tr>
<tr>
<td>Live-timer method of automatic dead-time correction for precision counting</td>
<td>B69-10612</td>
</tr>
<tr>
<td>COMPUTER COMPONENTS</td>
<td></td>
</tr>
<tr>
<td>Computer circuit will fit on single silicon chip</td>
<td>B63-10514</td>
</tr>
<tr>
<td>Delayed ripple counter simplifies square-root computation</td>
<td>B65-10343</td>
</tr>
<tr>
<td>Improved wire memory matrix uses very little power</td>
<td>B65-10359</td>
</tr>
<tr>
<td>Queuing register uses fluid logic elements</td>
<td>B66-10100</td>
</tr>
<tr>
<td>Detection system ensures positive alarm activation in digital message loss</td>
<td>B66-10287</td>
</tr>
<tr>
<td>Study indicates fluid digital computation systems are feasible</td>
<td>B67-10181</td>
</tr>
<tr>
<td>Computer program simulates physical systems by solving the simultaneous differential equations describing the systems</td>
<td>B67-10193</td>
</tr>
<tr>
<td>Logic realization of simple majority voting connectives</td>
<td>B67-10511</td>
</tr>
<tr>
<td>COMPUTER DESIGN</td>
<td></td>
</tr>
<tr>
<td>Study indicates fluid digital computation systems are feasible</td>
<td>B67-10181</td>
</tr>
<tr>
<td>Computer memory access technique</td>
<td>B67-10585</td>
</tr>
<tr>
<td>Two-way digital driver/receiver uses one set of lines</td>
<td>B68-10437</td>
</tr>
<tr>
<td>Current-switching technique for analog pulse circuits</td>
<td>B69-10445</td>
</tr>
<tr>
<td>Folded stick module</td>
<td>B69-10496</td>
</tr>
<tr>
<td>Simplified, reliable circuit sorts binary numbers in order of magnitude</td>
<td>B69-10503</td>
</tr>
<tr>
<td>COMPUTER GRAPHICS</td>
<td></td>
</tr>
<tr>
<td>Welch diagram plotter simplifies Boolean functions</td>
<td>B63-10241</td>
</tr>
<tr>
<td>Computer circuit calculates cardiac output</td>
<td>B66-10006</td>
</tr>
<tr>
<td>FORTRAN program flow chart is automatically produced</td>
<td></td>
</tr>
</tbody>
</table>
I-111

Numerical solutions of differential equations
M-FS-20537  B66-10779  02

Computer programs

Computer modification reduces time of performing iterative division
M-FS-166   B66-10005  01

Computer programs simplify optical system analysis
GSFC-306  B66-10093  01

Density trace made with computer printout
GSFC-322  B66-10200  01

Upper and lowercase computer printout increases readability
EQ-12  B66-10286  01

FORTRAN program flow chart is automatically produced
M-FS-369  B66-10062  01

Computer program developed for flowsheet calculations and process data reduction
ARG-10134 B67-10222  01

New computer system simplifies programming of mathematical equations
M-FS-441  B66-10361  01

Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379  01

New computer program solves wide variety of heat flow problems
M-FS-421  B66-10404  01

Study compares methods for the numerical solution of ordinary differential equations
M-FS-830  B66-10466  01

Computer program performs flow analysis through turbines
LEWIS-236  B66-10496  01

Computer program determines performance efficiency of remote measuring systems
M-FS-1137 B66-10503  01

Subroutine allows easy computation in extended precision arithmetic
M-FS-1136 B66-10504  01

Computer program determines inventory size
M-FS-1135 B66-10506  01

Computer routine adds plotting capabilities to existing programs
GSFC-490  B66-10511  01

Computer program performs statistical analysis for random processes
M-FS-723  B66-10525  01

Computer program searches characteristic data of diodes and transistors
GSFC-493  B66-10529  01

Computer programs perform spectral analyses of up to seven time series
M-FS-1133 B66-10539  01

Computer used to program numerically controlled milling machine
M-FS-1608 B66-10541  01

Ultrasonic quality inspection of bonded honeycomb assemblies is automated
MSC-859  B66-10544  01
Computer programs determine chemical composition of physical systems at equilibrium
MSC-1119 B66-10670 01

Computer program determines chemical equilibria in complex systems
LBWIS-261 B66-10671 01

Equivalent circuit for a field effect transistor established for computer simulation
H-FS-1752 B66-10690 01

Program computes single-point failures in critical system designs
HSC-603 B67-10001 01

Computer program detects transient malfunctions in switching circuits
HSC-604 B67-10002 01

Computer/PERT technique monitors actual versus allocated costs
LBWIS-260 B67-10025 01

Computer program simulates design, test, and analysis phases of sensitivity experiments
H-FS-1496 B67-10077 01

Translator program converts computer printout into braille language
H-FS-2061 B67-10087 01

Polynomial manipulator AP-168
HSC-1231 B67-10103 01

Computer program reduces calculation time of normal response functions
H-FS-1517 B67-10108 01

Computer program calculates monotonic maximum likelihood estimates using method of reversion
H-FS-1516 B67-10136 01

A power-spectral-density computer program
WFO-10126 B67-10160 01

Study of dynamic response of elastic space stations
WFO-10124 B67-10169 06

Data retrieval system provides unlimited hardware design information
HSC-1144 B67-10170 01

Space trajectories program for IBM 7090
WFO-10125 B67-10172 06

Linear circuit analysis program for IBM 1620 Monitor 2, 1311/1443 data processing system /CIRCUS/
WFO-10131 B67-10173 06

Stress calculator speedily converts strain data
H-FS-2021 B67-10182 03

Computer program simulates physical systems by solving the simultaneous differential equations describing the systems
WFO-10019 B67-10193 06

A nodal combination computer program for dynamic analysis of structures
WFO-10129 B67-10217 06

Calculation of resonance neutron absorption

SUBJECT INDEX

in two-region problems /the GAROL code/ WUC-10045 B67-10223 06

Computer program calculates steady-state temperature distribution within plane or axisymmetric solids
WUC-10049 B67-10228 06

Lunar landing couch dynamics computer program
MSC-1210 B67-10233 06

Computer program simplifies design of rotating components of turbomachinery
WUC-10046 B67-10235 06

Computer program samples digital data for CRT display
MSC-999 B67-10249 01

CINDA - Chrysler Improved Numerical Differentiating Analyzer computer program
H-FS-2298 B67-10278 06

Computer program for determination of natural frequencies of closed spherical sandwich shells
MSC-1246 B67-10279 06

Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident
WUC-10054 B67-10281 06

Computer program provides linear sampled-data analysis for high order systems
H-FS-12821 B67-10287 06

Computer program uses Monte Carlo techniques for statistical system performance analysis
H-FS-2234 B67-10306 06

Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
H-FS-12916 B67-10307 06

Computer program for mass optional solutions of some endpoint trajectory problems
H-FS-12976 B67-10310 06

Computer program utilizes FORTRAN 4 subroutines for contour plotting
TPC-10127 B67-10323 06

Multiple correlation computer program determines relationships between several independent and dependent variables
H-FS-13024 B67-10327 06

Computer optimization program finds values for several independent variables that minimize a dependent variable
H-FS-13030 B67-10328 06

Computer program resolves radiative, conductive, and convective heat transfer problems for a variety of geometries
H-FS-1910 B67-10329 06

Improved computer program for elastic analysis of highly redundant structural configurations
H-FS-13087 B67-10330 06

General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions
H-FS-13094 B67-10331 06

Computer subroutine TSUGS accurately solves large system of simultaneous linear algebraic equations
WUC-10051 B67-10344 06

Computer program VARI-QUIR 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>COMPUTER PROGRAMS CONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUC-10052</td>
<td>B67-10345 06</td>
</tr>
<tr>
<td>Computerized parts list system coordinates engineering releases, parts control,</td>
<td>Assembly processor program converts</td>
</tr>
<tr>
<td>and manufacturing planning</td>
<td>symbolic programming language to machine language</td>
</tr>
<tr>
<td>NUC-10073</td>
<td>B67-10348 06</td>
</tr>
<tr>
<td>Automatic telemetry checkout system</td>
<td>Computer program performs aerothermodynamic</td>
</tr>
<tr>
<td>N-PS-12580</td>
<td>flight test data correlation</td>
</tr>
<tr>
<td>B67-10402 01</td>
<td>B67-10494 06</td>
</tr>
<tr>
<td>Control apparatus for spectral energy source</td>
<td>Multidimensional reaction kinetic amination</td>
</tr>
<tr>
<td>LENS-391</td>
<td>program / RERAP/</td>
</tr>
<tr>
<td>B67-10404 01</td>
<td>B67-10495 06</td>
</tr>
<tr>
<td>Saturn S-2 Automatic Software System /SASS/</td>
<td>Neutron irradiation of Am-241 effectively</td>
</tr>
<tr>
<td>N-PS-1741</td>
<td>produces curium</td>
</tr>
<tr>
<td>B67-10405 06</td>
<td>AEG-10030</td>
</tr>
<tr>
<td>Computer program for network synthesis by frequency response fit</td>
<td>Computer program for antennas feed system</td>
</tr>
<tr>
<td>N-PS-12686</td>
<td>design and analysis</td>
</tr>
<tr>
<td>B67-10406 06</td>
<td>BPO-10359</td>
</tr>
<tr>
<td>Earth orbit rendezvous evaluation program</td>
<td>Computer program computes equilibrium</td>
</tr>
<tr>
<td>N-PS-13016</td>
<td>normal shock and stagnation point solutions for</td>
</tr>
<tr>
<td>B67-10407 06</td>
<td>arbitrary gas mixtures</td>
</tr>
<tr>
<td>Computer program generates averaged value data tapes</td>
<td>LANGLEY-10050</td>
</tr>
<tr>
<td>N-PS-12728</td>
<td>B67-10509 06</td>
</tr>
<tr>
<td>Computer program provides steady state analysis for liquid propellant</td>
<td>Computer program performs rectangular</td>
</tr>
<tr>
<td>propellant propulsion systems</td>
<td>fitting stress analysis</td>
</tr>
<tr>
<td>HSC-10064</td>
<td>B67-10520 06</td>
</tr>
<tr>
<td>B67-10414 06</td>
<td>General frequency response program calculates</td>
</tr>
<tr>
<td>Computer program analyzes generalized environmental control and life</td>
<td>frequency response of system, open at any specified element</td>
</tr>
<tr>
<td>support systems</td>
<td>B67-10521 06</td>
</tr>
<tr>
<td>HSC-1157</td>
<td>Computerized Schedule Effectiveness</td>
</tr>
<tr>
<td>B67-10415 06</td>
<td>Technique /SET/ determines present and future schedule position</td>
</tr>
<tr>
<td>Computer program FFP2-REV calculates fission product inventory for U-235</td>
<td>B67-10522 06</td>
</tr>
<tr>
<td>fission</td>
<td>Analysis of dynamic systems with DAP4N computer program</td>
</tr>
<tr>
<td>NUC-10089</td>
<td>B67-10523 06</td>
</tr>
<tr>
<td>B67-10450 06</td>
<td>DIANA - An advanced programming system for</td>
</tr>
<tr>
<td>Computer program MCP-TOSS calculates steady-state fluid dynamics of</td>
<td>large classes of dynamic and equivalent systems</td>
</tr>
<tr>
<td>coolant in parallel channels and temperature distribution in surrounding</td>
<td>B67-10524 06</td>
</tr>
<tr>
<td>heat-generating solid</td>
<td>Program computes zero lift wave drag of</td>
</tr>
<tr>
<td>NUC-10042</td>
<td>entire aircraft</td>
</tr>
<tr>
<td>B67-10456 06</td>
<td>LANGLEY-10079</td>
</tr>
<tr>
<td>Computer program MCP provides steady state thermal and flow analysis of</td>
<td>B67-10530 06</td>
</tr>
<tr>
<td>multiple parallel channels in heat generating solid</td>
<td>Computer program provides improved</td>
</tr>
<tr>
<td>NUC-10043</td>
<td>longitudinal response analysis for</td>
</tr>
<tr>
<td>B67-10457 06</td>
<td>axisymmetric launch vehicles</td>
</tr>
<tr>
<td>Computer program conducts facilities utilization and occupancy survey</td>
<td>LANGLEY-10093</td>
</tr>
<tr>
<td>NUC-10326</td>
<td>B67-10531 06</td>
</tr>
<tr>
<td>B67-10476 06</td>
<td>H-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program</td>
</tr>
<tr>
<td>KOPP / Kaleend Oriented Program Efforts/ provides data for management decisions</td>
<td>HSC-10126</td>
</tr>
<tr>
<td>N-PS-12331</td>
<td>B67-10536 06</td>
</tr>
<tr>
<td>B67-10478 06</td>
<td>SOC-DS computer code provides tool for</td>
</tr>
<tr>
<td>Fortran 4 program for two-impulse rendezvous analysis</td>
<td>design evaluation of homogeneous</td>
</tr>
<tr>
<td>N-PS-13971</td>
<td>two-material nuclear shield</td>
</tr>
<tr>
<td>B67-10479 06</td>
<td>NUC-10142</td>
</tr>
<tr>
<td>Numerical least-square method for resolving complex pulse height spectra</td>
<td>B67-10537 06</td>
</tr>
<tr>
<td>GSPC-10142</td>
<td>Computer program calculates peripheral</td>
</tr>
<tr>
<td>B67-10480 06</td>
<td>water injection cooling of axisymmetric subsonic diffuser</td>
</tr>
<tr>
<td>Computer program calculates sonic-boom pressure signatures</td>
<td>HSC-10541</td>
</tr>
<tr>
<td>LANGLEY-10096</td>
<td>B67-10543 06</td>
</tr>
<tr>
<td>B67-10489 06</td>
<td>Computer program for optical systems ray tracing</td>
</tr>
<tr>
<td>Computer program uses characteristics method for free jet investigation</td>
<td>FBC-10017</td>
</tr>
<tr>
<td>LANGLEY-10117</td>
<td>B67-10549 06</td>
</tr>
<tr>
<td>B67-10490 06</td>
<td>Computer program DFC improves computation</td>
</tr>
<tr>
<td>Material fatigue data obtained by card-programmed hydraulic loading system</td>
<td>of elastic transfer matrixes of Legendre polynomials P/0/ and P/1/</td>
</tr>
<tr>
<td>LANGLEY-10042</td>
<td>B67-10566 06</td>
</tr>
<tr>
<td>B67-10491 03</td>
<td>Propellant tank pressurization analysis</td>
</tr>
<tr>
<td>Computer program reduces and provides profile plot of surface plate</td>
<td>Program / N-PS-1506</td>
</tr>
<tr>
<td>calibration data</td>
<td>B67-10625 06</td>
</tr>
<tr>
<td>N-PS-13866</td>
<td>Computer program for Video Data Processing System /VDPS/</td>
</tr>
<tr>
<td>B67-10492 06</td>
<td>B67-10630 06</td>
</tr>
</tbody>
</table>

I-113
Digital computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds.

Computer program calculates and plots surface area and pore size distribution data.

Computer program determines exact two-sided tolerance limits for normal distributions.

Computer program offers new method for constructing periodic orbits in nonlinear dynamical systems.

Computer program analyzes Buckling Of Shells Of Revolution with various wall construction, BOROB.

SEAL/Subnetwork Enumeration And Listing.

Computer program analyzes and designs supersonic wing-body combinations.

Computer program analyzes and designs submarine wing-body combinations.

Analysis of annular combustors.

Real fluid properties of normal and parahydrogen.

Axisymmetric two-phase perfect gas performance program.

One-dimensional reacting gas nonequilibrium performance program.

Axisymmetric reacting gas nonequilibrium performance program.

Internal velocity factors.

Analysis of filament reinforced metal-shell pressure vessels.

DS3 seven day/two week schedule program.

CIRCUS--A digital computer program for transient analysis of electronic circuits.

Computer program for machine design of Cassegrain feed systems.

Generalized Newton-Raphson trajectory optimization-generator 1.

Syntactic reduction of block diagrams using FORMAC.

Conditioning flat conductors for flat conductor cable production.

Modified Malthopp mean casserer computer program.

Plane radiation program.
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>COMPUTER PROGRAMS CONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single degree of freedom antenna pointing program</td>
<td><strong>SPAN</strong> - Terminal sterilization process analysis program</td>
</tr>
<tr>
<td>/ANTENA/ NPO-10756</td>
<td>NPO-10804 B69-10104 06</td>
</tr>
<tr>
<td>Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction</td>
<td>Midcourse maneuver operations program</td>
</tr>
<tr>
<td>NUC-10189</td>
<td>NPO-10735 B69-10105 06</td>
</tr>
<tr>
<td>A request-oriented information selection program</td>
<td><strong>LABCON</strong> - Laboratory Job Control program</td>
</tr>
<tr>
<td>NUC-10255</td>
<td>B69-10106 06</td>
</tr>
<tr>
<td>Modified Melthopp lifting surface loading program</td>
<td>Geometry and design point performance of axial flow turbines</td>
</tr>
<tr>
<td>MELHOPP-10375</td>
<td>LEWIS-10471 B69-10111 06</td>
</tr>
<tr>
<td>Computer program for parameter optimization</td>
<td>Circuitry selectively limits data storage in general purpose computer</td>
</tr>
<tr>
<td>ARC-10166</td>
<td>B69-10121 01</td>
</tr>
<tr>
<td>GERT simulation program for GERT network analysis</td>
<td><strong>LEWIS</strong> - Program for calculating velocities in magnified region of turbomachines</td>
</tr>
<tr>
<td>M-PS-12623</td>
<td>LEWIS-10789 069-10132</td>
</tr>
<tr>
<td>Nondispersive X-ray emission analysis for geoscientific exploration</td>
<td>GERT simulation program for GERT network analysis</td>
</tr>
<tr>
<td>GSFC-10568</td>
<td>ERC-10209 B69-10134 06</td>
</tr>
<tr>
<td>Computer program developed for flowsheet calculations and process data reduction</td>
<td>Bass spectograph analysis</td>
</tr>
<tr>
<td>ARG-10134</td>
<td>B69-10134 06</td>
</tr>
<tr>
<td>The compatible conversion system</td>
<td><strong>VICTAR</strong> - Digital image processing system</td>
</tr>
<tr>
<td>M-PS-20224</td>
<td>NPO-10770 B69-10139 06</td>
</tr>
<tr>
<td>Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing</td>
<td>Bell nozzle kernel analysis program</td>
</tr>
<tr>
<td>NUC-10308</td>
<td>M-PS-10456 B69-10146 06</td>
</tr>
<tr>
<td>General series solution technique for bending of irregular laterally loaded flat plates</td>
<td>Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems</td>
</tr>
<tr>
<td>M-PS-20100</td>
<td>M-PS-14447 B69-10158 06</td>
</tr>
<tr>
<td>Computer program calculates the effective temperature for a crystalline solid</td>
<td>Advanced mission analysis programs</td>
</tr>
<tr>
<td>/NUC/10161</td>
<td>B69-10175 06</td>
</tr>
<tr>
<td>Monte Carlo direct view factor and generalized radiative heat transfer programs</td>
<td><strong>COM</strong> - Computer programs for axial flow compressor design</td>
</tr>
<tr>
<td>M-PS-15010</td>
<td>LEWIS-10765 B69-10174 06</td>
</tr>
<tr>
<td>Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing</td>
<td><strong>SHELL</strong> - Design computer program</td>
</tr>
<tr>
<td>NUC-10109</td>
<td>LEWIS-10736 B69-10175 06</td>
</tr>
<tr>
<td>Finite element analysis of compressible solids with nonlinear material properties</td>
<td>Neutron therapy of cancer</td>
</tr>
<tr>
<td>/NUC/10161</td>
<td>ARG-10310 B69-10203 04</td>
</tr>
<tr>
<td>SPAN C - Terminal sterilization process analysis program</td>
<td><strong>PORTTRAN</strong> - Program calculates velocities and streamlines in a tandem blade turbomachine</td>
</tr>
<tr>
<td>NPO-10804</td>
<td>LEWIS-10743 B69-10219 06</td>
</tr>
<tr>
<td>Ratio matching of half-bridge weldable strain gages, computer program</td>
<td>Computer program for high pressure real gas effects</td>
</tr>
<tr>
<td>FNC-10032</td>
<td>LEWIS-10820 B69-10222 06</td>
</tr>
<tr>
<td>Weight Control System</td>
<td>A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voight line profile</td>
</tr>
<tr>
<td>M-PS-15028</td>
<td>ARC-10221 B69-10232 06</td>
</tr>
<tr>
<td>On-line computer system for use with low-energy nuclear physics experiments is reported</td>
<td>Finite element analysis of compressible solids with nonlinear material properties</td>
</tr>
<tr>
<td>ARG-10257</td>
<td>NUC-10342 B69-10238 06</td>
</tr>
<tr>
<td>EXTRAJ on-site tracking prediction program</td>
<td>Thermal Network Analyzer Program</td>
</tr>
<tr>
<td>NPO-10836</td>
<td>NUC-10540 B69-10239 09</td>
</tr>
<tr>
<td>Simplified system displays complex curves corresponding to input data</td>
<td>Computer program for off-design performance of radial inflow turbines</td>
</tr>
<tr>
<td>HQ-10073</td>
<td>LEWIS-10764 B69-10267 06</td>
</tr>
<tr>
<td>Computer program for off-design performance of radial inflow turbines</td>
<td><strong>LEWIS</strong> - Technique for assessing potential fire hazards</td>
</tr>
<tr>
<td>LEWIS-10764</td>
<td>HQ-10279 B69-10287 03</td>
</tr>
<tr>
<td>Analysis of space vehicle structures using the transfer-function concept</td>
<td>Study of high-speed angular-contact ball</td>
</tr>
<tr>
<td>HQ-11162</td>
<td>B69-10337 06</td>
</tr>
</tbody>
</table>
| Study of high-speed angular-contact ball | **I-115**
SUBJECT INDEX

M-FS-15010 B69-10031 06

Weight Control System
M-FS-15026 B69-10041 06

Optically exciting a magnetic memory - A feasibility study
M-FS-14854 B69-10060 02

Circuitry selectively limits data storage in general purpose computer
GSFC-10605 B69-10121 01

Encode/Decode facility for FORTRAN 4
ARG-10335 B69-10169 06

Time-shared Cathode Ray Tube
MSC-12230 B69-10243 06

Reducing quantizer deadband with a switching digital filter
M-FS-20419 B69-10259 01

Method reduces computer time for smoothing functions and derivatives through sixth order polynomials
NDC-10334 B69-10524 06

Electrooptical scanning of film
NFO-11106 B69-10568 01

IBM-1620 monitor 2-D disk-storage subroutines
ARG-10376 B69-10618 01

Time-shared Cathode Ray Tube

COMPUTER SYSTEMS PROGRAMS

The compatible conversion system
M-FS-15010 B69-10031 06

JPLIP-JPL FORTRAN language with interval pre-processor
NPO-10635 B69-10187 06

COMPUTERIZED DESIGN

Data retrieval system provides unlimited hardware design information
MSC-1144 B67-10170 01

Computer programs for antennas feed system design and analysis
NFO-10359 B67-10504 06

Computer program aids dual reflector antenna system design
NPO-10591 B68-10139 06

FORTRAN optical lens design program
NPO-10663 B68-10354 06

Analysis of annular combustors
LEWS-10399 B68-10356 06

Geometry and design point performance of axial flow turbines
LEWS-10471 B69-10111 06

A thirty-six element array antenna system
M-FS-20435 B69-10390 01

COMPUTERIZED SIMULATION

Computer simulation program is adaptable to industrial processes
LEWS-240 B66-10426 01

Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
MSC-781 B66-10429 01

Study made of application of stereoscopic display system to analog computer simulation
M-FS-1263 B66-10550 01

Equivalent circuit for a field effect transistor established for computer simulation
M-FS-1752 B66-10690 01

Computer program simulates design, test, and analysis phases of sensitivity experiments
M-FS-1406 B67-10077 01

Linear circuit analysis program for IBM 1620 Monitor X, 1311/1443 data processing system /CICE/ /BNO-10131 B67-10173 06

Transient Analysis Generator /TAN/ simulates behavior of large class of electrical networks
NPO-10031 B67-10319 06

Computer program performs rectangular fitting stress analysis
M-FS-13010 B67-10520 06

X-Y plotter adapter developed for SDS-930 computer
NPO-10220 B67-10654 06

Assembly, checkout, and operation optimization analysis technique for complex systems
M-FS-14105 B68-10222 05

GEERT simulation program for GEERT network analysis
MSC-1209 B68-10457 06

Computer simulation of high-frequency combustion instability and its suppression
HQ-10391 B69-10368 06

Monte Carlo simulation by computer for life-cycle costing
M-FS-14754 B69-10590 05

COMPUTERS

Modular chassis simplifies packaging and interconnecting of circuit boards
JPL-236A B63-10174 01

Solar-angle sensor has no moving parts
JPL-418 B63-10260 02

Computer determines high-frequency phase stability
GSFC-113 B63-10555 01

Monostable circuit with tunnel diode has fast recovery
GSFC-124 B63-10603 01

Molded elastomer provides compact ferrite-core holder, simplifies assembly
JPL-584 B64-10084 05

Novel circuit combines pulse stretcher with NOR gate
GSFC-167 B64-10150 01

Variable word length encoder reduces TV bandwidth requirements
LANGLEY-67 B65-10345 01

Laser measuring system accurately locates point coordinates on photograph
ARG-74 B66-10560 02

Computational procedure for finite difference solution of one-dimensional heat conduction problem reduces computer time
MSC-1120 B66-10566 01

Triple modular redundancy /IBM/ computer operation improved
MSC-831 B67-10085 01

I-117
Digital-to-analog converter operates from low level signals
JPL-907  B67-10357  01
Pocket-size wavelite tape reader device aids computer tape checking
KSC-10052  B67-10361  01
Small, low power analog-to-digital converter
M-PS-13954  B68-10016  01
Circuit detects voltage decrease in computer power supply
KSC-67-120  B68-10019  01
Electronic calorimetric computer
LEWIS-90254  B68-10138  01
Design techniques - Stochastic controllers
M-PS-11554  B68-10234  02
Fluidic-thermochromic display device
KSC-10031  B68-100350  01
Electronic component reliability analysis by data reduction system
M-PS-10243  B68-10507  05
Computer grading of examinations
AIB-10269  B69-10159  06
Astronaut* s tool for withdrawing/replacing computer cards
M-PS-20453  B69-10183  05
Two devices for analysis of nystagmus
KSC-10273  B69-10224  01
Root-cubing and general root-powering methods for finding the zeros of polynomials
AIB-10444  B69-10424  02
Special purpose computer provides programmable digital filter for sampled-data control system
M-PS-20290  B69-10454  06
Solar activity history model
M-PS-20529  B69-10776  01
Trajectory optimization using regularized variables
M-PS-13370  B69-10810  02
CONCENTRATING
Uranil phthalocyanines show promise in the treatment of brain tumors
AIB-100  B67-10188  04
CONCENTRATION (COMPOSITION)
Ion exchange determines iodine-131 concentration in aqueous samples
AIB-208  B67-10129  04
Electronic circuitry used to automate paper chromatography
JPL-840  B67-10201  01
Automated xeralseize technique determines concentration of creatine and creatinine by colorimetry
MPO-10149  B67-10245  04
Dynamics of moving bubbles in single and binary component systems
M-PS-10845  B68-10339  02
Flow properties of suspensions rich in solids
AIB-10481  B68-10622  02
CONCENTRATORS
Cone and column solar energy concentrator
LAFLEI-110  B67-10517  01
CONCENTRIC CYLINDERS
Kinetic-energy absorber employs frictional force between mating cylinders
LEWIS-75  B63-10442  05
Seal allows blind assembly and thermal expansion of components
NU-0005  B65-10053  05
Rotational fluid coupling eliminates hose entanglements
M-PS-312  B66-10585  05
Torsion system for creep testing with multiple stress reversals
BQ-10039  B69-10140  03
Ultra-high-flux heat exchanger
M-PS-18135  B69-10201  02
CONCENTRICITY
Equations provide tabular information on effects of uniform and variable loads on thin, flat, circular plates
AIB-151  B66-10601  05
System for measuring roundness and concentricity of large tanks
M-PS-13362  B68-10099  05
Shock-absorbent mountings for bearings
MPO-10626  B69-10331  05
CONCRETE
Post-stressed concrete foundation may reduce machinery vibration
AIB-130  B67-10237  05
Ballast barge concept for underwater structures
KSC-10196  B68-10168  05
Fatigue of reinforced concrete beams under dynamic loading
M-PS-19980  B68-10515  05
CONDENSATES
Crystal microbalance measures condensable molecular fluxes
JPL-845  B67-10012  03
Axisymmetric two-phase perfect gas performance program
M-PS-11774  B68-10374  06
CONDENSATION
Cryopumping of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrocarbons
LEWIS-15  B63-10340  05
Adhesives for laminating polyimide insulated flat conductor cable
M-PS-12066  B67-10429  03
New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
M-PS-10576  B69-10118  03
CONDENSERS (LIQUIFIERS)
Reaction heat used in static water removal from fuel cells
M-PS-532  B66-10013  01
Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LEWIS-263  B68-10104  03
Reaction of steam with molybdenum is studied
ARG-295  B67-10502  03
CONDENSING
Xenon fluorides show potential as fluorinating agents
ARG-113  B67-10185  03
Quartz crystals detect gas contaminants during vacuum chamber evacuation
MPO-10144  B67-10205  01
Development of detonation reaction engine
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>CONDUCTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling of 2 kW H subscript 2-o subscript 2 fuel cell</td>
<td>M-PS-14020</td>
</tr>
<tr>
<td>Technique for ultrasonic cleaning with volatile solvents eliminates need for</td>
<td>N-PS-13737</td>
</tr>
<tr>
<td>hoods or condensers</td>
<td>N-PS-15611</td>
</tr>
<tr>
<td>A rotating, noncapillary heat pipe</td>
<td>LEWIS-10298</td>
</tr>
<tr>
<td>CONDUCTING FLUIDS</td>
<td></td>
</tr>
<tr>
<td>Inductive system detects level of conducting fluids</td>
<td>ISC-107</td>
</tr>
<tr>
<td>Concept to convert electrical power</td>
<td>ISC-10222</td>
</tr>
<tr>
<td>CONDUCTION BANDS</td>
<td></td>
</tr>
<tr>
<td>Optically exciting a magnetic memory - A feasibility study</td>
<td>ISC-14856</td>
</tr>
<tr>
<td>CONDUCTIVE HEAT TRANSFER</td>
<td></td>
</tr>
<tr>
<td>Simple transducer measures low heat-transfer rates</td>
<td>JPL-666</td>
</tr>
<tr>
<td>Inexpensive insulation is effective for cryogenic transfer lines</td>
<td>N-PS-618</td>
</tr>
<tr>
<td>Computer program simplifies transient and steady-state temperature prediction for complex body shapes</td>
<td>N-PS-999</td>
</tr>
<tr>
<td>Cold solid propellant motor has stop-restart capability</td>
<td>JPL-836</td>
</tr>
<tr>
<td>Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries</td>
<td>N-PS-1910</td>
</tr>
<tr>
<td>Method for X-ray study under extreme temperature and pressure conditions</td>
<td>N-PS-11232</td>
</tr>
<tr>
<td>Technique for assessing potential fire hazards</td>
<td>N-PS-10279</td>
</tr>
<tr>
<td>A rotating, noncapillary heat pipe</td>
<td>LEWIS-10298</td>
</tr>
<tr>
<td>CONDUCTIVITY METERS</td>
<td></td>
</tr>
<tr>
<td>Improved radiographic image amplifier panel</td>
<td>M-PS-14522</td>
</tr>
<tr>
<td>Improved ferrous shielding for flat cables</td>
<td>M-PS-14524</td>
</tr>
<tr>
<td>Quick don-doff electrode pastes</td>
<td>N-PS-13249</td>
</tr>
<tr>
<td>Design of multilayer insulation systems</td>
<td>ABC-10166</td>
</tr>
<tr>
<td>CONDUCTORS</td>
<td></td>
</tr>
<tr>
<td>Metal strip forms 21 foot boom, rolls up for compact storage</td>
<td>M-PS-151</td>
</tr>
<tr>
<td>Improved conductive paste secures biomedical electrodes</td>
<td>M-PS-107</td>
</tr>
<tr>
<td>Feed-through has polynedral feature</td>
<td>M-PS-25</td>
</tr>
<tr>
<td>Laser beam transmits electric power</td>
<td>GSLTC-293</td>
</tr>
<tr>
<td>Video signal processing system uses gated current switches to perform high speed multiplication and digital-to-analog conversion</td>
<td>N-PS-781</td>
</tr>
<tr>
<td>Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers</td>
<td>N-PS-15611</td>
</tr>
<tr>
<td>Technique for assessing potential fire hazards</td>
<td>N-PS-10279</td>
</tr>
<tr>
<td>Orbiting, noncapillary heat pipe</td>
<td>LEWIS-10298</td>
</tr>
<tr>
<td>Electrical continuity scanner facilitates identification of wires for soldering to connectors</td>
<td>N-PS-626</td>
</tr>
<tr>
<td>Multipurpose instrumentation cable provides integral thermocouple circuit</td>
<td>MD-0108</td>
</tr>
<tr>
<td>Reparable, high-density microelectronic module provides effective heat sink</td>
<td>M-PS-10375</td>
</tr>
<tr>
<td>Adhesives for lamineing polycarbonate insulated flat conductor cable</td>
<td>M-PS-12066</td>
</tr>
<tr>
<td>Inspection criteria ensure quality control of parallel gap soldering</td>
<td>M-PS-14530</td>
</tr>
<tr>
<td>Technique for abrasive cutting of thick-film conductors for hybrid circuits</td>
<td>M-PS-13242</td>
</tr>
<tr>
<td>Channel-wall limitations in the magnetohydrodynamic induction generator</td>
<td>ABC-10128</td>
</tr>
<tr>
<td>Leakage tester for flat conductor cable connector</td>
<td>M-PS-20427</td>
</tr>
<tr>
<td>Evaluation of magnetic materials for static inverters and converters</td>
<td>LEWIS-10343</td>
</tr>
<tr>
<td>Leads integral with the internal interconnection that penetrate the molded wall of a package</td>
<td>LEWIS-10228</td>
</tr>
<tr>
<td>Magnetic field mapper</td>
<td>LEWIS-10782</td>
</tr>
<tr>
<td>Lorentz attachment used to machine elliptical cones</td>
<td>M-PS-100</td>
</tr>
<tr>
<td>Gage tests tube flares quickly and accurately</td>
<td>KSC-66-19</td>
</tr>
<tr>
<td>Orbital tube flaring system produces tubing connectors with zero leakage</td>
<td>M-PS-2016</td>
</tr>
</tbody>
</table>

I-119
Cone and column solar energy concentrator
LANGLEY-210 E67-10517 01

Tensile testing grips ensure uniform loading of bimetal tubing specimens
LEWIS-10267 E68-10248 05

Method of making conical fiber optical components
XUP-09745 E69-10200 02

.subject index

GSFC-150 B64-10010 01

Compact coaxial connector for printed circuit adds reliability
MSC-57 B64-10016 01

High-pass RF coaxial filter rejects dc and low frequency signals
GSFC-73 B64-10173 01

Connector seals fluid lines at cryogenic temperatures and high vacuum
GSFC-253 B64-10327 05

Pickup device reads pressures from ports in rotating mechanisms
LEWIS-158 B65-10021 05

Gage measures electrical connector pin retention force
JPL-SC-071 B65-10034 03

Feed-through has polyterminal feature
S-PS-25 B65-10057 01

Cutter and stripper reduces coaxial cable connection time
ARC-40 B65-10094 05

New nut and sleeve improve flared connections
S-PS-194 B65-10180 05

Improved solderless connector is easily disconnected
JPL-SC-060 B65-10197 01

Electrical probe ensures reliable contact in socket
S-PS-315 B65-10215 01

Lightweight coaxial cable connector reduces signal loss
JPL-720 B65-10248 01

Thermocouple-to-instrumentation connector features quick assembly
ND-0022 B65-10246 05

Feed-through connector withstands high temperatures in vacuum environment
GSFC-442 B65-10328 01

Kevlar plugs and sockets prevent improper connectors
MSC-231 B65-10361 01

Threaded split ring connector separates structural sections
LANGLEY-145 B65-10383 05

Shrinkable sleeve eliminates shielding gap in RF cable
WOO-207 B65-10387 01

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 B66-10187 02

Tool enables proper mating of accelerometer and cable connector
S-PS-611 B66-10208 05

Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
S-PS-640 B66-10247 05

Diffusion bonding makes strong seal at flanged connector
S-PS-637 B66-10250 05

Tool separates sleeve-type unions without heat
MSC-497 B66-10253 05

Remotely controlled system couples and decouples large diameter pipes
NU-0062 B66-10276 05

Vacuum test fixture improves leakage rate measurements

I-120
Union would facilitate joining of tubing, minimize braze contamination
MSC-777 B66-10311 05
Adapter assembly prevents damage to tubing during high pressure tests
MSC-563 B66-10330. 02
Modified pliers facilitate coupling of bayonet-type connectors
H-FS-1344 B66-10417 05
Electrical continuity scanner facilitates identification of wires for soldering to connectors
MSC-626 B66-10605 01
Connector acts as quick coupling in coaxial cable application
JFL-003 B66-10621 01
Abraded cadmium-plated cable connectors repaired by conversion coating
H-FS-1426 B67-10014 03
Orbital tube flaring system produces tubing connectors with zero leakage
H-FS-2016 B67-10019 05
Feed-through connector couples RF power into vacuum chamber
NU-0096 B67-10227 01
Clamp provides efficient connection for high-density currents
H-FS-2417 B67-10140 01
Line adapter provides quick disconnect under moderate side loading
H-FS-2159 B67-10256 05
Spherical joint connects axially misaligned flanges
H-FS-2238 B67-10273 05
Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules
LEWIS-10201 B67-10359 01
Large volume continuous countercflow dialyzer has high efficiency
NU-10055 B67-10395 04
Improved sample capsule for determination of oxygen in hemolyzed blood
MSC-11017 B67-10408 04
Coaxial cable stripping device facilitates RF cabling fabrication
NO-10315 B67-10419 05
Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board
H-FS-13663 B67-10426 01
Protected, high-temperature connecting cable
LEWIS-10149 B67-10461 01
Flat cable insulation stripping machine
H-FS-13776 B67-10581 05
Reconnect mechanism
H-FS-12968 B67-10670 05
Remotely operated gripper provides vertical control rod movement
ARG-10160 B68-10359 05
Refractory oxide insulated thermocouple designed and analyzed for high temperature applications
ARG-10202 B69-10053 03
Leakage tester for flat conductor cable connector

A mechanically extendible boom
B69-10284 05
Connect-disconnect coupling for preadjusted rigid shafts
MSC-10470 B69-10375 05
Leads integral with the internal interconnection that penetrate the molded wall of a package
LANGLEY-10228 B69-10436 01
Air-cushion lift pad
H-FS-14685 B69-10448 05
Rotary antenna attenuator
B69-10502 01
Two-functional seal for hose connection
H-FS-14062 B69-10588 05
A sterilizable high-impact antenna
B69-10697 01
Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi
UUC-10067 B67-10263 01
Compact monitoring and control console for pressurized gas bottles
H-FS-14074 B68-10401 05
Improved perceptual-motor performance measurement system
EQ-10123 B69-10385 01
Multipurpose instrumentation cable provides integral thermocouple circuit
NU-0108 B67-10436 05
Dewpoint temperature inversions analyzed
ARG-10316 B69-10057 02
New package for Belleville spring permits rate change, easy disassembly
JFL-392 B63-10247 05
A technique for making animal restraints
ARC-25 B63-10564 05
Safety restrainer prevents whipping of ruptured high-pressure hose
LEWIS-99 B64-10348 05
Lightweight hinged bellows restraint has high load capacity
WOO-151 B65-10341 03
Universal bellows joint restraint permits angular and offset movement
WOO-102 B65-10371 05
Torque wrench designed for restricted areas
LEWIS-246 B66-10111 05
Beam splitter used in dual filming technique
H-FS-501 B66-10072 02
Pipe cutting tool is useful in limited space
MSC-36 B66-10102 05
Body-fitted harness provides safe and easy component handling
H-FS-533 B66-10202 05
Torque wrench allows readings from inaccessible locations
H-FS-598 B66-10204 05
Portable sandblaster cleans small areas
MSC-523 B66-10242 05
Ultrasound hand tool allows convenient scanning of spot welds
CONSTRUCTIONS

<table>
<thead>
<tr>
<th>CONSTRUCTION</th>
<th>DESCRIPTION</th>
<th>REPORT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic separator gives quick release to heavy loads</td>
<td>KSC-66-10</td>
<td>B66-10294</td>
<td>05</td>
</tr>
<tr>
<td>Latching mechanism operates in limited access area</td>
<td>MSC-230</td>
<td>B66-10338</td>
<td>05</td>
</tr>
<tr>
<td>Design concept for pressure switch calibrator</td>
<td>H-S-36</td>
<td>B66-10598</td>
<td>01</td>
</tr>
<tr>
<td>Integrated mobility measurement and notation system</td>
<td>M-S-726</td>
<td>B67-10114</td>
<td>04</td>
</tr>
<tr>
<td>Single wrench separates nuts from free-floating bolts</td>
<td>H-S-10014</td>
<td>B67-10158</td>
<td>05</td>
</tr>
<tr>
<td>Self-sealing closure enables access to several fluid containers</td>
<td>KPO-10123</td>
<td>B67-10207</td>
<td>04</td>
</tr>
<tr>
<td>Cable clamp bolt fixture facilitates assembly in close quarters</td>
<td>KSC-67-80</td>
<td>B67-10249</td>
<td>05</td>
</tr>
<tr>
<td>Precision metal molding</td>
<td>J-FS-13305</td>
<td>B67-10423</td>
<td>05</td>
</tr>
<tr>
<td>Optically exciting a magnetic memory - A feasibility study</td>
<td>J-FS-14854</td>
<td>B67-10060</td>
<td>02</td>
</tr>
<tr>
<td>Sidescrane maneuver operations program</td>
<td>H-S-10735</td>
<td>B67-10105</td>
<td>06</td>
</tr>
</tbody>
</table>

CONSTRUCTIONS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>REPORT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrochemical cell has internal resistive heater element</td>
<td>GSFC-10358</td>
<td>B68-10325</td>
</tr>
<tr>
<td>Magnetostrictive foring for precision sizing and joining of large-diameter tubes</td>
<td>J-FS-20481</td>
<td>B69-10422</td>
</tr>
<tr>
<td>Improved atomic resonance gas cell for use in frequency standards</td>
<td>HSC-11666</td>
<td>B66-10230</td>
</tr>
<tr>
<td>Possible correlation between work-hardening and fatigue-failure</td>
<td>ARG-10371</td>
<td>B69-10414</td>
</tr>
</tbody>
</table>

CONSTRUCTION MATERIALS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>REPORT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swiveling lathe jaw concept for holding irregular pieces</td>
<td>J-FS-783</td>
<td>B66-10321</td>
</tr>
<tr>
<td>Isostatic compression process converts polycrystalline into structural material</td>
<td>JPL-882</td>
<td>B67-10168</td>
</tr>
<tr>
<td>Study made of procedures for externally loading and corrosion testing stress corrosion specimens</td>
<td>H-S-12064</td>
<td>B67-10451</td>
</tr>
<tr>
<td>Fiber glass reinforced structural materials for aerospace application</td>
<td>J-FS-14866</td>
<td>B68-10360</td>
</tr>
<tr>
<td>Study of chloride corrosion of nickel alloys</td>
<td>AVG-10224</td>
<td>B69-10048</td>
</tr>
</tbody>
</table>

CONTACT LENSES

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>REPORT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin transparent films formed from powdered glass</td>
<td>GSFC-352</td>
<td>B65-10217</td>
</tr>
</tbody>
</table>

CONTACT POTENTIALS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>REPORT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrode has automatic zero bias control</td>
<td>GSFC-350</td>
<td>B65-10242</td>
</tr>
<tr>
<td>Rugged pressed disk electrode has low contact potential</td>
<td>B65-10320</td>
<td>01</td>
</tr>
</tbody>
</table>

SUBJECT INDEX

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>REPORT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTACT RESISTANCE</td>
<td>Diffusion technique stabilizes resistor values</td>
<td>MSC-205</td>
</tr>
<tr>
<td>Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces</td>
<td>HSC-10254</td>
<td>B65-10689</td>
</tr>
<tr>
<td>CONTACT BUSHINGS</td>
<td>Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle</td>
<td>JPL-545</td>
</tr>
<tr>
<td>New inflatable liferaft is nontippable</td>
<td>B66-10001</td>
<td>05</td>
</tr>
<tr>
<td>Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces</td>
<td>ERC-10254</td>
<td>B65-10689</td>
</tr>
</tbody>
</table>

CONTAINERS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>REPORT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUTAIBLES</td>
<td>Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle</td>
<td>JPL-545</td>
</tr>
<tr>
<td>New inflatable liferaft is nontippable</td>
<td>B66-10001</td>
<td>05</td>
</tr>
<tr>
<td>Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces</td>
<td>ERC-10254</td>
<td>B65-10689</td>
</tr>
<tr>
<td>Compact assembly generates plastic foam, inflates flotation bag</td>
<td>LANGLEY-96</td>
<td>B65-10272</td>
</tr>
<tr>
<td>COUTAMIBARTS</td>
<td>Compact assembly generates plastic foam, inflates flotation bag</td>
<td>LANGLEY-96</td>
</tr>
</tbody>
</table>

CONTAINERS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>REPORT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>New inflatable liferaft is nontippable</td>
<td>GSFC-4A</td>
<td>B66-10001</td>
</tr>
<tr>
<td>Multiple test chamber exposes materials to various environments</td>
<td>MSC-179</td>
<td>B65-10268</td>
</tr>
<tr>
<td>Electrically heated diaphragm eliminates use of pyrotechnics</td>
<td>BSC-241</td>
<td>B65-10400</td>
</tr>
<tr>
<td>Large diameter metal ring seal prevents gas leakage at 5000 psi</td>
<td>H-FS-1064</td>
<td>B66-10422</td>
</tr>
<tr>
<td>Seal-off assembly permits rapid evacuation of air from containers</td>
<td>GSFC-513</td>
<td>B65-10446</td>
</tr>
<tr>
<td>Irradiated gases transferred without contamination or dilution</td>
<td>LEWIS-278</td>
<td>B67-10044</td>
</tr>
<tr>
<td>Method prevents secondary radiation in radiographic inspection</td>
<td>H-S-13383</td>
<td>B67-10391</td>
</tr>
<tr>
<td>Study of fluoride corrosion of nickel alloys</td>
<td>ARG-10371</td>
<td>B65-10256</td>
</tr>
<tr>
<td>Contact-spring forming machine for flat conductor cable receptacles</td>
<td>M-FS-20126</td>
<td>B68-10550</td>
</tr>
<tr>
<td>Inflatable bladder to facilitate handling of heavy objects - A concept</td>
<td>M-FS-14272</td>
<td>B69-10069</td>
</tr>
<tr>
<td>Gearbox of steel and tantalum apparatus for molten Cd-Hg-Zn alloys</td>
<td>ARG-159</td>
<td>B86-10594</td>
</tr>
<tr>
<td>Hydrodynamics of a new concept of primary containment by energy absorption</td>
<td>ABG-10242</td>
<td>B65-10046</td>
</tr>
<tr>
<td>Sensor detects hydrocarbon oil contaminants in fluid lines</td>
<td>M-FS-522</td>
<td>B66-10668</td>
</tr>
<tr>
<td>Brazing process using Al-Si filler alloy reliably bonds aluminum parts</td>
<td>M-FS-20124</td>
<td>B66-10241</td>
</tr>
<tr>
<td>Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment</td>
<td>LEWIS-359</td>
<td>B66-10678</td>
</tr>
<tr>
<td>Valve effectively controls amount of contaminant in flow stream</td>
<td>B66-10678</td>
<td>05</td>
</tr>
</tbody>
</table>
Quartz crystals detect gas contaminants during vacuum chamber evacuation

Steel test panel helps control additives in pyrophosphate copper plating

Tool samples subsurface soil free of surface contaminants

Indian adhesion provides quantitative measure of surface cleanliness

Preparation of high purity copper chloride by chlorinating copper hydroxide

Health hazards of ultrafine metal and metal oxide powders

Technique for highly efficient recovery of microbiological contaminants

Apparatus automatically measures soluble residue content of volatile solvents

Freon, T-81 cutting fluid

Heat-shrinkable jacket holds fluid in contact with tensile test specimen

Gamma radiation characteristics of plutonium dioxide fuel

Gas chromatograph injection port protective device

Quick-acting clutch disengages idle drive motor

Magnetic field controls carbon arc tail flame

Multiple test tubes stirred mechanically

Radioactive tracer system detects oil contaminants in fluid lines

Tool provides constant purge during tube welding

Epoxy-coated containers easily opened by wire band

Fiberglass container shells form contamination-free storage units

Insert sleeve prevents tube soldering contamination

Union would facilitate joining of tubing,
A new method for the determination of particulate contamination levels for surface cleanliness of fluid systems
KSC-10267 B69-10520 02

Microbiological aspects of sterilization
BFO-11197 B69-10593 04

Fluid sample collection and storage device
MSC-10962 B69-10816 05

CONTINUITY
Solvent residue content measured by light scattering technique
M-PS-850 B66-10320 01

CONTINUITY EQUATION
Computer program determines gas flow rates in piping systems
M-PS-443 B66-10300 01

CONTINUOUS RADIATION
Frequency offset in linear FM/CW transponder eliminates clutter
M-PS-249 B65-10146 01

FM carrier deviation measured by differential probability method
M-PS-2166 B67-10213 01

Laser system generates single-frequency light
M-PS-2556 B67-10280 02

Wideband, high efficiency optical modulator requires less than 10 watts drive power
M-PS-12733 B67-10289 01

Improved ultrasonic TV image achieved by use of Lamb-wave orientation technique
ABO-203 B67-10295 02

Continuous wave detector has wide frequency range
M-PS-1849 B67-10386 01

Shock and vibration response of multistage structure
M-PS-14972 B68-10353 05

CONTINUOUS RADAR
FM/CW system measures aircraft attitude
M-PS-276 B65-10290 01

CONTOURS
Portable flooring protects finished surfaces, is easily moved
M-PS-15 B63-10387 05

Polychart contour plotter enables data extrapolation from multiple plotting charts
M-PS-37 B64-10406 05

Density trace made with computer printout
GSFC-322 B65-10200 01

Noncontacting vibration transducer has constant sensitivity
LANGLEY-99 B65-10392 01

Aluminized fiberglass insulation conforms to curved surfaces
M-PS-477 B66-10024 03

Specimen holder design improves accuracy of X-ray powder analysis
JPL-SC-1465 B66-10075 02

SUBJECT INDEX
Swiveling lathe jaw concept for holding irregular pieces
M-PS-783 B66-10321 05

Alignment tool facilitates pin placement on irregular horizontal surfaces
LANGLEY-219 B66-10410 05

Computer program utilizes FORTRAN IV subroutines for contour plotting
BFO-10127 B67-10323 06

Development of technology for hot-drape forming of large torus sections
M-PS-12141 B67-10341 05

Crack growth measured on flat and curved surfaces at cryogenic temperatures
LEWIS-389 B67-10384 01

Automatic contour welder incorporates speed control system
M-PS-14574 B66-10091 01

Journal gas bearing for curved surfaces
M-PS-20423 B69-10182 05

Determination of the absolute contours of optical flats
ABG-10352 B69-10209 05

Simplified system displays complex curves corresponding to input data
HQ-10073 B69-10247 01

Long range holographic contour mapping concept
HQ-10350 B69-10700 02

Photoacrostroscopy
M-PS-14556 B69-10736 01

CONTRACTION
Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems
LEWIS-67 B63-10368 05

High-pressure, low temperature electrical connector makes no-leak seal
MSC-276 B66-10079 02

Bismuth alloy potting seals aluminum connector in cryogenic application
WGO-260 B66-10138 03

Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line
HU-0077 B66-10702 05

Temperature responsive valve withstands high impact loading
BFO-10186 B67-10225 05

Techniques for controlling warpage and residual stresses in welded structures
M-PS-20307 B69-10086 05

Improved design of item in high speed rotating machinery
M-PS-10441 B69-10373 05

Investigation of the development of cracks in solder joints
M-PS-20444 B69-10807 01

CONTACT
KOPE /Kalendar Oriented Program
Efforts provide data for management decisions
M-PS-12331 B67-10478 06

CONTACTS
Silicon rule-type color chart predicts reproduced photo tones
MSC-1227 B66-10680 01

Pocket-size manual tape reader device aids computer tape checking
Simple control device senses solar position

JPL-438  B65-10001  01

Pulsed plasma accelerator operates repeatedly without complex controls

LANGLEY-86  B65-10006  01

Tension is servo controlled in film advance system

LANGLEY-54  B65-10075  05

Apparatus measures swelling of membranes in electrochemical cells

GSFC-289  B65-10087  01

Magnetic field controls carbon arc tail flame

MSC-139  B65-10108  01

Variable frequency magnetic multivibrator generates stable square-wave output

GSFC-AB-21  B65-10124  01

Electropneumatic rheostat regulates high current

MSC-44  B65-10299  01

Zener diode controls switching of large direct currents

MSC-186  B65-10350  01

Back mount device quickly inserts or extracts chassis units

MSC-244  B65-10385  01

Auxiliary coil controls temperature of RF induction heater

MSC-286  B66-10067  01

System proportions fluid-flow in response to demand signals

GSFC-457  B66-10094  01

Control system maintains compartment at constant temperature

JPL-SC-145  B66-10188  01

Pneumatic shutoff and time-delay valve operates at controlled rate

MSC-602  B66-10189  05

Automatic reel controls filler wire in welding machines

MSC-416  B66-10236  05

Modified hydraulic braking system limits angular deceleration to safe values

GSFC-476  B66-10310  05

Flexible drive allows blind machining and welding in hard-to-reach areas

MSC-524  B66-10428  05

Control circuit maintains unity power factor of reactive load

MSC-192  B66-10431  01

Automatic cryogenic liquid level controller is safe for use near combustible substances

LEWIS-195  B66-10482  01

Study made of application of stereoscopic display system to analog computer simulation

MSC-1263  B66-10590  01

Fluid logic control circuit operates actuator motor

LEWIS-294  B66-10593  05

Gage accurately controls force for placing chips on substrates

MSC-194  B66-10675  01

Elastic guides reduce hysteresis effect in Belleville spring package

JPL-910  B67-10011  05

Variable-pulse switching circuit accurately controls solenoid-valve actuations

MSC-1895  B67-10022  01

Rapid-response, light-exposure control system

WOO-10238  B66-10502  01

Fluid power-transmitting gas bearing

MSC-10097  B66-10503  05

Digital laser-beam deflection sensor

F-PS-14765  B66-10525  01

Root-cubing and general root-powering methods for finding the zeros of polynomials

ARG-10444  B66-10654  05

Special purpose computer provides programmable digital filter for sampled-data control systems

F-PS-20290  B66-10650  05

Linear signal noise summer accurately determines and controls S/N ratio

JPL-SC-152  B66-10654  01

Process controls introduction of selected impurities into semiconductor wafers

MSC-524  B66-10428  05

Fluid logic control circuit operates nutator actuator motor

LEWIS-294  B66-10593  05
Improved fluid control circuit operates on low power input
LNWIS-325 B67-10042 01

Heater control circuit provides both fast and proportional control
M-PS-906 B67-10097 01

Multiplexing control device enables handling of wide variations in sampling rates
M-PS-1871 B67-10150 01

Solid state circuit averages multiple signals and rejects those varying significantly from the average
NDC-10066 B67-10262 01

Liquid mercury chamber and microsyringe designs allow more efficient micromanipulations
ARG-251 B67-10305 04

Limit circuit prevents overdriving of operational amplifier
NDC-10082 B67-10343 01

Signal generator converts direct current to multiphase supplies
MSC-11043 B67-10368 01

Computer program generates averaged value data tapes
M-PS-12728 B67-10411 06

Computer program analyzes generalized environmental control and life support systems
MSC-1157 B67-10415 06

Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates
MPO-10376 B67-10418 05

Pump simulator provides variable pressure-flow characteristics
LNWIS-10122 B67-10453 05

Improved control system power unit for large parachutes
MSC-12052 B67-10677 05

Pressure variable orifice for hydraulic control valve
MSC-11323 B68-10120 05

Improved active vibration isolator
LANGLER-10106 B68-10123 05

Device provides controlled gas leaks
NFO-10298 B68-10142 03

Design techniques - Stochastic controllers
MSC-11557 B68-10234 02

Random access-random release relay switching matrix
M-PS-12590 B68-10301 01

Current-limiting voltage regulator
MSC-11024 B68-10305 01

Improved limiter for turn-on current transient
GSFC-10413 B68-10308 01

Automatic solar lamp intensity control system
XGS-10017 B68-10399 01

Charge control of nickel-cadmium batteries by coulometer and third electrode method
GSFC-10487 B68-10431 01

Fluidic transducer gives pressure output as function of temperature
MSC-10093 B68-10537 05

Fluidic analog amplifier
XSC-10102 B68-10538 05

Welding gate with computerized controls
M-PS-20224 B68-10566 01

Astronaut's tool for withdrawing/replacing computer cards
M-PS-20453 B68-10565 05

Reducing quantizer deadband with a *range switching** digital filter
M-PS-20419 B69-10259 01

Piezoelectric linear actuator
MSC-13194 B69-10409 02

Analysis of problems related to slingshot shock machine high-velocity shock testing
HPO-11193 B69-10506 05

Constant-frequency, variable-duty-cycle multivibrator
XGS-10033 B69-10512 01

Gas Metal Arc/GEA/ weld torch proximity control
M-PS-16327 B69-10533 01

Control for maintaining constant level of a cryogenic liquid
HFO-11177 B69-10573 05

Load current sensor for a pulse width modulator power regulator
GSFC-10656 B69-10578 01

Cryogenic pressure transducer
M-PS-14909 B69-10601 01

Versatile telemonitoring system
ARG-10339 B69-10655 01

Control jet placement on spacecraft
MSC-13365 B69-10671 01

Battery charge-discharge controller
MSC-11836 B69-10747 01

CONTROL ROCKETS
Lightweight universal joint transmits both torque and thrust
JPL-375 B63-10236 05

CONTROL BODS
Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry
ARG-210 B67-10236 03

Remotely operated gripper provides vertical control rod movement
ARG-10160 B68-10359 05

CONTROL STABILITY
Polynomial manipulator AP-168
MSC-1231 B67-10103 01

CONTROL SURFACES
Improved control system power unit for large parachutes
MSC-12052 B67-10677 05

CONTROL VALVES
High-pressure regulating system prevents pressure surges
JPL-231 B63-10170 05

Flow control valve is independent of pressure drop
JPL-W00-039 B65-10121 05

Improved fluid control valve extends diaphragm life
JPL-345 B65-10147 05

I-126
Device disconnects several couplings simultaneously
JPL-226 B65-10163 05

Quick-disconnect coupling safe transfer of hazardous fluids
LEWIS-125 B65-10202 01

Fluid check valve has fail-safe feature
JPL-0019 B65-10207 05

Inexpensive check valve is installed in standard AN fittings
JPL-2A B65-10222 05

System proportions fluid-flow in response to demand signals
GSFC-457 B66-10094 01

Segmented ball valve is easy to open and close
WOO-248 B66-10195 05

Self-contained clothing system provides protection against hazardous environments
S-PS-536 B66-10201 05

Electric arc heater is self starting
LANGLEY-208 B66-10230 03

Flow ring valve is simple, quick-acting
S-PS-752 B66-10255 05

Diaphragm valve for corrosive and high temperature fluid flow control has unique features
LEWIS-304 B66-10365 05

Rotary valve controls multiple hydraulic leveling cylinders
S-PS-361 B66-10402 05

Miniature valve accurately controls small volume fluid flow
ARG-66 B66-10473 05

Multidimensional Reaction Kinetic Ablation Program /HEKAAP/
MSC-143 B66-10495 05

Quick-response servo amplifies small hydraulic pressure differences
ARG-99 B66-10498 05

In-tank shutoff valve is provided with maximum blast protection
S-PS-1529 B66-10514 05

Study of vortex valve for medium temperature solid propellants
LANGLEY-209 B66-10524 01

Monitoring circuit accurately measures movement of solenoid valve
S-PS-1829 B66-10568 01

Fuel and oxidizer valve assembly employs single solenoid actuator
MSC-1046 B66-10648 05

Check valve installation in pilot operated relief valve prevents reverse pressurization
H-PS-1925 B66-10655 05

Valve effectively controls amount of contaminant in flow stream
H-PS-1771 B66-10663 05

Fire extinguisher control system provides reliable cold weather operation
H-PS-13031 B67-10622 05

Semirotoidal-diaphragm cavitating valve designed for bipropellant flow control
XWP-09704 B69-10016 05

**Controlled Atmospheres**
Multiple test chamber exposes materials to various environments
MSC-179 B65-10268 01

Materials physically tested in variable-environment chamber
JPL-789 B66-10130 01

Improved method facilitates debulking and curing of phenolic impregnated asbestos
MSC-949 B66-10459 05

**Controllers**
An investigation of phase-lock loop swept-frequency synchronization
S-PS-656 B66-10423 01

Design techniques - Stochastic controllers
MSC-11554 B66-10234 02

Novel multipurpose timer for laboratories
ARG-10147 B69-10410 01

Battery charge-discharge controller
MSC-11836 B69-10747 01

**Convection**
Thermal Network Analyzer Program
NUC-10580 B69-10239 06

Method for determining properties of microinstabilities of a magnetized plasma
HQ-10447 B69-10862 02

**Convective Flow**
Study of convective magnetohydrodynamic channel flow
ARG-10102 B68-10181 02

Mass transport mechanism in porous fuel cell electrodes
HQ-10343 B69-10135 01

**Convective Heat Transfer**
Simple transducer measures low heat-transfer rates
JPL-466 B68-10122 01

Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MSC-989 B66-10619 01

Computer program calculates steady-state temperature distribution within plane or axisymmetric solids
NUC-10049 B67-10224 06

Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries
H-PS-1910 B67-10329 06

Computer program MCAP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solids
NUC-10043 B67-10457 06

Thin film heat transfer gage is stable at higher temperatures
H-PS-12396 B68-10051 01

Two-fluid, impinging-sheet injector
NEO-10547 B68-10338 05

Technique for assessing potential fire hazards
HQ-10279 B69-10287 03

Surface-renewal models for heat-transfer between walls and fluidized beds
ARG-10372 B69-10772 02

**Convergence**
Computer program analyzes generalized environmental control and life support systems
MSC-1157 B67-10415 06
CONVERGENT NOZZLES

Nozzles for size reclassification of microfog particles
LEWIS-10705 B69-10076 05

CONVERSION

Treatment increases stress-corrosion resistance of aluminum alloys
N-PS-1840 B66-10595 05

Transistor h parameter conversion slide rule
JPL-649 B67-10561 01

Input gate circuit converted for use as linear amplifier
N-PS-14265 B68-10015 01

System converts slow-scan to standard fast-scan TV signals
BUC-90534 B69-10748 01

CONVERSION TABLES

GMT/local-time conversion chart
GSPC-10521 B67-10548 01

CONVERTERS

Circuit controls transients in SCR inverters
GSPC-120 B63-10600 01

Transistorized converter provides nondissipative regulation
GSPC-238 B64-10305 01

Compressed gas system operates semitrailer brakes during winching operation
JPL-0036 B64-10306 05

Dc to ac converter operates efficiently at low input voltages
GSPC-130 B65-10178 01

Solid state time-to-pulse-height converter developed
ARG-170 B67-10053 01

Converter provides constant electrical power at various output voltages
GSPC-519 B67-10481 01

Solid state single-ended switching dc-to-dc converter
N-PS-13598 B67-10558 01

Evaluation of magnetic materials for static inverters and converters
LEWIS-10343 B69-10306 01

CONVEXITY

Alignment tool facilitates pin placement on irregular horizontal surfaces
LANGLEY-219 B66-10410 05

Improved method of dicing integrated circuit wafers into chips
NRC-10138 B69-10441 01

CONVOLUTION INTEGRALS

Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices
ARG-10445 B69-10415 02

COOLANTS

Pulsed plasma accelerator operates repetitively without complex controls
LANGLEY-48 B65-10062 01

Transducer measures temperature differentials in presence of strong electromagnetic fields
ARC-27 B65-10089 01

Radial coolant channels fabricated by simplified method
NN-0070 B66-10267 05

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54 B66-10471 05

CLOSED LOOPS

High intensity radiation heat source is capable of sustained operation
ARC-61 B66-10547 02

A design procedure for the weight optimization of straight finned radiators
GSPC-547 B66-10618 05

Low rate flow switch can be used for gas or liquid
JPL-867 B66-10696 01

Cold plate of pin fin design makes efficient heat exchanger
MSC-1093 B67-10073 05

New class of compounds have very low vapor pressures
ARG-115 B67-10184 03

Computer optimization program finds values for several independent variables that minimize a dependent variable
N-PS-13030 B67-10328 06

Welding torch and wire feed manipulator
N-PS-13102 B66-10385

Circuit controls transients in SCR inverters
GSPC-120 B63-10600 Modified blackbody device emits high-density radiation
1-38 B67-10388

Transistorized converter provides nondissipative regulation
GSPC-238 B64-10305 01 Standard surface grinder for precision machining of thin-wall tubing
ARG-10014 B67-10400

Compressed gas system operates semitrailer brakes during winching operation
JPL-0036 B64-10306 05 Concept for cryogenic liquid reclamation system
RPO-10322

Dc to ac converter operates efficiently at low input voltages
GSPC-130 B65-10306 05

Computer program MCP-T0SS calculates steady-state thermal and flow analysis of multiple parallel channels and temperature distribution in surrounding heat-generating solid
NRC-10042 B67-10456 06

Computer program MCP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solid
NRC-10043 B67-10457 06

Technique eliminates high voltage arcing at electrode-insulator contact area
LEWIS-10133 B67-10470 01

High temperature thermocouple design provides gas cooling without increasing overall size of unit
NRC-10515 B67-10497 01

Coolants with selective optical filtering characteristics for ruby laser applications
N-PS-20188 B68-10508 02

Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes
ARG-10274 B69-10047 02

Cold machining of high density tungsten and other materials
ARG-10289 B69-10110 05

Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings
N-PS-18453 B69-10178 05

Automatic calorimetry system monitors RF power
NPO-11033 B69-10384 01

Pneumatic flow comparator
N-PS-18373 B69-10400 05

Rate of heat extraction controller for environmental control
AG-10318 B69-10516 01

X-128
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed ether bath for electrodeposition of aluminum LANGLEY-10200 B69-10737 03</td>
</tr>
<tr>
<td>COOLING</td>
</tr>
<tr>
<td>Indium foil with beryllia washer improves transistor heat dissipation GSFC-42 B65-10033 01</td>
</tr>
<tr>
<td>Cooling method prolongs life of hot-wire transducer LEWIS-54 B63-10344 02</td>
</tr>
<tr>
<td>Integral coolant channels supply made by melt-out method N-PS-91 B63-10497 05</td>
</tr>
<tr>
<td>Test device prevents molecular bounce-back GSFC-82 B63-10546 03</td>
</tr>
<tr>
<td>Lathe converted for grinding aspheric surfaces GSFC-115 B63-10556 05</td>
</tr>
<tr>
<td>New method forms bond line free of voids LANGLEY-20 B63-10558 05</td>
</tr>
<tr>
<td>Cryogenic waveguide window is sealed with plastic foam JPL-559 B63-10613 01</td>
</tr>
<tr>
<td>Mounting for diodes provides efficient heat sink N-PS-197 B66-10263 01</td>
</tr>
<tr>
<td>Fastener provides cooling and compensates for thermal expansion ND-0003 B65-10038 05</td>
</tr>
<tr>
<td>Automatic thermal switch accelerates cooling-down of cryogenic system JPL-655 B65-10068 01</td>
</tr>
<tr>
<td>Nitrogen dioxide produced by self-sustained pyrolysis of nitrous oxide LANGLEY-32 B65-10074 05</td>
</tr>
<tr>
<td>Internal cooling increases range of immersion-type temperature probe LEWIS-171 B65-10157 02</td>
</tr>
<tr>
<td>Insulation accelerates rate of cooling with cryogenic fluid MSC-161 B65-10240 02</td>
</tr>
<tr>
<td>Boron nitride housing cools transistors WO-079 B66-10289 01</td>
</tr>
<tr>
<td>Copper foil provides uniform heat sink path MSC-262 B66-10004 02</td>
</tr>
<tr>
<td>Special mandrel permits uniform welding of out-of-round tubing N-PS-706 B66-10323 05</td>
</tr>
<tr>
<td>Auxiliary titanium sublimation pump produces ultrahigh 10 to the minus 11 torr/ vacuum LANGLEY-212 B66-10368 02</td>
</tr>
<tr>
<td>Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum ABG-104 01</td>
</tr>
<tr>
<td>Glass formulation has high coefficient of thermal expansion ND-0004 B66-10705 03</td>
</tr>
<tr>
<td>Metal flame spray coating protects electrical cables in extreme environment MOC-10077 B67-10351 03</td>
</tr>
<tr>
<td>Reparable, high-density microelectronic module provides effective heat sink N-PS-13075 B67-10356 01</td>
</tr>
<tr>
<td>Study made of ductility limitations of aluminum-silicon alloys N-PS-12524 B67-10392 03</td>
</tr>
<tr>
<td>Warpage eliminated in copper-clad microwave circuit laminates N-PS-13692 B67-10454 03</td>
</tr>
<tr>
<td>Flame sprayed dielectric coatings improve heat dissipation in electronic packaging N-PS-13569 B67-10534 01</td>
</tr>
<tr>
<td>Thermal short improves sensitivity of cryogenically cooled wood NPO-09975 B68-10059 01</td>
</tr>
<tr>
<td>Detection sensitivities in 3-8 MeV neutron activation ABG-10210 B68-10296 02</td>
</tr>
<tr>
<td>Microprobe investigation of brittle segregates in aluminum Mg and TiG welds N-PS-14720 B68-10334 03</td>
</tr>
<tr>
<td>Dynamics of moving bubbles in single and binary component systems N-PS-14845 B68-10339 02</td>
</tr>
<tr>
<td>Evaluation of superconducting magnets, a study N-PS-14806 B68-10396 02</td>
</tr>
<tr>
<td>Battery-package design provides for cell cooling and constraint RSC-11039 B68-10398 05</td>
</tr>
<tr>
<td>Heat-load simulator for heat sink design RSC-11710 B68-10510 02</td>
</tr>
<tr>
<td>High conductance vapor thermal switch GSFC-10108 B68-10519 02</td>
</tr>
<tr>
<td>Cooling of 2 kW H subscript 2-0 subscript 2 fuel cell N-PS-13737 B68-10544 01</td>
</tr>
<tr>
<td>Method for copper staining of germanium crystals ABG-10403 B69-10257 03</td>
</tr>
<tr>
<td>Modular packaging technique for combining integrated circuits and discrete components GSFC-10365 B69-10453 01</td>
</tr>
<tr>
<td>Single-electron coaxial injector for rocket fuel NPO-11095 B69-10947 05</td>
</tr>
<tr>
<td>Modified cryogenic storage tank subsystem KSC-10380 B69-10556 02</td>
</tr>
<tr>
<td>Control for maintaining constant level of a cryogenic liquid NPO-11777 B69-10573 05</td>
</tr>
<tr>
<td>Strain-age cracking in Rene 41 alloy N-PS-18650 B69-10605 03</td>
</tr>
<tr>
<td>Niobium-uranium alloys with voids of predetermined size and total volume ABG-10490 B69-10641 03</td>
</tr>
<tr>
<td>Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites EOC-10161 B67-10732 01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COOLING SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe samples components of rocket engine exhaust N-PS-485 B65-10384 03</td>
</tr>
<tr>
<td>Argon purge gas cooled by chill box N-PS-560 B66-10153 02</td>
</tr>
<tr>
<td>Electropneumatic transducer automatically limits motor current LEWIS-253 B66-10160 01</td>
</tr>
<tr>
<td>Radial coolant channels fabricated by simplified method ND-0070 B66-10267 05</td>
</tr>
<tr>
<td>Modular Porous Plate Sublimator I/IIPS/</td>
</tr>
</tbody>
</table>
Subject Index

- Improved cryogenic refrigeration system
- Water cooled anode increases life of high temperature arc lamp
- Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident
- Development of dual solid cryogens for high reliability refrigeration system
- Viscosity and density of methanol/water mixtures at low temperatures
- Cooled miniature pressure transducers effective at high temperatures
- Dual-purpose chamber-cooling system
- A rotating, noncapillary heat pipe
- Solar-angle sensor has no moving parts
- Simple scale interpolator facilitates reading of graphs
- Device enables measurement of moments of inertia about three axes
- Simple scale interpolator facilitates reading of graphs
- Laser measuring system accurately locates point coordinates on photograph
- Subroutines GEORGE and DRASTIC simplify operation of automatic digital plotter
- Computer program utilizes FORTRAN 4 subroutines for contour plotting
- Earth orbit rendezvous evaluation program
- Simplified system displays complex curves corresponding to input data
- LM lookangle program
- Circuit board hole coordinate locator concept
- Measuring coplanarity of surfaces
- Arylenesiloxane copolymers
- Heparin insolubilized with crosslinking agent
- Refractory thermal insulation for smooth metal surfaces
- Composite gaskets are compatible with liquid oxygen, resist compression set
- Thermoplastic rubberlike material produced at low cost
- Warpage eliminated in copper-clad microwave circuit laminates
- Ionone membrane battery separator
- Method of welding joint in closed vessel improves quality of seal
- Connector for vacuum-jacketed lines cuts tubing system cost
- Improved molybdenum disulfide-silver motor brushes have extended life
- Gate valve with ceramic-coated base operates at high temperatures
- Solder flux leaves corrosion-resistant coating on metal
- Improved technique for localizing electropolishing features novel nozzles
- Mounting for diodes provides efficient heat sink
- Wide-angle sensor measures radiant heat energy in corrosive atmospheres
- Improved holder protects crystal during high acceleration and impact
- Lightweight aluminum casting alloy is useful at cryogenic temperatures
- Inert gas spraying device aids in repair of hazardous systems
- Coating method enables low-temperature brazing of stainless steel
- Adherent protective coatings plated on magnesium-lithium alloy
- Improved wire memory matrix uses very little power
- Wire bundle formed into grids with minute interstices
- Adhesive-backed terminal board eliminates mounting screws
- Copper foil provides uniform heat sink path
- Hydrogen-atmosphere induction furnace has increased temperature range

COOBDIIATBS SUBJECT IBDBX
requires only water supply for coolant

I-FS-1374 B66-10409

Improved cryogenic refrigeration system
JPL-731 B67-10128

Water cooled anode increases life of high temperature arc lamp
NPO-10180 B67-10247

Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident
NUC-10054 B67-10281

Development of dual solid cryogens for high reliability refrigeration system
GSFC-10186 B67-10644

Viscosity and density of methanol/water mixtures at low temperatures
E-PS-10951 B68-10274

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401 B68-10370

Dual-purpose chamber-cooling system
EPO-10467 B68-10506

A rotating, noncapillary heat pipe
LEWIS-10298 B69-10684

Solar-angle sensor has no moving parts
JPL-418 B63-40260

Simple scale interpolator facilitates reading of graphs
LABGLEY-88 B65-10070

Device enables measurement of moments of inertia about three axes
GSFC-49 B65-10176

Simple scale interpolator facilitates reading of graphs
LEWIS-92 B66-10302

Laser measuring system accurately locates point coordinates on photograph
ARG-74 B66-10560

Subroutines GEORGE and DRASTIC simplify operation of automatic digital plotter
NUC-10044 B67-10222

Computer program utilizes FORTRAN 4 subroutines for contour plotting
EPO-10127 B67-10323

Earth orbit rendezvous evaluation program
E-PS-13016 B67-10407

Simplified system displays complex curves corresponding to input data
EPO-10073 B69-10247

LM lookangle program
MSC-13179 B69-10370

Circuit board hole coordinate locator concept
E-PS-14737 B69-10539

Measuring coplanarity of surfaces
MSC-12044 B67-10371

Arylenesiloxane copolymers
E-PS-1812 B67-10079

Heparin insolubilized with crosslinking agent
NPO-10834 B69-10299

Refractory thermal insulation for smooth metal surfaces
E-PS-150 B66-10099

Composite gaskets are compatible with liquid oxygen, resist compression set
E-PS-455 B66-10395

Thermoplastic rubberlike material produced at low cost
JPL-733 B66-10453

Warpage eliminated in copper-clad microwave circuit laminates
E-PS-13892 B67-10454

Ionone membrane battery separator
NPO-11091 B67-10501

Method of welding joint in closed vessel improves quality of seal
JPL-170 B63-10139

Connector for vacuum-jacketed lines cuts tubing system cost
LEWIS-56 B63-10367

Improved molybdenum disulfide-silver motor brushes have extended life
E-PS-64 B63-10479

Gate valve with ceramic-coated base operates at high temperatures
ANC-23 B63-10562

Solder flux leaves corrosion-resistant coating on metal
JPL-611 B64-10206

Improved technique for localizing electropolishing features novel nozzles
WGO-101 B66-10271

Mounting for diodes provides efficient heat sink
E-PS-197 B66-10283

Wide-angle sensor measures radiant heat energy in corrosive atmospheres
E-PS-228 B65-10019

Improved holder protects crystal during high acceleration and impact
JPL-463 B65-10037

Lightweight aluminum casting alloy is useful at cryogenic temperatures
E-PS-267 B65-10092

Inert gas spraying device aids in repair of hazardous systems
LEWIS-88 B65-10115

Coating method enables low-temperature brazing of stainless steel
WGO-0030 B65-10250

Adherent protective coatings plated on magnesium-lithium alloy
E-PS-365 B65-10294

Improved wire memory matrix uses very little power
JPL-SC-167 B65-10359

Wire bundle formed into grids with minute interstices
WGO-089 B66-10372

Adhesive-backed terminal board eliminates mounting screws
MSC-173 B65-10396

Copper foil provides uniform heat sink path
MSC-262 B66-10004

Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055
Auxiliary coil controls temperature of RF induction heater
GSFC-428  B66-10067  01

Argon purge gas cooled by chill box
I-PS-560       B66-10153  02

Simple device facilitates inert-gas welding
of tubes
M-PS-558  B66-10155  05

Submicron metal powders produced by ball milling with grinding aids
LEWIS-188  B66-10221  03

Diffusion bonding makes strong seal at flanged connector
M-PS-637  B66-10250  05

Multiple temperatures sampled using only one reference junction
GSFC-485  B66-10260  01

Boron-deoxidized copper withstands brazing temperatures
M-PS-762  B66-10273  03

Bypass rod transfers heat developed in thermionic diode
JPL-SC-136  B66-10303  05

Electrochemical milling removes burrs and solder from tubing ends
M-PS-714  B66-10358  03

Hollow spherical rotors fabricated by electroplating
JPL-SC-117  B66-10366  05

Copper wire plated with nickel and silver resists corrosion
M-PS-761  B66-10421  03

Electrical cabling withstands severe environmental conditions
M-PS-1585  B66-10427  01

Rotating magnetic poles used to pump mercury
LEWIS-276  B66-10434  05

Weldable aluminum alloy has improved mechanical properties
M-PS-295  B66-10445  03

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54  B66-10471  05

Silver-base ternary alloy proves superior for slip ring lead wires
M-PS-1540  B66-10540  03

Tungsten fiber-reinforced copper composites form high strength electrical conductors
LEWIS-338  B66-10572  03

Nondestructive test method accurately sorts mixed bolts
M-PS-1426  B66-10574  01

Plastic tubing protects flexible copper hose
M-PS-772  B66-10588  05

Multilayer refractory nozzles produced by plasma-spray process
WGO-318  B66-10611  05

Improved memory word line configuration allows high storage density
GSFC-559  B66-10617  01

Intergranular metal phase increases thermal shock resistance of ceramic coating
M-PS-1862  B66-10651  03

Glass formulation has high coefficient of thermal expansion
M-PS-5084  B66-10705  03

Miniature capacitor functions as pressure sensor
JPL-903  B66-10020  01

Neutron activation analysis traces copper artifacts to geographical point of origin
ARG-119  B66-10036  02

Correlation established between heat transfer and ultrasonic transmission properties of copper braze bonds
ARG-247  B66-10037  02

Multipurpose instrumentation cable provides integral thermocouple circuit
MU-0108  B66-10046  01

Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam
ARG-226  B66-10050  03

Evaluation of high temperature stranded hookup wire
M-PS-2478  B66-10122  03

Clasp provides efficient connection for high-density currents
M-PS-2477  B66-10140  01

Fast-acting calorimeter measures heat output of plasma gun accelerator
LEWIS-388  B66-10192  01

Porous sandblasts provide uniform deformation in hydrostatic powder metallurgy
M-PS-1972  B66-10209  03

High-strength braze joints between copper and steel
M-PS-2519  B66-10211  05

Water cooled anode increases life of high temperature arc lamp
PPO-10180  B66-10247  02

Extrusion of small-diameter, thin-wall tungsten tubing
LEWIS-90335  B66-10355  05

Steel test panel helps control additives in pyrophosphate copper plating
LEWIS-10101  B66-10358  05

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10010  B66-10399  01

Metal tube reducer is inexpensive and simple to operate
ARG-49  B66-10401  05

Study made of anodized aluminum circuit boards
M-PS-1358C  B66-10425  01

Adhesives for laminating polyimide insulated flat conductor cable
M-PS-12066  B66-10429  03

Corrosion of aluminum alloys by chlorinated hydrocarbon/methanol mixtures
MGC-11365  B66-10442  03

Warpage eliminated in copper-clad microwave circuit laminates
M-PS-13892  B66-10454  03

Method for X-ray study under extreme temperature and pressure conditions
MGC-11232  B66-10474  02

Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area
NUC-10007  B66-10538  01
Study of crevice-galvanic corrosion of aluminum ARG-10572 B69-10536 02

Multilayer plated wire shows promise as memory device HSC-1-106 B69-10025 01

Astronaut space suit communication antenna HSC-12101 B69-10238 01

Improved traveling wave maser amplifier MDO-10548 B69-10244 01

One hundred angstrom niobium wire LEWIS-10128 B69-10279 03

Method for making small pointed thermocouples SAN-10014 B69-10389 01

Temperature controlled strain gaged extensometer LEWIS-10353 B69-10543 01

Contact-spring forming machine for flat conductor cable receptacles M-PS-20126 B69-10550 05

Isothermal drop calorimeter provides measurements for alpha active, pyrophoric materials ARG-10186 B69-10002 02

Liquid gallium rotary electric contact LEWIS-10828 B69-10138 03

Experimental prediction of performance by superconducting cables ARG-10215 B69-10161 01

Aggregation of metallochlorophylls — Examination by spectroscopy ARG-10273 B69-10163 04

 Plasma-heating by induction LEWIS-10528 B69-10185 02

 Imprinting of confining sites for cell cultures on thermoplastic substrates LANGLEY-10495 B69-10236 04

 Diffusion bond method of joining steel and a TPE-bronze composite M-PS-20482 B69-10237 03

 Method for copper staining of germanium crystals ARG-10403 B69-10257 03

 Nondestructive evaluation of printed wiring boards by microh resistance measurements SAN-10034 B69-10272 01

 Parameters for good welding of copper to nickel M-PS-20353 B69-10302 05

 Quality-weld parameters for microwelding technicians and equipment M-PS-20484 B69-10303 05

 Self-shielding printed circuit boards for high frequency amplifiers and transmitters HQ-10433 B69-10314 01

 Analysis of problems related to slingshot shock machine high-velocity shock testing MDO-1193 B69-10506 05

 Improved method of producing oxide-dispersion-strengthened alloys HQ-10461 B69-10536 03

 Sprayed shielding of plastic-encapsulated electronic modules M-PS-13570 B69-10607 01

 Surface-renewal models for heat-transfer
COPPER OXIDES
Device removes hydrogen gas from enclosed spaces
GSPC-495 B66-10340 03

COPPER SELLENIDES
Cuprous selenide and sulfide form improved photovoltaic barriers
WOO-212 B66-10025 01

COPPER SULFIDES
Crack detection method is safe in presence of liquid oxygen
H-PS-236 B65-10107 03

Production of metals and compounds by radiation chemistry
LEWIS-10231 B69-10123 03

CORDAGE
Explosive force of primacord grid forms large sheet metal
Farts B66-10014 05

Nylon shock absorber prevents injury to parachute jumpers
MSC-226 B66-10080 05

Tool pre-tensions covers prior to lacing
MSC-631 B66-10301 05

CORROSION
Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135 B67-10623 05

Minimization of magnetic logic circuitry
LANGLEY-10037 B66-10184 06

Adding calcium improves lithium ferrite core
ARC-10036 B69-10086 06

CORRECTION
Electrometer preamplifier has drift correction feedback
JPL-SC-074 B65-10267 01

Calorimeter accurately measures thermal radiation energy
LANGLF-173 B66-10058 02

Elementary review of electron microprobe techniques and correction requirements
ARG-10062 B68-10195 03

Variable-nash method of solving differential equations
HPO-10515 B69-10017 02

Numerical integration of ordinary differential equations of various orders
ABG-10247 B69-10089 02

Wind tower influence study
1-FS-20239 B69-10653 01

CORRELATION
Study of random process theory aids digital data processing
M-PS-1475 B67-10309 06

CORRELATION COEFFICIENTS
Multiple correlation computer program determines relationships between several independent and dependent variables
H-PS-13024 B67-10327 06

The I square statistic and goodness of fit test
GSPC-10547 B68-10136 02

Prediction of friction coefficients for gases
LEWIS-10774 B69-10112 02

CORRELATORS
Phase detector circuit synthesizes own reference signal
M-PS-247 B65-10080 01

Linear signal noise summer accurately determines and controls S/N ratio
JPL-SC-152 B66-10433 01

CORROSION
Self-contained clothing system provides protection against hazardous environments
M-PS-536 B66-10201 05

Apparatus enables accurate determination of alkali oxides in alkali metals
LEWIS-256 B66-10296 03

Diaphragm valve for corrosive and high temperature fluid flow control has unique features
LEWIS-304 B66-10365 05

Trace levels of metallic corrosion in water determined by emission spectrography
MSC-1193 B66-10701 03

Evaluation of high temperature stranded hookup wire
M-PS-2478 B67-10122 03

Xenon fluoride solutions effective as fluorinating agents
ARG-217 B67-10133 03

New class of compounds have very low vapor...
Filler device for handling hot corrosive materials
MSc-85
B64-10166 03

Solder flux leaves corrosion-resistant coatings on metal
JPL-611
B64-10206 03

Improved technique for localizing electropolishing features; novel nozzles
Woo-101
B64-10271 01

Wide-angle sensor measures radiant heat energy in corrosive atmospheres
N-FS-228
B65-10019 05

Inexpensive electrical connector is moisture- and corrosion-proof
MSc-164
B65-10196 01

New brazing alloy eliminates metal-stress cracking
Woo-249
B65-10397 03

Nickel/tin coating protects threaded fasteners in corrosive environment
MSc-253
B65-10398 03

Epoxy blanket protects milled part during explosive forming
N-FS-307
B66-10029 03

White primer permits a corrosion-resistant coating of minimum weight
N-FS-304
B66-10207 03

System locates randomly placed remote objects
Langley-209
B66-10315 01

Valve seat pores sealed with thermosetting monomer
R-FS-900
B66-10322 03

Brazing process provides high-strength bond between aluminum and stainless steel
N-FS-308
B66-10352 05

Copper wire plated with nickel and silver resists corrosion
N-FS-761
B66-10421 03

Modified thermocouple is effective from minus 250 deg to 5000 deg F
MSc-420
B66-10461 01

Electroless nickel plating on stainless steels and aluminum
GSMC-533
B66-10479 03

Silver-base ternary alloy proves superior for slip ring lead wires
N-FS-1540
B66-10540 03

Tantalum alloys resist creep deformation at elevated temperatures
LEWIS-350
B66-10558 03

Use of steel and tantalum apparatus for molten Cd-Zr-Zn alloys
AGS-199
B66-10590 03

Treatent increases stress-corrosion resistance of aluminum alloys
N-FS-1840
B66-10595 05

Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam
ARG-226
B67-10050 03

Study made of corrosion resistance of stainless steel and nickel alloys in nuclear reactor superheaters
ARG-230
B67-10051 03

Controlled ferrite content improves weldability of corrosion-resistant steel
N-FS-568
B67-10069 03
SUBJECT INDEX

Study to minimize hydrogen embrittlement of ultrahigh-strength steels M-PS-2455 03
Heat treatment study of aluminum casting alloy M-PS-2397 03
Iron serves as diffusion barrier in thermally regenerative galvanic cell ARG-29 03
Materials data handbook, aluminum alloy 7075 M-PS-2349 03
Flowmeter determines six ratio for viscous adhesives M-PS-2306 03
Fuel cell life improved by metallic sinter activation after electrode assembly welding E67-10140 03
Aluminum and stainless steel tubes joined by simple ring and welding process M-PS-13120 03
Study made of resistance of stainless steels to zinc-vapor corrosion ARG-10055 03
Stress-corrosion characteristics of aluminum casting alloy M-PS-14017 03
Precise doping of metals by small gas flows LEWIS-10444 03
Improved thermal treatment of aluminum alloy 7075 M-PS-20083 03
Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control XNP-09704 03
Corrosion reduction of aluminum alloys in flowing high-temperature water ARG-10244 03
Study of fluoride corrosion of nickel alloys ARG-10224 03
Materials data handbook, aluminum alloy 6061 M-PS-20381 03
Improved pH buffering agent for sodium hypochlorite NSC-13443 03
Corrosion protection of aluminum alloys in contact with other metals M-PS-18526 03
Advances in aluminum anodizing M-PS-14600 03
Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings M-PS-18453 03
Improved method of producing oxide-dispersion-strengthened alloys EO-10451 03
Development of improved potting and conformal coating compounds M-PS-20219 03

COST ESTIMATES

Improved method of producing oxide-dispersion-strengthened alloys EO-10451 03
Development of improved potting and conformal coating compounds M-PS-20219 03

COST REDUCTION

Square tubing reduces cost of telescoping bridge crane hoist ARG-13 03

COSTS

Galium useful bearing lubricant in high-vacuum environment LEWIS-12 03

COLUMNS

Battery charge regulator is coulometer B67-10233 03
Method accurately measures mean particle diameters of monodisperse polystyrene latexes
ARG-207 B67-10054 01
Cleanroom air sampler counts, categorizes, and records particle data
M-FS-2221 B67-10076 01
Strain gage circuitry provides fatigue testing machine with accurate cycle count
WU-0114 B67-10093 01
A conceptual, parallel operating data compression processor
NPO-10068 B67-10204 01
Quartz crystals detect gas contaminants during vacuum chamber evacuation
NPO-10144 B67-10205 01
FM carrier deviation measured by differential probability method
M-FS-2166 B67-10213 01
Simple first order data compression processor concept
NPO-10338 B67-10553 01
Self-correcting, synchronizing ring counter using integrated circuit devices
M-FS-13901 B68-10067 01
Recharge unit provides for optimum recharging of battery cells
GSFC-10688 B68-10273 01
Closed circuit TV system automatically guides welding arc
M-FS-20084 B68-10357 01
Tape reading fixture
M-FS-14146 B69-10008 05
Remote balance weighs accurately and high radiation
ARG-10387 B69-10242 05
Reducing quantizer deadband with a range switching digital filter
M-FS-20415 B69-10259 01
Circuit counts pulses and indicates time of occurrence of slow pulses
XEP-06234 B69-10313 01
A method for reducing sampling jitter in digital control systems
NPO-11088 B69-10338 01
Foot-operated cell-counter
ARG-10315 B69-10351 01
Simple quasi-exponential slope generator
NPO-11130 B69-10439 01
Laser interferometer micrometer system
M-FS-14747 B69-10633 02

COUNTERSINKING
Countersunk headscrew retainer
M-FS-16481 B69-10282 05

COUTING
Run numbering system for use with data recorders
M-FS-2557 B67-10215 01
Detection sensitivities in 3-8 MeV neutron activation
ARG-10210 B68-10298 02
Live-timer method of automatic dead-time correction for precision counting
ARG-10478 B69-10612 01
Highly stable high-rate discriminator for nuclear counting
ARG-10483 B69-10614 01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>COUPLINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COUNTING CIRCUITS</strong></td>
<td></td>
</tr>
<tr>
<td>Improved sensor counts microeteorid penetration</td>
<td>GSFC-10056</td>
</tr>
<tr>
<td>Digital cardiometer computes and displays heartbeat rate</td>
<td>BS-1043</td>
</tr>
<tr>
<td>Simple pulse counting circuit computes sum of squares</td>
<td>GSFC-391</td>
</tr>
<tr>
<td>Delayed ripple counter simplifies square-root computation</td>
<td>GSFC-398</td>
</tr>
<tr>
<td>Ring counter circuit switches multiphase motor direction of rotation</td>
<td>JPL-SC-166</td>
</tr>
<tr>
<td>Low-power ring counter drives high-level loads</td>
<td>GSFC-431</td>
</tr>
<tr>
<td>Digital system provides superregulation of nanosecond amplifier-discriminator</td>
<td>ARS-61</td>
</tr>
<tr>
<td>Digital frequency counter permits readout without disturbing counting process</td>
<td>JPL-906</td>
</tr>
<tr>
<td>Mechanical properties of wire insulation automatically determined</td>
<td>N-PS-249</td>
</tr>
<tr>
<td>Circuit automatically calibrates flowmeter against liquid-level gage reference</td>
<td>N-PS-2194</td>
</tr>
<tr>
<td>Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor</td>
<td>ARS-10150</td>
</tr>
<tr>
<td>Simple quasi-exponential slope generator</td>
<td>NPO-11130</td>
</tr>
<tr>
<td><strong>COUPLINGS</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency offset in linear FM/CW transponder eliminates clutter</td>
<td>N-PS-249</td>
</tr>
<tr>
<td>Dielectric prisms would improve performance of quasi-optical microwave components</td>
<td>N-PS-10011</td>
</tr>
<tr>
<td>Segmented SiGe-PbTe couples</td>
<td>GSFC-10746</td>
</tr>
<tr>
<td>Two-part valve acts as quick coupling</td>
<td>JPL-478</td>
</tr>
<tr>
<td>Device disconnects several couplings simultaneously</td>
<td>JPL-226</td>
</tr>
<tr>
<td>Diaphragm spring gives clutch over-center toggle effect</td>
<td>GSFC-499</td>
</tr>
<tr>
<td>Latching mechanism operates in limited access area</td>
<td>N-SC-230</td>
</tr>
<tr>
<td>Rotational fluid coupling eliminates hose entanglements</td>
<td>N-SC-312</td>
</tr>
<tr>
<td>Ultrasonic wrench produces leaktight connections</td>
<td>N-PS-12561</td>
</tr>
<tr>
<td>Study of crevice-galvanic corrosion of aluminum</td>
<td>AMO-10013</td>
</tr>
<tr>
<td>Magnetically coupled emission regulator</td>
<td></td>
</tr>
<tr>
<td>Digital-output cardiometer measures rapid changes in heartbeat rate</td>
<td>BS-1033</td>
</tr>
<tr>
<td>Strain gauge network distinguishes between thermal and mechanical deformations</td>
<td>GSFC-478</td>
</tr>
<tr>
<td>Minimum permissible leakage resistance established for instrumentation systems</td>
<td>N-PS-348</td>
</tr>
<tr>
<td>Multichannel analyzers at high rates of input</td>
<td>AMO-10355</td>
</tr>
<tr>
<td>Automatic frequency control of voltage-controlled oscillators</td>
<td>NPO-11064</td>
</tr>
<tr>
<td>Cryogenic flux-concentrator</td>
<td>ARS-10494</td>
</tr>
<tr>
<td>Stringent cleaning technique assures reliable epoxy bond</td>
<td></td>
</tr>
<tr>
<td>Compressed gas system operates semitrailer brakes during winching operation</td>
<td>JPL-0036</td>
</tr>
<tr>
<td>New coupling compensates for shaft misalignment</td>
<td>NO-0013</td>
</tr>
<tr>
<td>Quick-disconnect coupling safe transfer of hazardous fluids</td>
<td>BS-125</td>
</tr>
<tr>
<td>Diaphragm eliminates leakage in cryogenic fluid duct coupling</td>
<td>NPO-142</td>
</tr>
<tr>
<td>O-ring type fittings form leakproof seal in hydraulic systems</td>
<td>N-PS-481</td>
</tr>
<tr>
<td>Single connector provides safety fuses for multiple lines</td>
<td>N-SC-199</td>
</tr>
<tr>
<td>Flanged hollow shaft makes fatigue-resistant shear pin</td>
<td>LANGLE-195</td>
</tr>
<tr>
<td>Remotely controlled system couples and decouples large diameter pipes</td>
<td>ND-0062</td>
</tr>
<tr>
<td>High pressure tube coupling requires no threads or flares</td>
<td>N-SC-600</td>
</tr>
<tr>
<td>Vacuum test fixture improves leakage rate measurements</td>
<td>N-SC-271</td>
</tr>
<tr>
<td>Pneumatic separator gives quick release to heavy loads</td>
<td>KSC-66-10</td>
</tr>
</tbody>
</table>
Union would facilitate joining of tubing, minimize braze contamination
MSC-777 B66-10311 05

Modified pliers facilitate coupling of bayonet-type connectors
NFSC-1344 B66-10417 05

Connector acts as quick coupling in coaxial cable application
JPL-803 B66-10621 01

Quick attach and release fluid coupling assembly is self-aligning, self-sealing
KSC-66-8 B66-10627 05

Device enables calibration of microphones at high sound pressure levels
E66-10417 B67-10336 01

Tube joint leak repair coupling
KSC-15022 B68-10540 05

Separation simulator
KSC-67-15 B69-10315 01

Connect-disconnect coupling for preadjusted rigid shafts
MSC-15470 B69-10375 05

Modular packaging technique for combining integrated circuits and discrete components
GSPc-10369 B69-10453 01

A sterilizable high-impact antenna
NFPO-10231 B69-10697 05

Shaker slip-plate adapter
KSS-14063 B69-10785 05

COVALENT BONDS
Aggregation of metallochlorophylls - Examination by spectroscopy
ABB-10273 B69-10163 04

COVERINGS
Spray-on technique simplifies fabrication of complex thermal insulation blanket
E66-497 B66-10053 03

Tool pre-tensions covers prior to lacing
MSC-631 B66-10301 05

Large diameter metal ring seal prevents gas leakage at 5000 psi
E66-1064 B66-10422 05

Gas leak detector is simple and inexpensive
NFSC-1206 B66-10669 01

Coaxial cable stripping device facilitates RF cabling fabrication
NFPO-10315 B67-10419 05

Cover protects critical electrical connectors against damage during handling
MSC-15662 B69-10526 01

Glass fabric fire barrier for silicone rubber parts
MSC-1555 B69-10629 03

Improved cure method for single component silicone rubber
MSC-12230 B69-10749 03

CRACK INITIATION
Study of crack initiation phenomena associated with stress corrosion of aluminum alloys
NFPO-14263 B68-10153 03

Experiments with ceramic coatings
NFSC-18150 B68-10355 03

Weld joint strength and mechanical properties in 2219-T61 aluminum alloy
LEWIS-10479 B68-10561 03
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>polyurethane foam insulation on cryogenic vessels M-PS-20058 B68-10406 02</td>
</tr>
<tr>
<td>Hot-cracking studies of Inconel 718 weld-heat-affected zones M-PS-18211 B69-10052 05</td>
</tr>
<tr>
<td>Strain-age cracking in Rene 41 alloy M-PS-18650 B69-10605 03</td>
</tr>
<tr>
<td>Literature review on pickling inhibitors and cadmium electroplating processes M-PS-14421 B69-10606 03</td>
</tr>
<tr>
<td>CRACKS</td>
</tr>
<tr>
<td>Crack detection method is safe in presence of liquid oxygen M-PS-236 B65-10107 03</td>
</tr>
<tr>
<td>Shoulder adapter steadies spot welding gun M-PS-321 B66-10076 05</td>
</tr>
<tr>
<td>Post-stressed concrete foundation may reduce machinery vibration ABC-130 B67-10237 05</td>
</tr>
<tr>
<td>Eddy current probe measures size of cracks in nonmetallic materials M-PS-14059 B67-10645 03</td>
</tr>
<tr>
<td>Damages in rolling element bearings may be detected early HQ-10031 B67-10658 01</td>
</tr>
<tr>
<td>Predicting fatigue life of metal bellows M-PS-14096 B68-10026 05</td>
</tr>
<tr>
<td>Experiments with ceramic coatings M-PS-10150 B68-10355 03</td>
</tr>
<tr>
<td>Coatings decrease metal fatigue failure ARC-10015 B69-10176 03</td>
</tr>
<tr>
<td>Restricted-flow junction between liquids NPO-10682 B69-10332 02</td>
</tr>
<tr>
<td>Investigation of the development of cracks in solder joints M-PS-20444 B69-10807 01</td>
</tr>
<tr>
<td>CRANES</td>
</tr>
<tr>
<td>Speed-sensing device aids crane operators WS-4 B64-10006 05</td>
</tr>
<tr>
<td>Safety switch permits emergency bridge crane shutdown M-PS-549 B66-10168 05</td>
</tr>
<tr>
<td>Lifting clamp positively grips structural shapes M-PS-593 B66-10176 05</td>
</tr>
<tr>
<td>Self-actuating grapple automatically engages and releases loads from overhead cranes ARG-81 B66-10522 05</td>
</tr>
<tr>
<td>Swing-out rail system separates overhead crane rails NU-0094 B66-10713 05</td>
</tr>
<tr>
<td>Square tubing reduces cost of telescoping bridge crane hoist ARG-13 B67-10293 05</td>
</tr>
<tr>
<td>Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates NPO-10316 B67-10418 05</td>
</tr>
<tr>
<td>Hoisting frame facilitates handling of large objects M-PS-16166 B66-10575 05</td>
</tr>
<tr>
<td>Calibrated water tank facilitates proof-loading of cranes and derricks M-PS-15059 B69-10109 05</td>
</tr>
<tr>
<td>CRITICAL LOAD</td>
</tr>
<tr>
<td>Automatic leveling and equalizing hoist device M-PS-16549 B69-10514 05</td>
</tr>
<tr>
<td>CRABES</td>
</tr>
<tr>
<td>Speed-sensing device aids crane operators WS-4 B64-10006 05</td>
</tr>
<tr>
<td>Safety switch permits emergency bridge crane shutdown M-PS-549 B66-10168 05</td>
</tr>
<tr>
<td>Lifting clamp positively grips structural shapes M-PS-593 B66-10176 05</td>
</tr>
<tr>
<td>Self-actuating grapple automatically engages and releases loads from overhead cranes ARG-81 B66-10522 05</td>
</tr>
<tr>
<td>Swing-out rail system separates overhead crane rails NU-0094 B66-10713 05</td>
</tr>
<tr>
<td>Square tubing reduces cost of telescoping bridge crane hoist ARG-13 B67-10293 05</td>
</tr>
<tr>
<td>Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates NPO-10316 B67-10418 05</td>
</tr>
<tr>
<td>Hoisting frame facilitates handling of large objects M-PS-16166 B66-10575 05</td>
</tr>
<tr>
<td>Calibrated water tank facilitates proof-loading of cranes and derricks M-PS-15059 B69-10109 05</td>
</tr>
</tbody>
</table>

I-139
**CRITICAL PATH METHOD**

**KOPE-Kalendar Oriented Program Efforts/ provides data for management decisions**  
M-PS-12331  B67-10478  06

**CRITICAL PRESSURE**  
Cryogenic fluid flow instabilities in heat exchangers  
M-PS-20438  B69-10541  02

**CRITICAL TEMPERATURE**  
Ptc thermistor protects multiloaded power supplies  
GSPC-236  B64-10281  01

**CRITICAL VELOCITY**  
Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing  
NUC-10308  B69-10034  06

**CROSS CORRELATION**  
Pn acquisition demodulator achieves automatic synchronization of a telemetry channel  
JPL-612  B66-10271  01

**Study of hot wire techniques in low density flows with high turbulence levels**  
M-PS-1269  B66-10687  01

**Local measurements in turbulent flows through cross correlation of optical signals**  
M-PS-1268  B67-10030  01

**Acquisition of pseudonoise signals by sequential estimation**  
M-PS-13098  B68-10258  01

**Improvement in recording and reading holograms**  
ERC-10151  B68-10347  02

**CROSS COUPLING**  
Multichip packaging with thermal insulation  
M-PS-14076  B68-10119  02

**CROSS SECTIONS**  
Instrument calculates moments of inertia of complex plane figures  
MSC-628  B66-10306  01

**Vibrator improves spark erosion cutting process**  
NU-0071  B66-10333  01

**Preformed stiffeners used to fabricate structural components for pressurized tanks**  
M-PS-1796  B66-10688  05

**Machining technique prevents undercutting in tensile specimens**  
LANGLEY-10261  B68-10352  05

**Rating of electrical wires in vacuum environments**  
MSC-15108  B68-10362  01

**Design of fluid-duct bends with low pressure loss**  
M-PS-20176  B68-10395  05

**CROSSED FIELDS**  
Improved design provides faster response time in photomultiplier  
GSPC-451  B66-10526  01

**CROSSTRAINING**  
Irradiation improves properties of an aromatic polymer  
LANGLEY-115  B65-10164  03

**Synthesis of pure aromatic glycidyl esters for use as adhesives**  
M-PS-12705  B67-10647  03

**Heparin insolubilized with crosslinking agent**

**SUBJECT INDEX**

**PWO-10830**  B69-10299  03

**CROSCIBLES**  
Ceramic-coated boat is chemically inert, provides good heat transfer  
LANGLEY-90  B65-10063  05

**Fabrication method produces high-grade alumina crucibles**  
M-PS-216  B65-10078  05

**Crucible cast from beryllia oxide and refractory cement is impervious to flux and molten metal**  
ARG-22  B66-10527  03

**Preparation of thorium magnesium-zinc reduction**  
ARG-10245  B69-10079  03

**Niobium-uranium alloys with voids of predetermined size and total volume**  
ARG-10490  B69-10641  03

**CRUDE OIL**  
Measurement of gas flow at extremely low pressures  
MSC-13261  B69-10522  03

**CRUSHING**  
Materials physically tested in variable-environment chamber  
JPL-789  B66-10130  01

**Effects of sterilization on the energy-dissipating properties of balsa wood**  
FPO-11207  B69-10592  03

**CRYOGENIC EQUIPMENT**  
Cryogenic filter method produces super-pure helium and helium isotopes  
JPL-374  B63-10235  03

**Supercold technique duplicates magnetic field in second superconductor**  
JPL-376  B63-10237  05

**Automatic thermal switch accelerates cooling-down of cryogenic system**  
JPL-625  B65-10068  01

**Inert gas spraying device aids in repair of hazardous systems**  
LEWIS-88  B65-10115  05

**Apparatus permits flexure testing of specimens at cryogenic temperatures**  
M-PS-257  B65-10129  02

**Insulation accelerates rate of cooling with cryogenic fluid**  
MSC-161  B65-10240  02

**Superconductor shields test chamber from ambient magnetic fields**  
JPL-627  B65-10297  02

**Automatic fluid separator supplies own driving power**  
VTO-085  B66-10008  02

**O-ring tube fittings form leakproof seal in hydraulic systems**  
M-PS-461  B66-10020  05

**Aluminized fiberglass insulation conforms to curved surfaces**  
M-PS-477  B66-10029  03

**Cryostat modified to aid rotating beam fatigue test**  
M-PS-435  B66-10083  03

**Mount makes liquid nitrogen-cooled gamma ray detector portable**  
LEWIS-259  B66-10103  01

**Cryogenic trap valve has no moving parts**
Cryogenic fluid storage

Bismuth alloy potting seals aluminum connector in cryogenic application N-PS-260 B66-10136 05

Cryogenic liquid transfer system reduces residual boiloff LEWIS-274 B66-10157 02

Frem provides heat transfer for solid CO2 calibration standard N-PS-644 B66-10257 02

Special treatment reduces helium permeation of glass in vacuum systems H-25 B66-10372 02

Densitometer system for liquid hydrogen has high accuracy, fast response N-PS-909 B66-10438 01

Resistor monitors transfer of liquid helium LANGLEY-229 B66-10590 01

Cryogenic fluid sampling device permits testing under hazardous conditions N-PS-1927 B66-10654 02

Preformed stiffeners used to fabricate structural components for pressurized tanks N-PS-1796 B66-10688 05

Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line N-PS-0077 B66-10702 05

Technique for stripping Teflon insulated wire N-PS-1774 B67-10048 05

Improve cryogenic refrigeration system JPL-731 B67-10128 02

Neutron diffractometer allows both magnetic and crystallographic analyses ARG-191 B67-10131 02

Cryogenic seal remains leaktight during thermal displacement ARG-96 B67-10134 02

Inexpensive cryogenic insulation replaces vacuum jacketed line NDC-10061 B67-10264 02

Jacketed cryogenic piping is stress relieved N-PS-985 B67-10308 05

Study made of dielectric properties of promising materials for cryogenic capacitors N-PS-13620 B67-10366 03

Temperature-sensed cryogenic bleed maintains liquid state in transfer line N-PS-12681 B67-10424 01

Performance of turbine-type flowmeters in liquid hydrogen LEWIS-10137 B67-10506 01

Dynamic valve seal is reliable at cryogenic temperatures N-PS-12987 B67-10526 05

Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel NDC-10008 B67-10539 05

Development of dual solid cryogens for high reliability refrigeration system GSPC-10188 B67-10644 02

Solenoid valve design minimizes vibration
CRYOGENIC FLUIDS

Level of super-cold liquids automatically maintained by levelometer
JPL-397 B63-10250 01

Inert gas spraying device aids in repair of hazardous systems
LEWIS-88 B65-10115 05

Quick-disconnect coupling safe transfer of hazardous fluids
LEWIS-125 B65-10202 01

Diaphragm eliminates leakage in cryogenic fluid duct coupling
WOO-142 B65-10227 05

Insulation accelerates rate of cooling with cryogenic fluid
MSC-161 B65-10240 02

Coaxial capacitor used to determine fluid density
LEWIS-232 B65-10296 02

Vacuum chamber provides improved insulation and support for cryostat
M-FS-915 B65-10368 02

High-pressure, low temperature electrical connector makes no-leak seal
MSC-276 B66-10079 02

Portable power tool machines weld joints in field
M-FS-258 B66-10145 05

Cryogenic liquid transfer system reduces residual blowoff
LEWIS-274 B66-10157 02

Fluid damping reduces bellows seal fatigue failures
M-FS-565 B66-10249 05

Gas diffuser facilitates withdrawal of cryogenic liquids from tanks
M-FS-915 B66-10342 05

Inexpensive insulation is effective for cryogenic transfer lines
MSC-618 B66-10348 02

High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation
LEWIS-310 B66-10394 01

Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket
M-FS-888 B66-10812 01

Density meter system for liquid hydrogen has high accuracy, fast response
M-FS-909 B66-10438 01

Automatic cryogenic liquid level controller is safe for use near combustible substances
LEWIS-195 B66-10482 01

In-tank shutoff valve is provided with maximum blast protection
M-FS-1529 B66-10518 05

Quick attach and release fluid coupling assembly is self-aligning, self-sealing
KSC-66-8 B66-10627 05

Instrument continuously measures density of flowing fluids
LEWIS-309 B67-10080 01

Nonwoven glass fiber mat reinforces polyurethane adhesive
M-FS-2309 B67-10113 03

Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment

CONCEPT FOR CRYOGENIC LIQUID RECLAMATION SYSTEM

Optical gyro pickoff operates at cryogenic temperatures
M-FS-407 B66-10128 01

Report on a cryogenic gyroscope
M-FS-11200 B66-10504 02

Rectangular configuration improves superconducting cable
ARG-90088 B66-10098 02

Combustion chamber inlet manifold separates vapor from liquid
M-FS-531 B66-10052 05

Cryogenic fluid sampling device permits testing under hazardous conditions
M-FS-1927 B66-10654 02

Lightweight door seals cryogenic container against diaphragm type loading
M-FS-876 B65-10402 05

Liquid oxygen-compatible insulation system
M-FS-16113 B65-10599 03

Connector for vacuum-jacketed lines cuts tubing system cost
LEWIS-66 B63-10367 05

Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems
LEWIS-67 B63-10368 05

Liquid-level meter has no moving parts
M-FS-3 B63-10378 03

Test device prevents molecular bounce-back
GSFC-82 B63-10546 03

Cryogenic waveguide window is sealed with plastic foam
JPL-559 B63-10613 01
Sensitive low-pressure relief valve has positive seating against leakage
WOO-041 B64-10278 05

Connector seals fluid lines at cryogenic temperatures and high vacuums
GSFC-253 B64-10327 05

Lightweight aluminum casting alloy is useful at cryogenic temperatures
N-PS-267 B65-10092 03

Cold cathode ionization gage has rigid metal housing
GSFC-445 B66-10041 01

Reflective insulator layers separated by bonded silica beads
#SC-215 B66-10070 03

Compound improves thermal interface between thermocouple and sensed surface
HDO-0028 B66-10121 02

O-rings with mylar back-up provide high-pressure cryogenic seal
N-PS-603 B66-10278 05

Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures
N-PS-600 B66-10325 02

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum
ARC-109 B66-10499 02

New weldable high strength aluminum alloy developed for cryogenic service
N-PS-737 B66-10613 05

Feed-thru flange is useful in vacuum applications to cryogenic temperatures
JPL-846 B66-10615 02

Study of fast response thermocouple measurement of temperatures in cryogenic gases
N-PS-1659 B66-10661 01

Materials data handbook, aluminum alloy 7075 N-PS-2349 B67-10301 03

Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures
NMC-10084 B67-10349 03

Magnesium-lithium alloys developed for low temperature use
N-PS-1547 B67-10365 03

Stabilizing stainless steel components for cryogenic service
N-PS-13127 B67-10377 05

Single-source mechanical loading system produces biaxial stresses in cylinders
N-PS-12530 B67-10380 05

Crack growth measured on flat and curved surfaces at cryogenic temperatures
LEWIS-389 B67-10384 01

Warpage eliminated in copper-clad microwave circuit laminates
N-PS-13892 B67-10454 03

Fluid behavioral patterns found in subscale geysering study
N-PS-13582 B67-10462 02

Handbook of cryogenic data in graphic form
KSC-10009 B67-10610 02

Panelized high performance multilayer insulation
N-PS-14023 B68-10031 03

Thermal short improves sensitivity of cryogenically cooled maser
NDO-09975 B68-10059 01

Development of biaxial test fixture includes cryogenic application
N-PS-14185 B68-10070 01

Weld microfissuring in Inconel 718 minimized by minor elements
N-PS-10165 B68-10251 03

One-dimensional reacting gas nonequilibrium performance program
MSC-11777 B68-10375 06

Anisotropic reacting gas nonequilibrium performance program
MSC-11781 B68-10377 06

Superconductivity in zirconium-rhodium alloys
ARG-10223 B69-10010 03

Compound improves thermal interface between thermocouple and sensed surface
NU-0028 B66-10121 02

O-rings with mylar back-up provide high-pressure cryogenic seal
PI-FS-603 B66-10278 05

Thermal expansion properties of aerospace materials
M-PS-18335 B69-10055 03

Materials data handbook, aluminum alloy 6061 N-PS-20381 B69-10065 03

Electro mechanical rotary actuator operates over wide temperature range
N-PS-10402 B69-10100 05

Automated measurement of thermal conductivity
N-PS-20454 B69-10283 03

A method for predicting interfacial freezing of a liquid flowing over a cold surface
LEWIS-10813 B69-10321 02

A new method for fabrication of flexible vacuum purge jackets
N-PS-12646 B69-10564 03

Cryogenic pressure transducer
N-PS-14909 B69-10601 01

Cryopumping
Cryopumping of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogen
LEWIS-15 B63-10340 05

Closed loop operation eliminates need for auxiliary gas in high pressure pumping station
N-PS-893 B66-10408 05

Combination double door high-vacuum valve provides access to vacuum chamber
JPL-849 B66-10697 05

Method for X-ray study under extreme temperature and pressure conditions
MSC-11232 B67-10474 05

Feed-thru oduct minimizes heat pickup
JPL-847 B66-10619 05

Cryostats
Low-cost insulation system for cryostats eliminates need for a vacuum
LEWIS-64 B63-10365 03

Apparatus permits flexure testing of specimens at cryogenic temperatures
N-PS-257 B65-10129 02

Vacuum chamber provides improved insulation and support for cryostat
N-PS-415 B65-10368 02

Cryostat modified to aid rotating beam fatigue test
N-PS-435 B66-10083 03
Mount makes liquid nitrogen-cooled gamma ray detector portable  
LEWIS-259  B66-10103  01

Simple pump maintains liquid helium level in cryostat  
N-P-1763  B67-10039  05

Mechanism of superconductivity investigated by nuclear radiation  
N-P-1984  B67-10057  02

Self-aligning rod prevents eccentric loading of tensile specimens  
NDC-10525  B67-10594  05

Polyvinyl cryostat facilitates testing tensile specimens under liquid nitrogen  
NDC-10522  B67-10613  02

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures  
NDC-10521  B67-10617  02

Environmental control system for cryogenic testing of tensile specimens  
NDC-10523  B67-10618  02

Supercconducting switch permits measurement of small voltages at cryogenic temperatures  
ARG-90260  B66-10687  01

Calibration of a resistance thermometer down to 0.04 degrees K  
ARG-10318  B66-10149  01

CRYOTRAPPING  
Heater decomposes oil backstreaming from high-vacuum pumps  
GSFC-356  B65-10224  02

Cryogenic trap valve has no moving parts  
N-P-487  B66-10136  05

Xenon fluorides show potential as fluorinating agents  
ARG-111  B67-10185  03

CRYSTAL DEFECTS  
Apparatus presents visual display of semiconductor surface characteristics  
JPL-645  B66-10200  01

Study of lattice defect vibration  
ARG-10221  B69-10076  02

CRYSTAL FILTERS  
Noise figure measurement concept for acoustic amplifiers  
GSFC-10066  B66-10272  01

CRYSTAL GROWTH  
Process facilitates photoresist mask alignment on Sic crystals  
N-P-2394  B67-10144  01

Grain-boundary migration in KCl bicrystals  
ARG-10181  B66-10455  03

Electron beam recrystallization of amorphous semiconductor materials  
LEWIS-10443  B66-10556  02

CRYSTAL LATTICES  
Spherical model provides visual aid for cubic crystal study  
LEWIS-108  B65-10065  03

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics  
LEWIS-320  B66-10373  03

Study of lattice defect vibration  
ARG-10221  B69-10076  02

CRYSTAL OPTICS  
Ge-diode detector combined with...  

CRYSTAL TRAPPING

SUBJECT INDEX

CRYSTAL DIFFRACTION SPECTROMETER holds high-resolution gamma ray spectroscopy  
ARG-10190  B69-10005  02

CRYSTAL OSCILLATORS  
FM oscillator uses tetrode transistor  
JPL-62  B66-10555  01

Voltage controlled oscillator is easily aligned, has low phase noise  
JPL-540  B66-10223  01

Quartz crystals detect gas contaminants during vacuum chamber evacuation  
NNO-10184  B67-10205  01

Ultrasound nanometer-tipped cardiac catheter  
ARC-10054  B66-10669  01

Simple, accurate automatic frequency control circuit  
KSC-10393  B69-10323  01

Laser interferometer micrometer system  
N-P-17647  B69-10633  02

CRYSTAL RECTIFIERS  
Substituting transistor for diode improves rectifying means  
GSFC-974  B66-10295  01

Moveable RF probe eliminates need for calibration in plasma accelerators  
LEWIS-10127  B67-10362  01

Development of reliability prediction technique for semiconductor diodes  
GSFC-10231  B67-10651  06

An electronic circuit for sensing malfunctions in test instrumentation  
KSC-10209  B66-10392  01

CRYSTAL STRUCTURE  
Neutron diffractometer allows both magnetic and crystallographic analyses  
ARG-191  B67-10131  02

Crystal structure analysis of intermetallic compounds  
ARG-10092  B68-10238  03

Sintering characteristics and properties of PuS and PuF are determined  
ARG-10228  B69-10058  03

CRYSTAL SURFACES  
Process facilitates photoresist mask alignment on Sic crystals  
N-P-2394  B67-10144  01

CRYSTALLITY  
Evaluation of a fluorocarbon plastic used in cryogenic valve seals  
N-P-18185  B66-10523  03

Electron beam recrystallization of amorphous semiconductor materials  
LEWIS-10443  B66-10556  02

Production of crystalline polymers via liquid crystal monomers  
KNO-10235  B66-10744  03

CRYSTALLITES  
Preferred-orientation analysis of polycrystalline materials  
NNO-10604  B69-10336  02

Epitaxial crystalline growth upon cold substrates  
NNO-11196  B69-10494  01

CRYSTALLISATION  
Balloon batteries, charged and heated by solar energy  
GSFC-10769  B69-10585  01

I-148
SUBJECT INDEX

CRYSTALLOGRAPHY

Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 03

Rotating filters permit wide range of optical pyrometry
LANGLEY-33 B65-10100 02

Neutron diffractometer allows both magnetic and crystallographic analyses
ARG-191 B67-10131 02

Grain-boundary migration in KCl bicrystals
ARG-10181 B68-10455 02

Preferred-orientation analysis of polycrystalline materials
NPO-10604 B69-10336 02

CRYSTALS

Increased performance reliability obtained with dual /redundant/ oscillator system
GSFC-36 B63-10027 01

Cesium iodide crystals fused to vacuum tube faceplates
GSFC-67 B63-10876 03

Superconductor magnets used for stagger-tuning traveling-wave maser
GSFC-292 B65-10165 01

Refractory oxides evaluated for high-temperature use
LANGLEY-121 B65-10167 03

Thin film process forms effective electrical contacts on semiconductor crystals
H-PS-2363 B67-10142 01

Ultrasonics used to measure residual stress
H-PS-12649 B67-10828 02

Nonreciprocal gain control for ring laser
H-PS-14041 B67-10653 02

Liquid crystal calibrator
H-PS-14151 B68-10221 03

Technique developed for measuring transmittance of optical birefringent networks
H-PS-14267 B68-10260 02

Correction for losses in optical birefringent networks, a concept
H-PS-20088 B68-10571 02

Computer program calculates the effective temperature for a crystalline solid /DETS/
HBC-1016 B69-10036 06

One hundred MHz voltage-controlled oscillator
NFO-11004 B69-10133 01

Method for copper staining of germanium crystals
ARG-10403 B69-10257 03

Multilayer infrared beamsplitter film system
ZGS-11036 B69-10260 02

New shield for gamma-ray spectrometry
ARG-10368 B69-10344 02

Improved camera for better X-ray powder photographs
HQ-10426 B69-10537 01

Electrolytic separation of crystals of transition-metal oxides
ARG-10506 B69-10642 03

Deposition monitor and control
NPO-10706 B69-10722 01

Pocket-sized tone-modulated FM transmitter
NPO-11100 B69-10725 01

CUBES (MATHEMATICS)

Root-cubing and general-root-powering methods for finding the zeros of polynomials
ARG-10404 B69-10424 02

CUBIC LATTICES

Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 03

CULTIVATION

Mass culture of photobacteria to obtain luciferase
GSFC-10563 B69-10294 04

CULTURE TECHNIQUES

Continuous microbial cultures maintained by electronically-controlled device
ARG-177 B67-10556 04

A microcapsule technique for the culture of mammalian cells
LANGLEY-10407 B69-10554 04

Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-10495 B69-10236 04

Mass culture of photobacteria to obtain luciferase
GSFC-10563 B69-10294 04

Life detection
NPO-10510 B69-10475 04

CUBIC TEMPERATURE

Process yield Co-Fe alloys with superior high-temperature magnetic properties
LEWIS-333 B69-10535 03

Development of Curie point switching for thin films, random access, memory device
NPO-10402 B67-10633 02

Adding calcium improves lithium ferrite core
ERC-10036 B69-10686 06

CUBING

Plastic molds reduce cost of encapsulating electric cable connectors
H-PS-69 B63-10568 05

Encapsulation process sterilizes and preserves surgical instruments
JPL-484 B64-10066 05

Refrahesive thermal insulation for smooth metal surfaces
H-PS-160 B64-10099 03

Plastic films for reflective surfaces reproduced from masters
GSFC-188 B64-10151 03

Flexible curtain shields equipment from intense heat fluxes
H-PS-40 B65-10044 03

Fiber glass parts cured during filament winding eliminates oven, saves time
H-PS-16 B65-10088 03

Refractory coating protects intricate graphite elements from high-temperature hydrogen
HO-0027 B66-10084 01

Improved adhesive for cryogenic applications cures at room temperature
HNO-132 B66-10185 03

Improved method facilitates debulking and curing of phenolic impregnated asbestos
MSC-949 B66-10459 05

Sprayable birefringent coating enables
strain measurements on large surfaces E66-10578 03
Composite bulkhead fabrication development B66-10582 05
Study made to control depth of potting compound for honeycomb sandwich fasteners B66-10677 05
Nanowave glass fiber mat reinforces polyurethane adhesive B67-10113 03
Photosensitive filler minimizes internal stresses in epoxy resins B67-10227 03
Substituting gold for silver improves electrical connections B67-10228 03
Multi-feed cone for Cassegrainian antenna B67-10488 03
Solvent permits solid curing agents to be used at room temperatures B67-10593 03
Epoxy resins produce improved plastic scintillators ARG-241 B67-10596 03
Bacteriostatic conformal coating for electronic components ARG-10007 B67-10599 03
Synthesis of pure aromatic glycidyl ethers for use as adhesives M-PS-12705 B67-10647 03
Cure of epoxy resins determined by simple tests M-PS-13131 B67-10199 05
Tools made of ice facilitate forming of soft, sticky materials KSC-10262 B69-10199 05
Simple test indicates degree of cure of polyimide coatings HSC-15487 B69-10303 03
A method for observing gas evolution during plastic laminate cure MSC-15592 B69-10530 03
Improved cure method for single component silicone rubber ARG-12230 B69-10749 03

CURIUM
Portable, high intensity isotopic neutron source provides increased experimental accuracy ARG-90250 B68-10243 02
CURIUM 242
alpha particle backscattering measurements used for chemical analysis of surfaces ARG-116 B67-10186 03
Neutron irradiation of Am-241 effectively produces curium B67-10501 03
Detection sensitivities in 3-8 MeV neutron activation ARG-10210 B68-10298 02
Transplutonium elements processed from rock debris of underground detonations ARG-10222 B69-10054 03

CURRENT AMPLIFIERS
Transflouro circuit amplifies sensing current for computer memories JPL-606 B63-10255 01
PCF magnetic tape system efficiently records and reproduces data GSFC-375 B65-10311 01
Circuit exhibits power efficiency greater than 75 percent MSC-254 B66-10034 01
Tester periodically registers dc amplifier characteristics MSC-190 B66-10148 01
Transistor circuit increases range of logarithmic current amplifier WU-0018 B66-10350 01
Control circuit maintains unity power factor of reactive load MSC-192 B66-10431 01
Bipolar current driver for memory circuits GSFC-213 B66-10469 01
Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 ampere and 10 to the minus 3 ampere WU-0087 B66-10706 01
Integrator can easily be set and reset with an electronic switch ARC-10002 B67-10135 01
Amplifier provides dual outputs from a single source with complete isolation NRC-10056 B67-10221 01
Laboratory pulse modulator uses minority carrier storage diodes M-PS-2442 B67-10226 01
System precisely controls oscillation of vibrating mass M-PS-1875 B67-10276 01
Current pulse amplifier transmits detector signals with minimum distortion and attenuation NRC-10055 B67-10347 01
Analog buffer isolates high impedance source from low impedance load M-PS-13481 B67-10544 01
Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor ARG-10158 B69-10191 01
Load current sensor for a pulse width modulator power regulator GSFC-10656 B69-10578 01

CURRENT DENSITY
High purity electroforming yields superior metal models ARC-6 B63-10007 05
Simple technique determines ac properties of hard superconductive materials M-PS-1818 B66-10657 02
Mechanisms of superconductivity investigated by nuclear radiation M-PS-1944 B67-10057 02
Clamp provides efficient connection for high-density currents M-PS-2417 B67-10140 01
Thermionic diode switching has high temperature application NPO-10404 B67-10672 01
Mass transport mechanism in porous fuel cell electrodes HQ-10343 B69-10135 01
Electrochemical sintering process for
producing electrodes from cadmium felt and a nickel or silver grid

GSPC-10764  
B69-10227  05

Improved inorganic ion exchange membranes

LEWIS-10737  
B69-10451  03

Magnetic field mapper

LEWIS-10782  
B69-10746  05

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte

ARG-10453  
B69-10453  03

CUBBBBf DISTRIBUTION

Simple circuit functions as frequency discriminator for PPI signals

GSPC-267  
B65-10102  01

Increased function lead inductance ballasts

high-frequency transistors

LANGLEY-267  
B66-10259  01

Standard arc welders provide high asperage direct current source

M-PS-13370  
B67-10471  01

Rating of electrical wires in vacuum environments

MSC-15108  
B68-10362  01

Experimental prediction of performance by superconducting cables

ARG-10215  
B69-10161  01

Use of medical and dental X-ray equipment for nondestructive testing

MSC-13389  
B69-10553  01

CURRENT REGULATORS

Constant-current regulator improves tunnel diode threshold-detector performance

GSPC-239  
B65-10282  01

Electropneumatic rheostat regulates high current

ARC-044  
B65-10299  01

Electropneumatic transducer automatically limits motor current

LEWIS-253  
B66-10160  01

Circuit protects regulated power supply against overload current

GSPC-453  
B66-10292  01

Electrically controlled optical latch and switch requires less current

JPL-SC-111  
B66-10414  01

Current steering commutator offers versatility

JPL-812  
B67-10410  01

Broadband choke suppresses spurious currents in antenna structure

MSC-10013  
B67-10675  01

Nondestructive test determines overload destruction characteristics of current limiter fuses

EVS-00566  
B68-10364  01

Improved limiter for turn-on current transient

GSPC-10413  
B68-10384  01

Bootstrap unloader

JBP-09768  
B69-10120  01

Self-starting circuit for switching regulators

LEWIS-10686  
B69-10128  05

Full wave 4e-to-4e converter using energy storage transformers

LEWIS-10375  
B69-10140  01

Magnetically coupled emission regulator

GSPC-10056  
B69-10213  01

Conversion of continuous-direct-current TIG welder to pulse-arc operation

M-PS-16411  
B69-10393  05

Instrumentation for potentiostatic corrosion studies with distilled water

ARG-10409  
B69-10413  03

Radiometric temperature reference

MSC-13276  
B69-10507  01

Battery charge-discharge controller

ISC-11836  
B69-10747  01

CUBREUTS

Accurate nine-decade temperature-compensated logarithmic amplifier

ARG-10480  
B69-10429  01

Transient sensor development

L-15-13370 B67-10471  01

Flexible curtain shields equipment from intense heat fluxes

CUBVATUBB

Rating of electrical wires in vacuum Aerial-image enables diagrams and animation environments to be inserted in moticu pictures

ISC-15108  
B68-10362  01

Experimental prediction of performance by superconducting cables

ARG-10215  
B69-10161  01

Redundancy techniques

I-PS-15075  
B69-10297  01

Use of medical and dental X-ray equipment for nondestructive testing

MSC-15075  
B69-10297  01

LEWIS-10782

Flexible honeycomb structure can bend to fit compound curves

MSC-13389  
B69-10553  01

CUBVES (GEOMETR)

Studies reveal effects of pipe bends on fluid flow cavitation

M-PS-516  
B66-10228  05

Evaporant feed device facilitates flash vapor deposition process in vacuum

MPO-10232  
B67-10320  03

Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors

M-PS-1887  
B67-10434  01

Study made of large amplitude fuel sloshing

M-PS-12381  
B67-10439  03

Analytical drafting curves provide exact equations for plotted data

LANGLEY-285  
B67-10601  02

CUSHIONS

Fixed vacuum plate clamps styrofoam for machining

M-PS-683  
B66-10283  05

CUT-OFF

Safety switch permits emergency bridge crane shutdown

M-PS-549  
B66-10168  05

CUTTERS

Sleeve and cutter simplify disconnecting welded joint in tubing

JFL-384  
B63-10240  05

Cutter and stripper reduces coaxial cable connection time

ARC-40  
B65-10094  05

Threaded pilot insures cutting tool alignment

I-147
Portable power tool machines weld joints in field
Device spot-laps spheres to very close tolerances
Tool post modification allows easy turret lathe cutting-tool alignment
Special tool seals conductors with combination of plastic sleeves
Hollow needle used to cut metal honeycomb structures
Thread cutting with 3-axis N/C milling machine
Coaxial cable stripper for confined areas
Microwave interferometer controls cutting depth of plastics
J-beveling of pipe ends with a hand-held tool
Technique for anchoring fasteners to honeycomb panels
Freon, T-B1 cutting fluid

Cutting

Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle
Rotating mandrel speeds assembly of plastic inflatables
Depth indicator and stop aid machining to precise tolerances
Nylon bit removes cork insulation without damage to substrate
Modified drill permits one-step drilling operation
Adjustable cutting guide aligns and positions stacks of material
Modified soldering iron speeds cutting of synthetic materials
Tool separates sleeve-type unions without heat
Mill profiler machines soft materials accurately
Versatile machine mills, maws light materials
Study made of destructive sectioning of complex structures for examination
Micromanipulation tool is easily adapted to many uses
### CYCLotron Radiation
An economical method for the continuous production of iodine-123

LEWIS-10518 B68-10433 03

### CYLinders
Superconducting technique duplicates magnetic field in second superconductor

JPL-376 B66-10237 05

Shaped superconductor cylinder retains intense magnetic field

JPL-381 B66-10238 01

Simple mechanism combines positive locking and quick-release features

Woo-4 B63-10420 05

Device induces lung to maintain known constant pressure

MSC-50 B64-10108 04

Miniature stress transducer has directional capability

JPL-591 B65-10023 01

Ionization vacuum gage starts quickly, is unaffected by spurious currents

JPL-304 B65-10036 02

Seal allows blind assembly and thermal expansion of components

H-0005 B65-10053 05

Low-cost tool minimizes damage to O-rings during installation

MSC-140 B65-10116 05

Vacuum chamber provides improved insulation and support for cryostat

M-FS-415 B65-10368 02

Light-intensity modulator withstands high heat fluxes

MSC-246 B66-10532 02

Positive displacement cylinder measures corrosive liquid volume

MSC-1038 B66-10589 05

Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control

XNP-09704 B69-10016 05

Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes

ARG-10274 B69-10047 02

### CYLINDRICAL BODIES
Device disconnects several couplings simultaneously

JPL-226 B65-10163 05

Sheet metal strip unrolls to form circular hoop

GSFC-423 B66-10032 05

Flexible coiled spline securely joins mating cylinders

Woo-270 B66-10172 05

Cylindrical claw clamp has quick release feature

M-FS-513 B66-10213 05

Torus elements used in effective shock absorber

Woo-114 B66-10318 05

Pressure levels and pulsation frequencies can be varied on high pressure/frequency testing device

LEWIS-10205 B67-10360 05

Single-source mechanical loading system produces biaxial stresses in cylinders

M-FS-12530 B67-10380 05

Crack growth measured on flat and curved surfaces at cryogenic temperatures

LEWIS-389 B67-10384 01

Compressible sleeve provides automatic centering for grinding or turning of cylinders

SAN-10021 B68-10318 05

Modified sine bar device measures small angles with high accuracy

GSFC-438 B66-10322 02

Electron beam selectively seals porous metal filters

LEWIS-10162 B68-10331 05

Automated measurement of thermal conductivity

M-FS-20454 B69-10283 03

Automatic leveling and equalizing hoist device

M-FS-16549 B66-10315 02

Miniature stress transducer has directional capability

JPL-591 B65-10023 01

Ionization vacuum gage starts quickly, is unaffected by spurious currents

JPL-304 B65-10036 02

Seal allows blind assembly and thermal expansion of components

H-0005 B65-10053 05

Low-cost tool minimizes damage to O-rings during installation

MSC-140 B65-10116 05

Vacuum chamber provides improved insulation and support for cryostat

M-FS-415 B65-10368 02

Light-intensity modulator withstands high heat fluxes

MSC-246 B66-10532 02

Positive displacement cylinder measures corrosive liquid volume

MSC-1038 B66-10589 05

Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control

XNP-09704 B69-10016 05

Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes

ARG-10274 B69-10047 02

### CYLINDRICAL SHELLS
System locates randomly placed remote objects

LANGLEY-209 B66-10315 01

Mechanism facilitates coating of inner surfaces of metal cylinders

GSFC-515 B66-10698 05

An improved nuclear magnetic resonance spectrometer

JPL-762 B67-10234 01

Computer program for determination of natural frequencies of closed spherical sandwich shells

MSC-1246 B67-10279 06

Liquid oxygen distillation cleaned by falling film method

M-FS-11816 B67-10299 03

Analysis of stability-critical orthotropic cylinders subjected to axial compression

M-FS-12069 B67-10375 03

Concept for cryogenic liquid reclamation system

EPS-10322 B67-10420 02

Buckling strength of filament-wound cylinders under axial compression is investigated

H-00032 B67-10659 03

Magnetic forming of resistive materials

M-FS-20417 B66-10397 03
<table>
<thead>
<tr>
<th>CYLINDRICAL TANKS</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved retort for cleaning metal powders with hydrogen</td>
<td>Adapter assembly prevents damage to tubing during high pressure tests</td>
</tr>
<tr>
<td>LEWIS-10718 B69-10468 03</td>
<td>MSC-563 B66-10330 02</td>
</tr>
<tr>
<td>A rotating, noncapillary heat pipe</td>
<td>Portable lightweight cell provides controlled environment</td>
</tr>
<tr>
<td>LEWIS-10290 B69-10684 05</td>
<td>MSC-648 B66-10370 05</td>
</tr>
<tr>
<td>CYLINDRICAL TANKS</td>
<td>Impact and puncture resistant material protects parts from damage</td>
</tr>
<tr>
<td>Rotary valve controls multiple hydraulic leveling cylinders</td>
<td>MSC-747 B66-10375 05</td>
</tr>
<tr>
<td>N-PS-361 B66-10402 05</td>
<td>Hermetically sealed cells protected from internal gas pressure</td>
</tr>
<tr>
<td>Study made of large amplitude fuel sloshing</td>
<td>GSFC-555 B66-10592 01</td>
</tr>
<tr>
<td>N-PS-12381 B67-10439 03</td>
<td>Design concept to decrease relative speed of ball bearings</td>
</tr>
<tr>
<td>CISTBIIE</td>
<td>N-PS-2003 B67-10212 05</td>
</tr>
<tr>
<td>Inhibition of browning in foodstuffs</td>
<td>Study of stress corrosion in aluminum alloys</td>
</tr>
<tr>
<td>HQ-10177 B69-10493 04</td>
<td>B67-10533 03</td>
</tr>
<tr>
<td>CYTOLGY</td>
<td>Prediction of radiation damage effects in transistors</td>
</tr>
<tr>
<td>Cytology is advanced by studying effects of deuterium environment</td>
<td>GSFC-10021 B67-10506 01</td>
</tr>
<tr>
<td>ARG-205 B67-10304 04</td>
<td>Damages in rolling element bearings may be detected early</td>
</tr>
<tr>
<td>Effect of preparation procedures on intensity of radioautographic labeling is</td>
<td>HQ-10031 B67-10538 01</td>
</tr>
<tr>
<td>studied</td>
<td>Inflatable bladder to facilitate handling of heavy objects - A concept</td>
</tr>
<tr>
<td>ARG-10032 B67-10500 04</td>
<td>B69-10069 B67-10538 05</td>
</tr>
<tr>
<td>Precision trimmer aids in preparing biomedical specimen blocks for nitritasia</td>
<td>Four-bar linkage for thermal compensation in test mounts for structures</td>
</tr>
<tr>
<td>sectioning</td>
<td>B69-10298 B67-10538 05</td>
</tr>
<tr>
<td>ARG-242 B67-10541 05</td>
<td>Improved method of dicing integrated circuit wafers into chips</td>
</tr>
<tr>
<td>Ultraviolet microscopy aids in cytological and biomedical research</td>
<td>B69-10441 B66-10452 01</td>
</tr>
<tr>
<td>ARG-178 B67-10590 04</td>
<td>Cover protects critical electrical connectors against damage during handling</td>
</tr>
<tr>
<td>A microlagoon technique for the culture of mammalian cells</td>
<td>MSC-15662 B69-10526 01</td>
</tr>
<tr>
<td>LANGMYT-10407 B69-10554 04</td>
<td>An electrical connector pin protector</td>
</tr>
<tr>
<td>Microscopes and computers combined for analysis of chromosomes</td>
<td>MSC-15660 B69-10742 01</td>
</tr>
<tr>
<td>ARG-10256 B69-10088 04</td>
<td>DARPES</td>
</tr>
<tr>
<td>Substitution of stable isotopes in Chlorella</td>
<td>Diaphragm spring gives clutch over-center toggle effect</td>
</tr>
<tr>
<td>ARG-10256 B69-10197 04</td>
<td>GSFC-899 B66-10297 05</td>
</tr>
<tr>
<td>D LINES</td>
<td>Concept for design of variable stiffness damped</td>
</tr>
<tr>
<td>Self-balancing line-reversal pyrometer automatically measures gas temperatures</td>
<td>ARC-11225 B67-10483 05</td>
</tr>
<tr>
<td>LEWIS-348 B69-10268 01</td>
<td>DAMPING</td>
</tr>
<tr>
<td>DAMAGE</td>
<td>Frictional wedge shock mount is inexpensive, has good damping characteristics</td>
</tr>
<tr>
<td>V-slotted screw head and matching driving tool facilitate insertion and removal of screw fasteners</td>
<td>JPL-IT-1001 B69-10289 05</td>
</tr>
<tr>
<td>FRC-16 B69-10023 05</td>
<td>Seismic transducer measures small horizontal displacements</td>
</tr>
<tr>
<td>Low-cost tool minimizes damage to O-rings during installation</td>
<td>N-PS-81 B65-10029 05</td>
</tr>
<tr>
<td>MSC-140 B65-10116 05</td>
<td>Shock absorber operates over wide range</td>
</tr>
<tr>
<td>Improved poppet valve provides positive damageproof seal</td>
<td>MSC-168 B65-10241 05</td>
</tr>
<tr>
<td>N-PS-293 B65-10346 05</td>
<td>Shock absorber operates over wide range</td>
</tr>
<tr>
<td>Nylon bit removes cork insulation without damage to substrate</td>
<td>MSC-168 B65-10241 05</td>
</tr>
<tr>
<td>MSC-381 B66-10152 05</td>
<td>Shock absorber operates over wide range</td>
</tr>
<tr>
<td>Special tool seals conductors with combination of plastic sleeves</td>
<td>MSC-168 B65-10241 05</td>
</tr>
<tr>
<td>N-PS-579 B66-10209 05</td>
<td>Shock absorber operates over wide range</td>
</tr>
<tr>
<td>Tool permits damage-free removal of solar cell</td>
<td>MSC-168 B65-10241 05</td>
</tr>
<tr>
<td>GSFC-467 B66-10219 05</td>
<td>Shock absorber operates over wide range</td>
</tr>
<tr>
<td>High pressure tube coupling requires no threads or flares</td>
<td>MSC-560 B66-10270 01</td>
</tr>
<tr>
<td>Circuit protects regulated power supply against overload current</td>
<td>Shock absorber operates over wide range</td>
</tr>
<tr>
<td>GSFC-453 B66-10292 01</td>
<td>MSC-168 B65-10241 05</td>
</tr>
</tbody>
</table>

I-150
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>DATA PROCESSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire material reduces compressor blade vibration</td>
<td>Materials data handbook, aluminum alloy</td>
</tr>
<tr>
<td>LWIS-257</td>
<td>7U75</td>
</tr>
<tr>
<td>Man-PS-12315</td>
<td>B67-10301 03</td>
</tr>
<tr>
<td>Torque meter aids study of hysteresis motor rings</td>
<td>Automatic testing device facilitates noise checks and electronic calibrations</td>
</tr>
<tr>
<td>LWIS-10173</td>
<td>B67-10467 01</td>
</tr>
<tr>
<td>Vibration damping composition has flush-away feature</td>
<td>Silicon surface barrier detectors used for liquid hydrogen density measurement</td>
</tr>
<tr>
<td>Man-PS-557</td>
<td>B67-10116 01</td>
</tr>
<tr>
<td>Honeycomb seal backing ring increases turbine disk life</td>
<td>High-speed camera synchronization</td>
</tr>
<tr>
<td>Man-PS-1303</td>
<td>B66-10282 02</td>
</tr>
<tr>
<td>Flexible ring baffles for damping liquid slosh</td>
<td>Nobsauer-effect data-collection system</td>
</tr>
<tr>
<td>Langley-90194</td>
<td>B69-10027 01</td>
</tr>
<tr>
<td>Sleeved damper limits spring surfing</td>
<td>Microscopes and computers combined for analysis of chromosomes</td>
</tr>
<tr>
<td>MSC-12071</td>
<td>B69-10088 04</td>
</tr>
<tr>
<td>Vibration testing and dynamic studies of relays</td>
<td></td>
</tr>
<tr>
<td>Man-PS-14542</td>
<td></td>
</tr>
<tr>
<td>Improved gyro-flotation/damping/ fluids</td>
<td></td>
</tr>
<tr>
<td>MSC-13217</td>
<td></td>
</tr>
<tr>
<td>Instrumentation for nondestructive testing of composite honeycomb materials</td>
<td></td>
</tr>
<tr>
<td>Man-PS-20405</td>
<td></td>
</tr>
<tr>
<td>Punch-magnet delay eliminated by modification of circuit</td>
<td></td>
</tr>
<tr>
<td>AEG-10333</td>
<td></td>
</tr>
<tr>
<td>Damping of thermoelastic structures</td>
<td></td>
</tr>
<tr>
<td>Man-PS-20002</td>
<td></td>
</tr>
<tr>
<td>Report on a cryogenic gyroscope</td>
<td></td>
</tr>
<tr>
<td>NPO-11200</td>
<td></td>
</tr>
<tr>
<td>Radiometric temperature reference</td>
<td></td>
</tr>
<tr>
<td>MSC-13276</td>
<td></td>
</tr>
<tr>
<td>Shaker slip-plate adapter</td>
<td></td>
</tr>
<tr>
<td>Man-PS-1463</td>
<td></td>
</tr>
<tr>
<td>Data processing tests</td>
<td></td>
</tr>
<tr>
<td>Diaphragm spring gives clutch over-center toggle effect</td>
<td></td>
</tr>
<tr>
<td>GSTC-499</td>
<td></td>
</tr>
<tr>
<td>Identification and evaluation of linear damping models in beam vibrations</td>
<td></td>
</tr>
<tr>
<td>AEG-10275</td>
<td></td>
</tr>
<tr>
<td>Discrimination of fish oil and mineral oil slicks on sea water</td>
<td></td>
</tr>
<tr>
<td>HO-10412</td>
<td></td>
</tr>
<tr>
<td>Data acquisition</td>
<td></td>
</tr>
<tr>
<td>Hybrid computer technique yields random signal probability distributions</td>
<td></td>
</tr>
<tr>
<td>ARC-34</td>
<td></td>
</tr>
<tr>
<td>PW acquisition demodulator achieves automatic synchronization of a telemetry channel</td>
<td></td>
</tr>
<tr>
<td>JEL-612</td>
<td></td>
</tr>
<tr>
<td>Direction indicator system does not require complicated optics</td>
<td></td>
</tr>
<tr>
<td>WOO-305</td>
<td></td>
</tr>
<tr>
<td>Indicator system provides complete data of engine cylinder pressure variation</td>
<td></td>
</tr>
<tr>
<td>LWIS-291</td>
<td></td>
</tr>
<tr>
<td>Data processing</td>
<td></td>
</tr>
<tr>
<td>Superconductor magnets used for stagger-tuning traveling-wave maser</td>
<td></td>
</tr>
<tr>
<td>GSTC-292</td>
<td>B65-10165 01</td>
</tr>
<tr>
<td>Solid state phase detector replaces bulky transformer circuit</td>
<td></td>
</tr>
<tr>
<td>NCC-11007</td>
<td></td>
</tr>
<tr>
<td>Concept for automatic Doppler compensation</td>
<td></td>
</tr>
<tr>
<td>in two-way communication systems</td>
<td></td>
</tr>
<tr>
<td>GSTC-10213</td>
<td>B67-10643 01</td>
</tr>
<tr>
<td>Single demodulator for telemetry phase-shift keyed subcarriers</td>
<td></td>
</tr>
<tr>
<td>NCO-11000</td>
<td>B69-10095 01</td>
</tr>
<tr>
<td>Design for a rapid automatic sync acquisition system</td>
<td></td>
</tr>
<tr>
<td>NCO-10214</td>
<td>B69-10538 01</td>
</tr>
<tr>
<td>Data links</td>
<td></td>
</tr>
<tr>
<td>Detection system ensures positive alarms activation in digital message loss</td>
<td></td>
</tr>
<tr>
<td>WOO-208</td>
<td>B66-10287 01</td>
</tr>
<tr>
<td>Concept for automatic Doppler compensation</td>
<td></td>
</tr>
<tr>
<td>in two-way communication systems</td>
<td></td>
</tr>
<tr>
<td>GSTC-10213</td>
<td>B67-10643 01</td>
</tr>
<tr>
<td>Simple demodulator for telemetry phase-shift keyed subcarriers</td>
<td></td>
</tr>
<tr>
<td>NCO-11000</td>
<td>B69-10095 01</td>
</tr>
<tr>
<td>Design for a rapid automatic sync acquisition system</td>
<td></td>
</tr>
<tr>
<td>NCO-10214</td>
<td>B69-10538 01</td>
</tr>
<tr>
<td>Data processing</td>
<td></td>
</tr>
<tr>
<td>Superconductor magnets used for stagger-tuning traveling-wave maser</td>
<td></td>
</tr>
<tr>
<td>GSTC-292</td>
<td>B65-10165 01</td>
</tr>
</tbody>
</table>
Computer program determines performance efficiency of remote measuring systems

**DATA PROCESSING EQUIPMENT**

Computer program determines performance efficiency of remote measuring systems (I-PS-1137) B66-10503 01

Digital computer processing of X-ray photons (JPL-792) B67-10005 04

Recording and time expansion technique for high-speed, single-shot transient video signal (ABC-1000J) B67-10139 01

Multiplexing control device enables handling of wide variations in sampling rates (I-PS-1071) B67-10150 01

A power-spectral-density computer program (NPO-10126) B67-10160 01

Linear circuit analysis program for IBM 1620 Monitor 2, 1311/1443 data processing system (CIIRC/) (NPO-10131) B67-10173 06

Stress calculator speedily converts strain data (I-PS-2021) B67-10182 03

Subroutines GEORGE and DRASTIC simplify operation of automatic digital plotter (NWC-10044) B67-10222 06

A simplified PERT system (E-PS-2267) B67-10241 05

Master control data handling program uses automatic data input (I-PS-2259) B67-10260 06

Study of random process theory aids digital data processing (I-PS-1475) B67-10309 06

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning (NWC-10073) B67-10348 06

Automatic telemetry checkout system (I-PS-12580) B67-10402 01

Saturn S-2 Automatic Software System (SASS/) (I-PS-1741) B67-10405 06

Video synchronization processor overcomes poor signal-to-noise ratio (NWC-10062) B67-10515 01

DYNA - An advanced programming system for large classes of dynamic and equivalent systems (I-PS-12084) B67-10524 06

Computer program for Video Data Processing System (VDP/) (NPO-10042) B67-10630 06

Review of biological mechanisms for application to instrument design EQ-33 B67-10663 04

Principles of optical-data processing techniques (GSFC-10271) B66-10069 01

Silicon surface barrier detectors used for liquid hydrogen density measurement (I-PS-14115) B66-10166 01

Development of Electronic Data Processing /VDP/ supported management system (I-PS-14715) B66-10287 06

Fully automatic telemetry data processor (GSFC-10576) B66-10336 01

Non-dispersive X-ray emission analysis for geochemical exploration

**SUBJECT INDEX**

GSFC-10568 B69-10011 02

Nonshaker-effect data-collection system (ARG-10282) B66-10227 01

Structural Analysis and Matrix Interpretive System (DARIS/) (NPO-10839) B69-10093 01

On-line computer system for use with low-energy nuclear physics experiments is reported (ARG-10257) B69-10094 01

VCLN-DIGITAL image processing system (NPO-10770) B69-10139 06

Computer grading of examinations (ARG-10269) B69-10159 06

Combination ranging system and mapping radar (NPO-11001) B69-10325 01

Exact minimal-state system reliability analysis (I-PS-1655) B69-10409 06

Fast Fourier Transform Spectral Analysis Program (M-PS-15062) B69-10434 06

Method reduces computer time for smoothing functions and derivatives through ninth order polynomials (NWC-10334) B69-10524 04

Automatic computation of data-set definitions (ARG-10475) B69-10608 06

Experimental program to investigate transonic flow around protuberances (I-PS-20037) B69-10609 05

Data processing method for a weak, moving telemetry signal (NPO-11003) B69-10639 01

Biosmedical bulk data processing program (BFC-10015) B69-10720 06

**DATA PROCESSING EQUIPMENT**

A conceptual, parallel operating data compression processor (NPO-10068) B67-10204 01

Conceptual nonorthogonal gyro configuration for guidance and navigation (NSC-11363) B67-10433 01

Simple first order data compression processor concept (NPO-10338) B67-10553 01

PCM synchronization by word stuffing (NPO-10680) B67-10695 01

**DATA PROCESSING TERMINALS**

New computer system simplifies programming of mathematical equations (NWC-1041) B66-10361 01

**DATA RECORDER**

PCM magnetic tape system efficiently records and reproduces data (GSFC-375) B66-10311 01

Expandable tape reel facilitates paper tape removal (WOO-271) B66-10399 05

Electronic circuitry used to automate paper chromatography (JPL-840) B67-10201 01

Quartz crystals detect gas contaminants during vacuum chamber evacuation (NPO-10144) B67-10205 01

X-152
SUBJECT INDEX

RUN NUMBERING SYSTEM FOR USE WITH DATA RECORDERS
M-FS-2557 B67-10215 01

ULTRAMINATURE MANOMETER-TIPPED CARDIAC CATHETER
ARC-10054 B67-10669 01

RECHARGE UNIT PROVIDES FOR OPTIMUM RECHARGING OF BATTERY CELLS
GSFC-10488 B68-10273 01

DETERMINATION OF THE ABSOLUTE CONTOURS OF OPTICAL PLATES
ARG-10352 B69-10209 01

DATA RECORDING

DIGITAL CARDIOMETER COMPUTES AND DISPLAYS HEARTBEAT RATE
MSC-93 B64-10258 01

FATIGUE CRACKS DETECTED AND MEASURED WITHOUT TEST INTERRUPTION
LEWIS-266 B66-10178 02

EXTENSOMETER AUTOMATICALLY MEASURES ELONGATION IN ELASTOMERS
M-FS-517 B66-10288 05

CLOSED CIRCUIT TV SYSTEM MONITORS WELDING OPERATIONS
MSC-11002 B67-10162 01

TECHNIQUE FOR STRIP CHART RECORDER TIME NOTATION
GSFC-473 B67-10196 01

FAST FRAMING CAMERAS PROVIDE HIGH-SPEED MULTI-CHANNEL DATA RECORDING
ARG-10252 B69-10102 02

DATA REDUCTION

MULTIPLE PORT PRESSURE SCANNER VALVE FEATURES GREATER ACCURACY, QUICKER DATA
JPL-555 B64-10031 05

POLYCHART CONTOUR PLOTTER ENABLES DATA EXTRAPOLATION FROM MULTIPLE PLOTTING CHARTS
M-FS-37 B64-10406 05

A CONCEPTUAL, PARALLEL OPERATING DATA COMPRESSION PROCESSOR
NFO-10068 B67-10204 01

COMPUTER PROGRAM SAMPLES DIGITAL DATA FOR CRT DISPLAY
M-FS-999 B67-10249 01

MASTER CONTROL DATA HANDLING PROGRAM USES AUTOMATIC DATA INPUT
M-FS-2259 B67-10280 06

STUDY OF RANDOM PROCESSES THEORY AIDS DIGITAL DATA PROCESSING
M-FS-1475 B67-10309 06

VIDEO SYNCHRONIZATION PROCESSOR OVERCOMES POOR SIGNAL-TO-NOISE RATIO
EIS-10002 B67-10515 01

SOC-DS COMPUTER CODE PROVIDES TOOL FOR DESIGN EVALUATION OF HOMOGENEOUS TWO-MATERIAL NUCLEAR SHIELD
MUC-10142 B67-10537 06

VERSATILE ANALOG PULSE HEIGHT COMPUTER PERFORMS REAL-TIME ARITHMETIC OPERATIONS
ARG-10052 B67-10626 06

NEW METHOD FOR CRITICAL FAILURE PREDICTION OF COMPLEX SYSTEMS
M-FS-14133 B68-10252 02

ELECTRONIC COMPONENT RELIABILITY ANALYSIS BY DATA REDUCTION SYSTEM
NFO-10243 B68-10507 05

NONDISPERSE X-RAY EMISSION ANALYSIS FOR GEOCHEMICAL EXPLORATION

DATA SAMPLING

GSFC-10568 B69-10011 02

COMPUTER PROGRAM DEVELOPED FOR FLOWSHEET CALCULATIONS AND PROCESS DATA REDUCTION
ARG-10134 B66-10023 06

ON-LINE COMPUTER SYSTEM FOR USE WITH LOW-ENERGY NUCLEAR PHYSICS EXPERIMENTS IS REPORTED
ARG-10257 B69-10096 01

MASS SPECTROGRAPH ANALYSIS
MSC-13239 B69-10138 06

LINEAR-LOG COUNTING-RATE METER USES TRANSISTOR CHARACTERISTICS OF A SILICON PLANAR TRANSISTOR
ARG-10158 B69-10191 01

EXPERIMENTAL PROGRAM TO INVESTIGATE TRANSONIC FLOW AROUND PROTBURANESSES
M-FS-20037 B69-10609 05

DETERMINATION OF THE ABSOLUTE CONTOURS OF OPTICAL PLATES
ARG-10352 B69-10209 01

DATA RECOVERY

GAPPED TOROID PROVIDES INFINITE RESOLUTION OF DELAY-LINE PICKUP
GSFC-370 B65-10258 01

DATA RETRIEVAL SYSTEM PROVIDES UNLIMITED HARDWARE DESIGN INFORMATION
MSC-1114 B67-10170 01

SCAN RATE CONVERTER FOR TAPE RECORDING AND PLAYBACK OF TV PICTURES
NFO-10166 B67-10676 01

JPKWIC -- GENERAL KEY WORD IN CONTEXT AND SUBJECT INDEX REPORT GENERATOR
WFO-10509 B68-10208 06

A REQUEST-ORIENTED INFORMATION SELECTION PROGRAM
LEWIS-10255 B68-10451 06

LONG-TERM DATA STORAGE AND RETRIEVAL SYSTEM, A CONCEPT
M-FS-14789 B68-10505 01

OPERATIONAL INTEGRATOR
NFO-10230 B68-10547 01

THE COMPATIBLE CONVERSION SYSTEM
M-FS-15010 B69-10031 06

DATA SAMPLING

DESIGN RELIABILITY GOAL DEVELOPED FROM SMALL SAMPLE
M-FS-403 B66-10405 05

MULTIPLYING CONTROL DEVICE ENABLES HANDLING OF WIDE VARIATIONS IN SAMPLING RATES
M-FS-1871 B67-10150 01

A CONCEPTUAL, PARALLEL OPERATING DATA COMPRESSION PROCESSOR
NFO-10068 B67-10204 01

COMPUTER PROGRAM SAMPLES DIGITAL DATA FOR CRT DISPLAY
MUC-999 B67-10249 01

VERSATILE ANALOG PULSE HEIGHT COMPUTER PERFORMS REAL-TIME ARITHMETIC OPERATIONS
ARG-10052 B67-10626 06

NEW METHOD FOR CRITICAL FAILURE PREDICTION OF COMPLEX SYSTEMS
M-FS-14133 B68-10252 02

ELECTRONIC COMPONENT RELIABILITY ANALYSIS BY DATA REDUCTION SYSTEM
NFO-10243 B68-10507 05

NONDISPERSE X-RAY EMISSION ANALYSIS FOR GEOCHEMICAL EXPLORATION

I-153
DATA SMOOTHING

Maximum RMS error comparison of several redundancy techniques
M-FS-15075  B69-10297  01

A method for reducing sampling jitter in digital control systems
NPO-11084  B69-101338  01

Special purpose computer provides programmable digital filter for sampled-data control systems
M-FS-20250  B69-101454  06

DATA SMOOTHING

Solubility data are compiled for metals in liquid zinc
ARG-149  B67-10191  03

New technique for optimal smoothing of data
MSC-11354  B68-10060  02

Computer graphics data conditioning
NPS-14655  B68-10296  06

Method reduces computer time for smoothing functions and derivatives through ninth order polynomials
NOC-10334  B69-10524  06

DATA STORAGE

Library of documents compressed into lap-held display kit
BSC-125  B65-10030  01

System monitors discrete computer inputs
NPS-1021  B66-101389  01

Computer program searches characteristic data of diodes and transistors
GSFC-493  B66-10529  01

Data retrieval system provides unlimited hardware design information
MSC-1194  B67-10170  01

Improved television signal processing system
NPS-10140  B67-10246  01

Technique for measuring magnetic tape interlayer adhesion
NPS-10611  B67-10147  03

Scan rate converter for tape recording and playback of TV pictures
NPS-10166  B67-10676  01

Hydra 1 data display system
MSC-11594  B68-10155  01

Improvement in recording and reading holo gram
ERC-10151  B68-100347  02

A request-oriented information selection program
LEWIS-10255  B68-10451  06

Long-term data storage and retrieval system, a concept
NPS-14789  B68-10505  01

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSFC-10675  B69-10037  01

Circuitry selectively limits data storage in general purpose computer
GSFC-10605  B69-10121  01

Highly linear, sensitive analog-to-digital converter
MSC-13110  B69-10230  01

Maximum RMS error comparison of several redundancy techniques
M-FS-15075  B69-10297  01

Seam automatic inspection of microfilm

DATA SYSTEMS

Computer modification reduces time of performing iterative division
NPS-15075  B69-10297  01

Nonlinear feedback reduces analog-to-digital converter error
ABC-46  B65-10277  01

Thermocouples electrically checked while connected to data system
LANGLEY-182  B66-10623  01

Numerical data frame readout system used in testing telemetry systems
GSFC-551  B67-10175  01

DATA TRANSMISSION

Transfluxor circuit amplifies sensing current for computer memories
JPL-406  B63-10255  01

Tiny sensor-transmitter can withstand extreme acceleration, gives digital output
ARC-22  B63-10561  01

Logic redundancy improves digital system reliability
JPL-SC-065  B65-10025  01

Instrument performs nondestructive chemical analysis, data can be telemetered
JPL-SC-078  B65-10317  01

Detection system ensures positive alarm activation in digital message loss
WOO-208  B66-10287  01

System monitors discrete computer inputs
NPS-1021  B66-10389  01

A conceptual, parallel operating data compression processor
NPS-10068  B67-10204  01

Blood pressure reprogramming adapter assists signal recording
MSC-265  B67-10475  01

Unique frequency-shift-keyed demodulation system
GSFC-217  B67-10668  01

Accumulator for shaft encoder
NPS-13595  B68-10093  01

Deep space FM system, a concept
MSC-11825  B68-10289  01

Simultaneous message framing and error detection
MSC-12001  B68-10330  01

Voice frequency shifts for digital telemetry
MSC-11825  B68-10330  01

Two-way digital driver/receiver uses one set of lines
ERC-10055  B68-10437  01

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSFC-10675  B69-10037  01

Versatile telemetering system
ARG-10339  B69-10655  01

DEATH

Investigations of temperature dependence of development and aging
ARG-10145  B69-10022  04
SUBJECT INDEX

DEBRIS
A piezo-bar pressure probe
LWIS-393
B67-10259 01

DECAY
Quality-weld parameters for micro welding
M-FS-20484
B69-10303 05

Gamma radiation characteristics of
plutonium dioxide fuel
NGO-11220
B69-10733 02

DECAY RATES
Precision capacitor has improved temperature
and operational stability
ARG-189
B67-10313 01

Computer program FPIP-KEY calculates
fission product inventory for U-235
fission
WNC-10089
B67-10450 06

Propagation of density disturbances in
air-water flow
ARG-10260
B69-10043 02

Hydrogen flash lamps studied
ARG-10419
B69-10411 02

DECLERATION
Kinetic-energy absorber employs frictional
force between mating cylinders
LEWIS-75
B63-10442 05

Novel shock absorber features varying yield
strengths
MSC-63A
B64-10138 03

Calculations enable optimum design of
magnetic brake
LEWIS-251
B66-10073 05

Modified hydraulic braking system limits
angular deceleration to safe values
GSFC-476
B66-10310 05

Roll is automatically stopped at low
deceleration rate
M-FS-1639
B66-10545 05

Electromechanical rotary actuator
operates over wide temperature range
M-FS-10402
B69-10100 05

DECIMAL TO BINARY CONVERTERS
Run numbering system for use with data
recorders
M-FS-2557
B67-10215 01

DECISION MAKING
System automatically provides dynamic
launch decision criteria
M-FS-13063
B67-10363 01

Probabilistic approach to long range
planning of manpower
MSC-11524
B67-10510 06

Development of Electronic Data Processing
/EDP/ augmented management system
M-FS-14715
B69-10267 06

DECLINATION
Analog solar system model relates celestial
bodies spatially
JPL-195
B66-10413 01

DECODERS
Concept for simplified serial digital
decoder
NGO-10150
B68-10045 06

Simplified, high-speed binary data
decoder
NGO-10118
B68-10058 01

Simultaneous message framing and error
detection

DEEP SPACE INSTRUMENTATION FACILITY
MSC-12001
B68-10330 01

Fluidic-thermochromic display device
BHC-10031
B68-10350 01

Encode/Decode facility for FORTRAN 4
ARG-10335
B69-10169 06

DECODING
Literal readout of identification signals
in Morse code
LANGLEY-10222
B69-10479 01

DECONTAMINATORS
Security warning system monitors up to
fifteen remote areas simultaneously
EKC-66-39
B66-10548 01

Computer program generates averaged value
for data tapes
M-FS-12720
B67-10411 06

DECOMPOSITION
Metabolic and toxicological effects of
water-soluble xenon compounds are studied
ARG-90239
B68-10076 06

Decomposition vessel
GSFC-10343
B68-10104 03

Fire retardant foams developed to suppress
fuel fires
ARC-10096
B68-10358 03

Improved process for epitaxial deposition
of silicon on prediffused substrates
M-FS-1491C
B68-10390 03

Production of metals and compounds by
radiation chemistry
LEWIS-10231
B69-10123 03

Preparation of high purity copper fluoride
by fluorinating copper hydroxyl fluoride
LEWIS-10754
B69-10136 03

Technical report on galvanic cells with
fused-salt electrolytes
ARG-10297
B68-10155 01

DECOMPRESSION SICKNESS
Portable lightweight cell provides controlled
environment
MSC-646
B66-10370 05

DECONFINEMENT
Bacteriostatic conformal coating for
electronic components

Greenwich-11825
B69-10054 03

Transplutonium elements processed from
rock debris of underground detonations
ARG-10222
B69-10054 03

Sterilization training manual
M-FS-20437
B69-10277 04

DECOUPLING
Quick-acting clutch disengages idle drive
motor
GSFC-143
B68-10028 05

Single-sideband modulator accurately
reproduces phase information in 2-4c signals
M-FS-666
B68-10437 01

DEEP SPACE
Deep space FM system, a concept
MSC-11825
B68-10289 01

DSW seven day/twelve week schedule program
NGO-10752
B68-10410 06

Gamma radiation characteristics of
plutonium dioxide fuel
NGO-11220
B69-10733 02

DEEP SPACE INSTRUMENTATION FACILITY
Hydraulic system provides smooth control of
large tracking and antenna drive system at very low tracking rates NPO-10316 B67-10418 05

Computer program for machine design of Cassegrain feed systems NPO-10588 B68-10421 06

Combination ranging system and mapping radar NPO-11001 B69-10325 01

DEEP SPACE NETWORK

Highly stable microwave delay line NPO-09028 B67-10642 01

DSN seven day/twelve week schedule program NPO-10752 B68-10410 06

ASTM on-site tracking prediction program NPO-10836 B69-10103 06

The effect of mismatched components on microwave noise-temperature calibrations NPO-11163 B69-10333 01

Data processing method for a weak, moving telemetry signal NPO-11003 B69-10639 01

DEFECTIONS

Use of photographs speeds inspection of printed-circuit boards MSC-72 B64-10118 01

Portable self-powered device detects internal flaw in tubular structures NU-0019 B66-10028 01

Shoulder adapter steadies spot welding gun M-PS-321 B66-10076 05

New backup-bar groove configuration improves heliarc welding of 2014-26 aluminum MSC-806 B66-10443 05

Calibrating ultrasonic test equipment for checking thin metal strip stock ASC-10009 B67-10127 01

Effect of welding position on porosity formation in aluminum alloy welds M-PS-2318 B67-10177 05

Liquid crystals detect voids in fiber glass laminates LEWIS-10104 B67-10286 03

Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique ARQ-203 B67-10295 02

Accumulator isolator prevents malfunctioning of faulty hydraulic system M-PS-1415 B67-10528 05

Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing ASC-10010 B67-10542 02

Damages in rolling element bearings may be detected early AGO-10311 B67-10658 01

Weld microfissurising in Inconel 718 minimized by minor elements M-PS-18185 B68-10251 03

Effects of surface preparation on quality of aluminum alloy weldments M-PS-13152 B68-10302 03

Camera mount for close-up stereo photographs LANGLEY-10442 B69-10226 02

Magnetic field mapper LEWIS-10762 B69-10476 01

SUBJECT INDEX

Pulse-height defect due to electron interaction in dead layers of Ge/Li/ gamma-ray detectors ARG-10362 B69-10767 02

DEFINITION

Integrated mobility measurement and notation system MSC-726 B67-10118 04

DEFLECTION

Multiple test chamber exposes materials to various environments MSC-179 B65-10260 01

Simple device produces accelerometer calibration pulse M-PS-363 B65-10269 01

Electron-beam deflection controlled by digital signals GSFC-385 B65-10263 02

Vibration tests on vidicons made by improved method JPL-SC-115 B66-10042 01

Noncontacting transducer measures shaft torque M-PS-474 B66-10048 01

Angular acceleration measured by deflection in sensing ring MSC-250 B66-10105 01

Colloidal suspension simulates linear dynamic pressure profile W0-266 B66-10214 05

Electron beam welding of copper-Monel facilitated by circular magnetic shields M-PS-569 B66-10215 05

Fluid damping reduces bellows seal fatigue failures M-PS-565 B66-10249 05

Diaphragm spring gives clutch over-center toggle effect GSFC-499 B66-10297 05

Belows joint absorbs torsional deflections in duct system M-PS-882 B66-10332 04

Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart JPL-605 B66-10386 01

Thermionic scanner pinpoints work function of emitter surfaces JPL-SC-177 B66-10444 01

Rectilinear accelerometer possesses self-calibration feature M-PS-1480 B66-10452 01

Spiral spring/strain gage combination accurately measures shock induced deflection MSC-785 B66-10488 01

Equations provide tabular information on effects of uniform and variable loads on thin, flat, circular plates ARO-151 B66-10601 05

Selective tube roughening increases heat transfer capability M-PS-599 B66-10610 05

Subminiature deflection circuit operates integrated sweep circuits in TV camera MSC-1263 B67-10155 01

Static seal concept to accommodate seal tolerances M-PS-1854 B67-10285 05

Computer program uses Monte Carlo...
SUBJECT INDEX

techniques for statistical system performance analysis
I-PS-2234 B67-10306 06

Improved computer program for elastic analysis of highly redundant structural configurations
H-FS-31067 B67-10330 06

Circuit automatically calibrates flowmeter against liquid-level gage reference
I-PS-2194 B67-10376 01

Aerial-image enables diagrams and animation to be inserted in motion pictures
ABC-165 B67-10398 02

Heavy-gage bonded honeycomb sandwich as primary load-bearing structure
I-PS-12060 B67-10427 05

Series transistors isolate amplifier from flyback voltage
M-SC-11023 B67-10468 01

Electron beam deflected to determine focal point location
I-PS-14107 B67-10649 01

Telescope mount with azimuth-only primary
NPO-10466 B67-10671 02

High efficiency, high frequency magnetic deflection driver
MSC-11597 B68-10116 01

Deflection circuit monitors force on object under water
M-SC-10167 B68-10417 01

Shock-absorbing caster wheel is simple and compact
SAN-10019 B68-10266 05

Conceptual hermetically sealed elbow actuator
I-PS-14710 B68-10300 05

Electron beam selectively seals porous metal filters
LEWIS-10162 B68-10331 05

General series solution technique for bending of irregular laterally loaded flat plates
M-SC-10170 B69-10035 06

Instrumentation for nondestructive testing of composite honeycomb materials
I-PS-20405 B69-10366 03

Monopole mass spectrometer with improved sensitivity and reduced background
Hq-10476 B69-10666 01

DEFLECTORS
Grit blasting nozzle fabricated from mild tool steel proves satisfactory
I-PS-1420 M-PS-1420 B66-10597 05

Electron beam standby absorber system
I-PS-14108 B67-10650 01

Improved electro-optical tracking system
I-PS-14791 B68-10311 01

Two-fluid, impinging-sheet injector
NPO-10547 B68-10338 05

DEFORMATION
Plastic plus stainless-steel fibers make resilient, impermeable material
IPO-246 B65-10370 03

Polymer deformation gage measures thickness change in tensile tests
JPL-745 B66-10147 01

Low power heating element provides thermal control during swaging operations
M-PS-457 B66-10206 05

Dry film lubricant is effective at extreme loads
I-PS-628 B66-10256 03

Differential expansion provides pressure for diffusion bonding of large diameter rings
I-PS-588 B66-10269 05

Strain gage network distinguishes between thermal and mechanical deformations
GSPC-478 B66-10280 01

High pressure tube coupling requires no threads or flares
MSC-600 B66-10285 05

Porous mandrels provide uniform deformation in hydrostatic pressure metalurgy
I-PS-1972 B67-10209 03

Computer program performs rectangular fitting stress analysis
I-PS-13010 B67-10520 06

Study made of mechanics of deformation and fracture of fibrous composites
Hq-10035 B67-10660 03

Shell design computer program
LEWIS-10734 B68-10175 06

Optimum structural design based on reliability and proof-load testing
M-PS-11228 B69-10723 31

DEPORBETERS
Polymer deformation gage measures thickness change in tensile tests
JPL-745 B66-10147 01

DEGASSING
Encapsulation process sterilizes and preserves surgical instruments
JPL-484 B66-10066 05

Baking enables McLeod gauge to measure in ultrahigh vacuum range
GSFC-410 B65-10329 01

Solvent permits solid curing agents to be used at room temperatures
I-PS-13434 B67-10593 03

Elimination of dissolved gases in hypergolic engine propellants
I-PS-16175 B69-10692 03

DEGENERATION
Conceptual techniques for reducing parasitic current gain of lateral FET transistors
MSC-13199 B69-10244 01

DEGRADATION
Analog device simulates physiological waveforms
MSC-51 B64-10109 01

Dot patterns provide reproducible flaw areas for study of adhesive bonds
M-PS-862 B66-10367 05

Nonwoven glass fiber mat reinforces polyurethane adhesive
I-PS-2309 B67-10113 03

Machining heavy plastic sections
I-PS-12720 B67-10381 03

Study made to establish parameters and limitations of explosive welding
I-PS-13006 B67-10393 05

Vibration damping composition has flush-away feature
DEGREES OF FREEDOM

Conceptual nonorthogonal gyro configuration for guidance and navigation
MSC-11363

Development of reliability prediction technique for semiconductor diodes
GSPC-10231

Heat treatment procedure to increase ductility of degraded nickel alloy
N-PS-12410

New rapid-curing, stable polysiloxane polymers with high-temperature strength and thermal stability
LEWIS-10576

A positive taper traveling-wave tube
LANGLEY-10263

Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors
ARG-10362

DEGREES OF FREEDOM

Visual attitude orientation and alignment system
MSC-647

Study of dynamic response of elastic space stations
NPO-10124

DYANA - An advanced programming system for large classes of dynamic and equivalent systems
N-PS-12084

Computer program determines vibration in three-dimensional space of hydraulic lines excited by forced displacements
N-PS-12226

Shock and vibration response of multistage structure
N-PS-14972

DEHYDRATION

Purification train produces ultrapure hydrogen gas
N-PS-1913

Tritiated alumina serves as reagent for self-labeling analysis
ARG-209

Zone purification of potassium chloride
ARG-10377

DEIONIZATION

Scribable coating for plastic films
MSC-11194

Fuel cell life improved by metallic sinter activation after electrode assembly welding
MSC-10965

DELIBERATING

Drill bit design assures clean holes in laminated materials
WO-096

DELAY

Polarizing keys prevent mismatch of connector plugs and receptacles
MSC-443

Novel multipurpose timer for laboratories
ARG-10147

DELEY CIRCUITS

Simple circuit functions as frequency discriminator for PPM signals
GSPC-267

SUBJECT INDEX

DELAY LINES

Gapped toroid provides infinite resolution of delay-line pickup
GSPC-370

Highly stable microwave delay line
NPO-09828

DELAY LINES (COMPUTER STORAGE)

System monitors discrete computer inputs
N-PS-1021

SIMPLIFIED, RELIABLE CIRCUIT SORTS BINARY NUMBERS IN ORDER OF MAGNITUDE
NPO-10112

DELTAD MODULATION

Improved digital TV encoding and decoding system
MSC-11147

DEMONIZATION

Apparatus alters position of objects to facilitate demagnetization
GSPC-234

DEMOUULATION

Improved head-controlled TV system produces high-quality remote image
ARO-120

Automatic telemetry checkout system
N-PS-12580

DEMONIOLOGIST

Point-source light sensor circuit is insensitive to background light
JPL-776

Improved design provides faster response time in photomultiplier
GSPC-451

Polarimeter provides transient response in nanosecond range
JPL-890

Amplifier provides dual outputs from a single source with complete isolation
NUC-10056

Electronic skewing circuit monitors exact position of object underwater
NUC-10146

DEMONIOLOGIST

Unique frequency-shift-keyed demodulation system
GSPC-217

Concept for simplified serial digital decoder
NPO-10150

Deep space FM system, a concept
MSC-11625

Simple demodulator for telemetry phaseshift keyed subcarriers
NPO-11000

DEMONIOLOGIST

Purification train produces ultrapure hydrogen gas
N-PS-1913

Tritiated alumina serves as reagent for self-labeling analysis
ARG-209

Zone purification of potassium chloride
ARG-10377

DEIONIZATION

Scribable coating for plastic films
MSC-11194

Fuel cell life improved by metallic sinter activation after electrode assembly welding
MSC-10965

DELIBERATING

Drill bit design assures clean holes in laminated materials
WO-098

DELAY

Polarizing keys prevent mismatch of connector plugs and receptacles
MSC-443

Novel multipurpose timer for laboratories
ARG-10147

DELEY CIRCUITS

Simple circuit functions as frequency discriminator for PPM signals
GSPC-267

I-158
## DENSITY (QUALITY)

- **Novel shock absorber features varying yield strengths**
  - MSC-63A
  - B64-10138
  - 03

- **Viscosity and density of methanol/water mixtures at low temperatures**
  - N-PS-14991
  - B68-10274
  - 03

- **Fire retardant foams developed to suppress fuel fires**
  - AMC-10998
  - B68-10358
  - 03

- **Fiber glass reinforced structural materials for aerospace application**
  - N-PS-14806
  - B68-10360
  - 03

- **Propagation of density disturbances in air-water flow**
  - AMO-10260
  - B68-10083
  - 02

- **Improved gyro-flotation/damping fluids**
  - ASC-13217
  - B68-10360
  - 03

- **Flow properties of suspensions rich in solids**
  - ARO-10481
  - B69-10622
  - 02

## DENSITY (NUMBER/VOLUME)

- **Automatic tuning of hydrogen masers**
  - GSFC-10127
  - B69-10452
  - 01

## DENSITY DISTRIBUTION

- **On the bound of first excursion probability**
  - NRO-11158
  - B69-10334
  - 06

- **Wall-thickness changes predicted in hollow-drawn tubing**
  - ARO-10425
  - B69-10428
  - 02

## DENSITY MEASUREMENT

- **Microwave technique measures plasma characteristics**
  - LANGLEY-134
  - B65-10122
  - 02

- **Density trace made with computer printout**
  - GSFC-322
  - B65-10200
  - 01

- **Coaxial capacitor used to determine fluid density**
  - LEWIS-232
  - B65-10296
  - 02

- **Vibrating diaphragm measures high electrostatic field strengths**
  - MSC-189
  - B65-10352
  - 01

- **Three-dimensional wire-mesh capacitor system measures fluid density**
  - WGO-194
  - B69-10379
  - 01

- **Instrument continuously measures density of flowing fluids**
  - LEWIS-309
  - B67-10080
  - 01

- **Radiation counting technique allows density measurement of metals in high-pressure/high-temperature environment**
  - ABG-124
  - B67-10316
  - 02

- **Instruments for bone density measurement**
  - ISC-11388
  - B68-10140
  - 01

## DEOXYGENATION

- **Purification train produces ultrapure hydrogen gas**
  - N-PS-1913
  - B67-10078
  - 03

## DEOXYRIBONUCLEIC ACID

- **Cytology is advanced by studying effects of deuterium environment**
  - CO-205
  - B67-10304
  - 04

- **Study of radiation effects on mammalian cells in vitro**
  - ARO-10191
  - B66-10294
  - 02

## DEPENDENT VARIABLES

- **Multiple correlation computer program determines relationships between several independent and dependent variables**
  - N-PS-13024
  - B67-10327
  - 06

- **Computer optimization program finds values for several independent variables that minimize a dependent variable**
  - N-PS-13030
  - B67-10328
  - 06

- **General frequency response program calculates frequency response of system, open at any specified element**
  - N-PS-12817
  - B67-10521
  - 06

## DEPLETION

- **Ohmmeter senses depletion of lubricant in journal bearings**
  - LEWIS-37
  - B64-10042
  - 01

## DEPOSITION

- **Integral coolant channels supply made by melt-out method**
  - N-PS-31
  - B63-10497
  - 05

- **Valve effectively controls amount of contaminant in flow stream**
  - N-PS-1771
  - B66-10683
  - 05
Complex surfaces plated by thin-film deposition in one operation

Ion plating technique improves thin film deposition

Improved process for epitaxial deposition of silicon on prediffused substrates

A new method for the determination of particulate contamination levels for surface cleanliness of fluid systems

Modification to improve self-isolating transistor arrays

Deposition monitor and control

Reference black body is compact, convenient to use

Monitor senses amount of contamination deposited on surfaces

Detection of effect of deposits on optical windows of pyrometer measurements

Adjustable knife cuts honeycomb material to specified depth

Mill profiler machines soft materials accurately

Instrument transmits vanishing point to illustration point

Study made to control depth of potting compound for honeycomb sandwich fasteners

Study made of large amplitude fuel sloshing

Development of lunar drill to take core samples to 100-foot depths

Microwave interferometer controls cutting depth of plastics

Sleeve and cutter simplify disconnecting welded joint in tubing

Depth indicator and stop aid machining to precise tolerances

Modified algesimeter provides accurate depth measurements

Hand-held instrument should relieve hematoma pressure

Eddy current probe measures size of cracks in nonmetallic materials

Grit blasting nozzle fabricated from mild tool steel proves satisfactory

Integrated mobility measurement and notation system

Sampling and handling of desert soils

Improved process for epitaxial deposition of silicon on prediffused substrates

Chart system simplifies identification of complex design assemblies

Hydrodynamics of a new concept of primary containment by energy absorption

Force controlled solenoid drives microweld tester

Study made of destructive sectioning of complex structures for examination

Composite weld rod corrects individual filler weaknesses

High-temperature bearing-cage materials

Explosive bridgewire detonator simulator

Use of photographs speeds inspection of printed-circuit boards

Transistor voltage comparator performs own sensing

Weld leaks rapidly and safely detected

Porous glass makes effective substrate for ozone-sensing reagent

Portable self-powered device detects internal flaws in tubular structures

Microorganisms detected by enzyme-catalyzed reaction

Linear signal noise summer accurately determines and controls S/N ratio

Security warning system monitors up to fifteen remote areas simultaneously

Positive displacement cylinder measures corrosive liquid volume

Welding torch and wire feed manipulator

Concept for cryogenic liquid reclamation system
Temperature-sensed cryogenic bleed maintains liquid state in transfer line H-FS-12681 B67-10420 02
Surface-crack detection by microwave methods ARCh-10009 B67-10482 01
Damages in rolling element bearings may be detected early HQ-10031 B67-10658 01
Detection and location of metallic objects imbedded in nonmetallic structures H-FS-14790 B68-10183 01
Detection of effect of deposits on optical windows of pyrometer LBNL-10366 B68-10367 01
Automatic system nondestructively monitors and records fatigue crack growth LANGLBP-10091 R68-10379 01
Training manuals for nondestructive testing using magnetic particles H-FS-20187 B68-10391 01
Diffusion of trace gases for leak detection - A study H-FS-20254 B69-10049 03
Proposed technique for vertical alignment of a crane's cable H-FS-16496 B69-10202 05
Pressure transducer NPO-10583 B69-10364 01
Life detection NPO-10510 B69-10475 08
Burst diaphragm leak detector H-FS-14500 B69-10067 03
Quantitative determination of flavin nucleotide using the bacterial bioluminescent reaction GSFC-10565 B69-10715 04

DETECTORS

Ultra-sensitive transducer advances micro-measurement range ARC-26 B64-10004 01
Analog device simulates physiological waveforms MSC-51 B64-10109 01
Circuit detects errors in address currents for magnetic core arrays H-FS-234 B65-10047 01
Interferometer construction assures parallelism of critical components JPL-704 B65-10292 02
Device detects unbonded areas in plastic laminates WO-206 B65-10380 01
Mounting facilitates removal and installation of flame-detector rods H-FS-555 B66-10150 05
Circuit prevents overcharging of secondary cell batteries GSFC-454 B66-10492 01
Gas leak detector is simple and inexpensive H-FS-1206 B66-10669 01
An improved soft X-ray photoionization detector GSFC-540 B67-10072 02
Device enables calibration of microphones at high sound pressure levels
### SUBJECT INDEX

<table>
<thead>
<tr>
<th>Hydrogen flash lamps studied</th>
<th>ARG-10419</th>
<th>B69-10411</th>
<th>02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen flash lamps studied</td>
<td>ARG-10314</td>
<td>B69-10207</td>
<td>04</td>
</tr>
<tr>
<td>Purification and characterization of two fully deuterated enzymes</td>
<td>ARG-10419</td>
<td>B69-10411</td>
<td>02</td>
</tr>
<tr>
<td>Purification and characterization of two fully deuterated enzymes</td>
<td>ARG-10314</td>
<td>B69-10207</td>
<td>04</td>
</tr>
<tr>
<td>Three-axis attitude and direction reference instrument has only one moving part</td>
<td>M-FS-12561</td>
<td>B67-10353</td>
<td>05</td>
</tr>
<tr>
<td>Three-axis attitude and direction reference instrument has only one moving part</td>
<td>M-FS-12561</td>
<td>B67-10353</td>
<td>05</td>
</tr>
<tr>
<td>Ultrasound wrench produces leaktight connections</td>
<td>M-FS-466</td>
<td>B66-10194</td>
<td>03</td>
</tr>
<tr>
<td>Ultrasound wrench produces leaktight connections</td>
<td>M-FS-466</td>
<td>B66-10194</td>
<td>03</td>
</tr>
<tr>
<td>Large volume continuous counterflow dialyzer has high efficiency</td>
<td>NU-10055</td>
<td>B67-10395</td>
<td>04</td>
</tr>
<tr>
<td>Large volume continuous counterflow dialyzer has high efficiency</td>
<td>NU-10055</td>
<td>B67-10395</td>
<td>04</td>
</tr>
<tr>
<td>Organic reactants rapidly produce plastic foam</td>
<td>LANGLEY-37</td>
<td>B65-10280</td>
<td>03</td>
</tr>
<tr>
<td>Organic reactants rapidly produce plastic foam</td>
<td>LANGLEY-37</td>
<td>B65-10280</td>
<td>03</td>
</tr>
<tr>
<td>Silazane polymers show promise for high-temperature application</td>
<td>M-FS-12066</td>
<td>B67-10429</td>
<td>03</td>
</tr>
<tr>
<td>Silazane polymers show promise for high-temperature application</td>
<td>M-FS-12066</td>
<td>B67-10429</td>
<td>03</td>
</tr>
<tr>
<td>New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability</td>
<td>LEWIS-10576</td>
<td>B69-10118</td>
<td>03</td>
</tr>
<tr>
<td>New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability</td>
<td>LEWIS-10576</td>
<td>B69-10118</td>
<td>03</td>
</tr>
<tr>
<td>Ultrasonic wrench produces leaktight connections</td>
<td>PI-FS-1256</td>
<td>B66-10353</td>
<td>01</td>
</tr>
<tr>
<td>Ultrasonic wrench produces leaktight connections</td>
<td>PI-FS-1256</td>
<td>B66-10353</td>
<td>01</td>
</tr>
<tr>
<td>Large volume continuous counterflow dialyzer has high efficiency</td>
<td>NU-10055</td>
<td>B67-10395</td>
<td>04</td>
</tr>
<tr>
<td>Large volume continuous counterflow dialyzer has high efficiency</td>
<td>NU-10055</td>
<td>B67-10395</td>
<td>04</td>
</tr>
<tr>
<td>Status of ultrachemical analysis for semiconductors</td>
<td>B67-10138</td>
<td>B67-10138</td>
<td>03</td>
</tr>
<tr>
<td>Status of ultrachemical analysis for semiconductors</td>
<td>B67-10138</td>
<td>B67-10138</td>
<td>03</td>
</tr>
<tr>
<td>Investigation of temperature dependence of development and aging</td>
<td>B69-10022</td>
<td>B69-10022</td>
<td>04</td>
</tr>
<tr>
<td>Investigation of temperature dependence of development and aging</td>
<td>B69-10022</td>
<td>B69-10022</td>
<td>04</td>
</tr>
<tr>
<td>Device measures reaction engine thrust vector deviations</td>
<td>JPL-SC-163</td>
<td>B66-10642</td>
<td>05</td>
</tr>
<tr>
<td>Device measures reaction engine thrust vector deviations</td>
<td>JPL-SC-163</td>
<td>B66-10642</td>
<td>05</td>
</tr>
<tr>
<td>FM carrier deviation measured by differential probability method</td>
<td>M-FS-2166</td>
<td>B67-10213</td>
<td>01</td>
</tr>
<tr>
<td>FM carrier deviation measured by differential probability method</td>
<td>M-FS-2166</td>
<td>B67-10213</td>
<td>01</td>
</tr>
<tr>
<td>Performance of turbine-type flowmeters in liquid hydro</td>
<td>LEWIS-10127</td>
<td>B67-10506</td>
<td>01</td>
</tr>
<tr>
<td>Performance of turbine-type flowmeters in liquid hydro</td>
<td>LEWIS-10127</td>
<td>B67-10506</td>
<td>01</td>
</tr>
<tr>
<td>FORTRAN optical lens design program</td>
<td>NPO-10603</td>
<td>B68-10354</td>
<td>06</td>
</tr>
<tr>
<td>FORTRAN optical lens design program</td>
<td>NPO-10603</td>
<td>B68-10354</td>
<td>06</td>
</tr>
<tr>
<td>Substitution of stable isotopes in Chloroella</td>
<td>ARG-10258</td>
<td>B69-10197</td>
<td>04</td>
</tr>
<tr>
<td>Substitution of stable isotopes in Chloroella</td>
<td>ARG-10258</td>
<td>B69-10197</td>
<td>04</td>
</tr>
<tr>
<td>Proposed technique for vertical alignment of a crane's cable</td>
<td>M-FS-16496</td>
<td>B69-10202</td>
<td>05</td>
</tr>
<tr>
<td>Proposed technique for vertical alignment of a crane's cable</td>
<td>M-FS-16496</td>
<td>B69-10202</td>
<td>05</td>
</tr>
<tr>
<td>Electrocardiograph transmitted by RF and telephone links in emergency situations</td>
<td>PFC-10031</td>
<td>B68-10233</td>
<td>01</td>
</tr>
<tr>
<td>Electrocardiograph transmitted by RF and telephone links in emergency situations</td>
<td>PFC-10031</td>
<td>B68-10233</td>
<td>01</td>
</tr>
<tr>
<td>Veitch diagram plotter simplifies Boolean functions</td>
<td>JPL-385</td>
<td>B63-10241</td>
<td>05</td>
</tr>
<tr>
<td>Veitch diagram plotter simplifies Boolean functions</td>
<td>JPL-385</td>
<td>B63-10241</td>
<td>05</td>
</tr>
<tr>
<td>Automated drafting system uses computer techniques</td>
<td>M-FS-788</td>
<td>B66-10362</td>
<td>01</td>
</tr>
<tr>
<td>Automated drafting system uses computer techniques</td>
<td>M-FS-788</td>
<td>B66-10362</td>
<td>01</td>
</tr>
<tr>
<td>Visualize a plan/management technique provides performance-time scale</td>
<td>KSC-10073</td>
<td>B67-10240</td>
<td>06</td>
</tr>
<tr>
<td>Visualize a plan/management technique provides performance-time scale</td>
<td>KSC-10073</td>
<td>B67-10240</td>
<td>06</td>
</tr>
<tr>
<td>Aerial-image enables diagrams and animation to be inserted in motion pictures</td>
<td>ARG-1765</td>
<td>B67-10398</td>
<td>02</td>
</tr>
<tr>
<td>Aerial-image enables diagrams and animation to be inserted in motion pictures</td>
<td>ARG-1765</td>
<td>B67-10398</td>
<td>02</td>
</tr>
<tr>
<td>Magnetic field mapper</td>
<td>LEWIS-10762</td>
<td>B69-10476</td>
<td>01</td>
</tr>
<tr>
<td>Magnetic field mapper</td>
<td>LEWIS-10762</td>
<td>B69-10476</td>
<td>01</td>
</tr>
<tr>
<td>Design and spacing techniques to meet specified performance life</td>
<td>HQ-10200</td>
<td>B69-10528</td>
<td>02</td>
</tr>
<tr>
<td>Design and spacing techniques to meet specified performance life</td>
<td>HQ-10200</td>
<td>B69-10528</td>
<td>02</td>
</tr>
<tr>
<td>Long range holographic contour mapping concept</td>
<td>HQ-10350</td>
<td>B69-10700</td>
<td>02</td>
</tr>
<tr>
<td>Long range holographic contour mapping concept</td>
<td>HQ-10350</td>
<td>B69-10700</td>
<td>02</td>
</tr>
<tr>
<td>Modular packaging technique for combining integrated circuits and discrete components</td>
<td>GSFC-10369</td>
<td>B69-10453</td>
<td>01</td>
</tr>
<tr>
<td>Modular packaging technique for combining integrated circuits and discrete components</td>
<td>GSFC-10369</td>
<td>B69-10453</td>
<td>01</td>
</tr>
<tr>
<td>Device facilitates centering of workpieces in lathe chuck</td>
<td>M-FS-685</td>
<td>B66-10277</td>
<td>05</td>
</tr>
<tr>
<td>Device facilitates centering of workpieces in lathe chuck</td>
<td>M-FS-685</td>
<td>B66-10277</td>
<td>05</td>
</tr>
<tr>
<td>Legibility of electroluminescent instrument panels investigated</td>
<td>M-SF-494</td>
<td>B66-10316</td>
<td>02</td>
</tr>
<tr>
<td>Legibility of electroluminescent instrument panels investigated</td>
<td>M-SF-494</td>
<td>B66-10316</td>
<td>02</td>
</tr>
</tbody>
</table>

### DEUTERIUM COMPOUNDS

- Hydrogen flash lamps studied
- Purification and characterization of two fully deuterated enzymes
- Three-axis attitude and direction reference instrument has only one moving part
- Ultrasound wrench produces leaktight connections
- Large volume continuous counterflow dialyzer has high efficiency
- Organic reactants rapidly produce plastic foam
- Silazane polymers show promise for high-temperature application
- New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
- Ultrasonic wrench produces leaktight connections
- Large volume continuous counterflow dialyzer has high efficiency
- Device spot-laps spheres to very close tolerances
- Manual of industrial diamonds plus dressing and grinding criteria for machining superalloys
- One hundred angstrom niobium wire
- Preparing rock powder specimens of controlled size distribution
- Pneumatic shut-off and time-delay valve operates at controlled rate
- Pneumatic shut-off and time-delay valve operates at controlled rate
- Diaphragm spring gives clutch over-center toggle effect
- Flexible arms provide constant force for pressure switch calibration
- Acceleration-compensated pressure transducer has fast response
- Diaphragm valve for corrosive and high-temperature fluid flow control has unique features
- Pneumatic wrench retains or discharges nuts or bolts as desired
- High-energy-rate magnetohydraulic metal forming system
- Iron serves as diffusion barrier in thermally regenerative galvanic cell
- Temperature responsive valve withstands high impact loading
- High impact pressure regulator withstands
**SUBJECT INDEX**

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts of over 15,000 g</td>
<td>B67-10274</td>
<td>01</td>
</tr>
<tr>
<td>Ultraminiature manometer-tipped cardiac catheter</td>
<td>B67-10669</td>
<td>01</td>
</tr>
<tr>
<td>Cryogenic seal concept for static and dynamic conditions</td>
<td>B67-10673</td>
<td>05</td>
</tr>
<tr>
<td>Dual rate pressure relief valve</td>
<td>B68-10237</td>
<td>05</td>
</tr>
<tr>
<td><strong>DIAPHRAGMS (MECHANICS)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-pressure regulating system prevents pressure surges</td>
<td>B63-10170</td>
<td>05</td>
</tr>
<tr>
<td>Level of super-cold liquids automatically maintained by levelometer</td>
<td>B63-10250</td>
<td>01</td>
</tr>
<tr>
<td>Improved variable-reluctance transducer measures transient pressures</td>
<td>B63-10321</td>
<td>01</td>
</tr>
<tr>
<td>Welded pressure transducer made as small as 1/8th-inch in diameter</td>
<td>B63-10429</td>
<td>03</td>
</tr>
<tr>
<td>Fluid-pressure meter can be calibrated without removal from flow line</td>
<td>B63-10502</td>
<td>05</td>
</tr>
<tr>
<td>Sensitive low-pressure relief valve has positive seating against leakage</td>
<td>B64-10278</td>
<td>05</td>
</tr>
<tr>
<td>Screening technique makes reliable bond at room temperature</td>
<td>B65-10004</td>
<td>03</td>
</tr>
<tr>
<td>Metal diaphragm used to calibrate miniature transducers</td>
<td>B65-10059</td>
<td>01</td>
</tr>
<tr>
<td>Improved fluid control valve extends diaphragm life</td>
<td>B65-10147</td>
<td>05</td>
</tr>
<tr>
<td>Diaphragm eliminates leakage in cryogenic fluid duct coupling</td>
<td>B65-10227</td>
<td>05</td>
</tr>
<tr>
<td>Burst diaphragm protects vacuum vessel from internal pressure transients</td>
<td>B65-10236</td>
<td>05</td>
</tr>
<tr>
<td>One-shot valve may be remotely actuated</td>
<td>B65-10266</td>
<td>05</td>
</tr>
<tr>
<td>Electrostatically driven dynamic capacitor employs capacitive feedback</td>
<td>B65-10293</td>
<td>01</td>
</tr>
<tr>
<td>Titanium diaphragm makes excellent aspiltron cathode support</td>
<td>B65-10298</td>
<td>01</td>
</tr>
<tr>
<td>Vibrating diaphragm measures high electrostatic field strengths</td>
<td>B65-10352</td>
<td>01</td>
</tr>
<tr>
<td>Regenerative fuel cell combines high efficiency with low cost</td>
<td>B65-10363</td>
<td>01</td>
</tr>
<tr>
<td>Die and telescoping punch form convolutions in thin diaphrags</td>
<td>B65-10393</td>
<td>05</td>
</tr>
<tr>
<td>Centrifugal device separates liquid from gas</td>
<td>B65-10394</td>
<td>05</td>
</tr>
<tr>
<td>Electrically heated diaphragm eliminates use of pyrotechnics</td>
<td>B65-10400</td>
<td>01</td>
</tr>
<tr>
<td>Control system maintains compartment at constant temperature</td>
<td>B66-10188</td>
<td>05</td>
</tr>
<tr>
<td>Miniature capacitive accelerometer is especially applicable to telemetry</td>
<td>B66-10491</td>
<td>01</td>
</tr>
<tr>
<td>Ultrasonic water column probe speeds up testing of welds</td>
<td>B66-10577</td>
<td>05</td>
</tr>
<tr>
<td>Gas leak detector is simple and inexpensive</td>
<td>B66-10669</td>
<td>01</td>
</tr>
<tr>
<td>Improved variable-reluctance transducer measures transient pressures</td>
<td>B67-10020</td>
<td>01</td>
</tr>
<tr>
<td>High speed blowdown system provides rapid pressure loss</td>
<td>B67-10043</td>
<td>05</td>
</tr>
<tr>
<td>Resilient bearing supports are gas controlled</td>
<td>B67-10364</td>
<td>05</td>
</tr>
<tr>
<td>Rugged switch responds to minute pressure differentials</td>
<td>B67-10389</td>
<td>01</td>
</tr>
<tr>
<td>Vanadium diaphragm electrode serves as hydrogen diffuser in lithium hydride cell</td>
<td>B67-10499</td>
<td>01</td>
</tr>
<tr>
<td>Solenoid hammer valve developed for quick-opening requirements</td>
<td>B67-10503</td>
<td>05</td>
</tr>
<tr>
<td>Miniature pressure transducer for stressed member application</td>
<td>B68-10246</td>
<td>01</td>
</tr>
<tr>
<td>Silicon strain sensors enable pressure measurement at cryogenic temperatures</td>
<td>B68-10262</td>
<td>01</td>
</tr>
<tr>
<td>Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control</td>
<td>B69-10016</td>
<td>05</td>
</tr>
<tr>
<td>Electronic visualization of gas bearing behavior</td>
<td>B69-10073</td>
<td>01</td>
</tr>
<tr>
<td>Calibratable solid-state pressure switch</td>
<td>B69-10437</td>
<td>05</td>
</tr>
<tr>
<td>Burst diaphragm leak detector</td>
<td>B69-10543</td>
<td>03</td>
</tr>
<tr>
<td><strong>DIATOMIC MOLECULES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voight line profile</td>
<td>B69-10232</td>
<td>06</td>
</tr>
<tr>
<td><strong>DIBORANE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-element coaxial injector for rocket fuel</td>
<td>B69-10547</td>
<td>05</td>
</tr>
<tr>
<td><strong>DIETHYL COMPOUNDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic reactants rapidly produce plastic foam</td>
<td>B65-10288</td>
<td>03</td>
</tr>
<tr>
<td><strong>DICHROISM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unique construction makes interferometer insensitive to mechanical stresses</td>
<td>B65-10295</td>
<td>02</td>
</tr>
<tr>
<td>Optical automatic gain channel</td>
<td>B66-10596</td>
<td>02</td>
</tr>
<tr>
<td>Color-televised medical microscopy</td>
<td>B68-10314</td>
<td>01</td>
</tr>
</tbody>
</table>

I-163
DIELECTRIC PERMISSIBILITY

Resonant microwave dichroic surface
GSFC-10658

DIELECTRIC PERMISSIBILITY

Capacitive system detects and locates fluid leaks
N-FS-478

DIELECTRIC PROPERTIES

Oscillator circuit measures liquid level in tanks
N-FS-245

Capacitive system detects and locates fluid leaks
N-FS-478

Coaxial capacitor used to determine fluid density
LEWIS-232

Three-dimensional wire-mesh capacitor system measures fluid density
WOO-194

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSFC-422

Dielectrometer design permits measurement in vacuum under irradiation
N-FS-359

Concept for using laser beams to measure electron density in plasmas
N-FS-962

Liquid hydrogen densitometer utilizes open-ended microwave cavity
LEWIS-390

Study made of dielectric properties of promising materials for cryogenic capacitors
N-FS-13620

Glass coated single grid for charged particle acceleration
LEWIS-10106

Cryogenic liquid level measuring probe
ARG-10138

Thermal conductivity and dielectric constant of silicate materials
N-FS-14565

Low-loss C-band parasitic probe
KSC-09348

Method for determining properties of microinstabilities of a magnetized plasma
HQ-10447

Development of improved potting and conformal coating compounds
N-FS-20219

Optical frequency waveguide and ion transmission system
HQ-10541

DIELECTRICS

Improved sensor counts micrometeoroid penetrations
LEWIS-76

High-pass RF coaxial filter rejects dc and low frequency signals
GSFC-73

Microparticle impact sensor measures energy directly
GSFC-252

Spherical electrode eliminates high-voltage breakdown
LEWIS-155

Improved wire memory matrix uses very little power
JPL-SC-167

Resonant microwave dichroic surface

SUBJECT INDEX

Polymer film exhibits thermal and radiation stability
LANGLEY-100

Electrolytic etching process provides effective bonding surface on stainless steel
GSFC-484

Dielectrometer design permits measurement in vacuum under irradiation
N-FS-359

Gage tests tube flares quickly and accurately
KSC-66-19

Triphire spark gap actuates overvoltage relay
ARC-68

Detector measures power in 50 to 30,000 GHz radiation band
ERB-26

Improved memory word line configuration allows high storage density
GSFC-559

Traveling wire electrode increases productivity of Electrical Discharge Machining /EDM/ equipment
ARG-136

Precision capacitor has improved temperature and operational stability
ARG-189

Movable RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127

Standard surface grinder for precision machining of thin-wall tubing
LEWIS-10133

Dielectric prisms would improve performance of quasi-optical microwave components
ERC-10011

Technique eliminates high voltage arcing at electrode-insulator contact area
LEWIS-10163

Thin film thermal detector
JPL-943

Thermal conductors improve heat dissipation in electronic packaging
N-FS-13569

Broadband choke suppresses spurious currents in antenna structure
MSC-10013

Improved process for making thin-film sodium niobate capacitors
MSC-11231

Moebius resistor is noninductive and nonreactive
SAS-10202

Nondestructive method for measuring residual stresses in metals, a concept
KSC-10237

Improved wire memory matrix uses very little power
JPL-SC-167

Resonant microwave dichroic surface
SUBJECT INDEX

Dielectric materials for use in thin-film capacitors
M-FS-20471 B69-10387 02

Leads integral with the internal interconnection that penetrate the molded wall of a package
LANGLEY-10228 B69-10436 01

A sterilizable high-impact antenna
NP-10231 B69-10697 01

DIES

Break-up of metal tube makes one-time shock absorber, bars rebound
LANGLEY-1A B63-10304 05

Guide for extrusion dies eliminates straightening operation
LEWIS-152 B64-10014 05

Metal-bending brake facilitates lightweight, close-tolerance fabrication
ARC-29 B64-10069 05

Upsetting butt edge increases weld-joint strength
M-PS-175 B64-10164 05

Pressure molding of powdered materials improved by rubber mold insert
WO-100 B64-10270 03

Screw locking cups quickly and neatly crimped
WO-0009 B65-10049 05

Fabrication method produces high-grade alumina crucibles
M-PS-216 B65-10078 05

Integral ribs formed in metal panels by cold-press extrusion
M-PS-230 B65-10141 05

Lathe attachment used to machine elliptical cones
MNC-100 B65-10168 05

Metal parts hydrosized by explosive force
M-PS-209 B65-10170 05

Hand tool bends component leads accurately
M-PS-308 B65-10181 05

Fiber glass dies speed forging of large metal sheets
M-PS-214 B65-10210 05

Die and telescoping punch form convolutions in thin diaphragm
JPL-SC-135 B65-10393 05

Forming tool improves quality of tubing flares
WO-231 B66-10001 05

Heated die facilitates tungsten forming
LEWIS-25A B66-10047 05

Hand tool permits shrink sizing of assembled tubing
MSC-504 B66-10239 05

Pressure-welded flange assembly provides leak-tight seal at reduced bolt loads
M-PS-640 B66-10247 05

Strippable grid facilitates removal of grid-surfaced conical workpiece from die
M-PS-716 B66-10334 01

Tool forms right angles in component leads
M-PS-722 B66-10346 05

Hydraulic fluid serves as mandrel for small diameter refractory tube drawing
ARG-94 B66-10523 05

DIFFERENTIAL AMPLIFIERS

Controlled release device prevents damage from dynamic stresses
KSC-66-14 B66-10628 05

Orbital tube flaring system produces tubing connectors with zero leakage
M-PS-2016 B67-10019 05

Development of technology for hot-drape forming of large torus sections
M-PS-12141 B67-10341 05

Precision metal molding
M-PS-13305 B67-10423 05

Method of making conical fiber optical components
XNP-09745 B69-10020 02

Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-10495 B69-10236 04

Wall-thickness changes predicted in hollow-drawn tubing
ARG-10425 B69-10428 02

DIFFERENTIAL EQUATIONS

Computer simulation program is adaptable to industrial processes
LEWIS-240 B68-10426 01

Digital filter synthesis computer program
ARC-10130 B68-10164 06

Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction
MBC-10189 B68-10450 06

Variable-mesh method of solving differential equations
NFO-10515 B69-10017 02

Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices
ARG-10445 B69-10345 02

DIFFERENCES

Leakage tester for flat conductor cable connector
M-PS-20427 B69-10284 05

DIFFERENTIAL AMPLIFIERS

New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation
ARC-2 B63-10003 04

Simulator produces physiological waveforms
MSC-94 B65-10091 01

Variable-capacitance tachometer eliminates troublesome magnetic fields
GSFC-435 B66-10126 01

FET comparator detects analog signal levels without loading analog device
M-PS-503 B66-10224 01

Feedback loop compensates for rectifier nonlinearity
M-PS-384 B66-10382 01

Direction indicator system does not require

I-165
Differential Calculus

Complicated optics
Woo-305

Solid-state switch increases switching speed
Woo-298

Solid-state circuit switches ac load
JPL-798

Electronic circuit delivers pulse of high
interval stability
B66-10501

Collector/collector guard ring balancing

circuit eliminates edge effects

Control circuit ensures solar cell
operation at maximum power
GSFC-432

TV synchronization system features
stability and noise immunity
JPL-915

Edge-type connectors evaluated by

electrical noise measurement
M-FS-2243

Subminiature deflection circuit operates

time sweep circuits in TV camera
MSC-1263

Hybrid solid-state switch replaces motor-
driven power switch
JPL-931

FM carrier deviation measured by
differential probability method
M-FS-2166

Field effect transistors improve buffer
amplifier
M-FS-946

Amplifier improvement circuit
LEWIS-10712

Bootstrapping unloader
INF-09768

Low-cost voltage-level detector
LEWIS-10885

Automatic Gaussian random-noise limiter
NFO-10169

Automatic calorimetry system monitors RF
power
NFO-11033

Constant-frequency, variable-duty-cycle
multivibrator
KGS-10013

Differential Calculus

Method reduces computer time for smoothing
functions and derivatives through ninth
order polynomials
NWC-10534

Differential Equations

New computer program solves wide variety of
heat flow problems
M-FS-421

Study compares methods for the numerical
solution of ordinary differential equations
M-FS-830

Study made of application of stereoscopic

display system to analog computer simulation
M-FS-1263

Problems of oscillating cone in supersonic
flow is solved by small perturbation

techniques
M-FS-869

Subject Index

Self-starting procedure simplifies numerical
integration
MFC-50

Linear circuit analysis program for IBM
1620 Monitor 2, 1371/1443 data processing
system /CIRCS/
NFO-10131

Computer program simulates physical systems
by solving the simultaneous differential
equations describing the systems
NFO-10019

Computer program resolves radiative,
conductive, and convective heat transfer
problems for variety of geometries
M-FS-1910

General frequency response program calculates
frequency response of system, open at any
specified element
M-FS-12817

DYANA - An advanced programming system for
large classes of dynamic and equivalent
systems
M-FS-12084

Tool reconstructs data input points
corresponding to first order output graph
M-FS-18003

Computer program determines system
stability /DIGSTA/
LEWIS-10395

EICOV - Newton-Raphson calculus of
variation with automatic transversalities
M-FS-14086

Solution of differential equations by
application of transformation groups
M-FS-14802

Controllability of distributed-parameter
systems
M-FS-14929

CIRCUSS - A digital computer program for
transient analysis of electronic circuits
M-FS-15002

Solving nonlinear heat transfer constant
area fin problems
M-FS-14851

Accurate digital technique simulates flight
control system
M-FS-14767

Improved technique for digital simulation
of bending and slosh phenomena
M-FS-14788

Variable-bash method of solving
differential equations
NFO-10515

Numerical integration of ordinary
differential equations of various orders
AEG-10247

Some numerical methods for integrating
systems of first-order ordinary differential
equations
AEG-10308

Computer simulation of high-frequency
combustion instability and its suppression
EQ-10391

Control jet placement on spacecraft
MSC-13365

Engineering thermal analyzer /ETTA 2/
M-FS-15055

Numerical solutions of differential equations
SUBJECT INDEX

DIFFERENTIAL INTERFEROMETRY
Laser interferometer micrometer system
M-PF-14747 B69-10633 02

DIFFERENTIAL PRESSURE
Elastic orifice automatically regulates gas bearings
JPL-135 B63-10123 05
Welded pressure transducer made as small as 1/8th-inch in diameter
ARC-11 B63-10429 03
Differential pressure gauge has fast response
M-PF-358 B65-10265 05
Ring valve responds to differential pressure changes
WOO-247 B66-10022 05
Transmission system isolates pressure transducer from severe environment
WOO-239 B66-10064 01
Microorganisms detected by enzyme-catalyzed reaction
JPL-782 B66-10117 04
Liquid trap seals thermocouple leads
M-PF-688 B66-10212 05
Ultrasonic cleaning restores depth-type filters
M-PF-542 B66-10298 03
Concept for passive system to control gas flow independently of temperature
M-PF-982 B66-10343 05
Plant respirometer enables high resolution of oxygen consumption rates
HQ-47 B66-10406 04
Fluid logic control circuit operates nutator actuator motor
LEWIS-294 B66-10593 05
Valve effectively controls amount of contaminant in flow stream
M-PF-1771 B66-10603 05
Silver plating technique seals leaks in thin wall tubing joints
WOO-0090 B66-10703 05
Miniature capacitor functions as pressure sensor
JPL-903 B67-10020 01
Two techniques enable sampling of filtered and unfiltered molten metals
ARG-150 B67-10034 03
High speed blowdown system provides rapid pressure loss
LEWIS-375 B67-10043 05
Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates
NPO-10316 B67-10418 05
Design for high-temperature /1800 deg F/ liquid metal pressure transducer
LEWIS-10144 B67-10458 01
Automatic transducer switching provides accurate wide range measurement of pressure differential
NOC-10001 B67-10580 01
Quasi-static vapor pressure measurements on reactive systems in inert atmosphere box
ARG-90142 B68-10236 01
Direct indication of particle size in fluidized beds

DIFFUSION
Leakage measuring method
M-PF-14722 B69-10083 05
Integral valve provides automatic relief and remote venting
M-PF-12134 B69-10438 01
Vapor deposition process provides new method for fabricating high temperature thermocouples
NOC-10152 B67-10616 01

DIFFERENTIATORS
Simple circuit functions as frequency discriminator for PPM signals
GSFC-267 B65-10102 01
Gimbal angle sensor
GSFC-10305 B66-10315 01

DIFFRACTION
Optical device enables small detector to see large field of view
WOO-253 B66-10263 02
One hundred angstrom niobium wire
LEWIS-10128 B66-10279 03
Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectroscopy
ARG-10190 B66-10005 02
Preferred-orientation analysis of polycrystalline materials
NPO-10604 B67-10336 02
Proposed acusto-optic filter
HQ-10440 B67-10466 02
Improved camera for better X-ray powder photographs
HQ-10424 B69-10537 01
Fine-line sensitivity for holographic interferograms
HQ-10348 B69-10663 02

DIFFRACTION PATTERNS
Fresnel diffraction plates are simple and inexpensive
M-PF-12731 B67-10297 02

DIFFRACTOMETERS
Motion drive system is accurately controlled in the 1-micron range
JPL-864 B66-10695 05
Neutron diffractometer allows both magnetic and crystallographic analyses
ARG-191 B67-10131 02
Improved optical diffractometer
ESC-12055 B68-10071 02

DIFFUSERS
Venturi meter with separable diffuser
LEWIS-10463 B68-10295 05
Analysis of annular combustors
LEWIS-10359 B68-10356 06

DIFFUSION
Variable light source with a million-to-one intensity ratio
JPL-WOO-008 B63-10424 03
New method used to fabricate gallium arsenide photovoltaic device
WOO-062 B68-10019 01
Fabrication method produces high-grade

I-167
alumina crucibles B65-10078 05
Vapor grown silicon dioxide improves transistor base-collector junctions GSFC-389 B66-10091 01
Diffusion technique stabilizes resistor values MSC-205 B66-10142 01
Alumina doping improves silicon solar cells LEWIS-206 B66-10181 02
Apparatus presents visual display of semiconductor surface characteristics JPL-665 B66-10200 01
Simplified method introduces drift fields into cells GSFC-372 B67-10102 03
Static electricity of polymers reduced by treatment with iodine LPO-10062 B67-10132 02
Process controls introduction of selected impurities into semiconductor wafers GSFC-523 B67-10303 03
Test and inspection for process control of monolithic circuits M-PS-13004 B67-10507 01
Improved fuel-cell-type hydrogen sensor M-PS-14656 B68-10263 01
Dynamics of moving bubbles in single and binary component systems M-PS-14805 B68-10339 02
High-emittance coatings on metal substrates LEWIS-10325 B68-10381 03
Diffusion of trace gases for leak detection A study M-PS-20254 B69-10067 03
Mass transport mechanism in porous fuel cell electrodes HQ-10343 B69-10135 01
FORTRAN 4 program calculates velocities and streamlines in a tandem blade turbomachine LEWIS-10743 B69-10219 06
Improved method of fabricating planar gallium arsenide diodes INF-04235 B69-10271 01
Modification to improve self-isolating transistor arrays M-PS-20499 B69-10678 01
Lateral PNP bipolar transistor with aiding field diffusions MSC-13072 B69-10741 01
Propagation of density disturbances in air-water flow ARG-10260 B69-10043 02
Metallic diffusion measured by a modified Knudsen technique HQ-10145 B69-10309 03
Segmented electrode increases operating pressure of MHD accelerator LARGE-95 B65-10356 02
Vapor diffusion electrode improves fuel cell operation LEWIS-187 B66-10281 03
Iron serves as diffusion barrier in thermally regenerative galvanic cell
Feedback oscillator functions as low-level pulse stretcher
GSPC-261

Computer programs simplify optical system analysis
GSPC-306

Instrument calibrates low gas-rate flowmeters
MSC-134

Auxiliary circuit enables automatic monitoring of MKG5
MSC-106

Hybrid computer technique yields random signal probability distributions
ARC-8

Computer program determines chemical composition of physical system at equilibrium
MSC-1219

Digital computer processing of X-ray photos
JPL-792

Improved fluid control circuit operates on low power input
LEVS-325

Study indicates fluid digital computation systems are feasible
I-PS-520

Low cost SCR lamp driver indicates contents of digital computer registers
GSPC-10221

Instrumentation for bone density measurement
MSC-1138

Digital computer processing of X-ray photos
JEL-792

Hybrid computer technique yields random signal probability distributions
ARC-34

Computer program determines chemical composition of physical system at equilibrium
MSC-147

Special purpose computer provides programmable digital filter for sampled-data control systems
I-PFS-20290

Saturn S-2 Automatic Software System SASS
I-PS-1741

Heavy-gage bonded honeycomb sandwich as primary load-bearing structure
I-PS-13504

Low cost SCR lamp driver indicates contents of digital computer registers
GSPC-10221

Saturn S-2 Automatic Software System SASS
I-PS-1741

Heavy-gage bonded honeycomb sandwich as primary load-bearing structure
I-PS-13504
DIGITAL FILTERS

- Oscillator circuit operates as digitally controlled frequency synthesizer

- Computer program for Video Data Processing system

- Digital data averager improves conventional measurement system performance

- Analysis of flutter in tape transport systems

- Concept for simplified serial digital decoder

- Method of reducing time base error in digital magnetic recorders

- Short circuit protection for a power distribution system

- VICAR-DIGITAL image processing system

- Two devices for analysis of nystagmus

- Remote balance weighs accurately amid high radiation

DIGITAL FILTERS

- Reducing quantizer deadband with a range switching digital filter

DIGITAL INTEGRATORS

- Digital logic elements provide additional functions from analog input

- Logic circuit exhibits optimum performance

- Study indicates fluid digital computation systems are feasible

- Operational integrator

- Special purpose computer provides programmable digital filter for sampled-data control systems

DIGITAL SIMULATION

- Computer program simulates physical systems by solving the simultaneous differential equations describing the systems

- Accurate digital technique simulates flight control system

- Improved technique for digital simulation of bending and slosh phenomena

DIGITAL SPACECRAFT TELEVISION

- Improved television signal processing system

DIGITAL SYSTEMS

- Monostable circuit with tunnel diode has fast recovery

- Novel circuit combines pulse stretcher with NOR gate

- Logic redundancy improves digital system reliability

- Digital system accurately controls velocity of electromechanical drive

- Transistorized circuit clamps voltage with 0.1 percent error

- Digital-output cardiotachometer measures rapid changes in heartbeat rate

- New television camera eliminates vidicon tube

- How sensitive solids mass spectrometer uses inert-gas ion source

- Binary fluid amplifier solves stability and load problems

- Electronic phase-locked-loop speed control system is stable

- PW acquisition demodulator achieves automatic synchronization of a telemetry channel

- Pneumatic binary encoder replaces multiple solenoid system

- Digital system provides superregulation of nanosecond amplifier-discriminator circuit

- Digital system detects binary code patterns containing errors

- Positive displacement cylinder measures corrosive liquid volume

- Computer program detects transient malfunctions in switching circuits

- Electronic frequency discriminator

- Structural Analysis and Matrix Interpretive System /SAMIS/
Numerical data frame readout system used in testing telemetry systems  
GSFC-551  B67-10175  01

Computer program uses Monte Carlo techniques for statistical system performance analysis  
M-PS-2234  B67-10306  06

Thin film thermal detector  
JPL-943  B67-10505  01

Digital filter suppresses effects of nonstatistical noise bursts on multichannel scaler digital averaging systems  
AGO-30143  B68-10193  06

Recharge unit provides optimum recharging of battery cells  
GSFC-10688  B68-10273  01

Method of reducing time base error in digital magnetic recorders  
GSFC-10108  B68-10317  01

High-speed pulse camera  
MSC-11353  B68-10329  02

Two-way digital driver/receiver uses one set of lines  
SRC-10055  B68-10437  01

A method for reducing sampling jitter in digital control systems  
NPO-11068  B69-10338  01

Phase-locked-loop phase modulator with high modulation index, low distortion  
MSC-12247  B69-10487  01

Pulse-code-modulation baseline correction for low signal-to-noise ratios  
MSC-13268  B69-10750  01

DIGITAL TECHNIQUES

Small digital recording head has parallel bit channels, minimizes cross talk  
JPL-0029  B63-10284  01

Binary system generates sidereal rate from standard solar rate  
GSFC-190  B64-10200  01

Digital cardiometer computes and displays heartbeat rate  
MSC-93  B64-10258  01

Oscillator circuit measures liquid level in tanks  
M-PS-245  B65-10209  01

Simple pulse counting circuit computes sum of squares  
GSFC-391  B65-10260  01

Electron-beam deflection controlled by digital signals  
GSFC-385  B65-10283  02

Detection system ensures positive alarm activation in digital massage loss  
WOO-208  B66-10287  01

Shaft encoder presents digital output  
JPL-SC-191  B66-10436  01

Digital system provides superregulation of nanosecond amplifier-discriminator circuit  
AGO-61  B66-10500  01

Digital frequency counter permits readout without disturbing counting process  
JPL-506  B66-10658  01

Subroutines GEORGE and DBASTC simplify operation of automatic digital plotter  
MUC-10044  B67-10222  06

Vis-a-Plan /visualize a plan/ management  

DIGITAL TO ANALOG CONVERTERS

technique provides performance-time scale  
EKC-10073  B67-10260  06

Automated urine analysis technique determines concentration of creatine and creatinine by colorimetry  
NPO-10149  B67-10265  04

Digital voltage-controlled oscillator  
GSFC-512  B67-10440  01

Automatic testing device facilitates noise checks and electronic calibrations  
LWIS-10173  B67-10467  01

Digital servo readout system increases recording accuracy of servo-balance scales  
HUC-10125  B67-10496  01

Damage in rolling element bearings may be detected early  
EKC-10031  B67-10658  01

Digital filter synthesis computer program  
ARC-10130  B68-10169  02

Acquisition of pseudonoise signals by sequential estimation  
H-PS-13896  B68-10259  01

Closed circuit TV system automatically guides welding arc  
H-PS-20884  B68-10357  01

Computer program for parameter optimization  
ARC-10168  B68-10453  06

Operational integrator  
NPO-10230  B68-10558  01

Accurate digital technique simulates flight control system  
M-PS-14787  B68-10569  02

Improved technique for digital simulation of bending and slosh phenomena  
M-PS-14786  B68-10570  01

Digital computer technique for setup and checkout of an analog computer  
M-PS-13969  B68-10576  06

Ring laser angle encoder  
MSC-13099  B69-10115  01

DIGITAL TO ANALOG CONVERTERS

Digital logic elements provide additional functions from analog input  
MSC-64  B68-10064  01

Pressure transducer system is force-balanced, has digital output  
M-PS-154  B65-10174  05

Variable word length encoder reduces TV bandwidth requirements  
LANGL-87  B65-10385  01

Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion  
EKC-787  B66-10429  01

Shaft encoder presents digital output  
JPL-SC-191  B66-10436  01

Numerical data frame readout system used in testing telemetry systems  
GSFC-551  B67-10175  01

Study indicates fluid digital computation systems are feasible  
H-PS-520  B67-10181  01

Quartz crystals detect gas contaminants during vacuum chamber evacuation  
NPO-10144  B67-10205  01
DIGITAL TRANSDUCERS

Digital-to-analog converter operates from low level inputs
JPL-907 B67-10357 01

Improved digital TV encoding and decoding system
MSC-11147 B67-10562 01

Closed circuit TV system automatically guides welding arc
M-FS-2084 B68-10357 01

Simplified system displays complex curves corresponding to input data
BQ-10073 B69-10247 01

Reducing quantizer deadband with a switching digital filter
M-FS-20419 B69-10259 01

Automatic tuning of hydrogen masers
GSPC-10127 B69-10452 01

Laser interferometer micro-ter system
B69-10633 02

DIELECTRICAL ANALYSIS

Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
LANGLEY-1019 B67-10666 06

DISSOCIATES

Organic reactants rapidly produce plastic foam
LANGLEY-37 B65-10288 03

Process produces chlorinated aromatic isocyanate in high yield
M-FS-1658 B66-10646 03

Synthesis of polyethers of hexafluoropentanediol
M-FS-14962 B69-10636 03

DILUTION

Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination
ARG-262 B67-10421 03

Diffusion of trace gases for leak detection - A study
B69-10067 03

DIRECTIONAL ANALYSIS

Rectangular-bore, high-gain laser plasma tube
EQ-10234 B69-10193 02

DIRECTIONAL MEASUREMENT

Polymer deformation gage measures thickness change in tensile tests
JPL-745 B66-10147 01

Pressure probe compensates for dimensional tolerance variations
LEWIS-302 B66-10599 01

System enables dimensional inspection of very large structures
M-FS-2477 B67-10214 05

Areas of irregular, discontinuous patterns rapidly and accurately measured
GSPC-10184 B67-10647 01

Surface irregularities detected by flare inspection instrument
M-FS-20157 B69-10152 01

Laser interferometer micrometer system
M-FS-14747 B69-10633 02

DINING

Collapsible truss structure is automatically expandable
GSPC-265 B65-10126 05

Study of high temperature bearing materials
LEWIS-10829 B69-10252 03

Helical tape forming device
GSPC-10136 B69-10137 05

Ultra-high-flux heat exchanger
J-18135 B69-10201 02

DIODES

Increased performance reliability obtained with dual/redundant oscillator system
GSPC-36 B63-10258 01

Double-throw microwave device switches two lines quickly
JPL-410 B63-10258 01

Circuit switches latching relay in response to signals of different polarity
W00-055 B63-10508 01

Simple circuit provides adjustable voltage with linear temperature variation
JPL-W00-029 B63-10537 01

Transistorized trigger circuit is trimmable
GSPC-101 03

Circuit controls transients in SCR inverters
GSPC-120 B63-10600 01

Monostable circuit with tunnel diode has fast recovery
GSPC-132 B63-10603 01

Efficient circuit triggers high-current, high-voltage pulses
M-SC-14 B64-10024 01

Ring counter may be advanced or retarded by command signal
GSPC-101 B64-10144 01

Novel circuit combines pulse stretcher with NOR gate
GSPC-107 B64-10150 01

Thermocompression bonding produces efficient surface-barrier diode
JPL-SC-066 B65-10006 05

Circuit improvement produces monostable multivibrator with load-carrying capability
GSPC-39A B65-10007 05

Optical arrangement increases useful light output of injection-luminescent diodes
JPL-192 B65-10006 05

Voltage generator sweeps oscillator frequency linearly with time
M-FS-219 B64-10320 01

Modification increases light output of injection-luminescent diodes
M-FS-192 B65-10006 05

Modulation improves monostable multivibrator with load-carrying capability
GSPC-39A B65-10007 05

Pulse height analyzer operates at high repetition rates, low power
W00-046 B65-10041 01

Pulse generator permits nondestructive 

I-172
testing of component breakdown voltage
MSC-122  B65-10054  01

FM oscillator uses tetrode transistor
JPL-82  B65-10055  01

Feedback oscillator functions as low-level pulse stretcher
GSFC-261  B65-10069  01

Logarithmic amplifier uses field effect transistors
JPL-509  B65-10145  01

Solid-state switching used to speed up capacitive integrator
LANGLEY-104  B65-10159  01

Solid-state laser transmitter is amplitude modulated
JPL-121  B65-10238  01

Added diodes increase output of balanced mixer circuit
GSFC-354  B65-10276  01

Selenium bond decreases ON resistance of light-activated switch
JPL-SC-101  B65-10324  01

Dual-voltage power supply has increased efficiency
LBWIS-107A  B66-10002  01

Improved chopper circuit uses parallel transistors
K-PS-468  B66-10113  01

Semiconductor forms biomedical radiation probe
MSC-300  B66-10252  04

Simple circuit provides reliable multiple signal average and reject capability
NO-0069  B66-10282  01

Substituting transistor for diode improves rectifying means
GSFC-474  B66-10295  01

Function generator eliminates need of series summation
GSFC-274  B66-10351  01

Electrically controlled optical latch and switch requires less current
JPL-SC-111  B66-10414  01

Electronic bidirectional valve circuit prevents crossover distortion and threshold effect
MSC-193  B66-10420  01

Solid-state switch increases switching speed
NO-298  B66-10430  01

Linear signal noise summer accurately determines and controls S/N ratio
JPL-SC-152  B66-10433  01

Semiconductors can be tested without removing them from circuitry
K-PS-1163  B66-10447  01

Basic suppression techniques are evaluated
K-PS-867  B66-10449  01

Bipolar current driver for memory circuits
GSFC-213  B66-10469  01

Solid state circuit controls direction, speed, and braking of dc motor
JPL-757  B66-10486  01

Circuit prevents overcharging of secondary cell batteries
GSFC-454  B66-10949  02

Solid state annunciator facilitates complex system troubleshooting
MSC-122  B65-10054  01

Pulse stretcher has improved dynamic range and linearity
ARG-82  B66-10509  01

Computer program searches characteristic data of diodes and transistors
GSFC-493  B66-10529  01

Preregulator feedback circuit utilizes Light-Actuated Switch
K-PS-1180  B66-10542  01

Collector/Collector guard ring balancing circuit eliminates edge effects
JPL-509  B66-10563  01

Heater control circuit provides both fast and proportional control
K-PS-906  B67-10097  01

Laboratory pulse modulator uses minority carrier storage diodes
N-PS-2442  B67-10226  01

Fused diode provides visual indication of fuse condition
KSC-67-16  B67-10230  01

Solid-state laser transmitter is amplitude modulated
ISC-121  B65-10238  01

Heater control circuit provides both fast and proportional control
I-PS-906  B67-10226  01

Selenium bond decreases ON resistance of light-activated switch
JPL-SC-101  B65-10324  01

Fused diode provides visual indication of fuse condition
KSC-67-16  B67-10230  01

Dual-voltage power supply has increased efficiency
LEWIS-1078  B66-10002  01

Improved chopper circuit uses parallel transistors
JPL-509  B66-10113  01

Circuit provides overcurrent protection to push-pull amplifier
MSC-12033  B67-10300  01

Transistor biased amplifier minimizes diode discriminator threshold attenuation
ARG-163  B67-10311  01

SiC/Si diode trigger circuit provides automatic range switching for log amplifier
K-PS-1879  B67-10314  01

Limit circuit prevents overdriving of operational amplifier
MSC-10062  B67-10343  01

Digital-to-analog converter operates from low level inputs
JPL-907  B67-10357  01

High power dc/dc and dc/ac electrical power conversion techniques developed
N-FS-13227  B69-10390  01

Computer memory access technique
NPO-10201  B67-10585  01

Feasibility study of wireless power transmission systems
N-PS-14691  B68-10309  01

System measures response time of photosensitive tube emitters
LBWIS-10437  B68-10382  01

Pressure-sensitive bonded junction transducers
ER-10087  B68-10563  01

Silicon carbide diode for increased light output
N-PS-20063  B65-10096  01

Full wave dc-to-dc converter using energy storage transformers
LBWIS-10375  B69-10140  01

Improved liquid-level sensor for cryogenics
ARG-10162  B69-10210  02

Magnetically coupled emission regulator
GSFC-10056  B69-10213  01

Improved method of fabricating planar gallium arsenide diodes
DIOXIDES

Sweep frequency detector
NPO-10669

An integrated circuit switch
NPO-11073

Automatic Gaussian random-noise limiter
NPO-10169

High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes
LEWIS-90271

Punch-magnet delay eliminated by modification of circuit
ARG-10333

Constant-frequency, variable-duty-cycle multivibrator
KOS-10013

Miniature backward-diode pressure sensor
RNC-10229

DIOXIDES

IR-transmission glasses formed from oxides of bismuth and tellurium
I-PS-279

Study of mechanical properties of uranium compounds
ARG-10074

Gamma radiation characteristics of plutonium dioxide fuel
NPO-11220

DIPHENYL COMPOUNDS

Flexible protective coatings made from silicon-nitrogen materials
N-PS-528

DIPLEXERS

Interference effects eliminated in random oriented space station antenna system
MSC-11004

DIPOLAR ANTENNAS

Test instrumentation evaluates electrostatic hazards in fluid systems
N-PS-2277

Survey of man-made electrical noise affecting radio broadcasting
HQ-10290

Improved VHF direction finding system
N-PS-20439

Rotary antenna attenuator
RNC-10648

DIRECT CURRENT

Igniting system for mercury lamps protects transistorized sustaining supply
JPL-421

Digital logic elements provide additional functions from analog input
MSC-64

Improved technique for localizing electropolishing features novel nozzles
WOC-101

Pulsed plasma accelerator operates repetitively without complex controls
LANGLEY-48

Variable load automatically tests dc power supplies
GSFC-291

Variable frequency transistor inverters use multiple core transformers

SUBJECT INDEX

Rotor position sensor switches currents in brushless dc motors
GSFC-315

System measures unidirectional forces, excludes extraneous forces
LEWIS-170

Dc to ac converter operates efficiently at low input voltages
GSFC-130

Device measures fluid drag on test vehicles
LANGLEY-34

Brushless dc motor uses electron beam switching tube as commutator
GSFC-345

Inductor flyback characteristic gives voltage regulator fast response
GSFC-361

Ceramic materials purified by experimental method
LEWIS-225

Differential pressure gauge has fast response
M-PS-358

Electrostatically driven dynamic capacitor employs capacitive feedback
JPL-771

Electropneumatic rheostat regulates high current
ARC-44

Solenoid diode controls switching of large direct currents
MSC-188

Noncontacting vibration transducer has constant sensitivity
LANGLEY-99

Dual-voltage power supply has increased efficiency
LEWIS-1074

Rod and dish cathode improves penning-type vacuum gage
GSFC-847

Tester periodically registers dc amplifier characteristics
MSC-190

Circuit protects regulated power supply against overload current
GSFC-853

Circuit provides accurate four-quadrant multiplication
WOC-272

Phase inverter provides variable reference push-pull output
HQ-23

Brushless dc motor has high efficiency, long life
GSFC-181

Efficient dc to dc converter eliminates large stray magnetic fields
GSFC-863

Nonhazardous acid etches weld samples
M-PS-975

Electronic bidirectional valve circuit prevents crossover distortion and threshold effect
MSC-193

Remote preamplifier circuit maintains...
stability over wide temperature range
W00-278

Shaft encoder presents digital output
JPL-SC-191

Standard arc welders provide high asperage direct current source
LANGLY-267

Thermionic scanner pinpoints work function of emitter surfaces
JPL-SC-177

Instrument automatically selects peak acceleration signal from several accelerometers
JPL-816

Solid state circuit switches ac load
JPL-798

Solid state circuit controls direction, speed, and braking of dc motor
JPL-775

Spiral spring/strain gage combination accurately measures shock induced deflection
MSC-789

Solid state annunciator facilitates complex system troubleshooting
ARC-73

Preregulator feedback circuit utilizes Light Actuated Switch
H-FS-1160

High intensity radiation heat source is capable of sustained operation
ARC-61

Monitoring circuit accurately measures movement of solenoid valve
H-FS-1829

Electronic circuit provides accurate sensing and control of dc voltage
W0-0069

Low input voltage converter/regulator minimizes external disturbances
GSPC-527

Polarimeter provides transient response in nanosecond range
JPL-890

Variable-pulse switching circuit accurately controls solenoid-valve actuations
H-FS-1895

Heater control circuit provides both fast and proportional control
H-FS-906

Voltage regulator/amplifier is self-regulated
H-FS-1240

Glow discharge density sensor probe life is extended
H-FS-1707

Improved television signal processing system
JPO-10140

Solid state phase detector replaces bulky transformer circuit
MSC-11007

Fast-response frequency-to-analog converter
H-FS-709

System precisely controls oscillation of vibrating mass
H-FS-1875

Vibrator elapsed time is automatically controlled
H-FS-2573

Transistor biased amplifier minimizes diode discriminator threshold attenuation
ARG-163

Portable spectrometer monitors inert gas shield in welding process
H-FS-12144

Signal generator converts direct current to multiphase supplies
MSC-11043

Multiple meter monitoring circuits served by single alarm
MSC-10984

High power dc/dc and dc/ac electrical power conversion techniques developed
H-FS-13227

Standard surface grinder for precision machining of thin-wall tubing
ARC-10014

Control apparatus for spectral energy source
MSC-391

Solid state single-ended switching dc-to-dc converter
H-FS-13598

Linear analog dc voltage-to-pulse-width converter
GSPC-556

Regulated dc-to-dc converter features low power drain
GSPC-03829

Improved dc voltage multiplier
H-FS-14042

Precision helometer bridge
MSC-11473

Synthesis of electro-optic modulators for amplitude modulation of light
H-FS-14266

Analysis and design of a class-D amplifier
H-FS-14803

Concept to convert electrical power
GSPC-10222

Power consumption in acoustic amplifiers under conditions of maximum stable gain
GSPC-10067

Application of the solid lubricant molybdenum disulfide by sputtering
MSC-10544

Isolated, multiple-output voltage dc-to-dc converter
H-FS-14976

Silicon carbide diode for increased light output
H-FS-20063

Plasma-heating by induction
MSC-10526
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>DIRECT POWER GENERATORS</th>
<th>DIRECTORS (ANTENNA ELEMENTS)</th>
<th>DISCHARGE COEFFICIENT</th>
<th>DISCONNECT DEVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC-12044</td>
<td>Improved dc voltage regulator XPS-06467</td>
<td>Generation of sonic power during welding R-PS-20339</td>
<td>Calibratable solid-state pressure switch GSFC-10127</td>
<td>DIRECTORY (ANTENNA ELEMENTS) Antenna configurations provide polarization diversity GSFC-74 Low-loss C-band parasitic probe KSC-09348</td>
</tr>
<tr>
<td>B67-10371</td>
<td></td>
<td></td>
<td></td>
<td>Auxilary silver electrode eliminates two-step voltage discharge characteristic of silver-zinc cells GSFC-169 Segmented electrode increases operating pressure of NBI accelerator LNLB-95</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High voltage pulse generator BSC-12178</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DISCHARGE COEFFICIENT Analysis of annular combustors LEWIS-10399</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DISCONNECT DEVICES Sleeve and cutter simplify disconnecting welded joint in tubing JPL-384 Special pliers connect hose containing liquid under pressure JPL-IT-1003 Circuit reliability boosted by soldering pins of disconnect plugs to sockets JPL-447 Device disconnects several couplings simultaneously JPL-226 Improved tool easily removes brazed tube connectors BSC-263 Remotely controlled system couples and decouples large diameter pipes BU-0062 Pneumatic separator gives quick release to heavy loads KSC-66-10 Lock-disconnect mechanism gives positive release to joined bodies BSC-2147 Line adapter provides quick disconnect under moderate side loading BSC-2159 Reconnect mechanism BSC-12966 Remotely operated gripper provides vertical control rod movement ARG-10160 Pyrotechnic-actuated cable release XUP-10849 Connect-disconnect coupling for preadjusted rigid shafts BSC-15470</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10351</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10540</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10493</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10977</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10548</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B68-10356</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B63-10289</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B63-10289</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10002</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B65-10163</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B66-10003</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B66-10276</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B66-10002</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B66-10294</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10123</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10256</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10670</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B66-10359</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B66-10535</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B65-10375</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10677</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10251</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B64-10114</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10251</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10548</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B68-10356</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10548</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B67-10540</td>
</tr>
</tbody>
</table>

**DIRECT POWER GENERATORS**

- Improved dc voltage regulator XPS-06467
- Generation of sonic power during welding R-PS-20339
- Calibratable solid-state pressure switch GSFC-10127
- Automatic tuning of hydrogen masers GSFC-10127
- Pulsed high-voltage dc RF sputtering LEWIS-10920
- Pulse-code-modulation baseline correction for low signal-to-noise ratios I-PS-20339
- Calibratable solid-state pressure switch I-PS-20474
- Automatic tuning of hydrogen masers I-PS-20339
- Isolated, multiple-output voltage dc-to-dc converter I-PS-14976
- Hydraulic drive system prevents backlash JPL-371
- Antenna configurations provide polarization diversity GSFC-74
- Low speed, long-term tracking electric drive system has zero backlash NP-10316
- Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates NP-10316
- Single degree of freedom antenna pointing program /ANTENA/ NP-10356
- Survey of man-made electrical noise affecting radio broadcasting NP-10356
- A thirty-six element array antenna system R-PS-20435
- An interferometer tracking radar system BSC-10956
- Hydraulic drive system prevents backlash JPL-371
- Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates NP-10316
- Single degree of freedom antenna pointing program /ANTENA/ NP-10356
- Survey of man-made electrical noise affecting radio broadcasting NP-10356
- A thirty-six element array antenna system R-PS-20435
- An interferometer tracking radar system BSC-10956

**DIRECTORS (ANTENNA ELEMENTS)**

- Antenna configurations provide polarization diversity GSFC-74
- Segmental electrode increases operating pressure of NBI accelerator LNLB-95
- High voltage pulse generator BSC-12178

**DISCHARGE COEFFICIENT**

- Analysis of annular combustors LEWIS-10399

**DISCONNECT DEVICES**

- Sleeve and cutter simplify disconnecting welded joint in tubing JPL-384
- Special pliers connect hose containing liquid under pressure JPL-IT-1003
- Circuit reliability boosted by soldering pins of disconnect plugs to sockets JPL-447
- Device disconnects several couplings simultaneously JPL-226
- Improved tool easily removes brazed tube connectors BSC-263
- Remotely controlled system couples and decouples large diameter pipes BU-0062
- Pneumatic separator gives quick release to heavy loads KSC-66-10
- Lock-disconnect mechanism gives positive release to joined bodies BSC-2147
- Line adapter provides quick disconnect under moderate side loading BSC-2159
- Reconnect mechanism BSC-12966
- Remotely operated gripper provides vertical control rod movement ARG-10160
- Pyrotechnic-actuated cable release XUP-10849
- Connect-disconnect coupling for preadjusted rigid shafts BSC-15470

**DIRECTIVITY**

- Measuring coplanarity of surfaces
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>DISPERSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakaway electrical connector</td>
<td>Improved pulse shape discriminator for fast neutron-gamma ray detection system</td>
</tr>
<tr>
<td>WPO-11140</td>
<td>B69-10474</td>
</tr>
<tr>
<td>Torsional tubular disconnect</td>
<td>Highly stable high-rate discriminator for nuclear counting</td>
</tr>
<tr>
<td>WPO-10704</td>
<td>B69-10499</td>
</tr>
<tr>
<td><strong>DISCONTINUITY</strong></td>
<td><strong>DISPERSE</strong></td>
</tr>
<tr>
<td>Zener diode function generator requires no external reference voltage</td>
<td>Modified interelement spacing improves Yagi antenna array</td>
</tr>
<tr>
<td>JPL-0031</td>
<td>B65-10013</td>
</tr>
<tr>
<td>Calibrating ultrasonic test equipment for checking thin metal strip stock</td>
<td>Honeycomb seat backing ring increases turbomop disk life</td>
</tr>
<tr>
<td>NUC-10009</td>
<td>B67-10127</td>
</tr>
<tr>
<td>Computer program performs rectangular fitting stress analysis</td>
<td>Eddy current disk valve</td>
</tr>
<tr>
<td>N-FS-13010</td>
<td>B67-10520</td>
</tr>
<tr>
<td><strong>DISCRETE FUNCTIONS</strong></td>
<td><strong>DISPERSE</strong></td>
</tr>
<tr>
<td>Instrument calculates moments of inertia of complex plane figures</td>
<td>Packless valve with all-metal seal handles wide temperature, pressure range</td>
</tr>
<tr>
<td>MSC-626</td>
<td>B66-10306</td>
</tr>
<tr>
<td>System monitors discrete computer inputs</td>
<td>Connector seals fluid lines at cryogenic temperatures and high vacuum</td>
</tr>
<tr>
<td>N-FS-1021</td>
<td>B66-10389</td>
</tr>
<tr>
<td>Simple quasi-exponential slope generator</td>
<td>Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket</td>
</tr>
<tr>
<td>WPO-11130</td>
<td>B69-10439</td>
</tr>
<tr>
<td><strong>DISCRIMINATION</strong></td>
<td><strong>DISPERSE</strong></td>
</tr>
<tr>
<td>Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors</td>
<td>Sealing disks for slag-type calorimeters have higher temperature stability</td>
</tr>
<tr>
<td>AEG-10362</td>
<td>B69-10767</td>
</tr>
<tr>
<td><strong>DISCRIMINATORS</strong></td>
<td><strong>DISPERSE</strong></td>
</tr>
<tr>
<td>Simple circuit functions as frequency discriminator for FPN signals</td>
<td>Gate measures total radiation, including vacuum UV, from ionized high-temperature gases</td>
</tr>
<tr>
<td>GSFC-267</td>
<td>B65-10102</td>
</tr>
<tr>
<td>Frequency discriminator with binary output eliminates tuned circuits</td>
<td>Simple switch actuated by force applied over wide solid angle</td>
</tr>
<tr>
<td>N-FS-376</td>
<td>B65-10349</td>
</tr>
<tr>
<td>Digitally controlled pulse-level discriminator operates over wide voltage range</td>
<td>Welded repairs of punctured thin-walled aluminum pressure vessels</td>
</tr>
<tr>
<td>GSFC-326</td>
<td>B66-10129</td>
</tr>
<tr>
<td>Digital system provides superregulation of nanosecond amplifier-discriminator circuit</td>
<td>A new solid lubricant</td>
</tr>
<tr>
<td>AEG-61</td>
<td>B66-10500</td>
</tr>
<tr>
<td>Electronic circuit delivers pulse of high interval stability</td>
<td>Temperature-controlled resistor</td>
</tr>
<tr>
<td>MSC-673</td>
<td>B66-10501</td>
</tr>
<tr>
<td>Electronic frequency discriminator</td>
<td>IBM-1620 monitor 2-D disk-storage subroutines</td>
</tr>
<tr>
<td>N-FS-2438</td>
<td>B67-10151</td>
</tr>
<tr>
<td><strong>DISSMEREC</strong></td>
<td><strong>DISPERSE</strong></td>
</tr>
<tr>
<td>Transistor biased amplifier minimizes diode discriminator threshold attenuation</td>
<td>Dispensing graduate for betadiene</td>
</tr>
<tr>
<td>AEG-163</td>
<td>B67-10311</td>
</tr>
<tr>
<td>Automatic telemetry checkout system</td>
<td>A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux</td>
</tr>
<tr>
<td>N-FS-12580</td>
<td>B67-10402</td>
</tr>
<tr>
<td>Conceptual servo technique for controlling tape drives</td>
<td>Dispensing bearings lubricated by sonic dispersion method</td>
</tr>
<tr>
<td>N-FS-12955</td>
<td>B67-10595</td>
</tr>
<tr>
<td>Dynamic linearity measurement technique</td>
<td>Vapor condensation process produces slurries of magnesium particles in liquid hydrocarbons</td>
</tr>
<tr>
<td>KSC-10186</td>
<td>B68-10290</td>
</tr>
<tr>
<td>Laser-Doppler gas-velocity instrument</td>
<td>Lewis-263</td>
</tr>
<tr>
<td>N-FS-20039</td>
<td>B68-10349</td>
</tr>
<tr>
<td>Simple tunnel diode circuit for accurate zero crossing timing</td>
<td>Lewis-10338</td>
</tr>
<tr>
<td>AEG-10362</td>
<td>B69-10116</td>
</tr>
<tr>
<td>Simple, accurate automatic frequency control circuit</td>
<td><strong>DISPERSE</strong></td>
</tr>
<tr>
<td>KSC-10393</td>
<td>B69-10323</td>
</tr>
</tbody>
</table>

I-177
DISPLACEMENT

reflective coatings on aluminum
M-FS-348 B65-10336 03
Process for preparing dispersions of alkali metals
JPL-734 B66-10639 03
Dispersion of borax in plastic is excellent.
fire-retardant heat insulator
ARG-5 B67-10016 03
Improved method of producing oxide-dispersion-strengthened alloys
HQ-10861 B69-10536 03

DISPLACEMENT

Transducer senses displacements of panels subjected to vibration
ARC-37 B65-10085 01
Leaf-spring suspension provides accurate parallel displacements
JPL-480 B65-10104 05
Bidirectional torque filter eliminates backlash
GSFC-335 B65-10148 05
Interferometer combines laser light source and digital counting system
MSC-151 B65-10161 01
Hydraulic device provides accurate displacements to microlines
MSC-112 B65-10230 05
Flowmeter measures low gas-flow rates
M-FS-215 B66-10036 01
Switching mechanism senses angular acceleration
GSFC-862 B66-10158 01
Positive displacement cylinder measures corrosive liquid volume
MSC-1038 B66-10589 05
Device measures reaction engine thrust vector deviations
JPL-SC-163 B66-10642 05
Cryogenic seal remains leaktight during thermal displacement
ARG-96 B67-10134 02
Web belt load measuring instrument has excellent stability
MSC-921 B67-10242 01
Device enables calibration of microphones at high sound pressure levels
M-FS-11980 B67-10336 01
Hydraulic system provides smooth control of large tracking and antenna drive systems
at very low tracking rates
HSC-10316 B67-10618 05
Study made of large amplitude fuel sloshing
M-FS-12381 B67-10639 03
A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux
ARC-10052 B69-10295 05
Instrumentation for nondestructive testing of composite honeycomb materials
M-FS-20405 B69-10366 03

DISPLACEMENT MEASUREMENT

Seismic transducer measures small horizontal displacements
M-FS-81 B65-10029 05
Design concept for pressure switch calibrator
HG-36 B66-10598 01

SUBJECT INDEX

Crack growth measured on flat and curved surfaces at cryogenic temperatures
LEWIS-389 B67-10384 01

DISPLAY DEVICES

Portable display paneling has wide use, easy take down and assembly
ARC-17 B63-10335 05
Digital cardiometer computes and displays heartbeat rate
MSC-93 B64-10258 01
Pneumotachometer counts respiration rate of human subject
MSC-92 B64-10259 01

Illuminated display panel is easily changed
MSC-108 B65-10003 05

Library of documents compressed into lap-held display kit
MSC-125 B65-10030 01

Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 03

Flexible magnetic planning boards are easily transported
M-FS-340 B65-10219 05

Single projector accommodates slides of different size and format
GSFC-339 B66-10016 02

Control system maintains selected liquid level
M-FS-370 B66-10039 01

Vibration tests on vidicons made by improved method
JPL-SC-115 B66-10042 01

Screen of cylindrical lenses produces stereoscopic television pictures
M-FS-273 B66-10086 02

Chart case opens to form briefing easel
MSC-349 B66-10135 05

Two-light circuit continuously monitors ac ground, phase, and neutral wires
MSC-356 B66-10163 01

Apparatus presents visual display of semiconductor surface characteristics
JPL-665 B66-10200 01

Multicolor stroboscope pinpoints resonances in vibrating components
JPL-10052 B66-10223 01

Legibility of electroluminescent instrument panels investigated
MSC-494 B66-10336 02

New computer system simplifies programming of mathematical equations
M-FS-341 B66-10361 01

Human transfer functions used to predict system performance parameters
LANGLEY-263 B66-10379 01

Video signal processing system uses gated current analog switches to perform high-speed multiplication and digital-to-analog conversion
MSC-701 B66-10429 01

Xirite tube display unit employs time-sharedlogic
ARG-117 B66-10512 01

Study made of application of stereoscopic display system to analog computer simulation
M-FS-1263 B66-10590 01

Developmental instrument supplies accurate

I-178
attitude and attitude-rate data
Hq-57 B66-10607 01

Three-axis attitude and direction reference
instrument has only one moving part
H-PS-1919 B66-10644 01

Absolute viscosity measured using
instrumented parallel plate system
JIM-6774 B67-10041 01

Visual attitude orientation and alignment
system MSC-647 B67-10120 02

Numerical data frame readout system used in
testing telemetry systems
GSFC-551 B67-10175 01

Plotter design simplifies determination of
image sensor transfer characteristic
HRO-10164 B67-10206 01

Subroutines GEORGE and DBAST simplify
operation of automatic digital plotter
NWC-10044 B67-10222 06

Vis-A-Plan /visualize a plan/ management
technique provides performance-time scale
KSC-10073 B67-10240 06

Rectilinear display gives acceleration load
factor and velocity information
MSC-1005 B67-10248 01

Computer program samples digital data for
CRT display
MSC-999 B67-10249 01

Automated tester permits precise calibration
of pressure transducers from 0 to 1050 psi
NWC-10067 B67-10263 01

New electron microscope employs new video
display technique
ARG-128 B67-10312 03

Pocket-size manual tape reader device aids
computer tape checking
KSC-10058 B67-10361 01

System automatically provides dynamic
launch decision criteria
H-PS-13063 B67-10363 01

Computer program reduces and provides
profile plot of surface plate calibration
data
H-PS-13066 B67-10492 06

Graphic visualization of program performance
aids management review
NWC-10111 B67-10568 06

X-Y plotter adapter developed for SDS-930
computer
NE-10220 B67-10654 06

Phase plane displays detect incipient
failure in servo system testing
Hq-10018 B67-10662 01

Hydra 1 data display system
MSC-11594 B68-10155 01

Computer graphics data conditioning
H-PS-14695 B68-10296 06

Random access-random release relay
switching matrix
H-PS-12590 B68-10301 01

Fluidic-thermochromic display device
KSC-10031 B68-10350 01

Selective video blanking technique
H-PS-20013 B68-10434 01

Gage measures total radiation, including
vacuum UV, from ionized high-temperature
gases
INF-9802 B69-10028 02

Electronic visualization of gas bearing
behavior
LWIS-10711 B69-10073 01

Two devices for analysis of nystagmus
Hq-10273 B69-10224 01

Time-Shared Cathode Ray Tube
RSC-12238 B69-10243 06

Simplified system displays complex curves
corresponding to input data
Hq-10073 B69-10247 01

Integrated sequence display device
KSC-10381 B69-10316 01

An electronic circuit for sensing
malfunctions in test instrumentation
KSC-10209 B69-10392 01

Versatile telemetering system
ARG-10339 B69-10655 01

Technique for improving solid state
mosaic images
H-PS-20532 B69-10664 01

Rectilinear display gives acceleration load
factor and velocity information
HSC-1045 B67-10248 01

DISPOSAL
Integral skin electrode for
electrocardiography in expendable
MSC-299 B66-10118 04

DISSTATION
Electron beam standby absorber system
H-PS-14108 B67-10650 01

DISSTATION
Beater decomposes oil backstreaming from
high-vacuum pumps
GSFC-356 B65-10224 02

Uranium isotopes quantitatively determined
by modified method of atomic absorption
spectrophotometry
ARG-210 B67-10236 03

DISSOLVING
Transplutonium elements processed from
rock debris of underground detonations
ARG-10222 B69-10054 03

Direct in-vial collection for
liquid-scintillation assay of carbon-14
and tritium
ARG-10424 B69-10412 03

Self-discharge in bimetallic cells
containing alkali metal
ARG-10347 B69-10631 01

Device separates hydrogen from solution in
water at ambient temperatures
MSC-13335 B69-10635 03

DISTANCE
Simple scale interpolator facilitates reading
of graphs
LWIS-92 B66-10302 05

Training course for radiation safety
technicians
ARG-216 B67-10477 02

DISTANCE MEASURING EQUIPMENT
Depth indicator and stop aid machining to
precise tolerances
H-PS-553 B66-10149 05

Analog solar system model relates celestial
bodies spatially
JPL-195 B66-10413 01

DISTILLATION
Silazane elastomer remains resilient at
DISTILLATION EQUIPMENT

400 deg C
E-PS-1144 B66-10667 05

Technique for highly efficient recovery of microbiological contaminants
MSC-13250 869-10273 04

DISTILLATION EQUIPMENT

Emergency solar still desalts seawater
MSC-805 B65-10214 03

Liquid trap seals thermocouple leads
E-PS-600 B66-10212 05

Distillation device supplies cesium vapor at constant pressure
IMP-08124 B68-10020 03

DISTORTION

Circuit reduces distortion of FM modulator
GSFC-257 B65-10152 01

Crystal measures short-term, large-magnitude forces
JPL-77 B65-10187 01

Cork is used to make tooling patterns and molds
MSC-425 B66-10328 01

Universal transloader moves delicate equipment without stress
MSC-654 B66-10384 05

Application of distorted models in developing scaled structural models
E-PS-2940 B67-10321 05

Current pulse amplifier transmits detector signals with minimum distortion and attenuation
MSC-10055 B67-10347 01

Machining heavy plastic sections
E-PS-12720 B67-10381 03

Vibration damping composition has flush-away feature
E-PS-597 B67-10432 03

Techniques for controlling warpage and residual stresses in welded structures
E-PS-20370 B66-10086 05

Helical tape forming device
GSFC-10830 B69-10137 05

VICAR-DIGITAL image processing system
JPL-10770 B69-10139 06

Miniaturization of magnetic logic circuitry
LANGLEY-10037 B69-10148 06

Repair of honeycomb panels with welded breakaway studs
MSC-15046 B69-10261 05

DISTRIBUTING

Controllability of distributed-parameter systems
E-PS-14929 B66-10346 02

DISTRIBUTION

Grit blasting nozzle fabricated from mild tool steel proves satisfactory
E-PS-1420 B66-10597 05

DISTRIBUTION (PROPERTY)

Program computes zero lift wave drag of entire aircraft
LANGLEY-10079 B67-10530 06

Areas of irregular, discontinuous patterns rapidly and accurately measured
GSFC-10184 B67-10674 01

Wall-thickness changes predicted in hollow-drawn tubing
ABS-10425 B69-10428 02

SUBJECT INDEX

DISTRIBUTION FUNCTIONS

Computer program calculates monotonic maximum likelihood estimates using method of reversals
E-PS-1516 B67-10136 01

Probabilistic approach to long range planning of manpower
MSC-11524 B67-10510 06

Solution of differential equations by application of transformation groups
E-PS-10802 B68-10276 02

DISTRIBUTORS

Gage provides audible signal to facilitate checkout of connector pins
KSC-10335 B69-10173 01

Technique for highly efficient recovery of microbiological contaminants
MSC-13250 869-10273 04

Probabilistic approach to long range planning of manpower
MSC-11524 B67-10510 06

Solution of differential equations by application of transformation groups
E-PS-10802 B68-10276 02

DISTURBANCES

Accuracy of laser measurements improved by pulse autocorrelator electronic system
MSC-10033 B67-10338 01

Propagation of density disturbances in air-water flow
ARG-10260 B69-10043 02

DITVERS

Design concepts using ring lasers for frequency stabilization
E-PS-2448 B67-10143 01

Universal transloader moves delicate equipment without stress
MSC-15046 B69-10261 05

Packing heavy plastic sections
E-PS-12720 B67-10381 03

Vibration damping composition has flush-away feature
E-PS-597 B67-10432 03

Techniques for controlling warpage and residual stresses in welded structures
E-PS-20370 B66-10086 05

Helical tape forming device
GSFC-10830 B69-10137 05

VICAR-DIGITAL image processing system
JPL-10770 B69-10139 06

Miniaturization of magnetic logic circuitry
LANGLEY-10037 B69-10148 06

Repair of honeycomb panels with welded breakaway studs
MSC-15046 B69-10261 05

DISTRIBUTING

Controllability of distributed-parameter systems
E-PS-14929 B66-10346 02

DISTRIBUTION

Grit blasting nozzle fabricated from mild tool steel proves satisfactory
E-PS-1420 B66-10597 05

DISTRIBUTION (PROPERTY)

Program computes zero lift wave drag of entire aircraft
LANGLEY-10079 B67-10530 06

Areas of irregular, discontinuous patterns rapidly and accurately measured
GSFC-10184 B67-10674 01

Wall-thickness changes predicted in hollow-drawn tubing
ABS-10425 B69-10428 02

X-180
DONNELL EQUATIONS
Buckling Of Shells Of Revolution
LANGLEY-10441 B69-10300 06

DONOR MATERIALS
Primary cells utilize halogen-organic
cell transfer complex
JPL-926 B66-10632 02
Xenon fluoride solutions effective as
fluorinating agents
ARG-217 B67-10133 03

DOORS
Lightweight door seal cryogenic container
against diaphragm type loading
MSC-623 B66-10336 03
Concealed hinge permits flush mounting of
doors and hatches
ARG-10071 B67-10597 02

DOPPLE EFFECT
Optical superheterodyne receiver uses laser
for local oscillator
M-PS-1605 B66-10584 01
Laser Doppler flowmeter measures gas
velocity
M-PS-1747 B66-10693 02
Design concepts using ring lasers for
frequency stabilization
M-PS-1808 B67-10143 01

DOSAGE
Training course for radiation safety
technicians
ARG-216 B67-10477 02
Neutron detector simultaneously measures
fluence and dose equivalent
ARG-10071 B67-10597 02
Experimental study and evaluation of
radioprotective drug
ARG-10196 B68-10320 04

DOSIMETERS
Semiconductor forms biomedical radiation probe
MSC-320 B66-10252 04
Practical new method of measuring
thermal-neutron fluence
WUC-10086 B67-10352 02

DRAFTING
Concept for modifying drafting instruments
to minimize smearing
KSC-10056 B67-10283 05
Photographic and drafting techniques
simplify method of producing engineering
drawings
MSC-716 B68-101128 02

DRAFTING MACHINES
Automated drafting system uses computer
MSC-320 B66-10362 01

DRAG
New anemometer has fast response, measures
dynamic pressure directly
LANGLEY-18 B63-10530 05

DRAG DEVICES
Friction device removes linear motion of
rotating shaft
WUC-10214 B66-10030 05

DRAG MEASUREMENT
Device measures fluid drag on test vehicles
LANGLEY-94 B65-10195 01

DRAG REDUCTION
Quick-acting clutch disengages idle drive
motor
MSC-143 B64-10028 05

DRAWINGS
Front and back printed circuit layouts
presented on single sheet
MSC-901 B66-10324 01
Instrument transmits vanishing point to
illustration point
MSC-267 B66-10371 02

I-181
Automated drafting system uses computer techniques
K-PS-786  E66-10362 01

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning
MSC-10073  E67-10348 06

Projection transparencies from printed material
K-PS-14608  E68-10112 01

Microelectronic device data handbook
ERC-10322  E69-10687 01

Unmanned seismometer levels self, corrects drift errors
GSPC-572  E67-10102 03

Simplified method introduces drift fields into cells
GSPC-572  E67-10102 03

Electrometer preamplifier has drift correction feedback
JPL-SC-074  E65-10267 01

Tester periodically registers dc amplifier characteristics
MSC-190  E66-10148 01

Analog buffer isolates high impedance source from low impedance load
K-PS-13401  E67-10544 01

Digital-to-analog converter operates from low level inputs
JPL-907  E67-10357 01

Rock bit requires no flushing medium to maintain drilling speed
JPL-800-031  E65-10109 05

Drill bit design assures clean holes in laminated materials
WOO-098  E65-10386 05

Modified drill permits one-step drilling operation
K-PS-559  E66-10169 05

Threaded pilot insures cutting tool alignment
K-PS-527  E66-10074 05

Modified drill permits one-step drilling operation
K-PS-559  E66-10169 05

Process sequence produces strong, lightweight reflectors of excellent quality
LEWIS-331  E67-10010 05

Polarized light reveals stress in machined laminated plastics
LEWIS-10016  E67-10383 03

Transplutonium elements processed from rock debris of underground detonations
ARG-10222  E69-10054 03

Cold machining of high density tungsten and other materials
ARG-10200  E69-10110 05

Repair of honeycomb panels with welded breakaway studs
MSC-15046  E69-10261 05

Technique for anchoring fasteners to honeycomb panels
LEWIS-10888  E69-10261 03

Circuit board hole coordinate locator concept
K-PS-14737  E69-10539 01

Portable tool cleans pipes and tubing
KSC-230  E65-10375 05

Drill bit design assures clean holes in laminated materials
WOO-098  E65-10386 05

Pipe cutting tool is useful in limited space
MSC-36  E66-10102 05

Hand drill adapter limits holes to desired depth
MSC-346  E66-10123 05

Depth indicator and stop aid machining to precise tolerances
K-PS-553  E66-10149 05

Nylon bit removes cork insulation without damage to substrate
MSC-381  E66-10152 05

Gear drive automatically indexes rotary table
K-PS-753  E66-10383 05

Hole saw drill attachment has zero force reaction
MSC-543  E66-10604 05

Irradiated gases transferred without contamination or dilution
LEWIS-278  E67-10044 03

Development of lunar drill to take core samples to 100-foot depths
K-PS-13195  E67-10529 05

J-beveling of pipe ends with a hand-held tool
KSC-10356  E69-10229 05

Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-10495  E69-10236 04

Multi-purpose tool mitten
SQ-10047  E69-10483 05

Iris-leaf core retainer for a surface drill
MSC-11402  E69-10496 05

A rotating, noncapillary heat pipe
LEWIS-10228  E69-10684 05

Nozzles for size reclassification of microfog particles
LEWIS-10705  E69-10076 05

Calculations enable optimum design of magnetic brake
LEWIS-251  E66-10073 05

Spiral spring/strain gage combination accurately measures shock induced deflection
MSC-789  E66-10488 01

Phase-lock loop frequency control and the dropout problem
K-PS-13941  E68-10130 01

Apparatus measures concentration of suspended droplets in gas streams
LANGLEY-31  B64-10237 01

System for measuring spatial distribution of ejected droplets, a concept
WPO-10185  E68-10402 01

Improved vacuum deposition apparatus
WPO-11009  E69-10365 02
SUBJECT INDEX

DRUMS (CONTAINERS)
Extendible column can be stowed on drum
JPL-686 B65-10191 05

DRY CELLS
Camera lens adapter magnifies image
M-PS-11955 B67-10431 02

DRY HEAT
Technique for highly efficient recovery
of microbiological contaminants
MSC-12520 B69-10273 04

DRIYING
Stringent cleaning technique assures reliable
epoxy bond
GSPC-161 B66-10341 03

DRIYING APPARATUS
Apparatus automatically measures soluble
residue content of volatile solvents
SAN-10032 B69-10292 03

DUCTED FLOW
Lightweight hinged bellows restraint has
high load capacity
WOO-151 B65-10341 03

DUCTILITY
Lightweight magnesium-lithium alloys show
promise
M-PS-17 B63-10389 03

Low power heating element provides thermal
control during swaging operations
M-PS-457 B66-10206 05

Nickel-base superalloys developed for high-
temperature applications
LEWIS-226 B66-10222 03

Pressure-welded flange assembly provides
leak-tight seal at reduced bolt loads
M-PS-640 B66-10247 05

Boron-deoxidized copper withstands brazing
temperatures
M-PS-762 B66-10273 03

Thermal stress-relief treatments for 2219
aluminum alloy are evaluated
M-PS-1213 B66-10448 03

Braze alloy holds bonding strength over wide
temperature range
LEWIS-337 B66-10519 03

Lower-cost tungsten-rhenium alloys
LEWIS-332 B66-10526 03

Silver-base ternary alloy proves superior
for slip ring lead wires
M-PS-1540 B66-10540 03

Tantalum alloys resist creep deformation at
elevated temperatures
LEWIS-350 B66-10558 03

Ductile mandrel and parting compound
facilitate tube drawing
ARG-43 B66-10571 05

Tests show that aluminum welds are improved
by bead removal
M-PS-1817 B67-10023 05

Aluminum-titanium hydride-boron carbide
composite provides lightweight neutron
shield material
NUC-10069 B67-10265 03

High-strength tungsten alloy with improved
ductility
LEWIS-10257 B67-10340 03

Excellent spring properties developed in two
nickel alloys for use at cryogenic
temperatures
NUC-10084 B67-10349 03

Steel test panel helps control additives in
pyrophosphate copper plating
LEWIS-10101 B67-10358 05

Magnesium-lithium alloys developed for low
temperature use
M-PS-1541 B67-10365 03

Study made of ductility limitations of
aluminum-silicon alloys
M-PS-12524 B67-10392 03

Heat treatment procedure to increase
ductility of degraded nickel alloy
M-PS-12410 B68-10029 03

Weld microfusing in Inconel 718
minimized by minor elements
M-PS-18185 B68-10251 03

High temperature alloy
LEWIS-10377 B68-10253 03

Fabrication techniques developed for small-
diameter, thin-wall tungsten and tungsten
alloy tubing
ARG-10100 B68-10264 05

Pre-weld heat treatment improves welds in
Rene 41
M-PS-18174 B68-10285 03

Nickel base alloy with improved stress
rupture properties
LEWIS-10263 B68-10344 03

Nickel-base superalloy* excellent
properties promote its service to 2200
degrees F
LEWIS-10355 B68-10380 03

Hot-cracking studies of Inconel 718 weld-
heat-affected zones
M-PS-18211 B68-10502 05

Two-step rocket engine bipropellant valve
concept
M-PS-10591 B69-10280 05

Effects of hydrogen on metals
M-PS-20364 B69-10372 03

Strain-age cracking in Rene 41 alloy
M-PS-18650 B69-10605 03

Retention of ductility in high-strength
steels
ARG-10497 B69-10616 03

Effects of high-pressure hydrogen on
storage vessel materials
M-PS-18605 B69-10730 03

DUCTS
External linkage tie permits reduction in
ducting system flange thickness
M-PS-623 B66-10326 05

Bellows joint absorbs torsional deflections in
duct system
M-PS-822 B66-10332 04

Brazing retort manifold design concept may
minimize air contamination and enhance
uniform gas flow
M-PS-707 B66-10371 05

Spherical pipe joint delivers loads equally
to mating flange
M-PS-807 B66-10665 05

I-183
Spherical joint connects axially misaligned flanges

Liquid oxygen dicting cleaned by falling film method

Flow liner extends operating life of high-angulation bellows

Design of fluid-duct bends with low pressure loss

Two-axis winch installer for heavy ducts in confined space

Fatigue failure in metal bellows due to flow-induced vibrations

Quick-acting backup tool for welding ducts

Hydraulic calipers

Multichannel spectroscopy guide

Strain gage network distinguishes between thermal and mechanical deformations

Electronic dummy for acoustical testing

A continuously operating source of vacuum ultraviolet below 500 angstrom

Machine tests crease durability of sheet materials

Spiral-grooved shaft seals substantially reduce leakage and wear

Compact rotating cup anemometer

Improved atmospheric particle analyzer

Vacuum probe sampler removes micron-sized particles from surfaces

Health hazards of ultrafine metal and metal oxide powders

Air sampler collects and protects minute particles

Transient sensor development

Forous glass makes effective substrate for ozone-sensing reagent

Test strips detect different CO2 concentrations in closed compartments

Surfactant for dye-penetrant inspection is insensitive to liquid oxygen

Sea dye marker provides visibility for 20 hours

Weld microsizing in Inconel 718 minimized by minor elements

Neutron therapy of cancer

Airborne Fraunhofer Line Discriminator

Dynamite characteristics

Precision C# laser automatic tracking system investigated

Materials data handbook, Inconel alloy 718

System automatically provides dynamic launch decision criteria

Torque meter aids study of hysteresis motor rings

Dynamic-reservoir lubricating device

Dynamic linearity measurement technique

Dynamics of moving bubbles in single and binary component systems

Analysis of space vehicle structures using the transfer-function concept

Study of high-speed angular-contact ball bearings under dynamic load

Dynamic calibrations of turbine flowmeters

New anemometer has fast response, measures dynamic pressure directly

Apparatus permits flexure testing of specimens at cryogenic temperatures

Pressure responsive seal handles static and dynamic loads

Mechanism continuously measures static and dynamic cable loads

Transducer measures force in vacuum environment

Controlled release device prevents damage from dynamic stresses

Aspirator increases relief valve poppet stroke

Improved control system power unit for large parachutes

Nondestructive testing of brazed rocket engine components
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>EARPHONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-FS-10191 B68-10394 03</td>
<td>N-FS-12084 B67-10524 06</td>
</tr>
<tr>
<td>Fatigue of reinforced concrete beams under dynamic loading</td>
<td>Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles LANGLEY-10093 B67-10531 06</td>
</tr>
<tr>
<td>N-FS-14980</td>
<td>Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts N-FS-13056 B67-10631 06</td>
</tr>
<tr>
<td><strong>DYNAMIC MODELS</strong></td>
<td><strong>EARRPHONES</strong></td>
</tr>
<tr>
<td>Application of distorted models in developing scaled structural models</td>
<td>Comfortable, lightweight safety helmet holds radio transmitter, receiver MSC-53 B64-10015 05</td>
</tr>
<tr>
<td>N-FS-2540 B67-10321 05</td>
<td></td>
</tr>
</tbody>
</table>
Personal communication system combines high performance with miniaturization
HSC-720 B67-10119 01

EARTH (PLANET)

Subject Index

Personal communication system combines high performance with miniaturization
HSC-720 B67-10119 01

Space trajectories program for IBM 7090
NFO-10125 B67-10172 06

Theory of a refined earth model
N-FS-14679 B68-10228 02

Trajectory optimization using regularized variables
HSC-13370 B69-10810 02

Space trajectories
IBM 7090 - NPO-10125 B67-10172 06

Theory of a refined earth model
N-FS-14679 B68-10228

Space trajectories program for IBM 7090 - NPO-10125 B67-10172 06

BARTLETT

EARTHYORES

Earth orbit rendezvous evaluation program
N-FS-13016 B67-10407 06

HICOV - Newton-Raphson calculus of variation with automatic transversalities
N-FS-14464 B68-10232

Earth surface
Theory of a refined earth model
N-FS-14679 B69-10810 02

EARTHQUAKES

Shock-operated valve would automatically protect fluid systems
N-FS-601 B66-10335 03

ECCENTRICITY

Eccentric drive mechanism is adjustable during operation
N-FS-20405 B69-10645 03

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures
NRC-10521 B67-10617 02

A magnifying scratch-gage force transducer
LANGLEY-10496 B69-10212 01

ECCENTRICS

High-temperature, high-pressure spherical segment valve provides quick opening
ARC-13 B63-10431 05

Machine tests crease durability of sheet materials
JPL-604 B68-10178 05

Improved cryogenic refrigerator system
JPL-731 B67-10128 02

ECCHOS

Study of yttrium iron garnet rods reveals new magnetostatic echo mode
ERC-37 B67-10153 01

Thick transducers used for generating short-duration stress pulses in thin specimens
ARG-10232 B66-10045 01

ECOLOGY

Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ra-226 in aquatic fauna
ABS-10345 B69-10258 02

Automatic bird watcher

X-186
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>ELASTIC DEFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training manuals for nondestructive testing using magnetic particles</td>
<td>GSFC-181</td>
</tr>
<tr>
<td>Contamination control handbook</td>
<td>Suppressor plate eliminates undesired arcing during electron beam welding</td>
</tr>
<tr>
<td>Training manual on optical alignment instruments</td>
<td>Special tool kit aids heavily garmented workers</td>
</tr>
<tr>
<td>Handbooks for nondestructive testing using ultrasonics</td>
<td>Chemical regeneration of emitter surface increases thermionic diode life</td>
</tr>
<tr>
<td>Sterilization training manual</td>
<td>Aspirator increases relief valve poppet stroke</td>
</tr>
<tr>
<td>Instruction manuals for liquid penetrant nondestructive testing</td>
<td>Wideband, high efficiency optical modulator requires less than 10 watts drive power</td>
</tr>
<tr>
<td>Handbook for design of containers of fluids and gases for spacecraft</td>
<td>Large volume continuous counterflow dialyzer has high efficiency</td>
</tr>
<tr>
<td>EDUCATIONAL TELEVISION</td>
<td>Computer programs for antenna feed system design and analysis</td>
</tr>
<tr>
<td>Color-television medical microscopy</td>
<td>Full wave dc-to-dc converter using energy storage transformers</td>
</tr>
<tr>
<td>EFFECTIVENESS</td>
<td>A positive taper traveling-wave tube</td>
</tr>
<tr>
<td>Computerized Schedule Effectiveness Technique /SET/ determines present and future schedule position</td>
<td>Fluid sample collection and storage device</td>
</tr>
<tr>
<td>EFFECTS</td>
<td>EIGENVALUES</td>
</tr>
<tr>
<td>Resilient clamp holds fuel cell stack through thermal cycle</td>
<td>Buckling Of Shells Of Revolution /BOSOR/ with various wall constructions</td>
</tr>
<tr>
<td>EFFERVESCENCE</td>
<td>EIGENVECTORS</td>
</tr>
<tr>
<td>Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer</td>
<td>Structure of the isotropic transport operators in three independent space variables</td>
</tr>
<tr>
<td>EFFICIENCY</td>
<td>REJECTION</td>
</tr>
<tr>
<td>Flange on microwave antenna subreflector cuts ground noise</td>
<td>Air sampler collects and protects minute particles</td>
</tr>
<tr>
<td>Electron bombardment improves vacuum chamber efficiency</td>
<td>ELASTIC DEFORMATION</td>
</tr>
<tr>
<td>Lewis-160</td>
<td></td>
</tr>
<tr>
<td>Regenerative fuel cell combines high efficiency with low cost</td>
<td></td>
</tr>
<tr>
<td>WGO-090</td>
<td></td>
</tr>
<tr>
<td>Centrifugal device separates liquid from gas</td>
<td></td>
</tr>
<tr>
<td>MSC-262</td>
<td></td>
</tr>
<tr>
<td>Complementary system vaporizes subcooled liquid, improves transformer efficiency</td>
<td></td>
</tr>
<tr>
<td>B66-10045</td>
<td></td>
</tr>
<tr>
<td>Modified power tool rapidly drives series torque bolts</td>
<td></td>
</tr>
<tr>
<td>MSC-221</td>
<td></td>
</tr>
<tr>
<td>Instrument quickly transposes ground reference to eye level</td>
<td></td>
</tr>
<tr>
<td>B66-10054</td>
<td></td>
</tr>
<tr>
<td>Fortran program flow chart is automatically produced</td>
<td></td>
</tr>
<tr>
<td>B66-10061</td>
<td></td>
</tr>
<tr>
<td>Modified soldering iron speeds cutting of synthetic materials</td>
<td></td>
</tr>
<tr>
<td>B66-10246</td>
<td></td>
</tr>
<tr>
<td>Vibrator improves spark erosion cutting process</td>
<td></td>
</tr>
<tr>
<td>B66-1007</td>
<td></td>
</tr>
<tr>
<td>Brushless dc motor has high efficiency, long life</td>
<td></td>
</tr>
</tbody>
</table>
ELASTIC PROPERTIES

Computer program for determination of natural frequencies of closed spherical sandwich shells MSC-1246 B67-10279 06

Two-functional seal for hose connection H-FS-14062 B69-10588 05

**ELASTIC PROPERTIES**

Pressure transducer 3/8-inch in size can be faired into surface WOC-0065 B64-10621 05

Valve designed with elastic seat JPL-462 B65-10040 05

Metal tube can be folded for compact storage, is self-erecting LEWIS-288 B66-10450 05

Tungsten fiber-reinforced copper composites form high strength electrical conductors LEWIS-338 B66-10572 03

Lateral ring metal elastic wheel absorbs shock loading M-FS-1312 B66-10663 05

Improved computer program for elastic analysis of highly redundant structural configurations M-FS-13087 B67-10330 06

Vibration testing and dynamic studies of relays M-FS-14542 B68-10268 01

Conceptual hermetically sealed elbow actuator M-FS-14710 B68-10300 05

Torsion system for creep testing with multiple stress reversals JPL-10039 B69-10147 03

Optimum structural design based on reliability and proof-load testing NFO-11228 B69-10723 31

**ELASTIC SCATTERING**

Computer program ETC improves computation of elastic transfer matrices of Legendre polynomials P/0/ and P/1/ NUC-10070 B67-10566 06

Computer program /PI-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas NUC-10144 B67-10678 06

**GAGEIT program** NWC-10243 B69-10433 06

**ELASTIC SHEETS**

Impact and puncture resistant material protects parts from damage MSC-747 B66-10375 05

Thin plastic sheet eliminates need for expensive plating M-FS-1086 B66-10681 03

**ELASTIC SYSTEMS**

Rigid-body motion extracted from total notion of a flexible body ARC-63 B67-10081 05

**ELASTIC WAVES**

Unmanned seismometer levels self, corrects drift errors GSFC-100 B63-10551 01

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers NUC-10024 B67-10664 05

**SUBJECT INDEX**

ELASTODYNAMICS

Tester for study of rolling element bearings LEWIS-305 B67-10009 01

High-temperature bearing lubricants LEWIS-10408 B68-10249 05

Study of high-speed angular-contact ball bearings under dynamic load M-FS-20562 B69-10367 05

ELASTOMERS

Chain friction system gives positive, reversible drive ARC-6 B63-10009 05

Elastic orifice automatically regulates gas bearings JPL-135 B63-10123 05

Plastic molds reduce cost of encapsulating electric cable connectors M-FS-69 B63-10568 05

Molded elastomer provides compact ferrite-core holder, simplifies assembly JPL-164 B64-10084 05

Elastomers bonded to metal surfaces seal electrochemical cells GSFC-168 B64-10113 03

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures MSC-118 B64-10319 03

Flexible curtain shields equipment from intense heat fluxes M-FS-48 B65-10044 03

Compact assembly generates plastic foam, inflates flotation bag LANGLEY-96 B65-10090 05

Shock mount isolates pressure transducers from vibration JPL-631 B65-10113 05

Testing device subjects elastic materials to biaxial deformations JPL-616 B65-10189 03

Silazane polymers show promise for high-temperature application M-FS-466 B66-10194 03

Extensometer automatically measures elongation in elastomers M-FS-517 B66-10284 05

Large diameter metal ring seal prevents gas leakage at 5000 psi M-FS-1064 B66-10422 05

Silazane elastomer remains resilient at 800 deg C M-FS-1164 B66-10667 05

Self-sealing closure enables access to several fluid containers NFO-10123 B67-10207 04

Compressible sleeve provides automatic centering for grinding or turning of cylinders SAM-10021 B68-10318 05

Simple switch actuated by force applied over wide solid angle XNP-09808 B69-10032 01

Flared-tube fittings with replaceable seat inserts NWC-15372 B69-10519 05

Development of improved potting and conformal coating compounds M-FS-20215 B69-10559 03
SUBJECT INDEX

Silphenylene elastomers have high thermal stability and tensile strength
M-FS-20250 B69-10580 03

Glass fabric fire barrier for silicone rubber parts
MSC-15555 B69-10629 03

Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol
M-FS-14926 B69-10636 03

ELECTRIC ARCS

Electropneumatic rheostat regulates high current
ARC-44 B65-10299 01

Ring counter circuit switches multiphase motor direction of rotation
JPL-SC-166 B66-10101 01

Electric arc heater is self starting
LANGLEY-208 B66-10230 03

Magnetically operated limit switch has improved reliability, minimizes arcing
MSC-422 B66-10270 01

Suppressor plate eliminates undesired arcing during electron beam welding
M-FS-1126 B66-10357 05

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum
ARS-109 B66-10499 02

Control apparatus for spectral energy source
LEWIS-391 B67-10404 01

Technique eliminates high voltage arcing at electrode-insulator contact area
LEWIS-10133 B67-10470 01

Design concept for nonarcing electrical connector
M-FS-14937 B69-10404 01

Testing the flammability of materials exposed to arcs
MSC-15225 B69-10531 03

ELECTRIC BATTERIES

Pressure sensor responds only to shock wave
M-FS-238 B65-10184 01

Electronic ampere-hour integrator is accurate to one percent
GSFC-203 B65-10308 01

New energy storage concept uses tapes
LEWIS-239 B69-10098 02

Modular Porous Plate Sublimator /MPS/ requires only water supply for coolant
M-FS-1374 B66-10409 01

Circuit prevents overcharging of secondary cell batteries
GSFC-454 B66-10492 01

Thermocouples electrically checked while connected to data system
LANGLEY-182 B66-10623 01

Low input voltage converter/regulator minimizes external disturbances
GSFC-527 B66-10689 01

Converter provides constant electrical power at various output voltages
GSFC-519 B67-10481 01

Improved calorimeter provides accurate thermal measurements of space batteries
GSFC-1000a B67-10615 01

Zinc-oxygen primary cell yields high energy density

ELECTRIC BRIDGES

Recharge unit provides for optimum recharging of battery cells
GSFC-10688 B68-10226 01

Superconductive thin film makes convenient liquid helium level sensor
LANGLEY-10289 B68-10341 01

Battery-package design provides for cell cooling and constraint
MSC-11839 B68-10398 05

Remotely-actuated biomedical switch
ARC-10105 B69-10117 01

High-energy, high-power, long-life battery
LEWIS-10724 B69-10131 01

Preparation of high purity copper fluoride by fluorinating copper hydroxyfluoride
LEWIS-10754 B69-10136 03

Cobalt improves nickel hydroxide electrodes for batteries
LEWIS-10760 B69-10228 01

Tracer of electrical conduit or pipes
MSC-15223 B69-10347 01

Ioseene membrane battery separator
NFO-11091 B69-10501 03

Load current sensor for a pulse width modulator power regulator
GSFC-10656 B69-10578 01

Flexible high-voltage supply for experimental electron microscope
ARS-10482 B69-10603 01

Pocket-sized tone-modulated FM transmitter
NFO-11180 B69-10725 01

A simple electrometer for measuring small photoelectric currents
GSFC-10603 B69-10734 01

ELECTRIC BRIDGES

Simple circuit provides adjustable voltage with linear temperature variation
JPL-WOO-029 B63-10537 01

Electronic modules easily separated from heat sink
MSC-142 B65-10186 02

Thermocouple-to-instrumentation connector features quick assembly
HS-0022 B65-10246 05

Coaxial capacitor used to determine fluid density
LEWIS-232 B65-10296 02

Ferroelectric bolometer measures RP absolute power at submillimeter wavelengths
GSFC-422 B66-10051 01

Strain gage network distinguishes between thermal and mechanical deformations
GSFC-478 B66-10280 01

Inductive system detects level of conducting fluids
LEWIS-322 B66-10392 01

Minimum permissible leakage resistance established for instrumentation systems
M-FS-848 B66-10397 01

High voltage potential divider calibrated by simple device
ARS-83 B66-10497 01

Magnetoresistor monitors relay performance
M-FS-1754 B66-10650 01

I-189
Blackbody cavity radiometer has rapid response  E66-10679  01
Double emitter suppressed carrier modulator uses commercially available components  E67-10101  01
Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions  E67-10294  01
Ultrasensitive manometer-tipped cardiac catheter  E67-10054  01
Precision bolometer bridge  B66-10156  01
Ratio matching of half-bridge weldable strain gages, computer program  B69-10040  06
Explosing bridgewire detonator simulator  E69-10782  01

Efficient circuit triggers high-current, high-voltage pulses  B64-10024  01
Large capacitor performs as a distributed parameter pulse line  B66-10291  01
Hermetically sealed cells protected from internal gas pressure  B66-10692  01
Recharge unit provides for optimum charging of battery cells  B66-10273  01
Charge control of nickel-cadmium batteries by coilometer and third electrode method  B68-10431  01
Gage measures total radiation, including vacuum UV, from ionized high-temperature gases  B69-10028  02
Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid  B69-10227  05
Cobalt improves nickel hydroxide electrodes for batteries  B69-10228  01
Improved anode design for metal-oxygen cells  B69-10318  01
Battery charge-discharge controller  B69-10747  01

Improved chopper circuit uses parallel transistors  B66-10113  01
Blackbody cavity radiometer has rapid response  B66-10679  01
Double emitter suppressed carrier modulator uses commercially available components  E67-10101  01
Modified univibrator compensates for output timing errors  B67-10130  01
Improved television signal processing system  B67-10246  01

Vibrator elapsed time is automatically controlled  B67-10284  01
Thermonuclear diode switching has high temperature application  B67-10672  01
Improved relay optical element for spectroradiometer using cryogenically cooled detector  B68-10245  02
High-efficiency step-up regulator  B68-10432  01

Device measures fluid drag on test vehicles  B65-10195  01
Improved tool easily removes brazed tube connectors  B66-10003  05
Noncontacting transducer measures shaft torque  B66-10048  01
Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths  B66-10051  01
Hydrogen-atmosphere induction furnace has increased temperature range  B66-10055  05
Auxiliary coil controls temperature of RF induction heater  B66-10067  01
Thermal motor positions magnetometer sensors  B66-10078  05
Soldering tool heats workpieces and applies solder in one operation  B66-10115  05
Gas-injection valve operates at high speed  B66-10381  05
Inductive system detects level of conducting fluids  B66-10392  01
RF inductor has high Q, is stable at higher temperatures  B67-10106  01
High-energy-rate magnetohydraulic metal forming system  B67-10126  02
Solenoid valve design has one moving part  B67-10219  05
Low speed, long term tracking electric drive system has zero backlash  B67-10220  01
An improved nuclear magnetic resonance spectrometer  B67-10234  01
System precisely controls oscillation of vibrating mass  B67-10276  01
Electron beam deflected to determine focal point location  B67-10649  01
Nonreciprocal gain control for ring laser  B67-10653  02

Removable preheater elements improve oxide induction furnace  B63-10193  01
Cooling method prolongs life of hot-wire
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>ELECTRIC CONNECTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>transducer LEWIS-41</td>
<td>B63-10344 02</td>
</tr>
<tr>
<td>Metals plated on fluorocarbon polymers JPL-544</td>
<td>B63-10612 03</td>
</tr>
<tr>
<td>Improved electrode gives high-quality biological recordings B64-10025 04</td>
<td></td>
</tr>
<tr>
<td>Mounting for diodes provides efficient heat sink M-FS-197</td>
<td>B64-10283 01</td>
</tr>
<tr>
<td>Coating method enables low-temperature brazing of stainless steel N-0030</td>
<td>B65-10250 03</td>
</tr>
<tr>
<td>Direct force-measuring transducer used in blood pressure research ARC-53</td>
<td>B65-10325 01</td>
</tr>
<tr>
<td>Vacuum chamber provides improved insulation and support for cryostat M-FS-815</td>
<td>B65-10368 02</td>
</tr>
<tr>
<td>Three-dimensional wire-mesh capacitor system measures fluid density WOO-194</td>
<td>B65-10379 01</td>
</tr>
<tr>
<td>Special tool seals conductors with combination of plastic sleeves M-FS-579</td>
<td>B66-10209 05</td>
</tr>
<tr>
<td>Electrically conductive fibers thermally isolate temperature sensor GSFC-856</td>
<td>B66-10349 01</td>
</tr>
<tr>
<td>Electrical cabling withstands severe environmental conditions M-FS-1085</td>
<td>B66-10827 01</td>
</tr>
<tr>
<td>Tungsten fiber-reinforced copper composites form high strength electrical conductors LEWIS-338</td>
<td>B66-10572 03</td>
</tr>
<tr>
<td>Logic circuitry used to automatically test shielded cables NO-60</td>
<td>B66-10659 01</td>
</tr>
<tr>
<td>Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables NO-0083</td>
<td>B66-10704 05</td>
</tr>
<tr>
<td>Substituting gold for silver improves electrical connections M-FS-2390</td>
<td>B67-10228 03</td>
</tr>
<tr>
<td>Tester automatically checks insulation of individual conductors in multiple-strand cables NUC-10668</td>
<td>B67-10260 01</td>
</tr>
<tr>
<td>Precision capacitor has improved temperature and operational stability ARG-109</td>
<td>B67-10313 01</td>
</tr>
<tr>
<td>Protected, high-temperature connecting cable LEWIS-10499</td>
<td>B67-10461 01</td>
</tr>
<tr>
<td>Composite solar cell matrix is reliable, lightweight and flexible MF-10821</td>
<td>B67-10503 01</td>
</tr>
<tr>
<td>Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area NUC-10007</td>
<td>B67-10538 01</td>
</tr>
<tr>
<td>Areas of irregular, discontinuous patterns rapidly and accurately measured GSFC-10184</td>
<td>B67-10678 01</td>
</tr>
<tr>
<td>Multichannel wireway adapter box MSC-90645</td>
<td>B68-10052 05</td>
</tr>
<tr>
<td>Inspection criteria ensure quality control of parallel gap soldering M-FS-18530</td>
<td>B68-10257 05</td>
</tr>
<tr>
<td>Moebius resistor is noninductive and nonreactive SAR-10020</td>
<td>B68-10267 01</td>
</tr>
<tr>
<td>Concept to convert electrical power GSFC-10222</td>
<td>B68-10321 01</td>
</tr>
<tr>
<td>Rating of electrical wires in vacuum environments MSC-15008</td>
<td>B68-10362 01</td>
</tr>
<tr>
<td>Contact-spring forming machine for flat conductor cable receptacles M-FS-20126</td>
<td>B68-10550 05</td>
</tr>
<tr>
<td>Simple switch actuated by force applied over wide solid angle IMP-09608</td>
<td>B69-10032 01</td>
</tr>
<tr>
<td>Corrosion protection of aluminum alloys in contact with other metals M-FS-10526</td>
<td>B69-10098 03</td>
</tr>
<tr>
<td>ELECTRIC CONNECTORS Modular chassis simplifies packaging and interconnecting of circuit boards JPL-236B</td>
<td>B63-10174 01</td>
</tr>
<tr>
<td>Connector for thermocouple leads saves costly wire, makes reliable connectors LANGLEY-26</td>
<td>B63-10529 01</td>
</tr>
<tr>
<td>Plastic molds reduce cost of encapsulating an electric cable connectors M-FS-69</td>
<td>B63-10568 05</td>
</tr>
<tr>
<td>Circuit reliability boosted by soldering pins of disconnect plugs to sockets JPL-447</td>
<td>B64-10002 01</td>
</tr>
<tr>
<td>Contactor tester screens out faulty socket connections JPL-596</td>
<td>B64-10065 01</td>
</tr>
<tr>
<td>Improved technique for localizing electropolishing features novel nozzles WOO-101</td>
<td>B64-10271 01</td>
</tr>
<tr>
<td>Photoelectric semiconductor switch operates with low level inputs JPL-SC-066</td>
<td>B65-10033 01</td>
</tr>
<tr>
<td>Piezoresistive gage tests pin-connector sockets JPL-675</td>
<td>B65-10128 01</td>
</tr>
<tr>
<td>Inexpensive electrical connector is moisture and corrosion-proof MSC-164</td>
<td>B65-10196 01</td>
</tr>
<tr>
<td>Electrical cable connector-clamp has smooth exterior surface MSC-154</td>
<td>B65-10201 05</td>
</tr>
<tr>
<td>Indexing device ensures proper mating of electrical connectors MSC-155</td>
<td>B65-10263 01</td>
</tr>
<tr>
<td>Feed-through connector withstands high temperatures in vacuum environment GSFC-842</td>
<td>B65-10326 01</td>
</tr>
<tr>
<td>Floating device aligns blind connections MSC-256</td>
<td>B66-10008 05</td>
</tr>
<tr>
<td>Single connector provides safety fuses for multiple lines MSC-199</td>
<td>B66-10050 01</td>
</tr>
<tr>
<td>High-pressure, low temperature electrical connector makes no-leak seal MSC-276</td>
<td>B66-10079 02</td>
</tr>
<tr>
<td>Soldering tool heats workpieces and applies solder in one operation</td>
<td></td>
</tr>
</tbody>
</table>
Bismuth alloy potting seals aluminum connector in cryogenic application

Device without electrical connections in tank measures liquid level

Special tool seals conductors with combination of plastic sleeves

Rugged microelectronic module package supports circuitry on heat sink

Polarizing keys prevent mismatch of connector plugs and receptacles

Exclusive-or logic circuit has useful properties

Device serves as hinge and electrical connector for circuit boards

Junction connectors permit strategic placement of television cameras

Flag-in connector socket accepts coaxial cable end

Optical monitor panel provides flexible test panel configurations

Process reduces secondary resonant emission in electronic components

Thermocouple-flexible cable connector insulator is highly reliable

Edge-type connectors evaluated by electrical noise measurement

Cracks in glass electrical connector headers removed by dry blasting with fine abrasive

Composite solar cell matrix is reliable, lightweight and flexible

Connector shorting cap provides pin alignment, inspection, and stray voltage protection

Inspection criteria ensure quality control of parallel gap soldering

Design concept for nonarcing electrical connector

Coaxial cable stripper for confined areas

Simple switch actuated by force applied over wide solid angle

Concept for a multifunctional oscilloscope probe

Adjustable wrench for electronic connectors

An improved method for electrical cable terminations

Modular packaging technique for combining integrated circuits and discrete components

Breakaway electrical connector

Cover protects critical electrical connectors against damage during handling

An electrical connector pin protector

Stepping switch with simple actuator provides many contacts in small space

Improved molybdenum disulfide-silver motor brushes have extended life

Contact stresses calculated for miniature slip rings

Electrical probe ensures reliable contact in socket

Lightweight coaxial cable connector reduces signal loss

Lamp automatically switches to new filament on burnout

New energy storage concept uses tapes

Integral skin electrode for electrocardiography is expendable

Diffusion technique stabilizes resistor values

Solar cell submodule design facilitates assembly of lightweight arrays

Brushless dc motor has high efficiency, long life

Junction connectors permit strategic placement of television cameras

Solid state detectors monitor relay contacts

System for etching thick aluminum layers minimizes bridging and undercutting

Plug-in connector socket accepts coaxial cable end

Device accurately measures and records low gas-flow rates

Gage accurately controls force for placing chips on substrates

Variable reluctance switch avoids contact corrosion and contact bounce

Subject Index
Thin film process forms effective electrical contacts on semiconductor crystals
M-PS-2343 B67-10142 01

Hybrid solid state switch replaces motor-driven power switch
JPL-931 B67-10165 01

Environmental study of miniature slip rings
M-PS-2443 B67-10210 05

Continuous wave detector has wide frequency range.
M-PS-1849 B67-10256 01

Technique eliminates high voltage arcing at electrode-insulator contact area
LEWIS-10133 B67-10470 01

Capacitance-coupled wiper increases potentiometer life
ABC-10060 B67-10175 01

Vibration testing and dynamic studies of relays
M-PS-14542 B67-10268 01

System measures arc energy dissipated in relay contact cycling
M-PS-14541 B67-10312 01

Contact-spring forming machine for flat conductor cable receptacles
M-PS-20126 B67-10550 05

Gage provides audible signal to facilitate checkout of connector pins
ESC-10335 B67-10173 01

Masking of aluminum surface against anodizing
M-PS-12964 B67-10335 05

Temperature-controlled resistor
MFO-10713 B67-10440 01

An electrical connector pin protector
MSC-15660 B67-10742 01

**ELECTRICAL CONTROL**

Binary counter accumulates time by complementary preset
MSC-242 B65-10399 01

Thermal motor positions magnetometer sensors
ABC-51 B66-10078 05

Electrically controlled optical latch and switch requires less current
JPL-SC-111 B66-10414 01

Nonreciprocal gain control for ring laser
M-PS-14041 B67-10653 02

Low-cost, fast-response drive circuit for electromagnetic torque motors
LEWIS-10143 B67-10386 01

**ELECTRIC CURRENT**

Sensitive electrometer features digital output
GSFC-288 B65-10206 01

Detector circuit compensates for vidicon beam current variations
GSFC-310 B65-10212 01

Multiaxial analyzer detects low-energy electrons
GSFC-329 B65-10213 01

Electrical probe ensures reliable contact in socket
M-PS-315 B67-10215 01

One-shot valve may be remotely actuated
NO-195 B67-10266 05

Circuit exhibits power efficiency greater than 75 percent
MSC-254 B66-10038 01

Lamp automatically switches to new filament on burnout
M-PS-498 B66-10046 01

Single connector provides safety fuses for multiple lines
MSC-199 B66-10050 01

Calculations enable optimum design of magnetic brake
LEWIS-251 B66-10073 05

Fingertip current control facilitates use of arc welding gun
MSC-289 B66-10092 05

Ring counter circuit switches multiphase motor direction of rotation
JPL-SC-166 B66-10101 01

Low-power ring counter drives high-level loads
GSFC-431 B66-10106 01

Safety switch permits emergency bridge crane shutdown
M-PS-549 B67-10168 05

Apparatus presents visual display of semiconductor surface characteristics
JPL-665 B66-10200 01

Magnetically operated limit switch has improved reliability, minimizes arcing
MSC-422 B66-10270 01

Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
MSC-781 B66-10429 01

Triphase spark gap actuates overvoltage relay
ABC-68 B66-10557 01

Electronic circuit provides accurate sensing and control of dc voltage
MO-0089 B66-10591 01

Low input voltage converter/regulator minimizes external disturbances
GSFC-527 B66-10689 01

Equivalent circuit for a field effect transistor established for computer simulation
M-PS-1752 B66-10690 01

Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 amperes to 10 to the minus 3 amperes
MO-0087 B66-10706 01

Resistance heating releases structural...
ELECTRIC DISCHARGES

adhesive
N-FS-1607 B67-10045 05

Clamp provides efficient connection for high-density currents
N-FS-2417 B67-10140 01

Solenoid valve design has one moving part
NPO-1039 B67-10219 05

Primary cell uses neither liquid nor fused electrolytes
WP-10001 B67-10275 01

Circuit provides overcurrent protection to push-pull amplifier
MSC-12033 B67-10300 01

Transistor biased amplifier minimizes diode discriminator threshold attenuation
ABC-163 B67-10311 01

Electronic test instrument generates extremely small current signals
ARG-276 B67-10318 01

General purpose computer program for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions
N-FS-13094 E67-10331 06

Braze joint quality tested electromagnetically
N-FS-12795 B67-10333 01

Field effect transistors improve buffer amplifier
M-FS-916 B67-10334 01

Digital-to-analog converter operates from low level inputs
JPL-907 B67-10357 01

Design for high-temperature /1800 deg F/ liquid metal pressure transducer
LEWIS-10144 B67-10458 01

Copper and nickel adherently electroplated on titanium alloy
N-FS-13952 B67-10532 03

Low cost SCR lamp driver indicates contents of digital computer registers
GSFC-10221 B67-10656 01

Lightweight heater generates high temperatures from low current
SAN-10004 B68-10223 01

Welder analyzer
MSC-12068 B68-10242 01

Recharge unit provides for optimum recharging of battery cells
GSFC-10688 B68-10273 01

Fluidic-thermochromic display device
KRC-10031 B68-10350 01

Nondestructive test determines overload destruction characteristics of current limiter fuses
LGS-08566 B68-10364 01

Method for reducing snap in magnetic amplifiers
LEWIS-10388 B68-10388 01

CIRCUIT--A digital computer program for transient analysis of electronic circuits
N-FS-15002 B68-10416 06

Locating **sneak paths** in electrical circuitry
N-FS-15018 B68-10565 01

Bootstrap unloader
XNP-05766 B69-10120 01

Integrated circuit with multiple collector current source
N-FS-20177 B69-10126 01

Technical report on galvanic cells with fused-salt electrolytes
ARG-10297 B69-10405 01

Magnetohydrodynamic generators using two-phase liquid-metal flows
ARG-10169 B69-10406 01

Nondestructive evaluation of printed wiring boards by microresistance measurements
SAN-10034 B69-10427 01

Preparation of superconducting thin films of transition-metal interstitial compounds
BZ-10445 B69-10470 01

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte
ARG-10453 B69-10627 03

Self-discharge in bimetallic cells containing alkali metal
ARG-10347 B69-10631 01

Battery charge-discharge controller
MSC-11836 B69-10747 01

Influent black body is compact, convenient to use
ARC-3 B69-10004 03

Regenerative fuel cell combines high efficiency with low cost
WGO-090 B65-10363 01

Cold cathode ionization gage has rigid metal housing
GSFC-445 B66-10041 01

Hollow needle used to cut metal honeycomb structures
MSC-486 B66-10244 05

Large capacitor performs as a distributed parameter pulse line
LEWIS-176 B66-10291 01

Thermocouples easily installed in hard-to-get-to places
N-FS-1946 B66-10653 01

High-energy-rate magnetohydraulic metal forming system
N-FS-2142 B67-10126 02

Test instrumentation evaluates electrostatic hazards in fluid system
N-FS-2277 B67-10145 01

Traveling wire electrode increases productivity of Electrical Discharge Machining /EDM/ equipment
ARG-136 B67-10238 05

Standard surface grinder for precision machining of thin-wall tubing
ARG-1004 B67-10400 05

Silicon oxide films grown in microwave discharge
N-FS-14634 B68-10171 01

Miniature pressure transducer for stressed member application
MSC-11869 B68-10246 01

Recharge unit provides for optimum recharging of battery cells
GSFC-10688 B68-10273 01

High-voltage pulse generator developed for wide-gap spark chambers
ARG-10136 B68-10283 01

SUBJECT INDEX

INDEX TO SUBJECTS

I-194
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method for removing surface-damaged layers</strong></td>
</tr>
<tr>
<td>from nickel alloys</td>
</tr>
<tr>
<td><strong>Simple quasi-exponential slope generator</strong></td>
</tr>
<tr>
<td>IFG-11130</td>
</tr>
<tr>
<td><strong>Self-discharge in bimetallic cells containing alkali metal</strong></td>
</tr>
<tr>
<td>AST-10347</td>
</tr>
<tr>
<td><strong>Battery charge-discharge controller</strong></td>
</tr>
<tr>
<td>MSC-11036</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td><strong>ELECTRIC ENERGY STORAGE</strong></td>
</tr>
<tr>
<td>Regenerative fuel cell combines high efficiency with low cost</td>
</tr>
<tr>
<td>New energy storage concept uses tapes</td>
</tr>
<tr>
<td>Storage of electric and magnetic energy in passive nonreciprocal networks</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td><strong>ELECTRIC EQUIPMENT TESTS</strong></td>
</tr>
<tr>
<td>Tester periodically registers dc amplifier characteristics</td>
</tr>
<tr>
<td>Apparatus presents visual display of semiconductor surface characteristics</td>
</tr>
<tr>
<td>Tester automatically checks insulation of individual conductors in multiple-strand cables</td>
</tr>
<tr>
<td>Tester automatically checks paper tape punch and reader after maintenance</td>
</tr>
<tr>
<td>Dc pin-to-pin testing of integrated circuits</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td><strong>ELECTRIC FIELDS</strong></td>
</tr>
<tr>
<td>Rod and dish cathode improves penning-type vacuum gage</td>
</tr>
<tr>
<td>Spherical ion source</td>
</tr>
<tr>
<td>Synchronous charge-constrained electroparamanistic generator</td>
</tr>
<tr>
<td>Production of crystalline polymers via liquid crystal monomers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ELECTRIC GENERATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELECTRIC FILTERS</strong></td>
</tr>
<tr>
<td>High-speed square-wave current limiter operates efficiently</td>
</tr>
<tr>
<td>Circuit operates as sine function generator</td>
</tr>
<tr>
<td>Improved relay optical element for spectroradiometer using cryogenically cooled detector</td>
</tr>
<tr>
<td>Active rc filter permits easy trade-off of amplifier gain and sensitivity to gain</td>
</tr>
<tr>
<td>Improved phase-shift-keyed detector</td>
</tr>
<tr>
<td>Full wave dc-to-dc converter using energy storage transformers</td>
</tr>
<tr>
<td>PCM bit detection with correction for intersymbol interference</td>
</tr>
<tr>
<td><strong>ELECTRIC FUSES</strong></td>
</tr>
<tr>
<td>One-shot valve may be remotely actuated</td>
</tr>
<tr>
<td>Single connector provides safety fuses for multiple lines</td>
</tr>
<tr>
<td>Solid-state recoverable fuse functions as circuit breaker</td>
</tr>
<tr>
<td>Fused diode provides visual indication of fuse condition</td>
</tr>
<tr>
<td>Eutectic fuse provides current and thermal protection under high vibration</td>
</tr>
<tr>
<td>Nondestructive test determines overload destruction characteristics of current limiters</td>
</tr>
<tr>
<td><strong>ELECTRIC GENERATORS</strong></td>
</tr>
<tr>
<td>Electropneumatic rheostat regulates high current</td>
</tr>
<tr>
<td>Threshold detector produces narrow pulses at high repetition rates</td>
</tr>
<tr>
<td>Thermionic scanner pinpoints work function of emitter surfaces</td>
</tr>
<tr>
<td>A design procedure for the weight optimization of straight finned radiators</td>
</tr>
<tr>
<td>Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 amperes to 10 to the minus 3 amperes</td>
</tr>
<tr>
<td>High power dc/dc and dc/ac electrical power conversion techniques developed</td>
</tr>
<tr>
<td>Potassium plasma cell facilitates thermionic energy conversion process</td>
</tr>
<tr>
<td>Design for high-temperature /1000 deg F/ liquid metal pressure transducer</td>
</tr>
<tr>
<td>Electronic load for testing power</td>
</tr>
</tbody>
</table>
ELECTRIC IGNITION

- Generating devices
  NPS-10350

- High temperature alloy
  LEWIS-10377

- Feasibility study of wireless power transmission systems
  NPS-14091

- Concept to convert electrical power
  GSFC-10222

- Full wave dc-to-dc converter using energy storage transformers
  LEWIS-10375

- Channel wall limitations in the magnetohydrodynamic induction generator
  ARC-10128

- Electrothermal linear actuator
  NPS-10637

- An unconventional magnetically-coupled multivibrator
  BQ-10226

ELECTRIC IGNITION

- Quick-closing valve is actuated by explosive discharge
  ARC-155

ELECTRIC MOTORS

- Metal strip forms 21 foot boom, rolls up for compact storage
  GSFC-151

- Compact cartridge drives coded tape at constant readout speed
  JPL-672

- Stepping motor drive circuit designed for low power drive
  GSFC-198

- Multiple test tubes stirred mechanically
  ARC-42

- Rotor position sensor switches currents in brushless dc motors
  GSFC-315

- Magnetic-shift-register circuit controls step motor operation
  GSFC-340

- Brushless dc motor uses electron beam switching tube as commutator
  GSFC-345

- Respiratory transfer value has fail-safe feature
  ARC-1

- Ring counter circuit switches multiphase motor direction of rotation
  JPL-SC-166

- Electropneumatic transducer automatically limits motor current
  LEWIS-253

- Electronic phase-locked-loop speed control system is stable
  JPL-SC-248

- Compact actuator converts rotary to linear motion
  JPL-786

- Brushless dc motor has high efficiency, long life
  GSFC-181

Gears drive automatically indexes rotary table
NPS-10383

Interior servicing platform simplifies maintenance of storage tanks
NPS-1300

Flexible drive allows blind machining and welding in hard-to-reach areas
MSC-524

Solid state circuit controls direction, speed, and braking of dc motor
JPL-757

Hybrid solid state switch replaces motor-driven power switch
JPL-931

Automated microsyringe is highly accurate and reliable
NPS-10142

Variable-speed, portable routing skate
NPS-13772

Development of laser drill to take core samples to 100-foot depths
NPS-13015

Improved control system power unit for large parachutes
MSC-10302

Hermetically sealed pump
LEWIS-10375

Transistor circuit increases range of logarithmic current amplifier
NU-10018

New computer program solves wide variety of heat flow problems
NPS-10015

Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 ampere to 10 to the minus 3 ampere
NUC-10077

Solid state circuit averages multiple signals and rejects those varying significantly from the average
NUC-10066

Oscilloscope used as X-Y plotter or two-dimensional analyzer
LEWIS-311

Transient Analysis Generator (TAG) simulates behavior of large class of electrical networks
NPS-10331

Logic realization of simple majority voting connectives
JPL-727

Automatic transducer switching provides accurate wide range measurement of pressure differential
NUC-10001

Ultrananometer tipped cardiac catheter
ARC-10054

Active RC networks of low sensitivity for integrated circuit transfer function
ARC-10146

Performance analysis of electrical circuits
JPL-5001

Active RC filter permits easy trade-off of amplifier gain and sensitivity to gain
NPS-10401

I-196
SUBJECT INDEX

ARC-10042 B68-10539 01
Locating "sneak paths" in electrical circuitry M-FS-15018 B68-10565 01
Storage of electric and magnetic energy in passive nonreciprocal networks ARC-10360 B69-10630 01

ELECTRIC CIRCUIT

Continuity tester screens out faulty socket connections JPL-596 B64-10065 01
Piezoresistive gage tests pin-connector sockets MSC-20 B63-10493 01
Electrical probe ensures reliable contact in socket M-FS-315 B65-10215 01
Keyed plugs and sockets prevent improper connections MSC-443 B66-10251 01
High-torque power wrench, a concept M-FS-18194 B68-10299 05

ELECTRIC POTENTIAL

Igniting system for mercury lamp protects transistorized sustaining supply JPL-421 B63-10262 01
Two-stage emitter follower is temperature-stabilized MSC-20 B63-10493 01
Simple circuit provides adjustable voltage with linear temperature variation JPL-WO0-029 B63-10537 01
Transistorized trigger circuit is frequency-controllable GSFC-111 B63-10553 01
Simple circuit continuously monitors thermocouple sensor M-FS-61 B63-10567 01
Liquid switch is remotely operated by low dc voltage GSFC-119 B63-10599 01
Circuit controls transients in SCR inverters GSFC-120 B63-10600 01
Nonrepetitve circuit with tunnel diode has fast recovery GSFC-132 B63-10603 01
Temperature-sensitive network drives stable multivibrator GSFC-137 B63-10609 01
Low-power transistorized circuit provides staircase waveforms GSFC-48 B64-10007 01
Digital logic elements provide additional functions from analog input MSC-64 B64-10064 01
Auxiliary silver electrode eliminates two-step voltage discharge characteristic of silver-zinc cells GSFC-169 B64-10114 01
Field effect transistors used as voltage controlled resistors M-FS-174 B64-10163 01
Temperature-compensation circuit stabilizes performance of vidicon ARC-38 B65-10056 01

Dc to ac converter operates efficiently at low input voltages GSFC-130 B65-10143 01
Voltage controlled oscillator is easily aligned, has low phase noise JPL-510 B65-10277 01
Nonlinear feedback reduces analog-to-digital converter error ARC-46 B65-10277 01
Photoresistance analog multiplier has wide range GSFC-360 B65-10287 01
Dual-voltage power supply has increased efficiency
LEWIS-107A B66-10002 01

System proportions fluid-flow in response to demand signals
GSFC-457 B66-10094 01

Testers periodically registers dc amplifier characteristics
MSC-190 B66-10148 01

Simple, nondestructive test identifies metals
MSC-525 B66-10305 03

Phase inverter provides variable reference push-pull output
NO-23 B66-10344 01

Transistor circuit increases range of logarithmic current amplifier
NO-0018 B66-10350 01

Standard arc welders provide highasperge direct current source
LANGLEY-267 B66-10441 01

Semiconductors can be tested without removing them from circuitry
M-PS-1163 B66-10447 01

High voltage potential divider calibrated by simple device
ARG-83 B66-10497 01

Electronic circuit delivers pulse of high internal stability
MSC-673 B66-10501 01

Computer programs calculate potential and charge distributions in a plasma
M-PS-871 B66-10553 01

Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MSC-989 B66-10619 01

Test instrumentation evaluates electrostatic hazards in fluid system
M-PS-2277 B66-10641 01

Iron serves as diffusion barrier in thermally regenerative galvanic cell
ARG-29 B67-10189 03

Electroositive series established for metals used in aerospace technology
N-PS-18327 B66-10385 03

Charge control of nickel-cadmium batteries by coulometer and third electrode method
GSFC-10487 B66-10431 01

Method for measuring alternator voltage transients
LEWIS-10373 B66-10513 01

Performance of low-pressure thermionic converters is evaluated
ARG-10276 B69-10090 01

Bootstrap unloader
XF-09768 B69-10120 01

Self-starting circuit for switching regulators
LEWIS-10666 B69-10128 05

Positive and negative output circuits
LEWIS-10715 B69-10151 01

PCB bit detection with correction for intersymbol interference
GSFC-10155 B69-10153 01

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor
ARG-10158 B69-10191 01

Improved liquid-level sensor for cryogenics
ARG-10162 B69-10191 01

Linear voltage-to-frequency converter
ARG-10419 B69-10220 01

Highly linear, sensitive analog-to-digital converter
MSC-13170 B69-10230 01

Piezoelectric lock mechanism resists lockpicking
SAR-10037 B69-10281 01

Remote control thermal actuator
LEWIS-10873 B69-10307 01

An electronic circuit for sensing malfunctions in test instrumentation
MSC-10209 B66-10392 01

Hydrogen flash lamps studied
ARG-10419 B69-10411 02

Accurate nine-decade temperature-compensated logarithmic amplifier
ARG-10480 B69-10429 01

Synchronous charge-constrained electroquasistatic generator
NO-10231 B69-10461 01

Synchronizing redundant power oscillators
IGS-09377 B69-10546 01

Use of medical and dental X-ray equipment
MSC-13389 B69-10553 01

Automatic frequency control of voltage-controlled oscillators
WPO-11064 B69-10569 01

Flexible high-voltage supply for experimental electron microscope
ARG-10482 B69-10603 01

Cryogenic flux-concentrator
ARG-10494 B69-10654 02

Camera shutter is actuated by electric signal
MSC-20 B63-10560 05
Ring counter may be advanced or retarded by command signal

New television camera eliminates vidicon tube and requires less than 500-J pulse with fast rise and fall times

Electrical heating diaphragm eliminates use of pyrotechnics

Single channel pulse-height analyzer operates in subnanosecond range

A design procedure for the weight optimization of straight finned radiators

Parallel line raster eliminates ambiguities in reading timing of pulses not more than 200 microseconds apart

Control circuit ensures solar cell operation at maximum power

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor

Study made of anodized aluminum circuit boards

Alpha particle backscattering measurements used for chemical analysis of surfaces

Regulated dc-to-dc converter features low power drain

Laboratory pulse modulator uses minority carrier storage diodes

Welder analyzer

Improved television signal processing system

Conceptual hermetically sealed elbow actuator

Technical report on galvanic cells with fused-salt electrolytes

Electrothermal linear actuator

Liquid-metal-piston HDG generator

Fast-response frequency-to-analog converter

Stability of a silicon planar transistor

Technical report on galvanic cells with fused-salt electrolytes

Analyzing liquid-metal-hydrodynamic generation of power

Electronic circuit delivers pulse of high interval stability

Studies of cycles for liquid-metal magnetohydrodynamic generation of power

Electronic circuit provides accurate sensing and control of d-c voltage

Electrical, continuity scanner facilitates identification of wiring for soldering to connectors

Full wave dc-to-dc converter using energy storage transformers

Magnetoresistor monitors relay performance

Brushless dc motor uses electron beam switching tube as commutator

Electrical continuity scanner facilitates identification of wires for soldering to connectors

Ball bearing used in design of rugged flowmeter

Remote control electrical switching system has 1000-output capability

Full wave dc-to-dc converter using energy storage transformers

Electrical, continuity scanner facilitates identification of wires for soldering to connectors

Electrical continuity scanner facilitates identification of wires for soldering to connectors

New television camera eliminates vidicon tube and requires less than 500-J pulse with fast rise and fall times

Electrical heating diaphragm eliminates use of pyrotechnics

A design procedure for the weight optimization of straight finned radiators

Control circuit ensures solar cell operation at maximum power

Study made of anodized aluminum circuit boards

Regulated dc-to-dc converter features low power drain

Welder analyzer

Conceptual hermetically sealed elbow actuator

Technical report on galvanic cells with fused-salt electrolytes

Studies of cycles for liquid-metal magnetohydrodynamic generation of power

Electrothermal linear actuator

Liquid-metal-piston HDG generator

Fast-response frequency-to-analog converter

Oscilloscope used as X-Y plotter or two-dimensional analyzer

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor

Automatic tuning of hydrogen masers

Reparable, high-density microelectronic module provides effective heat sink

Liquid gallium rotary electric contact

Optimizing solar-cell grid geometry

Full wave dc-to-dc converter using energy storage transformers

Ball bearing used in design of rugged flowmeter

Explosives actuate nonmagnetic indexing device

Solid-state switching used to speed up capacitive integrator

Brushless dc motor uses electron beam switching tube as commutator

Simple device produces accelerometer calibration pulse

Frequency discriminator with binary output eliminates tuned circuits

Electrical continuity scanner facilitates identification of wires for soldering to connectors

Magnetoresistor monitors relay performance
ELECTRIC SPARKS

**SUBJECT INDEX**

Soldering iron temperature is automatically reduced
ABC-57 B66-10203 01

Key-locked guard prevents accidental switch actuation
MSC-419 B66-10235 05

Magnetically operated limit switch has improved reliability, minimizes arcing
MSC-422 B66-10270 01

Flexible arm provides constant force for pressure switch calibration
Hq-3B B66-10317 01

Low rate flow switch can be used for gas or liquid
JPL-867 B66-10696 01

Variable reluctance switch avoids contact corrosion and contact bounce
MSC-1178 B67-10137 01

Dynamic linearity measurement technique
KSC-10166 B68-10290 01

Random access-random release relay switching matrix
J-PS-12596 B68-10301 01

Simple switch actuated by force applied over wide solid angle
INF-09808 B69-10032 01

Bootstrap unloader
INF-09766 B69-10120 01

Gage provides audible signal to facilitate checkout of connector pins
KSC-10335 B69-10173 01

ELECTRIC SPARKS

Instrument accurately measures extremely low air densities
M-PS-193 B65-10221 01

Small, high-intensity flasher permits continuous close-in photography
NO-0043 B66-10119 03

Toroidal ring prevents gas ignition at vent stack outlet
M-PS-2042 B67-10099 05

Effects of surface preparation on quality of aluminum alloy weldments
M-PS-13152 B68-10302 03

Detecting hydrogen-containing contaminants on metal surfaces
M-PS-20456 B69-10192 03

High voltage pulse generator
MSC-12178 B69-10548 01

ELECTRIC SWITCHES

Stopping switch with simple actuator provides many contacts in small space
JPL-122 B63-10118 01

Coincident switch closing reduces error in motor-driven timer
JPL-182 B63-10143 05

High-speed square-wave current limiter operates efficiently
JPL-SC-073 B65-10233 01

Remote control electrical switching system has 1000-output capability
M-PS-380 B65-10318 01

Miniature bioelectric device accurately measures and telemeters temperature
ABC-52 B66-10057 01

Switching mechanism senses angular acceleration
MSC-462 B66-10158 01

Safety switch permits emergency bridge crane shutdown
M-PS-549 B66-10168 05

I-200
hermetically sealed splices in metal sheathed instrumentation cables

[E66-10704]

Glass formulation has high coefficient of thermal expansion

[E66-10705]

Thermocouple-flexible cable connector insulator is highly reliable

[E66-10709]

Evaluation of high temperature stranded hookup wire

[B67-10122]

Cable clamp bolt fixture facilitates assembly in close quarters

[B67-10244]

Tester automatically checks insulation of individual conductors in multiple-strand cables

[B67-10068]

Eutectic fuse provides current and thermal protection under high vibration

[B67-10535]

Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area

[B67-10538]

Standards for compatibility of printed circuit and component lead materials

[B68-10310]

System for measuring spatial distribution of ejected droplets, a concept

[B68-10402]

Conditioning flat conductors for flat conductor cable production

[B68-10429]

Breakaway electrical connector

[B68-10829]

Folded stick module

[B68-10854]

Expanding bridgewire detonator simulator

[B68-10782]

ELECTRICAL CONDUCTIVITY METERS

Electronic circuitry used to automate paper chromatography

[B67-10201]

ELECTRICAL FAULTS

Spherical electrode eliminates high-voltage breakdown

[LEWIS-155]

Solid state detectors monitor relay contacts

[B66-10396]

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum

[ARQ-109]

Cut-through tester accurately measures insulation failure rates

[B66-10499]

Study made of dielectric properties of promising materials for cryogenic capacitors

[B67-10366]

Reducing bubbles in glass coatings improves electrical breakdown strength

[LEWIS-10278]

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time

[B68-10214]
ELECTRICAL GROUNDING

ARG-10110  B66-10328  01
Nondestructive testing of welds on thin-walled tubing  M-FS-18144  B69-10402  01
Use of medical and dental X-ray equipment for nondestructive testing  MSC-11389  B69-10555  01

ELECTRICAL GROUNDING
Self-shielding printed circuit boards for high frequency amplifiers and transmitters  NO-10433  B69-10314  01

ELECTRICAL IMPEDANCE
Double-throw microwave device switches two lines quickly  JPL-410  B63-10258  01
Circuit switches latching relay in response to signals of different polarity  WO-055  B63-10508  01
Unijunction frequency divider is free of backward loading  JPL-WO-010  B65-10112  01

Simplified electrometer has excellent operating characteristics  JPL-413  B65-10125  01
Field effect transistor presents high input impedance in ac amplifier  JPL-500  B65-10232  01
Complementary monostable circuits achieve low power drain and high reliability  GSFC-433  B66-10179  01

FET comparator detects analog signal levels without loading analog device  M-FS-503  B66-10224  01
Simple circuit provides reliable multiple signal average and reject capability  NO-0069  B66-10282  01
Large capacitor performs as a distributed parameter pulse line  LEWIS-176  B66-10291  01

Simple, nondestructive test identifies metals  MSC-525  B66-10305  03
Microphone multiplex system provides multiple outlets from single source  GSFC-426  B66-10308  01
Feedback loop compensates for rectifier nonlinearity  M-FS-384  B66-10382  01

Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion  MSC-781  B66-10429  01
Amplifier provides dual outputs from a single source with complete isolation  MSC-10056  B67-10221  01

An efficient, temperature-compensated subcarrier oscillator  JPL-SC-091  B67-10251  01

Analog buffer isolates high impedance source from low impedance load  M-FS-1381  B67-10544  01
Multipulse current source offers low power losses and high reliability  LANGLEY-68  B67-10603  01

Bilateral, zero-impedance static semiconductor switch  LEWIS-10129  B68-10118  01

New electrical plethysmograph monitors cardiac output  MSC-11447  B68-10220  01
Locating sneak paths in electrical circuitry  M-FS-15018  B69-10565  01
One hundred MHz voltage-controlled oscillator  NPO-11008  B69-10133  01

Quality-veld parameters for microvelding techniques and equipment  M-FS-25484  B69-10303  05
Field Effect Transistor /FET/ circuit for variable gain amplifiers  GSFC-10116  B69-10322  01

Energy-storage of a prescribed impedance  ARG-10428  B69-10431  02
Ionose membrane battery separator  NPO-11091  B69-10501  03

FET comparator detects analog signal levels without loading analog device  M-FS-503  B66-10224  01

Improved technique for localizing electropolishing features novel nozzles  WO-101  B64-10065  01
Improved magnetometer uses toroidal gating coil  GSFC-289  B65-10103  01

Efficient thin film heating element takes minimum space  GSFC-289  B65-10123  01

Simple device produces accelerometer calibration pulse  M-FS-363  B65-10269  01

Ceramic materials purified by experimental method  LEWIS-225  B65-10270  03

Boron nitride housing cools transistors  WO-079  B65-10269  01
Reflective insulator layers separated by bonded silica beads  MSC-215  B66-10070  03
Mounting improves heat-sink contact with beryllia washer  NUC-194  B66-10144  01

Special tool seals conductors with combination of plastic sleeves  M-FS-579  B66-10209  05

Electric arc heater is self starting  LANGLEY-208  B66-10230  03
Rugged microelectronic module package supports circuitry on heat sink  MSC-81A  B66-10245  01
Multiple temperatures sampled using only one reference junction  GSFC-485  B66-10260  01

Electrical cabling withstands severe...
environmental conditions

Improved insertion-loss tester
JPL-358
B64-10080
01

Pulse height analyzer operates at high repetition rates, low power
W00-046
B65-10041
01

Vibrating-membrane electrometer has high conversion gain
ARC-38
B65-10056
01

Variable load automatically tests dc power supplies
GSFC-291
B65-10105
01

Semiautomatic device tests components with biaxial leads
ESC-516
B66-10337
03

Edge-type connectors evaluated by electrical noise measurement
M-PS-2243
B67-10125
01

Improved circuit for measuring capacitive and inductive reactances
M-PS-13083
B67-10513
01

Studies in zirconium oxidation
ARG-10099
B68-10199
03

Welder analyzer
ESC-12068
B69-10242
01

Recharge unit provides for optimum recharging of battery cells
GSFC-10688
B69-10273
01

Nondestructive test determines overload destruction characteristics of current limiting fuses
XGS-08566
B69-10364
01

Electroactive series established for metals used in aerospace technology
M-PS-18327
B69-10385
03

Method for measuring alternator voltage transients
LEWIS-10373
B69-10513
01

Low-cost voltage-level detector
LEWIS-10805
B69-10217
01

Instrumentation for potentiostatic corrosion studies with distilled water
ARG-10409
B69-10413
03

Electrical properties

Composite solar cell matrix is reliable, lightweight and flexible
WPO-10036
B67-10503
01

Flame sprayed dielectric coatings improve heat dissipation in electronic packaging
M-PS-13569
B67-10534
01

Eutectic fuse provides current and thermal protection under high vibration
M-PS-13664
B67-10535
01

Vapor deposition process provides new method for fabricating high temperature thermocouples
WPO-10152
B67-10516
01

Conceptual apparatus for detecting leaks of nonconductive liquids
M-PS-14713
B68-10303
01

Temperature or pressure controller
LEWIS-10297
B68-10337
01

Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
WEF-09082
B69-10028
02

Refractory oxide insulated thermocouple designed and analyzed for high temperature applications
LEWIS-10292
B69-10053
03

Tools for applying lead tape to flat conductor cabling for chemical stripping
M-PS-20429
B69-10190
05

Novel terminal strips for transformers
WPO-10042
B69-10246
01

Electrical measurement

New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation
ARC-2
B63-10003
04

Electronic ohmmeter provides direct digital output
LEWIS-37
B64-10042
01

Lead oxide ceramic makes excellent high-temperature lubricant
LEWIS-144
B64-10116
03

Adhesive for vacuum environments resists shock and vibration
ESC-56
B65-10016
03

Logic circuit exhibits optimum performance
LANGLEY-129
B65-10193
01
Electropneumatic rheostat regulates high current

Improved strain-wire flowmeter has fast response time

Thin-film resistors used in functional electronic blocks

Cuprous selenide and sulfide forms improved photovoltaic barriers

Gelatin coated electrodes allow prolonged bioelectronic measurements

Hot-wire detector for chemically active materials used in gas chromatography

Complementary monostable circuits achieve low power drain and high reliability

High-performance RC bandpass filter is adapted to miniaturized construction

Minimum permissible leakage resistance established for instrumentation systems

New computer program solves wide variety of heat flow problems

Thermocouples electrically checked while connected to data system

Equivalent circuit for a field effect transistor established for computer simulation

Solid-state recoverable fuse functions as circuit breaker

Clamp provides efficient connection for high-density currents

Fast-acting calorimeter measures heat output of plasma gun accelerator

Fused diode provides visual indication of fuse condition

Concept for cryogenic liquid reclamation system

Graphite cloth facilitates vacuum evaporation of silicon monoxide

Superconductive thin film makes convenient liquid helium level sensor

Ratio matching of half-bridge weldable strain gages, computer program

Microelectronic oscillator

Refractory-metal compound impregnation of polytetrafluoroethylene

A new solid lubricant

Nondestructive evaluation of printed wiring boards by microresistance measurements

Design of a strain-gage probe

Generation of sonic power during welding

Temperature-controlled resistor

Synchronous charge-constrained electroquasistatic generator

Thermally conducting electron transfer polymers

Engineering thermal analyzer /BETA 2/

Exploding bridgewire detonator simulator

Electrical resistivity

Indium foil with beryllia washer improves transistor heat dissipation

Cooling method prolongs life of hot-wire transducer

Improved conductive paste secures biomedical electrodes

Carbon-arc rod holder has long life, reduces arc splatter

Portable self-powered device detects internal flaws in tubular structures

Improved electrode paste provides reliable measurement of galvanic skin response

Reflective insulator layers separated by bonded silica beads

Thermal motor positions magnetometer sensors

Refractory coating protects intricate graphite elements from high-temperature hydrogen

Integral skin electrode for electrocardiography is expendable

Diffusion technique stabilizes resistor values

Mounting improves heat-sink contact with beryllia washer

Aluminum doping improves silicon solar cells

Electrical upsetting of metal sheet forms weld edge

Silver-base ternary alloy proves superior for slip ring lead wires
Tungsten fiber-reinforced copper composites form high strength electrical conductors.

Spray-on electrodes enable EKG monitoring of physically active subjects.

Simple technique determines ac properties of hard superconductive materials.

Primary cells utilize halogen-organic charge transfer complex.

Solid-state recoverable fuse functions as circuit breaker.

Hydrated multivalent cations are new class of molten salt mixtures.

Mechanisms of superconductivity investigated by nuclear radiation.

Evaluation of high temperature stranded hookup wire.

Static electricity of polymers reduced by treatment with iodine.

Oxide film on metal substrate reduced to form metal-oxide-metal layer structure.

Switching-type regulator circuit has increased efficiency.

X-ray source uses interchangeable target anodes to vary X-ray wavelength.

Substituting gold for silver improves electrical connections.

Fused diode provides visual indication of fuse condition.

Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions.

Crack growth measured on flat and curved surfaces at cryogenic temperatures.

Flame sprayed dielectric coatings improve heat dissipation in electronic packaging.

Bacteriostatic conformal coating for electronic components.

Eddy current probe measures size of cracks in nonmetallic materials.

Resistivity measurements of neutron-irradiated pure metals and Al-Zn alloys.

Moebius resistor is noninductive and nonreactive.

System for measuring spatial distribution of ejected droplets, a concept.

Point-source light sensor circuit is insensitive to background light.

Electro-optics:

Design concept for nonarcing electrical connector.

Stress-corrosion-induced property changes in aluminum alloys.

Propagation of density disturbances in air-water flow.

Refractory oxide insulated thermocouple designed and analyzed for high temperature applications.

Segmented SiGe-PbTe couples.

Field Effect Transistor /FET/ circuit for variable gain amplifiers.

Magnetic forming of resistive materials.

Improved ferrons shielding for flat cables.

Production of solvated electrons.

Improved inorganic ion exchange membranes.

Abrasion and fracture testing in a high-pressure hydrogen environment.

Preparation of superconducting thin films of transition-metal interstitial compounds.

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte.

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys.

Electro-optical effect:

Point-source light sensor circuit is insensitive to background light.
ELECTROCARDIOGRAPHY

Improved electro-optical tracking system
N-PS-14791 B66-10311 01

Rapid-response, light-exposure control
system
NFO-10238 B68-10502 01

Hydrogen flash lamps studied
ARG-10419 B68-10411 02

The Quantum, an improved quantum
detector
ERC-10148 B69-10443 01

Technique for improving solid state
mosaic images
N-PS-20532 B69-10676 01

Improved electro-optical tracking system
N-PS-14791 B66-10311 01

Rapid-response, light-exposure control
system
NFO-10238 B68-10502 01

Hydrogen flash lamps studied
ARG-10419 B68-10411 02

The Quantum, an improved quantum
detector
ERC-10148 B69-10443 01

Technique for improving solid state
mosaic images
N-PS-20532 B69-10676 01

ELECTROCARDIOGRAPHY
New low-level a-c amplifier provides
adjustable noise cancellation and automatic
temperature compensation
ARC-2 B63-10003 04

Improved electrode gives high-quality
biological recordings
MSC-17 B64-10225 04

Digital cardiometer computes and displays
heart rate
MSC-93 B66-10143 01

Inexpensive, stable circuit measures heart
rate
MSC-95 B65-10010 01

Simulator produces physiological waveforms
MSC-94 B65-10091 01

Auxiliary circuit enables automatic monitoring
of EKGs
MSC-106 B65-10162 01

Digital-output cardiometer measures rapid
changes in heartbeat rate
MSC-133 B66-10143 01

Tiny biomedical amplifier combines high
performance, low power drain
ARC-41 B65-10203 01

Gelatin coated electrodes allow prolonged
bioelectronic measurements
MSC-153 B66-10088 01

Integral skin electrode for electrocardiography is expendable
MSC-299 B66-10118 04

Phonocardiograph system monitors heart sounds
MSC-185 B66-10154 04

Spray-on electrodes enable EKG monitoring
of physically active subjects
usc-36 B66-10649 04

Phase plane displays detect incipient
failure in servo system testing
HQ-10018 B67-10662 01

Cardiac R-wave detector
LEWIS-10394 B68-10144 01

Electrocardiograph transmitted by RF and
telephone links in emergency situations
FSC-10031 B68-10233 01

Direct reading of electrocardiograms and
temperature monitoring
KSC-10233 B69-10188 04

Quick don-doff electrode pastes
MSC-13249 B69-10598 04

Electrocatalysts
Mass transport mechanism in porous fuel cell
electrodes
HQ-10343 B69-10135 01

ELECTROCHEMICAL CELLS
Electrodes bonded to metal surfaces seal
electrochemical cells
GSFC-168 B66-10113 03

Didyaium compound improves nickel-cadmium
batteries
GSFC-295 B65-10083 03

Apparatus measures swelling of membranes in
electrochemical cells
GSFC-280 B65-10087 01

Rubber and alumina gaskets retain vacuum
seal in high temperature EME cell
ANG-17 B66-10472 05

Primary cells utilize halogen-organic
charge transfer complex
JPL-926 B66-10682 02

Gas pressure in sealed electrochemical cells
measured externally
GSFC-10004 B66-10551 03

Electrochemical cell has internal resistive
heater element
GSFC-10358 B66-10325 01

Frangible electrochemical cell and sealing
technique
GS-10010 B66-10056 01

Refractory-metal compound impregnation of
polytetrafluoroethylene
LEWIS-10733 B65-10072 03

High-energy, high-power, long-life battery
LEWIS-10724 B65-10131 01

Analysis of secondary cells with lithium anodes and immobilized
fused-salt electrolytes
ARC-10452 B69-10613 01

ELECTROCHEMICAL CORROSION
Galvanic corrosion reduced in aluminum
fabrications
N-PS-272 B65-10140 03

ELECTROCHEMICAL MACHINING
Electrolytic etching process provides
effective bonding surface on stainless steel
GSFC-484 B66-10299 03

Electrochemical milling removes burrs and
solder from tubing ends
N-PS-714 B66-10358 03

Internal machining accomplished at constant
radii
N-PS-1573 B66-10546 05

Clamp provides efficient connection for
high-density currents
N-PS-2417 B67-10140 01

Mechanical properties of wire insulation
automatically determined
GSFC-10983 B67-10370 01

ELECTROCHEMISTRY
Study of stress corrosion in aluminum
alloys
N-PS-13906 B67-10533 03

Nondestructive method for measuring residual
stresses in metals, a concept
KSC-10237 B68-10378 03

Electrochemical study of aluminum
corrosion in boiling high purity water
ANG-10306 B66-10033 03

Electrochemical sintering process for
producing electrodes from cadmium felt and
a nickel or silver grid
GSFC-10764 B67-10227 05
SUBJECT INDEX

Coordination chemistry in fused-salt solutions ARC-10469 B69-10423 03

ELECTRODELESS DISCHARGES
Electrodeless discharge lamp is easily started, has high stability WDC-030 B66-10015 01

ELECTRODEPOSITION
Metals plated on fluorocarbon polymers JPL-544 B63-10612 03
Fresnel zone plate forms images at wavelengths below 1000 angstroms GSFC-231 B65-10171 02
Nickel solution prepared for precision electroforming WDC-070 B65-10303 03
Device for reflowing electrodeposited solder on terminals N-PS-13621 B69-10670 01
Mired ether bath for electrodeposition of aluminum LANGLEY-10200 B69-10737 03

ELECTRODES
New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation ABC-2 B63-10003 04
Level of super-cold liquids automatically maintained by levelometer JPL-11 B63-10429 03
Welded pressure transducer made as small as 1/8th-inch in diameter ARC-11 B63-10250 01
New apparatus increases ion beam power density LEWIS-73 B63-10440 01
Improved electrode gives high-quality biological recordings MSC-17 B64-10025 04
Auxiliary silver electrode eliminates two-step voltage discharge characteristic of silver-zinc cells GSFC-169 B64-10114 01
Welding procedures improves quality of welds, offers other advantages N-PS-32 B66-10109 01
Modification increases light output of injection-luminescent diodes N-PS-192 B65-1006 01
Improved conductive paste secures biomedical electrodes MSC-107 B65-10015 03
Pulsed plasma accelerator operates repetitively without complex controls LANGLEY-48 B65-10062 01
Didyssium compound improves nickel-cadmium cell GSFC-295 B65-10083 03
Spherical electrode eliminates high-voltage breakdown LEWIS-155 B65-10139 01
Electrostatically driven dynamic capacitor employs capacitive feedback JPL-771 B65-10293 01
Thermoelectric elements diffusion-bonded to tungsten electrodes GSFC-346 B65-10309 01
Rugged pressed disk electrode has low contact potential

ELECTRODES
MBC-158 B65-10320 01
Segmented electrode increases operating pressure of RMD accelerator LANGLEY-95 B65-10356 02
Regenerative fuel cell combines high efficiency with low cost WOO-090 B65-10363 01
Wire bundle forced into grids with minute interstices WOO-089 B65-10372 03
Photosensors used to maintain welding electrode-to-joint alignment BSC-243 B65-10401 05
Thin-fil metal semiconductor rectifier has improved properties BSC-207 B66-10012 01
Reaction heat used in static water removal from fuel cells N-PS-352 B66-10013 01
Improved carbon electrode reduces arc sputtering MBC-219 B66-10026 01
Resilient clamp holds fuel cell stack through thermal cycle BSC-313 B66-10035 05
Improved electrode paste provides reliable measurement of galvanic skin response BSC-146 B66-10049 04
Gelatin coated electrodes allow prolonged bioelectronic measurements BSC-153 B66-10088 01
Integral skin electrode for electrocardiography is expendable BSC-299 B66-10118 04
Small, high-intensity flasher permits continuous close-in photography N-PS-208 B66-10119 03
Optically driven switch turn-off time reduced by opaque coatings JPL-SC-107 B66-10181 01
Electric arc heater is self starting LANGLEY-208 B66-10230 03
Electrical upsetting of metal sheet forms weld edge N-PS-720 B66-10288 05
Damping technique gives accelerometer flat frequency response N-PS-471 B66-10293 01
Simple, nondestructive test identifies metals MSC-525 B66-10305 03
Vibrator improves spark erosion cutting process N-PS-720 B66-10333 01
Device removes hydrogen gas from enclosed spaces GSFC-495 B66-10340 03
Miniature capacitive accelerometer is especially applicable to telemetry ARC-72 B66-10491 01
Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum ARC-109 B66-10499 02
Opposed arcs permit deep weld penetration with only one pass N-PS-1696 B66-10513 05
Helmet system broadcasts electroencephalograms of wearer ARC-70 B66-10536 01
High intensity radiation: heat source is capable of sustained operation ARC-61 B66-10547 02
Computer programs calculate potential and charge distributions in a plasma M-PS-871 B66-10553 01
Collector/collector guard ring: balancing circuit eliminates edge effects JPL-SC-143 B66-10563 01
A continuously operating source of vacuum ultraviolet below 500 angstrom GSPC-545 B66-10576 01
Power arc welder touch-started with consumable electrode M-PS-1485 B66-10641 05
Spray-on electrodes enable EKG monitoring of physically active subjects PRC-36 B66-10649 06
Primary cells utilize halogen-organic charge transfer complexes JPL-926 B66-10662 02
Hermetically sealed cells protected from internal gas pressure GSPC-555 B66-10692 01
Laboratory arc furnace features interchangeable hearths ABG-125 B67-10052 05
An improved soft X-ray photoionization detector GSPC-540 B67-10072 02
Traveling wire electrode increases productivity of Electrical Discharge Machining /EDM/ equipment ARG-136 B67-10238 05
Portable machine welding head automatically controls arc M-PS-12763 B67-10272 05
Primary cell uses neither liquid nor fused electrolytes NPO-10001 B67-10275 01
Lamp enables measurement of oxygen concentration in presence of water vapor MSC-10043 B67-10387 01
Standard surface grinder for precision machining of thin-wall tubing ARG-10144 B67-10400 05
Fuel cell life improved by metallic sinter activation after electrode assembly welding MSC-1065 B67-10436 03
Design for high-temperature /1800 deg F/ liquid metal pressure transducer LEWIS-10144 B67-10456 01
Technique eliminates high voltage arcing at electrode-insulator contact area LEWIS-10133 B67-10470 01
High-temperature /1100 degrees F/ capacitors operate without supplemental cooling LEWIS-10024 B67-10550 01
Method of maintaining activity of hydrogen-sensing platinum electrode M-PS-1422 B68-10049 03
Welder analyzer MSC-12068 B68-10242 01

Improved fuel-cell-type hydrogen sensor M-PS-14656 B68-10263 01
High-voltage pulse generator developed for wide-gap spark chambers ARG-10136 B68-10283 01
Concept to convert electrical power GSPC-10222 B68-10321 01
Gage measures total radiation, including vacuum UV, from ionized high-temperature gases INF-09802 B69-10028 02
Frangible electrochemical cell and sealing technique ZSC-10010 B69-10056 01
Mounting method improves electrical and vibrational characteristics of screen electrodes M-PS-20169 B69-10097 01
Ion-retarding lens improves the abundance sensitivity of tandem mass spectrometers ARG-10365 B69-10166 02
Detecting hydrogen-containing contaminants on metal surfaces M-PS-20456 B69-10192 03
Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid GSPC-10764 B69-10227 05
Cobalt improves nickel hydroxide electrodes for batteries LEWIS-10760 B69-10228 01
Improved vacuum deposition apparatus NPO-11009 B69-10365 02
Hydrogen flash lamps studied ARG-10419 B69-10411 02
Instrumentation for potentiostatic corrosion studies with distilled water ARG-10409 B69-10413 03
Automatic frequency control of voltage-controlled oscillators NPO-11064 B69-10569 01
Quick don-doff electrode pastes HSC-13249 B69-10598 04
Monopole mass spectrometer with improved sensitivity and reduced background Hg-10476 B69-10666 01
Pulsed high-voltage dc RF sputtering LEWIS-10920 B69-10699 01

Gelatin coated electrodes allow prolonged bioelectronic measurements MSC-153 B66-10088 01
Helmet system broadcasts electroencephalograms of wearer ARC-70 B66-10536 01
Spray-on electrodes enable EKG monitoring of physically active subjects PRC-36 B66-10649 04
Phase plane displays detect incipient failure in servo system testing Hg-10018 B67-10662 01
Quick don-doff electrode pastes HSC-13249 B69-10598 04
Biomedical bulk data processing program PRC-10015 B69-10720 06
ELECTROFORMING
High purity electroforming yields superior metal models
ARC-6 B63-10007 05
Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns
ARC-7 B63-10008 05
Ellipsoidal optical reflectors reproduced by electroforming
GSFC-92 B63-10547 05
Nickel solution prepared for precision electroforming
WOO-070 B65-10303 03
Pressure vessels fabricated with high-strength wire and electroformed nickel
N-PS-580 B66-10218 05
Electrical upsetting of metal sheet forms weld edge
N-PS-720 B66-10248 05
Electroformed screens with uniform hole size
LEWIS-10117 B68-10107 05
ELECTROHYDRAULIC FORMING
High-energy-rate magnetohydraulic metal forming system
N-PS-2742 B67-10126 02
ELECTROKINETICS
Fundamental electrode kinetics
ARG-10067 B68-10196 03
ELECTROELECTROSCOPESC
Pneumotachometer counts respiration rate of human subject
MSC-92 B64-10259 01
Legibility of electroluminescent instrument panels investigated
MSC-494 B66-10316 02
Panels illuminated by edge-lighted lens technique
MSC-871 B66-10507 02
Plotter design simplifies determination of image sensor transfer characteristic
NPO-10164 B67-10206 01
Improved radiographic image amplifier panel
H-PS-14522 B68-10363 02
Silicon carbide diode for increased light output
N-PS-20063 B69-10096 01
Improved method of fabricating planar gallium arsenide diodes
XRF-04235 B69-10271 01
ELECTROLYTICS
Regenerative fuel cell combines high efficiency with low cost
WOO-090 B65-10363 01
ELECTROLYTES
Level of super-cold liquids automatically maintained by levelometer
JPL-397 B63-10250 01
Elastomers bonded to metal surfaces seal electrochemical cells
GSFC-168 B64-10113 03
Filler device for handling hot corrosive materials
MSC-85 B64-10166 03
Improved technique for localizing electropolishing features novel nozzles
WOO-101 B64-10271 01
Fuel cell serves as oxygen level detector
JPL-SC-072 B65-10066 01
Apparatus measures swelling of membranes in electrochemical cells
GSFC-280 B65-10087 01
Nickel solution prepared for precision electroforming
WOO-070 B65-10303 03
Reaction heat used in static water removal from fuel cells
N-PS-532 B66-10013 01
Resilient clamp holds fuel cell stack through resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05
Gelatin coated electrodes allow prolonged bioelectronic measurements
MSC-153 B66-10088 01
New energy storage concept uses tapes
LEWIS-219 B66-10098 02
Vapor diffusion electrode improves fuel cell operation
LEWIS-187 B66-10261 03
Simple, nondestructive test identifies metals
MSC-525 B66-10305 03
Device removes hydrogen gas from enclosed spaces
GSFC-405 B66-10340 03
Electrochemical milling removes burrs and solder from tubing ends
N-PS-716 B66-10358 03
Rubber and alumina gaskets retain vacuum seal in high temperature EMF cell
ARG-17 B66-10472 05
Study shows effect of surface preparations on improving thermionic emission
JPL-SC-140 B66-10493 01
Primary cells utilize halogen-organic charge transfer complexes
JPL-926 B66-10682 02
New electrolyte may increase life of polarographic oxygen sensors
MSC-1069 B67-10003 03
Primary cell uses neither liquid nor fused electrolytes
WPO-10001 B67-10275 01
Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions
ARG-147 B67-10294 01
Development of low temperature battery
LEWIS-10326 B67-10546 01
Fundamental electrode kinetics
ARG-10067 B68-10196 03
Nondestructive method for measuring residual stresses in metals, a concept
KSC-10237 B68-10378 03
Electromotive series established for metals used in aerospace technology
N-PS-18327 B68-10385 03
System for measuring spatial distribution of ejected droplets, a concept
NPO-10185 B68-10402 01
Frangible electrochemical cell and sealing technique
XES-10219 B69-10056 01
Corrosion protection of aluminum alloys in...
ELECTROLYTIC CELLS

- Electrolytic separation of crystals of transition-metal oxides
- Composite seal reduces alkaline battery leakage
- Iron serves as diffusion barrier in thermally regenerative galvanic cell
- Lithium-tellurium bimetallic cell has increased voltage
- New bimetallic EMF cell shows promise in direct energy conversion
- Electrolytic silver ion cell sterilizes water supply
- Two systems developed for purifying inert atmospheres
- Technical report on galvanic cells with fused-salt electrolytes
- Improved anode design for metal-oxygen cells
- Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte
- Self-discharge in bimetallic cells containing alkali metal
- Improved cathode design for metal-oxygen cells
- Electrolytic polarization

SUBJECT INDEX

- Electro magnetic absorption
- Optical switch turn-off time reduced by opaque coatings
- Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
- Correction for losses in optical birefringent networks, a concept
- Primary radical yields in pulse irradiated alkaline aqueous solution
- Electro magnetic fields
- Liquid switch is remotely operated by low dc voltage
- Device measures fluid drag on test vehicles
- Capacitive system detects and locates fluid leaks
- System precisely controls oscillation of vibrating mass
- Precision capacitor has improved temperature and operational stability
- Movable EF probe eliminates need for calibration in plasma accelerators
- Solenoid hammer valve developed for quick-opening requirements
- High efficiency, high frequency magnetic deflection driver
- Concept to convert electrical power
- Levitation-melting technique for metals and alloys
- Report on a cryogenic gyroscope
- Electro magnetic interference
- Improved communication system for large operations center
- An integrated circuit switch
- An overview of electromagnetic interference problems in spacecraft
- Electro magnetic measurement
- Brake joint quality tested electromagnetically
- Alternating current electromagnetic servo induction meter
- Technique developed for measuring
transmittance of optical birefringent networks
M-PS-14267 B68-10260 02

Energy-storage of a prescribed impedance
ARG-10428 B69-10431 02

ELECTROMAGNETIC NOISE
Low input voltage converter/regulator minimizes external disturbances
GSPC-527 B66-10689 01

Edge-type connectors evaluated by electrical noise measurement
M-PS-2243 B67-10125 01

Environmental study of miniature slip rings
M-PS-2443 B67-10210 05

Low speed, long term tracking electric drive system has zero backlash
NPO-10173 B67-10220 01

Laser system generates single-frequency light
M-PS-2556 B67-10288 02

Video synchronization processor overcomes poor signal-to-noise ratio
KSC-10002 B67-10515 01

Operational integrator
NPO-10230 B68-10547 01

Survey of man-made electrical noise affecting radio broadcasting
EQ-10290 B69-10308 01

ELECTROMAGNETIC PROPERTIES
Microwave technique measures plasma characteristics
LANGLEY-134 B65-10122 02

Low-cost, fast-response drive circuit for electromagnetic torque motors
LEWIS-10183 B68-10386 01

ELECTROMAGNETIC PULSES
High-energy-rate magnetohydraulic metal forming system
M-PS-2142 B67-10126 02

ELECTROMAGNETIC RADIATION
Large capacitor performs as a distributed parameter pulse line
LEWIS-176 B66-10291 01

Detector measures power in 50 to 30,000 GHz radiation band
BEC-26 B66-10531 01

High-voltage pulse generator developed for wide-gap spark chambers
ARG-10136 B68-10283 01

Imaging slitless spectrometer for X-ray astronomy
M-PS-18309 B68-10546 02

A positive taper traveling-wave tube
LANGLEY-10263 B69-10407 01

ELECTROMAGNETIC SCATTERING
A theoretical study of radar backscatter from distributed targets with emphasis on polarization dependence
M-PS-13775 B69-10560 02

ELECTROMAGNETIC SHIELDING
Transducer measures temperature differentials in presence of strong electromagnetic fields
ARC-27 B65-10089 01

Self-shielding printed circuit boards for high frequency amplifiers and transmitters
EQ-10433 B69-10314 01

ELECTROMAGNETIC WAVE FILTERS
Digital filter suppresses effects of nonstatistical noise bursts on multichannel scaler digital averaging systems
ARG-90143 B68-10193 06

ELECTROMAGNETIC WAVE TRANSMISSION
Optical frequency waveguide and ion transmission system
EQ-10541 B69-10746 01

ELECTROMAGNETISM
Gas-injection valve operates at high speed
EQ-49 B66-10381 05

High transients suppressed in electromagnetic devices
EBC-136 B67-10031 01

Improved fluid control circuit operates on low power input
LEWIS-325 B67-10042 01

Calibration technique for electromagnetic flowmeters
LEWIS-10328 B67-10554 01

New passive telemetry system
EQ-10214 B69-10312 01

Magnetomotive forcing for precision sizing and joining of large-diameter tubes
M-PS-20481 B69-10422 05

ELECTROMAGNETS
Device calibrates vibration transducer at amplitudes up to 20 g
M-PS-88 B63-10572 01

Magnetic field controls carbos arc tall flame
MSC-139 B65-10108 01

Neutron diffractometer allows both magnetic and crystallographic analyses
ARG-191 B67-10131 02

Rectangular configuration improves superconducting cable
ARG-90088 B68-10098 02

ELECTROMECHANICAL DEVICES
Stepping switch with simple actuator provides many contacts in small space
JPL-122 B63-10118 01

Coincident switch closing reduces error in motor-driven timer
JPL-182 B63-10143 05

Electromechanically operated camera shutter provides uniform exposure
JPL-357 B63-10227 01

Knob linkage permits one-hand control of several operations
MSC-30 B65-10022 05

Digital system accurately controls velocity of electromagnetic drive
GSPC-287 B65-10096 01

Device measures fluid drag on test vehicles
LANGLEY-34 B65-10195 01

Electromechanical flowmeter accurately monitors fluid flow
GSPC-357 B65-10273 01

Electronic chamber provides direct digital output
GSPC-363 B65-10274 01

Remote control electrical switching system has 1000-output capability
M-PS-380 B65-10318 01

Circuit operates as sine function generator
MSC-255 B66-10638 01

Electropneumatic transducer automatically limits motor current
<table>
<thead>
<tr>
<th>ELECTROMECHANICS</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEWIS-253</td>
<td>ELECTROMETERS</td>
</tr>
<tr>
<td>Device without electrical connections in</td>
<td>Field-effect transistor improves electrometer</td>
</tr>
<tr>
<td>tank measures liquid level</td>
<td>amplifier</td>
</tr>
<tr>
<td>WGO-235</td>
<td>ARC-36</td>
</tr>
<tr>
<td></td>
<td>B66-10160 01</td>
</tr>
<tr>
<td>Electronic phase-locked-loop speed control</td>
<td>Vibrating-membrane electrometer has high</td>
</tr>
<tr>
<td>system is stable</td>
<td>conversion gain</td>
</tr>
<tr>
<td>JPL-SC-084</td>
<td>ARC-38</td>
</tr>
<tr>
<td></td>
<td>B66-10198 01</td>
</tr>
<tr>
<td>Compact actuator converts rotary to linear</td>
<td>Simplified electrometer has excellent</td>
</tr>
<tr>
<td>motion</td>
<td>operating characteristics</td>
</tr>
<tr>
<td>JPL-786</td>
<td>JPL-43</td>
</tr>
<tr>
<td></td>
<td>B66-10232 01</td>
</tr>
<tr>
<td>Flowmeter measures flow rates of high</td>
<td>Sensitive electrometer features digital</td>
</tr>
<tr>
<td>temperature fluids</td>
<td>output</td>
</tr>
<tr>
<td>LEWIS-328</td>
<td>GSFC-288</td>
</tr>
<tr>
<td></td>
<td>B66-10265 05</td>
</tr>
<tr>
<td>Motion drive system is accurately controlled in the 1-micron</td>
<td>Electrometer has automatic zero bias control</td>
</tr>
<tr>
<td>range</td>
<td>GSFC-350</td>
</tr>
<tr>
<td>JPL-664</td>
<td>B66-10282 01</td>
</tr>
<tr>
<td>Instrument continuously measures density</td>
<td>Electrometer preamplifier has drift correction</td>
</tr>
<tr>
<td>of flowing fluids</td>
<td>feedback</td>
</tr>
<tr>
<td>LEWIS-309</td>
<td>JPL-SC-074</td>
</tr>
<tr>
<td></td>
<td>B67-10080 01</td>
</tr>
<tr>
<td>Low speed, long term tracking electric</td>
<td>Electrostatically drives dynamic capacitor</td>
</tr>
<tr>
<td>drive system has zero backlash</td>
<td>employs capacitive feedback</td>
</tr>
<tr>
<td>WFO-10173</td>
<td>JPL-771</td>
</tr>
<tr>
<td></td>
<td>B67-10220 01</td>
</tr>
<tr>
<td>Power torque wrench concept for precision</td>
<td>Electrostatic amplifier operates over</td>
</tr>
<tr>
<td>torque application</td>
<td>dynamic range of five orders of magnitude</td>
</tr>
<tr>
<td>M-PS-13546</td>
<td>ARC-75</td>
</tr>
<tr>
<td>B67-10547 05</td>
<td>B67-10199 01</td>
</tr>
<tr>
<td>Bolasite - A new mechanical design concept</td>
<td>Flexible high-voltage supply for experimental</td>
</tr>
<tr>
<td>SAM-10001</td>
<td>electron microscope</td>
</tr>
<tr>
<td></td>
<td>B67-10611 05</td>
</tr>
<tr>
<td>System remotely inspects, measures, and</td>
<td>A simple electrometer for measuring small</td>
</tr>
<tr>
<td>records internal irregularities in piping</td>
<td>photoelectric currents</td>
</tr>
<tr>
<td>M-PS-14545</td>
<td>GSFC-1063</td>
</tr>
<tr>
<td>B66-10189 01</td>
<td>B69-10734 01</td>
</tr>
<tr>
<td>Random access-random release relay</td>
<td>ELECTROMOTIVE FORCES</td>
</tr>
<tr>
<td>switching matrix</td>
<td>Metal sheath improves thermocouple using</td>
</tr>
<tr>
<td>M-PS-12550</td>
<td>graphite in one leg</td>
</tr>
<tr>
<td>B68-10301 01</td>
<td>WGO-0011</td>
</tr>
<tr>
<td>Conceptual apparatus for detecting leaks</td>
<td>Apparatus measures thermal conductivity of</td>
</tr>
<tr>
<td>of nonconductive liquids</td>
<td>honeycomb-core panels</td>
</tr>
<tr>
<td>M-PS-14713</td>
<td>LANGLEY-202</td>
</tr>
<tr>
<td>B68-10303 01</td>
<td>B66-10127 01</td>
</tr>
<tr>
<td>Improved electromechanical master-slave</td>
<td>Rubber and alumina gaskets retain vacuum</td>
</tr>
<tr>
<td>manipulator</td>
<td>seal in high temperature EHF cell</td>
</tr>
<tr>
<td>ABS-10027</td>
<td>ABS-17</td>
</tr>
<tr>
<td>B68-10372 05</td>
<td>B66-10472 05</td>
</tr>
<tr>
<td>Electromechanical rotary actuator</td>
<td>Thermolectric metal capacitor determines</td>
</tr>
<tr>
<td>operates over wide temperature range</td>
<td>composition of alloys and metals</td>
</tr>
<tr>
<td>M-PS-18402</td>
<td>ARG-235</td>
</tr>
<tr>
<td>B69-10100 05</td>
<td>B67-10035 01</td>
</tr>
<tr>
<td>Two devices for analysis of nystagmus</td>
<td>Thermoelastic properties of solid palladium-silver</td>
</tr>
<tr>
<td>HQ-10273</td>
<td>alloys and other alloys are investigated by</td>
</tr>
<tr>
<td>B69-10224 01</td>
<td>torsion-effusion technique</td>
</tr>
<tr>
<td>Improved perceptual-motor performance</td>
<td>ARG-277</td>
</tr>
<tr>
<td>measurement system</td>
<td>B67-10324 03</td>
</tr>
<tr>
<td>HQ-10123</td>
<td>Electromotive series established for metals</td>
</tr>
<tr>
<td>B69-10385 01</td>
<td>used in aerospace technology</td>
</tr>
<tr>
<td>Simplified, reliable circuit sorts binary</td>
<td>M-PS-18327</td>
</tr>
<tr>
<td>numbers in order of magnitude</td>
<td>B68-10385 03</td>
</tr>
<tr>
<td>WFO-10112</td>
<td>Identification of thermocouple material</td>
</tr>
<tr>
<td>B69-10503 01</td>
<td>M-PS-10540</td>
</tr>
<tr>
<td>B69-10356 01</td>
<td>Identification of thermocouple material</td>
</tr>
<tr>
<td>ELECTROMECHANICS</td>
<td>Analysis of cell performance and thermal</td>
</tr>
<tr>
<td>Variable-capacitance tachometer eliminates</td>
<td>regeneration of a lithium-tin cell having</td>
</tr>
<tr>
<td>troublesome magnetic fields</td>
<td>an immobilized fused-salt electrolyte</td>
</tr>
<tr>
<td>GSFC-435</td>
<td>ARG-10453</td>
</tr>
<tr>
<td>B66-10126 01</td>
<td>B69-10627 03</td>
</tr>
<tr>
<td>Human transfer functions used to predict</td>
<td>Liquid-metal-piston EHD generator</td>
</tr>
<tr>
<td>system performance parameters</td>
<td>ARG-10500</td>
</tr>
<tr>
<td>LANGLEY-203</td>
<td>B69-10771 02</td>
</tr>
<tr>
<td>B66-10379 01</td>
<td>ELECTROCARDIOGRAPHY</td>
</tr>
<tr>
<td>Separation simulator</td>
<td>Auxiliary circuit enables automatic monitoring</td>
</tr>
<tr>
<td>KSC-67-15</td>
<td>of EKGs</td>
</tr>
<tr>
<td></td>
<td>B66-10315 01</td>
</tr>
<tr>
<td>B69-10315 01</td>
<td>ELECTRON BEAM WELDING</td>
</tr>
<tr>
<td>Electronic analog equalization for</td>
<td>Split glass tube assures quality in electron</td>
</tr>
<tr>
<td>vibrational testing</td>
<td>beam brazing</td>
</tr>
<tr>
<td>WFO-10544</td>
<td></td>
</tr>
<tr>
<td>B69-10472 01</td>
<td>B69-10533 01</td>
</tr>
<tr>
<td>SUBJECT INDEX</td>
<td>ELECTRON ENERGY</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Electron beam welding of copper-nickel facilitated by circular magnetic shields</td>
<td>B66-10151 05</td>
</tr>
<tr>
<td>Electron beam recrystallization of amorphous semiconductor materials</td>
<td>B66-10556 02</td>
</tr>
<tr>
<td>Suppressor plate eliminates undesired arcing during electron beam welding</td>
<td>B66-10215 05</td>
</tr>
<tr>
<td>Electron beam welder X-rays its own welds</td>
<td>LEWIS-10111</td>
</tr>
<tr>
<td>LEWIS-10443 B66-10556</td>
<td></td>
</tr>
<tr>
<td>Fuel cell life improved by metallic sinter activation after electrode assembly welding</td>
<td>MSC-10165</td>
</tr>
<tr>
<td>LEWIS-10111</td>
<td></td>
</tr>
<tr>
<td>Electron beam selectively seals porous metal filters</td>
<td>LEWIS-10162</td>
</tr>
<tr>
<td>LEWIS-10443 B66-10556</td>
<td></td>
</tr>
<tr>
<td>Welding, brazing, and soldering handbook</td>
<td>B66-10264 05</td>
</tr>
<tr>
<td>Cryogenic pressure transducer</td>
<td>B66-10601 01</td>
</tr>
<tr>
<td>ELECTRON BEAMS</td>
<td></td>
</tr>
<tr>
<td>Titanium treatment improves brazed joints</td>
<td>B65-10153 05</td>
</tr>
<tr>
<td>Tantalum cathode improves electron-beam evaporation of tantalum</td>
<td>JFL-1000-021</td>
</tr>
<tr>
<td>LEWIS-10175 03</td>
<td></td>
</tr>
<tr>
<td>Electron-beam deflection controlled by digital signals</td>
<td>GSPC-105</td>
</tr>
<tr>
<td>B66-10283 02</td>
<td></td>
</tr>
<tr>
<td>ELECTRON EMISSION</td>
<td></td>
</tr>
<tr>
<td>Process reduces secondary resonant emission in electronic components</td>
<td>JPL-934</td>
</tr>
<tr>
<td>B66-10685 01</td>
<td></td>
</tr>
<tr>
<td>Process yields Co-Pb alloys with superior high temperature magnetic properties</td>
<td>LEWIS-333</td>
</tr>
<tr>
<td>B66-10535 03</td>
<td></td>
</tr>
<tr>
<td>Electron-beam parallel X-ray generator</td>
<td>B67-10122 02</td>
</tr>
<tr>
<td>Magnetic ion source makes convenient liquid helium level sensor</td>
<td>LANGLEY-10289</td>
</tr>
<tr>
<td>B66-10341 01</td>
<td></td>
</tr>
</tbody>
</table>
Electron bombardment improves vacuum chamber efficiency
LEWIS-160 B65-10280 02

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10010 B67-10399 01

Electron irradiation
Radiation used to temperature compensate semiconductor strain gages
LANGLEY-207 B66-10186 02

Inverted grounding technique for electron beam heating
LEWIS-10543 B68-10411 01

Electron beam recrystallization of amorphous semiconductor materials
LEWIS-10443 B68-10556 02

Production of metals and compounds by radiation chemistry
LEWIS-10231 B69-10123 03

Electron microscopes
Ion pump provides increased vacuum pumping speed
NBS-13 B65-10239 02

Probe samples components of rocket engine exhaust
N-PS-485 B65-10384 03

Improved television signal processing system
NPO-10140 B67-10246 01

New electron microscope employs new video display technique
ARG-158 B67-10312 03

Study of stress corrosion in aluminum alloys
N-PS-13906 B67-10533 03

Scan rate converter for tape recording and playback of TV pictures
NPO-10166 B67-10676 01

Elementary review of electron microprobe techniques and correction requirements
ARG-10062 B68-10195 03

Stratification of centrifuged amoeba nuclei investigated by electron microscopy
ARG-10161 B68-10366 04

Fractography can be used to analyze failure modes in polytetrafluoroethylene
N-PS-20294 B69-10066 03

Health hazards of ultrafine metal and metal oxide powders
LEWIS-10678 B69-10268 04

Technique for pinpointing submicron particles in the electron microscope
HQ-10043 B69-10465 01

Epitaxial crystalline growth upon cold substrates
MSC-11196 B69-10494 01

Flexible high-voltage supply for experimental electron microscope
ARG-10482 B69-10603 01

Strain-age cracking in Rene 41 alloy
N-PS-18650 B69-10605 03

Electron optics
Electrooptical scanning of film
NPO-11006 B69-10568 01

Electron paramagnetic resonance
Coordination chemistry in fused-salt solution
ARG-10469 B69-10423 03

Electron plasma
Thin carbon film serves as UV bandpass filter
ERC-8 B66-10060 02

Electron probes
Standards for electron probe microanalysis of silicates prepared by convenient method
GSPC-469 B66-10234 03

Electron radiation
Semiconductor forms biomedical radiation probe
MSC-320 B67-10399 01

Rate constants measured for hydrated electron reactions with peptides and proteins
ARG-10195 B68-10424 04

Electron scattering
Measurements of thermoelectric power in annealed and quenched gold-platinum alloys
ARG-10303 B69-10206 03

Electron interaction in matter
M-PS-14086 B69-10674 02

Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors
ARG-10362 B69-10767 02

Electron sources
New apparatus increases ion beam power density
LEWIS-73 B63-10440 01

Tantalum cathode improves electron-beam evaporation of tantalum
JPL-WOO-021 B65-10175 03

Electron spin
Magnetometer measures orthogonal components of magnetic fields
GSPC-395 B65-10315 01

Electron transfer
Magnetic field controls carbon arc tail flame
MSC-139 B65-10108 01

Thermally conducting electron transfer polymers
GSPC-10703 B69-10511 03

Electron tubes
Fine-ash screen made by simplified method
WOO-104 B64-10282 03

Wire winding increases lifetime of oxide coated cathodes
LEWIS-154 B65-10032 03

Cantilever springs maintain tension in thermally expanded wires
LEWIS-136 B65-10149 05

Brushless dc motor uses electron beam switching tube as commutator
GSPC-345 B65-10237 01

Titanium diaphragms make excellent aspintron cathode support
GSPC-394 B65-10298 01

Thermionic scanner pinpoints work function of emitter surfaces
JPL-SC-177 B66-10444 01

Mounting method improves electrical and vibrational characteristics of screen electrodes
N-PS-20165 B69-10097 01

Electron tunneling
Detection of molecular infrared spectra
EQ-10377 B69-10172 02

Preparation of superconducting thin films
I-214
of transition-metal interstitial compounds
HQ-10445

ELECTRONIC CONTROL

Improved cavity-type absolute total-radiation radiometer
JPL-887

B67-10557

01

Conceptual servo technique for controlling tape drivers
M-FS-12955

B67-10595

01

Hydraulic servo system increases accuracy in fatigue testing
LANGLEY-217

B67-10637

01

Electronic aperture control devised for solid state imaging system
M-FS-12426

B68-10028

01

Electronic circuit provides automatic level control for liquid nitrogen traps
KSC-10127

B68-10061

01

Remote balance weighs accurately high radiation
AMO-10387

B69-10242

05

An unconventional magnetically-coupled multivibrator
HQ-10226

B69-10480

01

Radiometric temperature reference
MSC-13276

B69-10507

01

Automatic frequency control of voltage-controlled oscillators
NFO-11064

B69-10569

01

LIGHTWEIGHT MAGNESIUM-LITHIUM ALLOYS SHOW PROMISE

M-FS-12

B63-10389

03

Unmanned seismometer levels self, corrects drift errors
GSFC-100

B63-10551

01

Comfortable, lightweight safety helmet holds radio transmitter, receiver
MSC-53

B64-10015

05

Electronic assembly rack panels snap on and off
GSFC-59

B64-10121

05

Improved holder protects crystal during high acceleration and impact
JPL-663

B65-10037

05

Pulse generator permits nondestructive testing of component breakdown voltage
MSC-122

B65-10058

01

Feedback oscillator functions as low-level pulse stretcher
GSFC-261

B65-10069

01

System measures angular displacement without contact
LANGLEY-46

B65-10073

01

Logic circuit exhibits optimum performance
LANGLEY-129

B65-10193

01

Wire mesh isolator protects sensitive electronic components
GSFC-347

B65-10216

05

Voltage controlled oscillator is easily aligned, has low phase noise
JPL-510

B65-10223

01

Electronic ohmmeter provides direct digital output
GSFC-363

B65-10274

01

Electron-beam deflection controlled by digital signals

GSFC-385

B65-10283

02

Boron nitride housing cools transistors
WOC-079

B65-10289

01

Thin-film resistors used in functional electronic blocks
GSFC-380

B65-10305

01

Instrument performs nondestructive chemical analysis, data can be telemetered
JPL-SC-078

B65-10317

01

Standoff tool speeds placement of friction-fit electrical terminals
WOC-029

B65-10348

05

Multiphase clock-pulse generator uses simplified circuitry
M-FS-297

B65-10353

01

Insulator-holder protects transistors in dense electronic assemblies
MSC-214

B65-10389

01

Adhesive-backed terminal board eliminates mounting screws
MSC-173

B65-10396

01

Copper foil provides uniform heat sink path
MSC-262

B66-10004

02

Floating device aligns blind connections
MSC-256

B66-10007

05

Compact retractor protects cabling loops
M-FS-361

B66-10018

05

Portable self-powered device detects internal flaws in tubular structures
WGC-0019

B66-10028

01

Circuit operates as sine function generator
MSC-255

B66-10038

01

Piezoelectric bolometer measures RF absolute power at submillimeter wavelengths
GSFC-422

B66-10051

01

Soldering tool heats workpieces and applies solder in one operation
Lewis-247

B66-10115

05

Fixture aids soldering of electronic components on circuit board
ABC-47

B66-10162

01

Critical parts are stored and shipped in environmentally controlled reusable container
M-FS-703

B66-10258

05

Tool forms right angles in component leads
M-FS-722

B66-10346

05

Electronic circuit delivers pulse of high interval stability
MSC-673

B66-10501

01

Electronic circuit provides accurate sensing and control of dc voltage
WOC-089

B66-10591

01

Sensors measure surface ablation rate of reentry vehicle heat shield
LANGLEY-267

B66-10592

01

Electrical continuity scanner facilitates identification of wires for soldering to connectors
MSC-626

B66-10605

01

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment
Lewis-359

B66-10678

05

Process reduces secondary resonant emission in electronic components
JPL-934

B66-10685

01
ELECTRONIC EQUIPMENT TESTS

Coldplate of pin fin design makes efficient heat exchanger
MSC-1093 B67-10073 05

Double emitter suppressed carrier modulator uses commercially available components
M-PS-2949 B67-10101 01

Neutron diffractometer allows both magnetic and crystallographic analyses
ARG-191 B67-10131 02

Electronic shutter gates image orthicon on and off
HQ-96 B67-10270 01

IB vidicon scanner monitors many test points
M-PS-1937 B67-10277 01

Electronic dummy for acoustical testing
MSC-206 B67-10298 01

Electronic test instrument generates extremely small current signals
ARG-276 B67-10318 01

Accuracy of laser measurements improved by pulse autocorrelator electronic system
MSC-10033 B67-10338 01

Continuous wave detector has wide frequency range
M-PS-1849 B67-10366 01

Coaxial cable stripping device facilitates RF cabling fabrication
NPO-10315 B67-10419 05

Eutectic fuse provides current and thermal protection under high vibration
M-PS-13664 B67-10535 01

Continuous microbial cultures maintained by electronically-controlled device
ARG-177 B67-10556 04

Flat pack interconnection structure simplifies modular electronic assemblies
JPL-619 B67-10560 01

Regulated dc-to-dc converter features low power drain
GSPC-03629 B68-10017 01

System for measuring roundness and concentricity of large tanks
M-PS-13362 B68-10099 05

Multichip packaging with thermal insulation
M-PS-14076 B68-10119 02

Electronic calorimetric computer
LEWIS-90254 B68-10138 01

Standards for compatibility of printed circuit and component lead materials
M-PS-14531 B68-10310 01

Ultrasound temperature measuring device
LEWIS-10446 B68-10319 01

Automatic, nondestructive test monitors in-process weld quality
M-PS-14986 B68-10333 01

High resolution Ge/Li/ spectroscopy reduces rate-dependent distortions at high counting rates
ARG-10144 B68-10420 01

Electronic component reliability analysis by data reduction system
WPO-10243 B68-10507 05

Magnetron tuner has locking feature
IEP-09771 B69-10119 05

Torsion system for creep testing with multiple stress reversals
HQ-10039 B69-10147 03

Low-cost voltage-level detector
LEWIS-10885 B69-10217 01

Two devices for analysis of nystagmus
HQ-10273 B69-10224 01

Radiation tolerant silicon nitride insulated gate field effect transistors
GSPC-10581 B69-10253 01

Automatic Gaussian random-noise limiter
WPO-10169 B69-10349 01

Pressure transducer
WPO-10853 B69-10364 01

Phase multiplying electronic scanning array
WPO-10302 B69-10381 01

Improved perceptual-motor performance measurement system
HQ-10123 B69-10385 01

Temperature-controlled resistor
WPO-10713 B69-10440 01

Current-switching technique for analog pulse circuits
ARG-10479 B69-10445 01

Fuse protects circuit from voltage and current overloads
MSC-12135 B69-10490 01

Development of improved potting and conformal coating compounds
M-PS-20219 B69-10559 03

Balloon batteries, charged and heated by solar energy
GSPC-10769 B69-10585 01

Electrolytic separation of crystals of transition-metal oxides
ARG-10506 B69-10642 03

Adding calcium improves lithium ferrite core
ERC-10036 B69-10686 06

Multiple chip packasins with thermal insulation
LEWIS-10446 B69-10686 06

Electronic calorimetric computer
LEWIS-90254 B68-10138 01

Electronic component reliability analysis by data reduction systems
WPO-10243 B68-10507 05

High resolution Ge/Li/ spectroscopy reduces rate-dependent distortions at high counting rates
ARG-10144 B68-10420 01

Electronic component reliability analysis by data reduction system
WPO-10243 B68-10507 05

Magnetron tuner has locking feature
IEP-09771 B69-10119 05

Torsion system for creep testing with
A phonocardiogram simulator
KSC-67-94 B67-10239 01

Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi
NWC-10067 B67-10263 01

Liquid crystals detect voids in fiber glass laminates
LEWIS-10104 B67-10286 03

Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules
LEWIS-10201 B67-10359 01

Test and inspection for process control of monolithic circuits
M-PS-13084 B67-10507 01

Analog buffer isolates high impedance source from low impedance load
M-PS-13481 B67-10544 01

Electronic load for testing power generating devices
NPO-10350 B68-10203 01

Concept for a multifunctional oscilloscope probe
M-PS-16390 B69-10129 01

Electronic Filters
Electropneumatic rheostat regulates high current
ABC-44 B65-10299 01

Electronic filter discriminates between true and false reflections
HQ-55 B67-10071 02

Electronic Modules
Welded pressure transducer made as small as 1/8th-inch in diameter
ABC-11 B63-10429 03

Use of tear ring permits repair of sealed module circuitry
M-PS-210 B65-10014 05

Electronic modules easily separated from heat sink
MSC-142 B65-10186 02

Handtool facilitates extraction of circuit modules
LANGLEY-38 B65-10231 05

Assembly jig assures reliable solar cell modules
GSFC-455 B66-10040 05

Solar cell submodule design facilitates assembly of lightweight arrays
JPL-720 B66-10231 02

Rugged microelectronic module package supports circuitry on heat sink
MSC-81A B66-10245 01

Packaging of electronic modules
JPL-801 B66-10664 01

Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules
LEWIS-10201 B67-10359 01

Transducer measures embedment stresses in electronic modules
M-PS-13486 B67-10367 01

Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board
M-PS-13663 B67-10426 01

Composite solar cell matrix is reliable, lightweight and flexible

Electronic Transducers

Electronic Packaging

Modular chassis simplifies packaging and interconnecting of circuit boards
JMPL-236A B63-10174 01

Rugged microelectronic module package supports circuitry on heat sink
MSC-81A B66-10245 01

Study made of anodized aluminum circuit boards
M-PS-1358C B67-10425 01

Ultraminiature television camera
M-PS-11967 B67-10469 01

Electroplating dielectric coatings improve heat dissipation in electronic packaging
M-PS-13569 B67-10534 01

Method of disjoining adhesively bonded electronic modules
M-PS-12060 B68-10086 01

Multichip packaging with thermal insulating support
M-PS-14076 B68-10119 02

Nondestructive evaluation of printed wiring boards by microa resistance measurements
SAM-1003A B69-10272 01

Modular packaging technique for combining integrated circuits and discrete components
GSFC-10369 B69-10453 01

Folded stick module
WPO-1085A B69-10498 01

Sprayed shielding of plastic-encapsulated electronic modules
M-PS-1357C B69-10607 01

Electronic Transducers

Pressure sensor responds only to shock wave
M-PS-238 B65-10184 01

Control system maintains selected liquid level
M-PS-470 B66-10039 01

Noncontacting transducer measures shaft torque
M-PS-47A B66-10048 01

Sensor detects hydrocarbon oil contaminants in fluid lines
M-PS-522 B66-10068 01

Capacitive system detects and locates fluid leaks
M-PS-478 B66-10099 01

I-217
Phonocardiograph system monitors heart sounds
MDC-185 B66-10154 04

Electropneumatic transducer automatically
limits motor current
Lewis-253 B66-10160 01

Transducer measures force in vacuum
environment
Lewis-218 B66-10161 01

Fatigue cracks detected and measured without
test interruption
Lewis-266 B66-10178 02

Simple circuit provides reliable multiple
signal average and reject capability
Nu-0069 B66-10282 01

Phonocardiograph microphone is rugged and
moistureproof
MSC-212 B66-10318 00

Personal communication system combines high
performance with miniaturization
MSC-720 B67-10119 01

Automated tester permits precise calibration
of pressure transducers from 0 to 1050 psi
NDC-10067 B67-10263 01

Improved circuit for measuring capacitive
and inductive reactances
M-FS-13083 B67-10513 01

Automatic transducer switching provides
accurate wide range measurement of pressure
differential
NDC-10061 B67-10540 01

Instrumentation monitors transported
material through variety of parameters
M-FS-12938 B67-10545 01

Electronics
Automatic testing device facilitates noise
checks and electronic calibrations
Lewis-10173 B67-10467 01

Development of Electronic Data Processing
EDP/augmented management system
M-FS-14715 B68-10287 06

Quality-weld parameters for microwelding
techniques and equipment
M-FS-20484 B69-10305 05

Surface profiler for examining grain-boundary grooves
Argo-10280 B69-10345 05

Thermally conducting electron transfer
polymer
Gspc-10703 B69-10511 03

Electronics
Tensile analyzer detects low-energy
electrons
Gspc-329 B65-10213 01

Primary radical yields in pulse irradiated
alkaline aqueous solution
Argo-10322 B69-10167 02

Reduction by monovalent zinc, cadmium, and
nickel cations
Argo-10328 B69-10170 03

Production of solvated electrons
Argo-10416 B69-10830 03

Electrophysics
Concept to convert electrical power
Gspc-10222 B68-10321 01

Electroplating
High purity electroforming yields superior
metal models
ARC-6 B63-10007 05

Metals plated on fluorocarbon polymers
Jpl-544 B63-10612 03

New method used to fabricate gallium arsenide
photovoltaic device
Woc-062 B64-10019 01

Adherent protective coatings plated on
magnesium-lithium alloy
M-FS-365 B65-10294 03

Plated nickel wire mesh makes superior
catalyst bed
MSC-216 B65-10321 03

Nickel/tin coating protects threaded
fasteners in corrosive environment
M-FS-253 B65-10398 03

Cuprous selenide and sulfide form improved
photovoltaic barriers
100-212 B66-10025 01

Electric testing device facilitates noise
checks and electronic calibrations
Jpl-117 B66-10366 05

Electroplating eliminates gas leakage in
brazed areas
M-FS-923 B66-10415 05

Silver plating technique seals leaks in
thin wall tubing joints
Nu-0090 B66-10703 05

Silver plating ensures reliable diffusion
bonding of dissimilar metals
M-FS-1975 B67-10124 03

Clamp provides efficient connection for
high-density currents
M-FS-2417 B67-10140 01

Study to minimize hydrogen embrittlement
of ultrahigh-strength steels
M-FS-2955 B67-10141 03

Electronic circuitry used to automate paper
chromatography
Jpl-840 B67-10201 01

Copper and nickel adherently electroplated
on titanium alloy
M-FS-13052 B67-10532 03

High-resistance coatings on metal substrates
Lewiss-10325 B68-10361 03

Masking of aluminum surface against
anodizing
M-FS-12964 B69-10335 05

Effects of hydrogen on metals
M-FS-20364 B69-10372 03

Leads integral with the internal
interconnection that penetrate the
molded wall of a package
Languer-10228 B69-10436 01

Improved nickel plating of Inconel X-750
M-FS-18604 B69-10463 05

Rhodium-plated barrier against
high-temperature fusion bonding
M-FS-92155 B69-10544 05

Literature review on pickling inhibitors and
cadmium electroplating processes
M-FS-14421 B69-10606 03

Electrophysiology
New electrical plethysmograph monitors
cardiac output
MSC-11467 B68-10220 01

Electroplating
Improved technique for localizing
electroplating features novel nozzles

I-218
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>ELEVATION ANGLE</th>
<th>ELEVATIONS (CONTROL SURFACES)</th>
<th>ELEVATIONS (LIFTS)</th>
<th>ELIMINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study shows effect of surface preparations on improving thermionic emission</td>
<td>Telescope mount with azimuth-only primary</td>
<td>Break up of metal tube makes one-time shock absorber, bars rebound</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>JPL-SC-140</td>
<td>B66-10493</td>
<td>LID lookangle program</td>
<td>KSC-66-12</td>
<td>ARG-90239</td>
</tr>
<tr>
<td>Method for removing surface-damaged layers from nickel alloys</td>
<td>B68-10523</td>
<td>ELEVATORS (CONTROL SURFACES)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-F-18151</td>
<td></td>
<td>Break up of metal tube makes one-time shock absorber, bars rebound</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TECHNICAL SURFACE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEVATORS</td>
<td>LID lookangle program</td>
<td>Break up of metal tube makes one-time shock absorber, bars rebound</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>ELEVATION ANGLE</td>
<td></td>
<td>LID lookangle program</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>ELEVATIONS (CONTROL SURFACES)</td>
<td>Break up of metal tube makes one-time shock absorber, bars rebound</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>ELEVATIONS (LIFTS)</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>ELIMINATION</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Electromechanical linear actuator</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Electrothermal engines</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Ellipsoidal mirror reflectometer accurately measures infrared reflectance of materials</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Ellipsoidal optical reflectors reproduced by electroforming</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Ellipticity</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Elongation</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Lightweight aluminum casting alloy is useful at cryogenic temperatures</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Polymer deformation gage measures thickness change in tensile tests</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Extensometer automatically measures elongation in elastomers</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Weldable aluminum alloy has improved mechanical properties</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Study made of ductility limitations of aluminum-silicon alloys</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Study made of pneumatic high pressure piping materials /10,000 psi/</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Heat treatment procedure to increase ductility of degraded nickel alloy</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
<tr>
<td>Manual of typical low temperature</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Emergency escape system protects personnel from explosion and fire</td>
<td>Metabolic and toxico logical effects of water-soluble xenon compounds are studied</td>
</tr>
</tbody>
</table>
mechanical properties of several materials
M-PS-18331 B69-10179 03

Development of improved potting and conformal coating compounds
M-PS-20219 B69-10559 03

Strain-age cracking in Rene 41 alloy
M-PS-18650 B69-10605 03

Trace hydrazines in aqueous solutions accurately determined by gas chromatography
MSC-11222 B67-10290 03

Characteristics of fluidized-packed beds
ARG-10049 B68-10278 03

Zone purification of potassium chloride
ARG-10377 B69-10241 03

Separation of the rare earths by anion-exchange in the presence of lactic acid
ARG-10436 B69-10377 03

Corrosion of metal samples rapidly measured
NU-0041 B66-10140 03

Quality control criteria for acceptance testing of cross-wire welds
MSC-627 B66-10587 05

Heat-treatment of metal parts facilitated by sand embedment
M-PS-1543 B66-10616 03

Study made to control depth of potting compound for honeycomb sandwich fasteners
LEWIS-370 B66-10677 05

Nonwoven glass fiber mat reinforces polyurethane adhesive
M-PS-2309 B67-10113 03

Transducer measures embedment stresses in electronic modules
M-PS-13486 B67-10367 01

Eutectic fuse provides current and thermal protection under high vibration
M-PS-13664 B67-10535 01

Precision trimer aids in preparing biomedical specimen blocks for ultrathin sectioning
ARG-242 B67-10541 05

New alloy brazes titanium to stainless steel
MSC-102 B65-10060 05

Study to minimize hydrogen embrittlement of ultrahigh-strength steels
M-PS-2455 B67-10141 03

Susceptibility of irradiated steels to hydrogen embrittlement
ARG-10119 B68-10194 03

High temperature alloy
LEWIS-10377 B68-10253 03

Improved high-temperature silicide coatings
LEWIS-10817 B69-10266 03

Improved high-temperature-strength nickel-base superalloy
LEWIS-10874 B69-10352 03

Effects of hydrogen on metals
M-PS-20364 B69-10372 03

Literature review on pickling inhibitors and cadmium electroplating processes
M-PS-14421 B69-10606 03

Effects of high-pressure hydrogen on storage vessel materials
M-PS-18605 B69-10730 03

Study made of relationship between growth and metabolism
ARG-10046 B67-10604 04

Compound equation developed for postnatal growth of birds and mammals
ARG-10192 B68-10427 04

Safety switch permits emergency bridge crane shutdown
M-PS-549 B66-10168 05

Electrocardiograph transmitted by RF and telephone links in emergency situations
FRC-10031 B68-10233 01

Zone purification of potassium chloride
ARG-10377 B69-10241 06

Separation of the rare earths by anion-exchange in the presence of lactic acid
ARG-10436 B69-10377 03

Corrosion of metal samples rapidly measured
NU-0041 B66-10140 03

Quality control criteria for acceptance testing of cross-wire welds
MSC-627 B66-10587 05

Heat-treatment of metal parts facilitated by sand embedment
M-PS-1543 B66-10616 03

Study made to control depth of potting compound for honeycomb sandwich fasteners
LEWIS-370 B66-10677 05

Nonwoven glass fiber mat reinforces polyurethane adhesive
M-PS-2309 B67-10113 03

Transducer measures embedment stresses in electronic modules
M-PS-13486 B67-10367 01

Eutectic fuse provides current and thermal protection under high vibration
M-PS-13664 B67-10535 01

Precision trimer aids in preparing biomedical specimen blocks for ultrathin sectioning
ARG-242 B67-10541 05

New alloy brazes titanium to stainless steel
MSC-102 B65-10060 05

Study to minimize hydrogen embrittlement of ultrahigh-strength steels
M-PS-2455 B67-10141 03

Susceptibility of irradiated steels to hydrogen embrittlement
ARG-10119 B68-10194 03

High temperature alloy
LEWIS-10377 B68-10253 03

Improved high-temperature silicide coatings
LEWIS-10817 B69-10266 03

Improved high-temperature-strength nickel-base superalloy
LEWIS-10874 B69-10352 03

Effects of hydrogen on metals
M-PS-20364 B69-10372 03

Literature review on pickling inhibitors and cadmium electroplating processes
M-PS-14421 B69-10606 03

Effects of high-pressure hydrogen on storage vessel materials
M-PS-18605 B69-10730 03

Study made of relationship between growth and metabolism
ARG-10046 B67-10604 04

Compound equation developed for postnatal growth of birds and mammals
ARG-10192 B68-10427 04

Safety switch permits emergency bridge crane shutdown
M-PS-549 B66-10168 05

Electrocardiograph transmitted by RF and telephone links in emergency situations
FRC-10031 B68-10233 01

Nonwoven glass fiber mat reinforces polyurethane adhesive
M-PS-2309 B67-10113 03

Transducer measures embedment stresses in electronic modules
M-PS-13486 B67-10367 01

Eutectic fuse provides current and thermal protection under high vibration
M-PS-13664 B67-10535 01

Precision trimer aids in preparing biomedical specimen blocks for ultrathin sectioning
ARG-242 B67-10541 05

New alloy brazes titanium to stainless steel
MSC-102 B65-10060 05

Study to minimize hydrogen embrittlement of ultrahigh-strength steels
M-PS-2455 B67-10141 03

Susceptibility of irradiated steels to hydrogen embrittlement
ARG-10119 B68-10194 03

High temperature alloy
LEWIS-10377 B68-10253 03

Improved high-temperature silicide coatings
LEWIS-10817 B69-10266 03
parasitic current gain of lateral pnp transistors
MSC-13199 B69-10244 01

EMISSION SPECTRA
Trace levels of metallic corrosion in water determined by emission spectrography MSC-1193 B66-10701 03

Status of ultrachemical analysis for semiconductors M-FS-2258 B67-10138 03

Solar x-ray spectrum reproduced in vacuum M-FS-228 B67-10164 02

An improved nuclear magnetic resonance spectrometer JFL-762 B67-10234 01

Analytical technique characterizes all trace contaminants in water MSc-11032 B67-10243 03

Laser action from a terbium beta-ketoenolate at room temperature GSPC-444 B65-10337 03

An infrared television system for hydrogen flame detection KSC-11081 B69-10124 02

Prediction of thermal radiation from a rocket exhaust plane M-FS-20414 B69-10354 01

Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors ARG-10362 B69-10767 02

EMISSIVITY
Special coatings control temperature of structures GSPC-444 B65-10337 03

Properties of optics at high temperature and their measurement, a study M-FS-14696 B66-10240 02

Improved relay optical element for spectroradiometer using cryogenically cooled detector M-FS-11688 B66-10245 02

Surface temperature mapping with infrared photographic pyrometry LWIS-10763 B69-10113 01

EMITTANCE
Technique for measuring absorptance and emittance by using cyclic incident radiation LWIS-121 B66-10630 02

High-emittance coatings on metal substrates LWIS-10325 B66-10581 03

EMITTERS
New apparatus increases ion beam power density LWIS-73 B63-10440 01

Two-stage emitter follower is temperature stabilized MSC-20 B63-10493 01

Transistor voltage comparator performs own sensing GSPC-228 B65-10028 01

Photoelectric semiconductor switch operates with low level inputs JFL-SC-068 B65-10033 01

Variable voltage supply uses Zener diode as reference GSPC-262 B65-10097 01

Simple circuit functions as frequency discriminator for FFM signals

GSFC-267 B65-10102 01

Simplified electrometer has excellent operating characteristics JFL-413 B65-10125 01

Tiny biomedical amplifier combines high performance, low power drain ABC-91 B65-10203 01

Vapor grown silicon dioxide improves transistor base-collector junctions GSFC-389 B66-10091 01

New television camera eliminates vidicon tube M-FS-472 B66-10112 01

Optically driven switch turn-off time reduced by opaque coatings JFL-SC-107 B66-10141 01

Bypass rod transfers heat developed in thermionic diode JFL-SC-136 B66-10303 05

Remote preamplifier circuit maintains stability over wide temperature range WO-278 B66-10432 01

Chemical regeneration of emitter surface increases thermionic diode life LEWIS-17 B66-10435 02

Thermionic scanner pinpoints work function of emitter surfaces JFL-SC-177 B66-10444 01

Semiconductors can be tested without removing them from circuitry M-FS-1163 B66-10447 01

Collector/collector guard ring balancing circuit eliminates edge effects ARG-10010 067-10399 01

Electronic circuit provides accurate sensing and control of d.c. voltage BU-0089 B66-10591 01

Double emitter suppressed carrier modulator uses commercially available components M-FS-2494 B67-10101 01

Potassium plasma cell facilitates thermionic energy conversion process ARG-10010 B67-10399 01

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time ARG-10110 B68-10328 01

Performance of low-pressure thermionic converters is evaluated ARG-10276 B69-10090 01

Self-starting circuit for switching regulators LWIS-10686 B69-10128 05

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor ARG-10158 B69-10191 01

Modification to improve self-isolating transistor arrays M-FS-20499 B69-10678 01

EMOTIONAL FACTORS
Improved electrode paste provides reliable measurement of galvanic skin response MSC-146 B66-10049 04

EMULSIONS
Scrubable coating for plastic films MSC-11994 B67-10049 03

Automated microorganism Sample Collection
BIAIELS SUBJECT INDEX

Module
BQ-10421 B69-10223 04

Inexpensive infrared source improvised from flashlight
I-PS-494 866-10096 02

White primer permits a corrosion-resistant coating of minium weight
I-PS-304 B66-10207 03

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54 B66-10471 05

Improved method of edge coating flat ribbon wire
I-PS-902 B66-10684 03

ENCAPSULATING

Connector for thermocouple leads saves costly wire, makes reliable connectors
LANGLIEY-26 B63-10529 01

Plastic molds reduce cost of encapsulating electric cable connectors
I-PS-69 B63-10568 05

Encapsulation process sterilizes and preserves surgical instruments
JPL-40B B64-10066 05

PTC thermistor protects multiloade power supplies
GSPC-236 B64-10281 01

Seismometer designed for remote operation in random orientation
JPL-320 B66-10085 01

Phonocardiograph system monitors heart sounds
M-PS-185 B66-10154 04

Phonocardiograph microphone is rugged and moistureproof
M-PS-212 B66-10314 04

RF inductor has high Q, is stable at higher temperatures
JPL-109 B67-10106 01

Transducer measures embedment stresses in electronic modules
I-PS-13466 B67-10367 01

Multiplexer uses insulated gate-field effect transistors
I-PS-13096 B67-10396 01

Encapsulation technique eliminates thermal stresses in welded electronic modules
I-PS-14561 B68-10307 01

Leads integral with the internal interconnection that penetrate the molded wall of a package
LANGLIEY-10226 B69-10436 01

Development of improved potting and conformal coating compounds
M-PS-20219 B69-10559 03

Improved cure method for single component silicone rubber
M-PS-12230 B69-10749 03

ENCLOSURES

Portable lightweight cell provides controlled environment
M-PS-648 B66-10370 05

ENDFIRE ARRAYS

Improved circularly polarized planar-array antenna
WPO-10301 B69-10382 01

ENDOTHERMIC REACTIONS

Electrochemical cell has internal resistive heater element
GSPC-10358 B68-10325 01

Subjects of hydrogen on metals
I-PS-20364 B69-10372 03

ENERGY

Lamp enables measurement of oxygen concentration in presence of water vapor
M-PS-10043 B67-10387 01

Improved method of rotary dynamic balancing by laser
I-PS-12422 B67-10452 05

Welder analyzer
M-PS-12068 B68-10242 01

ENERGY ABSORPTION

Frictional wedge shock mount is inexpensive, has good damping characteristics
JPL-IT-1001 B63-10289 05

Break-up of metal tube makes one-time shock absorber, bars rebound
LANGLIEY-11A B63-10304 05

Kinetic-energy absorber employs frictional force between mating cylinders
M-PS-75 B63-10442 05

Materials physically tested in variable-environment chamber
JPL-799 B66-10130 01

Torus elements used in effective shock absorber
M-PS-114 B66-10318 05

High energy forming facility
I-PS-14026 B67-10588 05

Electron beam standby absorber system
M-PS-14108 B67-10650 01

Thick transducers used for generating short-duration stress pulses in thin specimens
ARG-10232 B69-10045 01

Hydrodynamics of a new concept of primary containment by energy absorption
ARG-10242 B69-10046 05

ENERGY ABSORPTION FILMS

Modular thermoelectric cell is easily packaged in various arrays
GSPC-339 B65-10199 01

Detector measures power in 50 to 30,000 MHz radiation band
M-PS-26 B66-10581 01

ENERGY CONVERSION

New method used to fabricate gallium arsenide photovoltaic device
M-PS-906 B64-10019 01

Laser beam transmits electric power
GSPC-293 B65-10158 01

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10010 B67-10399 01

New bimetallic EMF cell shows promise in direct energy conversion
ARG-10163 B68-10415 01

Technical report on galvanic cells with fused-salt electrolytes
ARG-10297 B69-10155 01

Magnetohydrodynamic generators using two-phase liquid-metal flows
ARG-10168 B69-10162 01

Segmented SiGe-PbTe couples
GSPC-10746 B69-10233 01
Optimizing solar-cell grid geometry B69-10460 01

Energy conversion efficiency
Modular thermoelectric cell is easily packaged in various arrays B66-10159 01

Energy dissipation
Improved system measures output energy of pyrotechnic devices B66-10141 05
System measures arc energy dissipated in relay contact cycling B68-10312 01
Four pi-recoil proportional counter used as neutron spectrometer B68-10326 02
Radial inflow turbine design charts LEWIS-10720 B66-10567 05
Mechanical properties of a lap joint under uniform clamping pressure M-PS-14538 B69-10141 05
Effects of sterilization on the energy-dissipating properties of balsa wood HQ-11207 B69-10592 03
Energy distribution
Semiconductor forms biomedical radiation probe MSC-320 B66-10252 01
Dielectric prisms would improve performance of quasi-optical microwave components ERC-10011 B67-10416 01
Detection of molecular infrared spectra HQ-10377 B69-10172 02
Energy levels
Solar X-ray spectrum reproduced in vacuum BSC-228 B66-10169 02
Low energy ohmmeter can be used to test sensitive circuits, other meters SAN-10013 B68-10269 01
Energy sources
Closed fluid system without moving parts controls temperature LEWIS-222 B65-10331 02
Fluidic-thermochromic display device ERC-10031 B68-10350 01
Self-starting circuit for switching regulators LEWIS-10686 B69-10128 05
Energy spectra
Alpha particle backscattering measurements used for chemical analysis of surfaces ABO-116 B67-10186 03
Ion-retarding lens improves the abundance sensitivity of tandem mass spectrometers ARG-10428 B69-10431 02
Energy storage
Large capacitor performs as a distributed parameter pulse line LEWIS-176 B66-10291 01
Study made of dielectric properties of promising materials for cryogenic capacitors M-PS-13594 B66-10596 02
Eddy current disk valve LEWIS-10123 B67-10638 05
Full wave dc-to-dc converter using energy storage transformers LEWIS-10375 B69-10140 01

Additional entries include:
- Energy storage of a prescribed impedance ARG-10428 B69-10431 02
- Energy transfer
- Flexible arms provide constant force for pressure switch calibration HQ-38 B66-10317 05
- Optical automatic gain channel M-PS-1550 B66-10596 02
- Computer program determines chemical composition of physical system at equilibrium M-PS-1119 B66-10670 01
- Quantum mechanical calculations of reactive scattering cross sections in biomolecular encounters M-PS-13594 B67-10527 03
- Advances in light-gas gun technology M-PS-14270 B66-10288 05
- Feasibility study of wireless power transmission systems M-PS-14691 B68-10309 01
- Axially symmetric two-phase perfect gas performance program M-PS-11774 B68-10374 06
- Technique for assessing potential fire hazards HQ-10279 B69-10287 03
- High voltage pulse generator M-PS-12178 B69-10548 01
- Engine control
- Analysis of dynamic systems with DAPU computer program M-PS-13999 B67-10523 06
- Engine design
- Equations provide tabular information on effects of uniform and variable loads on thin, flat, circular plates M-PS-151 B66-10601 05
- Materials data handbook, aluminum alloy 7075 M-PS-2349 B67-10301 03
- Torque meter aids study of hysteresis motor rings M-PS-12219 B67-10412 01
- Continuous detonation reaction engine M-PS-14019 B68-10034 03
- Radial inflow turbine design charts LEWIS-10720 B68-10567 05
- Computer program for off-design performance of radial inflow turbines LEWIS-10764 B69-10267 06
- Engine failure
- Analytical technique permits comparison of reliability of alternate mechanical designs M-PS-10065 B67-10261 06
- Engine inlets
- Flow direction measurement with fixed probes LEWIS-11044 B69-10714 02
- Engine parts
- Internal machining accomplished at constant radii M-PS-1573 B66-10546 05
- Cooled miniature pressure transducers effective at high temperatures LEWIS-10401 B68-10370 01
- Nondestructive testing of brazed rocket engine components M-PS-18191 B68-10394 03
Engine Tests

In-tank shutoff valve is provided with maximum blast protection
S-FS-1529 B66-10514 05

Rocket engine vibration accurately measured by photography
S-FS-1916 B66-10652 02

Engineering Drawings
Built-in templates speed up process for making accurate models
LANLEY-23 B63-10526 05

Use of photographs speeds inspection of printed-circuit boards
MSC-72 B64-10118 01

Equations provide tabular information on effects of uniform and variable loads on thin, flat, circular plates
ABC-151 B66-10601 05

Concept for modifying drafting instruments to minimize smearing
ESC-10056 B67-10283 05

Photographic and drafting techniques simplify method of producing engineering drawings
MSC-716 B66-10128 02

Welding, brazing, and soldering handbook
E-FS-20504 B69-10264 05

Engines
Device measures reaction engine thrust vector deviations
JPL-SC-163 B66-10642 05

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401 B66-10370 01

Improved high-temperature silicide coatings
LEWIS-10817 B69-10266 03

Engraving
Technique for abrasive cutting of thick-film conductors for hybrid circuits
ESC-13242 B69-10235 03

Entalphy
Experimental investigation of megawatt dc arc heating of nitrogen
LEWIS-313 B66-10508 02

Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique
ABC-277 B67-10324 03

Pure xenon hexafluoride prepared for thermal properties studies
ABG-10056 B67-10577 03

Study of thermal effects on nickel-cadmium batteries
G2PC-10003 B67-10614 01

Real fluid properties of normal and parahydrogen
LEWIS-10458 B68-10361 06

The thermodynamic properties of the wustite phase are studied
ABO-10200 B68-10408 03

A mass flux probe for measurement in a supersonic stream
LEWIS-10655 B68-10533 02

Isothermal drop calorimeter provides measurements for alpha active, pyrophoric materials
ABO-10186 B69-10002 02

Plasma-heating by induction
LEWIS-10528 B69-10185 02

Subject Index

Computer program for high pressure real gas effects
LEWIS-10820 B69-10222 06

Thermophysical properties of sodium
ABC-10363 B69-10240 03

Environment

Water-glycol system volume calculation
MSC-15193 B69-10563 02

Entertainment

Study made of Raney nickel technology
E-FS-2054 B67-10208 03

Entropy

Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique
ABC-277 B67-10324 03

Thermodynamic properties of saturated liquid parahydrogen charted for important temperature range
MSC-10018 B67-10346 03

Real fluid properties of normal and parahydrogen
LEWIS-10458 B68-10361 06

The thermodynamic properties of the wustite phase are studied
ABO-10200 B68-10408 03

InVESTIGATION

Investigation of temperature dependence of development and aging
ARG-10145 B69-10022 04

Computer program for high pressure real gas effects
LEWIS-10820 B69-10222 06

Thermophysical properties of sodium
ABC-10363 B69-10240 03

Environment Simulation

Miniature piezoelectric triaxial accelerometer measures cranial accelerations
ARC-71 B66-10534 01

Method for X-ray study under extreme temperature and pressure conditions
MSC-11232 B67-10474 02

Environment simulators
Simulator effects partial gravity conditions
MSC-152 B66-10339 05

Heat-load simulator for heat sink design
MSC-15170 B68-10510 02

Environmental Control

Self-contained clothing system provides protection against hazardous environments
E-FS-536 B66-10201 05

Critical parts are stored and shipped in environmentally controlled reusable container
E-FS-703 B66-10258 05

Portable lightweight cell provides controlled environment
for harmonic power generation
H-Q-61 B67-10166 01

Improved process for epitaxial deposition
of silicon on prediffused substrates
M-FS-14910 B68-10390 03

Conceptual techniques for reducing
parasitic current gain of lateral pnp
transistors
HSC-13199 B69-10244 01

Epitaxial crystalline growth upon cold
substrates
HSC-11196 B69-10494 01

Modification to improve self-isolating
transistor arrays
M-FS-20499 B69-10678 01

Lateral pnp bipolar transistor with
aiding field diffusions
B69-10741 01

EPOXY COMPOUNDS

Epoxy blanket protects milled part during
explosive forming
B69-10029 03

Thermocouple-flexible cable connector
insulator is highly reliable
BU-0082 B66-10709 01

Standards for compatibility of printed
circuit and component lead materials
M-FS-14531 B69-10310 01

Electron beam selectively seals porous metal
filters
LEWIS-10162 B69-10331 05

Cooled miniature pressure transducers
effective at high temperatures
LEWIS-10401 B69-10370 01

EPOXY RESINS

Integral coolant channels supply made by
melt-out method
M-FS-91 B63-10497 05

New method forms bond line free of voids
LANLERT-20 B63-10558 05

Plastic molds reduce cost of encapsulating
electric cable connectors
M-FS-69 B63-10568 05

Compact coaxial connector for printed circuit
adds reliability
HSC-59 B64-10016 01

Stringent cleaning technique assures reliable
epoxy bond
GSFC-161 B64-10142 03

Screening technique makes reliable bond at
room temperature
M-FS-227 B65-10004 03

Adhesive for vacuum environments resists shock
and vibration
HSC-56 B65-10016 03

Optical arrangement increases useful light
output of semiconductor diodes
JPL-SC-064 B65-10020 05

Miniature stress transducer has directional
capability
JPL-591 B65-10023 01

Wide-aperture solar energy collector is light
in weight
JPL-SC-055 B65-10046 02

Transducer measures temperature differentials in
presence of strong electromagnetic fields
ARX-27 B65-10089 01

Aluminum alloys protected against stress-
corrosion cracking
M-FS-235 B86-10172 03

Epoxy-resin patterns speed shell-molding of
aluminum parts
M-FS-303 B86-10177 05

Modular thermoelectric cell is easily packaged
in various arrays
GSFC-339 B86-10199 01

Thermocouple-to-instrumentation connector
features quick assembly
BU-0022 B86-10246 05

Composite seal reduces alkaline battery
leakage
GSFC-337 B86-10271 01

Epoxy blanket protects milled part during
explosive forming
M-FS-307 B86-101029 03

Spray-on technique simplifies fabrication of
complex thermal insulation blanket
M-FS-497 B86-10053 03

Hydrogen-atmosphere induction furnace has
increased temperature range
LEWIS-153 B86-10055 05

Compound improves thermal interface between
thermocouple and sensed surface
BU-0028 B86-10121 02

Bismuth alloy potting seals aluminum connector
in cryogenic application
BUO-269 B86-10138 03

Phonocardiograph system monitors heart sounds
in cryogenic application
B86-10154 04

Epoxy-coated containers easily opened by
wire hand
M-FS-592 B86-10174 05

Insulation for cryogenic tanks has reduced
thickness and weight
M-FS-326 B86-10183 02

Improved adhesive for cryogenic applications
cures at room temperature
BUO-132 B86-10105 03

Coating permits use of strain gage in water
and liquid hydrogen
M-FS-594 B86-10192 01

Rugged microelectronic module package supports
circuitry on heat sink
B86-10285 01

Phonocardiograph microphone is rugged and
moistureproof
B86-10314 04

Fiber length and orientation prevent migration
in fluid filters
M-FS-547 B86-10319 05

Strippable grid facilitates removal of
grid-surfaced conical workpiece from die
M-FS-716 B86-10334 01

Sprayable birefringent coating enables
strain measurements on large surfaces
M-FS-1484 B86-10578 03

Study made to control depth of potting
compound for honeycomb sandwich fasteners
LEWIS-370 B86-10677 05

Solid-state recoverable fuse functions as
circuit breaker
GSFC-560 B86-10691 01

Metal boot permits fabrication of
hermetically sealed splices in metal
sheathed instrumentation cables B66-10704 05

Miniature capacitor functions as pressure sensor JPL-903 B67-10020 01

RF inductor has high Q, is stable at higher temperatures JPL-1019 B67-10106 01

Photosensitive filler minimizes internal stresses in epoxy resins M-FS-1800 B67-10227 03

Pipe joints reinforced in place with fitted aluminum sleeves MSC-11109 B67-10271 05

Low-energy gamma ray inspection of brazed aluminum joints MSC-1189 B67-10337 02

Transducer measures embedment stresses in electronic modules M-FS-13066 B67-10367 01

Flowmeter determines mix ratio for viscous adhesives M-FS-2308 B67-10378 01

Multiplexer uses insulated gate-field effect transistors M-FS-13096 B67-10396 01

Technique eliminates high voltage arcing at electrode-insulator contact area LEWIS-10133 B67-10470 01

Multi-feed cone for Cassegrainian antenna ARG-10025 B67-10484 03

Flame sprayed dielectric coatings improve heat dissipation in electronic packaging M-FS-13569 B67-10534 01

Epoxy resins produce improved plastic scintillators ARG-241 B67-10596 03

Bacteriostatic conformal coating for electronic components GSPC-10027 B67-10599 03

Synthesis of pure aromatic glycidyl esters for use as adhesives M-FS-12705 B67-10647 03

Cure of epoxy resins determined by simple tests M-FS-13131 B68-10043 03

Method for reinforcing tubing joints MSC-11108 B68-10115 05

Miniature pressure transducer for stressed member application MSC-11869 B68-10246 01

Encapsulation technique eliminates thermal stresses in welded electronic modules M-FS-14581 B68-10307 01

Fiber glass reinforced structural materials for aerospace application M-FS-14806 B68-10360 03

Pressure-sensitive bonded junction transducers BNC-10067 B68-10563 01

Adhesive for cryogenic temperature applications LEMS-10264 B69-10074 03

Novel terminal strips for transformers BKG-10842 B69-10246 01

Automatic bird watcher
**EQUILIBRIUM**

- Stress in structural elements
  - N-PS-16556

**SUBJECT INDEX**

- Study of fluoride corrosion of nickel alloys
  - ARG-10224
  - B69-10048

- Tube welding and brazing
  - N-PS-20348
  - B69-10085

**EQUIPMENT SPECIFICATIONS**

- Nyler film eliminates silk screening of equipment panels
  - MSC-798
  - B66-10455

- Integrated mobility measurement and notation system
  - MSC-726
  - B67-10114

- Evaluation of high temperature stranded hookup wire
  - N-PS-2478
  - B67-10122

- Technique for measuring magnetic tape interlayer adhesion
  - NPO-10011
  - B67-10417

- Gas facilitates adhesive bonding of studs to surfaces
  - N-PS-20299
  - B69-10009

**EQUIPOTENTIALS**

- Automated plotting of equipotentials
  - NFO-11154
  - B69-10570

**EQUIVALENCE**

- Integrated circuit with multiple collector current source
  - N-PS-20177
  - B69-10126

**EQUIVALENT CIRCUITS**

- GERT exclusive-or combining paths and loops of electrical networks
  - ERC-10206
  - B66-10435

**EROSION**

- Internal cooling increases range of immersion-type temperature probe
  - LEWIS-171
  - B65-10157

- Vibrator improves spark erosion cutting process
  - BU-0071
  - B66-10333

- Labyrinth-type valve seat increases valve life by decreasing fluid velocity
  - N-PS-1051
  - B66-10424

- Plasma jet electrode has longer operating life
  - BU-0098
  - B67-10024

- Traveling wire electrode increases productivity of Electrical Discharge Machining /EDM/ equipment
  - ARG-136
  - B67-10238

- Two-fluid, impinging-sheet injector
  - NPO-10547
  - B66-10338

- Design concept for nonarcing electrical connector
  - N-PS-14937
  - B66-10404

**ERROR ANALYSIS**

- In carrier deviation measured by differential probability method
  - N-PS-2166
  - B67-10213

- Study of optimum discrete estimators in measurement analysis
  - N-PS-14915
  - B66-10348

- Refractory oxide insulated thermocouple designed and analyzed for high temperature applications
  - ARG-10202
  - B69-10053

- Compensation of pulse-rebalanced inertial instruments
  - MSC-13098
  - B69-10216

- The effect of mismatched components on...
## SUBJECT INDEX

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microwave noise-temperature calibrations</td>
<td>NPO-11163</td>
<td>B69-10333</td>
</tr>
<tr>
<td>Prediction of thermal radiation from a rocket exhaust plume</td>
<td>N-FS-2046</td>
<td>B69-10371</td>
</tr>
<tr>
<td>Structure of the isotropic transport operators in three independent space variables</td>
<td>ABO-10468</td>
<td>B69-10432</td>
</tr>
<tr>
<td>Method reduces computer time for smoothing functions and derivatives through ninth order polynomials</td>
<td>NUC-10334</td>
<td>B69-10524</td>
</tr>
<tr>
<td>Vacuum gage calibration system for 10 to the minus 6th power to 10 torr</td>
<td>LEWIS-11032</td>
<td>B69-10713</td>
</tr>
</tbody>
</table>

## ERROR DETECTION CODES

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection system ensures positive alarm activation in digital message loss</td>
<td>WO-208</td>
<td>B66-10287</td>
</tr>
<tr>
<td>Subroutine allows easy computation in extended precision arithmetic</td>
<td>N-FS-1136</td>
<td>B66-10504</td>
</tr>
<tr>
<td>Digital system detects binary code patterns containing errors</td>
<td>GSPC-541</td>
<td>B66-10516</td>
</tr>
<tr>
<td>Automatic channel switching device</td>
<td>M-SC-822</td>
<td>B67-10086</td>
</tr>
<tr>
<td>Simultaneous message framing and error detection</td>
<td>M-SC-12001</td>
<td>B68-10330</td>
</tr>
<tr>
<td>Water-glycol system volume calculation</td>
<td>MSC-15193</td>
<td>B69-10563</td>
</tr>
</tbody>
</table>

## ERROR SIGNALS

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer program for network synthesis by frequency response fit</td>
<td>M-FS-12686</td>
<td>B67-10406</td>
</tr>
<tr>
<td>FORTRAN optical lens design program</td>
<td>NPO-10603</td>
<td>B68-10354</td>
</tr>
<tr>
<td>Circuit detects errors in address currents for magnetic core arrays</td>
<td>N-FS-234</td>
<td>B65-10047</td>
</tr>
<tr>
<td>Nulling pyrometer uses Kerr cell shutter for fast responses</td>
<td>WO-0010</td>
<td>B65-10050</td>
</tr>
<tr>
<td>Tension is servo controlled in file advance system</td>
<td>LANGLEY-54</td>
<td>B65-10075</td>
</tr>
<tr>
<td>System selects framing rate for spectrograph camera</td>
<td>LANGLEY-55</td>
<td>B65-10086</td>
</tr>
<tr>
<td>Digital system accurately controls velocity of electromechanical drive</td>
<td>GSPC-287</td>
<td>B65-10096</td>
</tr>
<tr>
<td>Pressure transducer system is force-balanced, has digital output</td>
<td>N-FS-154</td>
<td>B65-10174</td>
</tr>
<tr>
<td>Light ray modulation controls optical system alignment</td>
<td>GSPC-171</td>
<td>B65-10211</td>
</tr>
<tr>
<td>Electronic character provides direct digital output</td>
<td>GSPC-363</td>
<td>B65-10274</td>
</tr>
<tr>
<td>Control circuit maintains unity power factor of reactive load</td>
<td>M-SC-192</td>
<td>B66-10431</td>
</tr>
<tr>
<td>Point-source light sensor circuit is insensitive to background light</td>
<td>JPL-778</td>
<td>B66-10502</td>
</tr>
<tr>
<td>Monitor assures availability and quality of communication channels</td>
<td>ESC-6-38</td>
<td>B67-10028</td>
</tr>
<tr>
<td>Modified univibrator compensates for output timing errors</td>
<td>ARG-85</td>
<td>B67-10130</td>
</tr>
<tr>
<td>Absolute frequency stabilization of laser oscillator against laser amplifier</td>
<td>N-FS-2555</td>
<td>B67-10255</td>
</tr>
<tr>
<td>System precisely controls oscillation of vibrating mass</td>
<td>N-FS-1875</td>
<td>B67-10276</td>
</tr>
<tr>
<td>Digital servo readout system increases</td>
<td>NPO-10562</td>
<td>B67-10432</td>
</tr>
</tbody>
</table>

---

I-229
recording accuracy of servo-balance scales
BSC-10125 B67-10496 01

disabled-mirror scanning system capable
of optical pattern
GSFC-11070 B67-10609 02

Spiral pattern
GSFC-11070 B67-10609 02

Dynamic linearity measurement technique
ESC-10986 B68-10290 01

Automatic system nondestructively monitors
and records fatigue crack growth
LANGLEY-10091 B68-10379 01

Accurate digital technique simulates flight
control system
ESC-14767 B68-10569 01

Simple, accurate automatic frequency
control circuit
ESC-10392 B69-10323 01

Improved dc voltage regulator
XK5-06467 B69-10369 01

Wide-band doubler and sine wave quadrature
generator
FPO-11133 B69-10383 01

Gas Metal Arc /GMA/ weld torch
proximity control
M-FS-16227 B69-10533 01

Automatic frequency control of
voltage-controlled oscillators
FPO-11064 B69-10569 01

Pulse-code-modulation baseline correction
for low signal-to-noise ratios
MSC-13266 B69-10750 01

Polarizing keys prevent mismatch of connector
plugs and receptacles
MSC-443 B66-10251 01

Analytical technique permits comparison of
reliability of alternate mechanical designs
BUC-10065 B67-10261 06

Miniature pressure transducer for stressed
member application
MSC-11869 B68-10246 01

Computer graphics data conditioning
M-FS-14695 B68-10296 06

Performance statistics of the FORTRAN 4
library for the IBM system/360
ARG-10299 B69-10157 06

Stereo TV enhancement study
M-FS-14805 B69-10497 01

Deposition monitor and control
FPO-10706 B69-10722 01

Pressure sensor responds only to shock wave
M-FS-236 B65-10184 01

Emergency escape system uses self-braking
mechanism on fixed cable
ESC-66-44 B66-10575 05

Emergency escape system protects personnel
from explosion and fire
ESC-66-12 B66-10634 05

Experiments shed new light on
nickel-fluorine reactions
ARG-10000 B67-10397 03

Synthesis of pure aromatic glycidyl esters
for use as adhesives
M-FS-12705 B67-10647 03

Design reliability goal developed from small
sample
M-FS-403 B66-10405 05

Computer program calculates monotonically
maximized likelihood estimates using method
of reversals
M-FS-1516 B67-10136 01

Probabilistic approach to long range
planning of manpower
ESC-11024 B67-10510 06

Estimating reliability by application of
matrix representation
HQ-10246 B69-10793 02

Nonhazardous acid etches weld samples
M-FS-975 B66-10378 05

A method for precision anodize stripping
MSC-15040 B69-10581 03

Reducing contact resistance at semiconductor
to metal or aluminum to metal interfaces
ESC-1002A B69-10689 01

Metals plated on fluorocarbon polymers
JPL-544 B63-10612 03

Stringent cleaning technique assures reliable
epoxy bond
GSFC-161 B66-10142 03

Modification increases light output of
injection-luminescent diodes
M-FS-192 B65-10006 01

Electroless nickel resist used in alkali
etching of aluminum
GSFC-284 B65-10162 03

Fresnel zone plate forms images at wavelengths
below 1000 angstroms
GSFC-231 B65-10171 02

Etching process mills Pb 14-8 Mo alloy
steel to precise tolerances
MSC-270 B66-10110 03

Electrolytic etching process provides
effective bonding surface on stainless steel
GSFC-488 B69-10299 03

Chemical milling solution produces smooth
surface finish on aluminum
MSC-549 B66-10312 03

Nonhazardous acid etches weld samples
M-FS-975 B66-10378 05

System for etching thick aluminum layers
minimizes bridging and undercutting
M-FS-1366 B65-10400 03

Study shows effect of surface preparations
on improving thermionic emission
JPL-SC-140 B66-10493 01

Silver plating ensures reliable diffusion
bonding of dissimilar metals
M-FS-1975 B67-10124 03

Warpage eliminated in copper-clad
microwave circuit laminates
M-FS-13892 B67-10454 03

Acid spray technique mills aluminum alloy
materials without immersion
M-FS-12500 B67-10463 03

I-230
Reaction rates of graphite with ozone measured by etch decoration
ARG-10086  B68-10101  03

Analytical techniques for determining boron in graphite
ARG-10087  B68-10102  03

Standards for compatibility of printed circuit and component lead materials
M-FS-18151  B68-10310  01

Hydrogen peroxide etching proves useful for germanium
ARG-10170  B68-10454  03

Integrated metal transistor leads, GSPC-90536  B68-10518  01

Method for removing surface-damaged layers from nickel alloys
M-FS-18151  B68-10522  03

Multiple-mask chemical etching
MSC-13114  B69-10221  01

Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGL-10495  B69-10236  04

Radiation tolerant silicon nitride insulated gate field effect transistors
GSPC-10581  B69-10253  01

Method for copper staining of germanium crystals
ARG-10403  B69-10257  03

Self-shielding printed circuit boards for high frequency amplifiers and transmitters
HQ-10433  B69-10314  01

Hermetically sealed pump
LEWIS-10837  B69-10320  05

Leads integral with the internal interconnection that penetrate the molded wall of a package
LANGL-10228  B69-10436  01

ETHERS
Test monkeys anesthetized by routine procedure
HQ-10  B65-10332  04

Sea dye marker provides visibility for 20 hours
MSC-714  B66-10313  03

Silphenylene elastomers have high thermal stability and tensile strength
M-FS-20250  B69-10580  03

Quick don-doff electrode pastes
MSC-13249  B69-10598  04

ETHYL ALCOHOL
Submicron metal powders produced by ball milling with grinding aids
LEWIS-188  B66-10221  03

Coolants with selective optical filtering characteristics for ruby laser applications
M-FS-20188  B68-10508  02

Adding calcium improves lithium ferrite core
ERC-10036  B69-10666  06

ETHYL COMPOUNDS
Thin transparent films formed from powdered glass
GSPC-352  B65-10217  03

Qualitative and quantitative analysis of mixtures of compounds containing both hydrogen and deuterium
ARG-10312  B69-10177  04

Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers
MSC-15611  B69-10552  03

ETHYL ALCOHOL
Coating method enables low-temperature brazing of stainless steel
NU-0030  B65-10250  03

Brazing method produces solid-solution bond between refractory metals
LEWIS-212  B65-10370  05

Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
ARG-22  B66-10527  03

Vacuum chamber is remotely sealed by eutectic metal
NU-0091  B67-10059  05

Eutectic fuses provide current and thermal protection under high vibration
M-FS-15664  B67-10535  01

Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation
ARG-10288  B69-10081  03
Niobium-uranium alloys with voids of predetermined size and total volume
ARG-10490 B69-10641 03

Emergency escape system uses self-braking mechanism on fixed cable
KSC-66-44 B66-10575 05

Emergency escape system protects personnel from explosion and fire
KSC-66-12 B66-10634 05

Tool permits damage-free removal of solar cell
GSPC-467 B66-10219 05

Brazing process using Al-Si filler alloy reliably bonds aluminum parts
MSC-448 B66-10241 05

Apparatus enables accurate determination of alkali oxides in alkali metals
LEWIS-256 B66-10296 03

Device removes hydrogen gas from enclosed spaces
GSPC-495 B66-10340 03

Auxiliary titanium sublimation pump produces ultrahigh vacuum
LANGLEY-212 B66-10388 02

Seal-off assembly permits rapid evacuation of air from containers
GSPC-513 B66-10446 05

Radioactive method enables determination of surface areas rapidly and accurately
NU-0068 B66-10710 03

Isostatic compression process converts polyacrylonitrile into structural material
JPL-992 B67-10168 03

Quartz crystals detect gas contaminants during vacuum chamber evacuation
NPO-10144 B67-10205 01

Hand-operated plug insertion valve
N-PS-12019 B67-10466 05

Thermal conductivity and dielectric constant of silicate materials
N-PS-14056 B68-10351 03

Thermal radiation shields for piping in vacuum environments
LEWIS-10949 B69-10262 03

New shield for gamma-ray spectroscopy
ARG-10388 B69-10344 02

Preparation of superconducting thin films of transition-metal interstitial compounds
EQ-10465 B69-10470 01

Sealed container sampling device
GSPC-10690 B69-10682 03

Use of steel and tantalum apparatus for molten Cd-5g-Zn alloys
ARG-199 B66-10594 03

Evaluation of high temperature stranded hookup wire
N-PS-2478 B67-10122 03

Effects of heat input rates on T-1 and T-1A steel welds
N-PS-2475 B67-10163 03

Vis-A-Plan /visualize a plan/ management technique provides performance-time scale
KSC-10073 B67-10240 06

Test and inspection for process control of monolithic circuits

<table>
<thead>
<tr>
<th>EXPANSION SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>casting</td>
</tr>
<tr>
<td>One-dimensional reacting gas nonequilibrium performance program</td>
</tr>
<tr>
<td>Composite, vacuum-jacketed tubing replaces bellow in cryogenic systems</td>
</tr>
<tr>
<td>Device spot-laps spheres to very close tolerances</td>
</tr>
<tr>
<td>Expandable rubber plug seals openings for pressure testing</td>
</tr>
<tr>
<td>Cork is used to make tooling patterns and molds</td>
</tr>
<tr>
<td>Thermodynamic properties of saturated liquid para-hydrogen charted for important temperature range</td>
</tr>
<tr>
<td>Hlmetal sensor averages temperature of nonuniform profile</td>
</tr>
<tr>
<td>Encapsulation technique eliminates thermal stresses in welded electronic modules</td>
</tr>
<tr>
<td>Techniques for controlling warpage and residual stresses in welded structures</td>
</tr>
<tr>
<td>Magnetohydroforming for precision sizing and joining of large-diameter tubes</td>
</tr>
<tr>
<td>Water-glycol system volume calculation</td>
</tr>
<tr>
<td>Investigation of the development of cracks in solder joints</td>
</tr>
<tr>
<td>EXPERT OPINION</td>
</tr>
<tr>
<td>Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors</td>
</tr>
<tr>
<td>EXPERIMENTAL DESIGN</td>
</tr>
<tr>
<td>Cantilever springs maintain tension in thermally expanded wires</td>
</tr>
<tr>
<td>Multiple correlation computer program determines relationships between several independent and dependent variables</td>
</tr>
<tr>
<td>Experiments to investigate particulate materials in reduced gravity fields</td>
</tr>
<tr>
<td>An overview of electromagnetic interference problems in spacecraft</td>
</tr>
<tr>
<td>Experimental design for research on shock-turbulence interaction</td>
</tr>
<tr>
<td>EXPERIMENTATION</td>
</tr>
<tr>
<td>A technique for making animal restraints</td>
</tr>
<tr>
<td>Ceramic materials purified by experimental method</td>
</tr>
<tr>
<td>Chemical regeneration of emitter surface increases thermionic diode life</td>
</tr>
</tbody>
</table>
**SUBJECT INDEX**

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead by pressure cartridge</td>
<td>BSC-11395 B67-10589 03</td>
</tr>
<tr>
<td>Explosive forming</td>
<td>N-PS-269 B66-10170 05</td>
</tr>
<tr>
<td>Explosive force of primacord grid forms large sheet metal parts</td>
<td>N-PS-316 B66-1014 05</td>
</tr>
<tr>
<td>Epoxy blanket protects milled part during explosive forming</td>
<td>N-PS-307 B66-10029 03</td>
</tr>
<tr>
<td>Strippable grid facilitates removal of grid-surfaced conical workpiece from die</td>
<td>N-PS-716 B66-10334 01</td>
</tr>
<tr>
<td>Study made to establish parameters and limitations of explosive welding</td>
<td>N-PS-13006 B67-10393 05</td>
</tr>
<tr>
<td>High energy forming facility</td>
<td>N-PS-14026 B67-10588 05</td>
</tr>
<tr>
<td>Laminated sheet composites reinforced with modular filament sheet</td>
<td>N-PS-14575 B68-10014 03</td>
</tr>
<tr>
<td>Tube swaging device uses explosive force</td>
<td>LANGLEY-10092 B68-10235 05</td>
</tr>
<tr>
<td>Explosive bonding of metal-matrix composites</td>
<td>N-PS-20657 B69-10804 05</td>
</tr>
<tr>
<td>Explosives</td>
<td>N-PS-316 B66-10014 05</td>
</tr>
<tr>
<td>Electric arc heater is self starting</td>
<td>LANGLEY-208 B66-10230 03</td>
</tr>
<tr>
<td>Improved head-controlled TV system produces high-quality remote image</td>
<td>ARG-128 B67-10317 01</td>
</tr>
<tr>
<td>High energy forming facility</td>
<td>N-PS-14026 B67-10568 05</td>
</tr>
<tr>
<td>Exploding bridgewire detonator simulator</td>
<td>N-PS-02191 B69-10782 01</td>
</tr>
<tr>
<td>Exponential functions</td>
<td>N-PS-10275 B68-10032 02</td>
</tr>
<tr>
<td>Simple quasi-exponential slope generator</td>
<td>WPO-11130 B69-10439 01</td>
</tr>
<tr>
<td>Exposure</td>
<td>JPL-357 B63-10227 01</td>
</tr>
<tr>
<td>Front and back printed circuit layouts presented on single sheet</td>
<td>GSFC-93 B63-10596 01</td>
</tr>
<tr>
<td>Exposure Value _/EV/ system expanded to include filter factors and transmittance</td>
<td>LANGLEY-190 B66-10602 02</td>
</tr>
<tr>
<td>Electronic shutter gates image orthicon on and off</td>
<td>HQ-96 B67-10270 01</td>
</tr>
<tr>
<td>Coded photographic proof paper could serve as convenient densitometer</td>
<td>N-PS-13374 B67-10443 02</td>
</tr>
<tr>
<td>Training course for radiation safety technicians</td>
<td>ARG-216 B67-10578 02</td>
</tr>
<tr>
<td>Study of corrosion of 1100 aluminum</td>
<td>ARG-10045 B67-10578 03</td>
</tr>
<tr>
<td>Extrapolation</td>
<td>Simulated hailstone fabrication and use in testing weatherability of structures</td>
</tr>
<tr>
<td>Multiple-mask chemical etching</td>
<td>BSC-13114 B69-10221 01</td>
</tr>
<tr>
<td>Improved high-temperature-strength nickel-base superalloy</td>
<td>LEWIS-10878 B69-10352 03</td>
</tr>
<tr>
<td>Expulsion</td>
<td>Quality control criteria for acceptance testing of cross-wire welds</td>
</tr>
<tr>
<td>Extensions</td>
<td>Square tube reduces cost of telescoping bridge crane hoist</td>
</tr>
<tr>
<td>A mechanically extendible boom</td>
<td>WPO-11118 B69-10328 05</td>
</tr>
<tr>
<td>Adjustable thermal <em>tree</em>*</td>
<td>B69-10484 01</td>
</tr>
<tr>
<td>Xethometers</td>
<td>Extensometer automatically measures elongation in elastomers</td>
</tr>
<tr>
<td>Temperature controlled strain gaged extensometer</td>
<td>LEWIS-10333 B68-10543 01</td>
</tr>
<tr>
<td>Extinction</td>
<td>Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples</td>
</tr>
<tr>
<td>Extractions</td>
<td>Heavy-duty staple remover operated by hand</td>
</tr>
<tr>
<td>Tool permits damage-free removal of solar cell</td>
<td>GSFC-467 B66-10219 05</td>
</tr>
<tr>
<td>Apparatus enables accurate determination of alkali oxides in alkali metals</td>
<td>LANGLEY-256 B66-10296 03</td>
</tr>
<tr>
<td>Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels</td>
<td>ARG-232 B67-10032 03</td>
</tr>
<tr>
<td>Effect of preparation procedures on intensity of radioautographic labeling in studied</td>
<td>ARG-10032 B67-10500 04</td>
</tr>
<tr>
<td>Simple colorimetric method determines uranium in tissue</td>
<td>ARG-10039 B67-10580 03</td>
</tr>
<tr>
<td>Transplutonium elements processed from rock debris of underground detonations</td>
<td>ARG-10222 B69-10054 03</td>
</tr>
<tr>
<td>Apparatus automatically measures soluble residue content of volatile solvents</td>
<td>SAM-10032 B69-10292 03</td>
</tr>
<tr>
<td>Extrapolation</td>
<td>Polychart contour plotter enables data extrapolation from multiple plotting charts</td>
</tr>
<tr>
<td>A theoretical model for determining turbine flowmeter sensitivity</td>
<td>N-PS-1172 B67-10179 01</td>
</tr>
<tr>
<td>Failure rates for accelerated acceptance testing of silicon transistors</td>
<td>EHC-10198 B68-10541 01</td>
</tr>
</tbody>
</table>

Some numerical methods for integrating
EXTRATERRESTRIAL LIFE

systems of first-order ordinary differential equations
SNC-10308  B69-10204  02

EXTRATERRESTRIAL LIFE

Desert soil collection at the JPL soil science laboratory
NFO-11206  B69-10571  04

Quantitative determination of flavin nucleotide using the bacterial bioluminescent reaction
GSPC-10565  B69-10715  04

EXTRATERRESTRIAL RADIATION

Glancing incidence telescope for far ultraviolet and soft X-rays
GSPC-10052  B67-10059  02

EXTRAVEHICULAR ACTIVITY

Astronaut's tool for withdrawing/replacing computer cards
M-PS-20453  B69-10183  05

Multi-purpose tool mitten
Hq-10047  B69-10083  05

Measurement of gas flow at extremely low pressures
MSC-13261  B69-10522  03

EXTURING

Guide for extrusion die eliminates straightening operation
LEWIS-152  B64-10014  05

Integral ribs formed in metal panels by cold-press extrusion
M-PS-230  B65-10141  05

Apparatus enables accurate determination of alkali oxides in alkali metals
LEWIS-256  B66-10296  03

Large diameter metal ring seal prevents gas leakage at 5000 psi
M-PS-1064  B66-10422  05

Thermoplastic rubberlike material produced at low cost
JPL-793  B66-10453  03

Ductile mandrel and parting compound facilitate tube drawing
ARG-6-43  B66-10571  05

Aluminum-titanium hydride-boron carbide composite provides lightweight neutron shield material
MUC-10069  B67-10265  03

Extrusion of small-diameter, thin-wall tungsten tubing
LEWIS-90325  B67-10355  05

Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing
ARG-10100  B68-10288  05

High strength, superplastic superalloy
LEWIS-10805  B69-10293  03

EYE (ANATOMY)

Infrared viewing permits human iris response studies
SNC-10003  B68-10206  04

EYE MOVEMENTS

Photoelectric sensor output controlled by eyeball movements
M-PS-27A  B65-10079  01

Optical projectors simulate human eyes to establish operator's field of view
W00-250  B66-10010  02

Oculometer for remote tracking of eye movement
SNC-10114  B69-10444  02

EYE PROTECTION

Thermal protective visor for entering high temperature areas
MSC-10285  B68-10277  05

P-1 ROCKET ENGINE

Plastic tubing protects flexible copper hose
M-PS-772  B66-10598  05

Tool facilitates installation of Marson clamps
M-PS-2039  B67-10105  05

Computer optimization program finds values for several independent variables that minimize a dependent variable
M-PS-13030  B67-10328  06

FABRICATION

Fabrication method produces high-grade alumina crucibles
M-PS-216  B65-10078  05

Integral ribs formed in metal panels by cold-press extrusion
M-PS-230  B65-10141  05

Spray-on technique simplifies fabrication of complex thermal insulation blanket
M-PS-497  B66-10053  03

Reflective insulator layers separated by bonded silica beads
MUC-249  B66-10070  03

Telescoping of instrumentation tubing eliminates swaging
M-PS-546  B66-10116  05

Rotating mandrel speeds assembly of plastic inflatables
LANGLEY-155  B66-10137  05

Argon purge gas cooled by chill box
M-PS-560  B66-10153  02

Pressure vessels fabricated with high-strength wire and electroformed nickel
M-PS-580  B66-10218  05

Solar cell submodule design facilitates assembly of lightweight arrays
JPL-728  B66-10231  02

Radial coolant channels fabricated by simplified method
W0-0070  B66-10267  05

Boron-deoxidized copper withstands brazing temperatures
M-PS-762  B66-10273  03

Tool pre-tensions covers prior to lacing
MSC-631  B66-10301  05

Fiber length and orientation prevent migration in fluid filters
M-PS-541  B66-10319  05

Hollow spherical rotors fabricated by electroplating
JPL-SC-117  B66-10366  05

Composite gaskets are compatible with liquid oxygen, resist compression set
M-PS-455  B66-10395  03

Composite bulkhead fabrication development
M-PS-1264  B66-10582  05

Grit blasting nozzle fabricated from mild tool steel proves satisfactory
M-PS-1420  B66-10597  05

Preformed stiffeners used to fabricate structural components for pressurized tanks

I-236
### SUBJECT INDEX

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Code</th>
<th>Number</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-FS-1756</td>
<td></td>
<td>B66-10688</td>
<td>05</td>
</tr>
<tr>
<td>Silver plating technique seals leaks in thin wall tubing joints</td>
<td>WW-6096</td>
<td>B66-10703</td>
<td>05</td>
</tr>
<tr>
<td>Effects of heat input rates on T-1 and T-2A steel welds</td>
<td>M-FS-2475</td>
<td>B67-10163</td>
<td>03</td>
</tr>
<tr>
<td>Workmanship standards for fusion welding</td>
<td>NUC-10050</td>
<td>B67-10200</td>
<td>05</td>
</tr>
<tr>
<td>Materials data handbook, Inconel alloy 718</td>
<td>M-FS-2348</td>
<td>B67-10282</td>
<td>03</td>
</tr>
<tr>
<td>Method of improving contact bonds in silicon integrated circuits</td>
<td>M-FS-1753</td>
<td>B67-10335</td>
<td>01</td>
</tr>
<tr>
<td>Composite solar cell matrix is reliable, lightweight and flexible</td>
<td>NFO-10821</td>
<td>B67-10503</td>
<td>01</td>
</tr>
<tr>
<td>Fabrication techniques developed for small-diameter thin-wall tungsten and tungsten alloy tubing</td>
<td>AGS-10100</td>
<td>B68-10284</td>
<td>05</td>
</tr>
<tr>
<td>Venturi meter with separable diffuser</td>
<td>LEWIS-10403</td>
<td>B68-10295</td>
<td>05</td>
</tr>
<tr>
<td>Fiber glass reinforced structural materials for aerospace application</td>
<td>M-FS-14806</td>
<td>B68-10360</td>
<td>03</td>
</tr>
<tr>
<td>Consolidation and fabrication techniques for vanadium-20 w/o titanium /TF-20/</td>
<td>ABG-10148</td>
<td>B68-10368</td>
<td>03</td>
</tr>
<tr>
<td>Conditioning flat conductors for flat conductor cable production</td>
<td>M-FS-14914</td>
<td>B68-10429</td>
<td>01</td>
</tr>
<tr>
<td>Low cost techniques for fabricating lobe bearings</td>
<td>LEWIS-10296</td>
<td>B68-10441</td>
<td>05</td>
</tr>
<tr>
<td>Integrated metal transistor leads</td>
<td>GSFC-90536</td>
<td>B68-10518</td>
<td>01</td>
</tr>
<tr>
<td>Design eliminates radial thermal expansion in turbine stator components</td>
<td>M-FS-15146</td>
<td>B68-10531</td>
<td>05</td>
</tr>
<tr>
<td>Simulated hailstone fabrication and use in testing weatherability of structures</td>
<td>NPO-10783</td>
<td>B68-10552</td>
<td>03</td>
</tr>
<tr>
<td>Multiple-mask chemical etching</td>
<td>MSC-13114</td>
<td>B69-10221</td>
<td>01</td>
</tr>
<tr>
<td>Breakaway electrical connector</td>
<td>NPO-11140</td>
<td>B69-10474</td>
<td>01</td>
</tr>
<tr>
<td>A new method for fabrication of flexible vacuum purge jackets</td>
<td>M-FS-12646</td>
<td>B69-10564</td>
<td>03</td>
</tr>
<tr>
<td>Modification to improve self-isolating transistor arrays</td>
<td>M-FS-20444</td>
<td>B69-10678</td>
<td>01</td>
</tr>
<tr>
<td>Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys</td>
<td>NUC-10554</td>
<td>B69-10707</td>
<td>02</td>
</tr>
<tr>
<td>Lateral PNP bipolar transistor with aiding field diffusions</td>
<td>MSC-13072</td>
<td>B69-10741</td>
<td>01</td>
</tr>
<tr>
<td>Investigation of the development of cracks in solder joints</td>
<td>M-FS-20444</td>
<td>B69-10807</td>
<td>01</td>
</tr>
<tr>
<td><strong>FAILURE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSC-217</td>
<td>B66-10107</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>Microorganisms detected by enzyme-catalyzed reaction</td>
<td>JPL-782</td>
<td>B66-10117</td>
<td>04</td>
</tr>
<tr>
<td>Fibers of newly developed refractory ceramics produced by improved process</td>
<td>WOO-169</td>
<td>B66-10196</td>
<td>03</td>
</tr>
<tr>
<td>Modified soldering iron speeds cutting of synthetic materials</td>
<td>M-FS-725</td>
<td>B66-10246</td>
<td>05</td>
</tr>
<tr>
<td>Graphite cloth facilitates vacuum evaporation of silicon monoxide</td>
<td>M-FS-14764</td>
<td>B68-10256</td>
<td>03</td>
</tr>
<tr>
<td>Glass fabric fire barrier for silicone rubber parts</td>
<td>MSC-15555</td>
<td>B69-10629</td>
<td>03</td>
</tr>
<tr>
<td><strong>FACSIMILE COMMUNICATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facsimile video enhancement device</td>
<td>GSFC-10185</td>
<td>B69-10207</td>
<td>01</td>
</tr>
<tr>
<td><strong>FACTOR ANALYSIS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimating reliability by application of matrix representation</td>
<td>HQ-10246</td>
<td>B69-10793</td>
<td>02</td>
</tr>
<tr>
<td><strong>FACTORIAL DESIGN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solenoid magnetic fields calculated from superposed semi-infinite solenoids</td>
<td>LEWIS-104</td>
<td>B68-10490</td>
<td>01</td>
</tr>
<tr>
<td>Data retrieval system provides unlimited hardware design information</td>
<td>MSC-11144</td>
<td>B67-10170</td>
<td>01</td>
</tr>
<tr>
<td><strong>FACSIMILE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar activity history model</td>
<td>N-FS-20529</td>
<td>B69-10776</td>
<td>01</td>
</tr>
<tr>
<td><strong>FACTORING</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid and precise analysis for calcium in blood serum</td>
<td>AGS-10246</td>
<td>B69-10160</td>
<td>04</td>
</tr>
<tr>
<td><strong>FAIL-SAFE SYSTEMS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid check valve has fail-safe feature</td>
<td>JPL-0019</td>
<td>B65-10207</td>
<td>05</td>
</tr>
<tr>
<td>Respiratory transfer value has fail-safe feature</td>
<td>ABC-1</td>
<td>B65-10369</td>
<td>01</td>
</tr>
<tr>
<td>Modified hydraulic braking system limits angular deceleration to safe values</td>
<td>MSC-11363</td>
<td>B66-10310</td>
<td>05</td>
</tr>
<tr>
<td>Automatic protective vent has fail-safe feature</td>
<td>LANGLEY-218</td>
<td>B66-10369</td>
<td>05</td>
</tr>
<tr>
<td><strong>FAILURE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut-through tester accurately measures insulation failure rates</td>
<td>M-FS-12506</td>
<td>B67-10354</td>
<td>03</td>
</tr>
<tr>
<td>Analysis of stability-critical orthotropic cylinders subjected to axial compression</td>
<td>M-FS-12869</td>
<td>B67-10375</td>
<td>03</td>
</tr>
<tr>
<td>Conceptual nonorthogonal gyro configuration for guidance and navigation</td>
<td>NUC-11363</td>
<td>B67-10433</td>
<td>01</td>
</tr>
<tr>
<td>Application of a truncated normal failure distribution in reliability testing</td>
<td>M-FS-14326</td>
<td>B69-10179</td>
<td>02</td>
</tr>
<tr>
<td>New method for critical failure prediction of complex systems</td>
<td>M-FS-14133</td>
<td>B68-10252</td>
<td>02</td>
</tr>
<tr>
<td>A rapid stress-corrosion test for aluminum alloys</td>
<td>M-FS-20175</td>
<td>B68-10536</td>
<td>03</td>
</tr>
</tbody>
</table>
FAILURE ANALYSIS

Failure rates for accelerated acceptance testing of silicon transistors
ERC-10196 B69-10541 01

Fatigue failure in metallic bellows due to flow-induced vibrations
M-FS-18383 B69-10071 05

Coatings decrease metal fatigue failure
ARC-10015 B69-10176 03

Device for obtaining separation of oxygen
LANGLEY-11007 B69-10477 01

FAILURE ANALYSIS

Cracks in glass electrical connector headers removed by dry blasting with fine abrasive
LEWIS-381 B67-10148 03

Analytical technique permits comparison of reliability of alternate mechanical designs
NWC-10064 B67-10261 06

Development of reliability prediction technique for semiconductor diodes
GSFC-10281 B67-10651 06

Phase plane displays detect incipient failure in servo system testing
HO-10018 B67-10662 01

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures
M-FS-18152 B69-10068 03

Abrasion and fracture testing in a high-pressure hydrogen environment
M-FS-18480 B69-10457 03

Design and sparing techniques to meet specified performance life
HO-10200 B69-10528 02

Application of cryptanalytic techniques to the analysis of BiCd space batteries
GSFC-10569 B69-10731 01

Estimating reliability by application of matrix representation
HO-10246 B69-10793 02

Determination of permissible applied load stress in structural elements
M-FS-16556 B69-10823 02

FAIWINGS

Pressure transducer 3/8-inch in size can be faired into surface
WOO-065 B64-10021 05

Colloidal suspension simulates linear dynamic pressure profile
WOO-266 B66-10214 05

FALLING

Calculations enable optimum design of magnetic brake
LEWIS-251 B66-10073 05

Liquid oxygen dicting cleaned by falling file method
M-FS-11816 B67-10299 03

FAR FIELDS

Noise study of single stage compressor rotor-stator interaction
LANGLEY-137 B67-10516 02

FAR INFRARED RADIATION

Study made of far infrared spectra of silicate minerals
M-FS-18111 B67-10075 02

FAR ULTRAVIOLET RADIATION

Fresnel zone plate forms images at wavelengths below 1000 angstroms
GSFC-231 B65-10171 02

SUBJECT INDEX

Ion chambers simplify absolute intensity measurements in the vacuum ultraviolet
ERC-10 B66-10439 01

FARADAY EFFECT

Multifilar analyzer detects low-energy electrons
GSFC-329 B65-10213 01

Nonreciprocal gain control for ring laser
M-FS-14041 B67-10653 02

Optically exciting a magnetic memory - A feasibility study
M-FS-18854 B69-10060 02

FAST BOLTING

A fast-neutron spectrometer of advanced design
M-FS-1664 B66-10555 01

Procedure developed for reporting fast-neutron exposure
ARC-10035 B68-10190 02

Studies of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
GSFC-329 B65-10220 01

High-temperature, gas-filled ceramic rectifiers, thyratrons, and voltage-reference tubes
LEWIS-90271 B69-10376 01

GAMBIT program
NUC-10243

Heavy-duty staple remover operated by hand
JPL-IT-1004 B63-10292 05

Buckle joins web straps quickly, adjusts easily
LANGLEY-21 B64-10145 05

Electronic assembly rack panels snap on and off
GSFC-59 B64-10121 05

Flexible fastener allows thermal expansion
LANGLEY-40 B64-10145 05

Fastener provides cooling and compensates for thermal expansion
HO-0003 B65-10038 05

Low-cost tool minimizes damage to O-rings during installation
MSC-149 B65-10116 05

Coiled spring mates self-locking device for threaded fasteners
MSC-149 B65-10135 05

Galvanic corrosion reduced in aluminum fabrications
M-FS-272 B65-10140 03

Burning technique improves lubrication of threaded fasteners
LEWIS-217 B65-10302 03

Fastener distributes stress evenly from sandwich-panel-baggy items
MSC-236 B65-10358 05

Nickel/tin coating protects threaded fasteners in corrosive environment
MSC-253 B65-10398 03

Torsion wrench designed for restricted areas
LEWIS-246 B66-10011 05

Compact retractor protects cabling loops
M-FS-561 B66-10018 05

Modified power tool rapidly drives series torque bolts

I-238
PATIGUE TESTS

PATIGUE TESTING MACHINES
Apparatus permits flexure testing of specimens at cryogenic temperatures
N-PS-257 B66-10129 02
Fatigue tester achieves true axial motion through flex plates and bars
NU-0021 B66-10164 01
Strain gage circuitry provides fatigue testing machine with accurate cycle count
NU-0114 B67-10093 01
Fixture tests bellows reliability through repetitive pressure/temperature cycling
MSC-1776 B67-10111 01
Fractography can be used to analyze failure modes in polytetrafluoroethylene
N-PS-20294 B69-10066 03

PATIGUE TESTS
FATIGUE (MATERIALS)
Internal cooling increases range of immersion-type temperature probe
LEWIS-177 B65-10157 02
Plugged hollow shaft makes fatigue-resistant shear pin
LANSB-195 B66-10077 05
Bellows design features low spring rate and long life
N-PS-521 B66-10190 05
Ultrasanics used to measure residual stress
N-PS-12449 B67-10428 02
Simple test for physical stability of cryogenic tank insulation
N-PS-12547 B58-10048 03
Fractography can be used to analyze failure modes in polytetrafluoroethylene
N-PS-20294 B69-10066 03
Fatigue failure in metal bellows due to flow-induced vibrations
N-PS-10383 B69-10071 05

PATIGUE LIFE
Control of component differential hardness increases bearing life
LEWIS-190 B65-10251 05
Fluid damping reduces bellows seal fatigue failures
N-PS-565 B66-10249 05

<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>FATIGUE TESTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC-221 866-10054 05</td>
<td>PATIGUE TESTING MACHINES</td>
</tr>
<tr>
<td>T-handle wrench has torque-limiting action BSC-280 866-10065 05</td>
<td>Apparatus permits flexure testing of specimens at cryogenic temperatures N-PS-257 B66-10129 02</td>
</tr>
<tr>
<td>Epoxy-coated containers easily opened by wire band H-P-592 866-10174 05</td>
<td>Fatigue tester achieves true axial motion through flex plates and bars NU-0021 B66-10164 01</td>
</tr>
<tr>
<td>Tool pre-tensions covers prior to lacing HSC-631 866-10301 05</td>
<td>Strain gage circuitry provides fatigue testing machine with accurate cycle count NU-0114 B67-10093 01</td>
</tr>
<tr>
<td>Flexible fastener effects airtight material closure JFL-684 866-10304 05</td>
<td>Fixture tests bellows reliability through repetitive pressure/temperature cycling MSC-1776 B67-10111 01</td>
</tr>
<tr>
<td>Study made to control depth of potting compound for honeycomb sandwich fasteners LEWIS-370 866-10677 05</td>
<td>Fractography can be used to analyze failure modes in polytetrafluoroethylene N-PS-20294 B69-10066 03</td>
</tr>
<tr>
<td>Web belt load measuring instrument has excellent stability BSC-921 867-10242 01</td>
<td>FATIGUE TESTS</td>
</tr>
<tr>
<td>Power torque wrench concept for precision torque application I-PS-13546 867-10547 05</td>
<td>System measures angular displacement without contact LANGLY-46 B65-10073 01</td>
</tr>
<tr>
<td>Radiant heat source, vacuum bag, provide portable bonding oven BSC-11342 867-10570 03</td>
<td>Apparatus facilitates pressure-testing of metal tubing LEWIS-174 B65-10131 05</td>
</tr>
<tr>
<td>Versatile impact hand tool N-PS-20140 B68-10371 05</td>
<td>Control of component differential hardness increases bearing life LEWIS-190 B65-10251 05</td>
</tr>
<tr>
<td>Beryllium fastener technology N-PS-20306 B69-10019 05</td>
<td>Infrared shield facilitates optical pyrometer measurements LANGLY-133 B65-10272 02</td>
</tr>
<tr>
<td>Mechanical properties of a lap joint under uniform clamping pressure I-PS-14538 869-10141 05</td>
<td>Cryostat modified to aid rotating beam fatigue test N-PS-435 B66-10083 03</td>
</tr>
<tr>
<td>Technique for anchoring fasteners to honeycomb panels LEWIS-10698 B69-10265 03</td>
<td>Fatigue cracks detected and measured without test interruption LEWIS-266 B66-10178 02</td>
</tr>
<tr>
<td>Quick-release hook-and-loop fastener N-PS-10950 B69-10388 05</td>
<td>Brazing process provides high-strength bond between aluminum and stainless steel I-PS-803 B66-10352 05</td>
</tr>
<tr>
<td>One-handed hammer-spanner for chucks N-PS-18581 B69-10398 05</td>
<td>Tester for study of rolling element bearings LEWIS-305 B67-10009 01</td>
</tr>
<tr>
<td>Tests show that aluminum welds are improved by bead removal I-PS-1817 B67-10023 05</td>
<td>Tests show that aluminum welds are improved by bead removal I-PS-1817 B67-10023 05</td>
</tr>
<tr>
<td>Cryostat modified to aid rotating beam fatigue test N-PS-435 B66-10083 03</td>
<td>Cryogenic fatigue data developed for Inconel 718 I-PS-702 B67-10049 03</td>
</tr>
<tr>
<td>Material fatigue data obtained by card-programmed hydraulic loading system LANGLY-10042 B67-10491 03</td>
<td>Chemical milling solution reveals stress corrosion cracks in titanium alloy LANGLY-10077 B67-10322 03</td>
</tr>
<tr>
<td>Circuit measures hysterisis loop areas at 30 Hz I-PS-13069 B67-10519 01</td>
<td>Fatigue testing machine with accurate cycle count NU-0114 B67-10093 01</td>
</tr>
<tr>
<td>High-temperature bearing lubricants LEWIS-10408 B69-10249 05</td>
<td>Automatic system nondestructively monitors and records fatigue crack growth LANGLY-10091 B66-10379 01</td>
</tr>
<tr>
<td>Effects of high frequency current in welding stainless steel 6061 N-PS-18337 B68-10383 05</td>
<td>Tensile and fatigue properties of Inconel</td>
</tr>
</tbody>
</table>
FEASIBILITY

718 at cryogenic temperatures
H-PS-18192 B69-10060 03

Possible correlation between work-hardening and fatigue-failure
ABC-10371 B69-10416 03

FEASIBILITY

Study indicates fluid digital computation systems are feasible
H-PS-520 B67-10181 01

Beryllium fastener technology
H-PS-20306 B69-10019 05

FEED SYSTEMS

Gas pressure feeds film into camera at high speed
ABC-97 B66-10476 02

Welding torch and wire feed manipulator
H-PS-13102 B67-10385 05

Metal tube reducer is inexpensive and simple to operate
ABC-49 B67-10401 05

Dual wire weld feed proportioner
H-PS-18037 B68-10332 05

Multi-feed cone for Cassegrainian antenna
WPO-10539 B69-10269 01

Nondestructive evaluation of printed wiring boards by microhm resistance measurements
SASM-10034 B69-10272 01

FEEDBACK

Field-effect transistor improves electrometer amplifier
ABC-36 B64-10143 01

FN oscillator uses tetrode transistor
JPL-62 B65-10055 01

Variable voltage supply uses Zener diode as reference
GSFC-262 B65-10097 01

Simple circuit functions as frequency discriminator for FFP signals
GSFC-267 B65-10102 01

Auxiliary circuit enables automatic monitoring of EKG's
MSC-106 B65-10142 01

Sensitive electrometer features digital output
GSFC-288 B65-10206 01

Simple BCD circuit accurately counts to 24
GSFC-317 B65-10225 01

Magnetic-shift-register circuit controls stepping motor operation
GSFC-340 B65-10226 01

Electrostatically driven dynamic capacitor employs capacitive feedback
JPL-771 B65-10293 01

Simple circuit provides reliable multiple signal average and reject capability
NU-0069 B66-10282 01

Transistor circuit increases range of logaritmic current amplifier
NU-0018 B66-10350 01

Bipolar current driver for memory circuits
GSFC-213 B66-10469 01

Study made of application of stereoscopic display system to analog computer simulation
H-PS-1263 B66-10590 01

Device enables calibration of microphones at high sound pressure levels

SUBJECT INDEX

H-PS-11980 B67-10336 01

Compensation circuit improves operation of inductive coupling transformers
H-PS-13801 B68-10129 01

Microelectronic oscillator, 2
GSFC-10387 B69-10063 01

Microelectronic oscillator
GSFC-10375 B69-10064 01

Automatic leveling and equalizing hoist device
H-P-16549 B69-10514 05

FEEDBACK AMPLIFIERS

Digital logic elements provide additional functions from analog input
MSC-64 B64-10064 01

Voltage variable oscillator has high phase stability
LAMLTY-123 B65-10204 01

Field effect transistor presents high input impedance in ac amplifier
JPL-500 B65-10232 01

Nonlinear feedback reduces analog-to-digital converter error
ABC-46 B65-10277 01

Digitally controlled pulse-level discriminator operates over wide voltage range
GSFC-324 B66-10129 01

Transducer measures force in vacuum environment
LWIS-218 B66-10161 01

Circuit provides accurate four-quadrant multiplication
WOO-272 B66-10331 02

Low speed, long term tracking electric drive system has zero backlash
WPO-10173 B67-10220 01

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems
WPO-340 B67-10552 01

Improved compensation circuit for direct-coupled amplifiers
MSC-1148 B66-10133 01

Millivolt signal limiter
LBRIS-90237 B69-10015 01

Remote control thermal actuator
LWIS-10873 B69-10307 01

Pulse-height analyzer with digital readout
ARCO-10503 B69-10640 01

FEEDBACK CIRCUITS

Increased performance reliability obtained with dual/redundant oscillator system
GSFC-36 B63-10027 01

Simplified electrometer has excellent operating characteristics
JPL-413 B65-10125 01

Voltage controlled oscillator is easily aligned, has low phase noise
JPL-510 B65-10223 01

Electromechanical flowmeter accurately monitors fluid flow
GSFC-357 B65-10273 01

Hybrid circuit achieves pulse regeneration with low power drain
GSFC-382 B65-10314 01

Phase inverter provides variable reference

I-240
Feedback loop compensates for rectifier nonlinearity

High power dc/dc and dc/ac electrical power conversion techniques developed

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems

Method for reducing snap in magnetic amplifiers

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor

FEEDBACK CONTROL

Igniting system for mercury lamps protects transistorized sustaining supply

Unanneled seismoneter levels self-correcting drift errors

Apparatus measures very small thrusts

Feedback oscillator functions as low-level pulse stretcher

Variable frequency transistor inverters use multiple core transformers

High-gain amplifier has excellent stability and low power consumption

Pressure transducer system is force-balanced, has digital output

Ball and socket joints provide accurate inclination gimbals

Closed loop operation eliminates need for auxiliary gas in high pressure pumping

I-241
FILAMENTS

Buckling strength of filament-wound cylinders under axial compression investigated.

Solid state high-voltage pulser operated with low supply voltage.

Analysis of filament reinforced metal pressure vessels.

Adhesive for cryogenic temperature applications.

FIBERS

LEWIS-10280 B67-10555 05

FIBERS

Program computes zero lift wave drag of entire aircraft.

LANGLEY-10079 B67-10530 06

Solving nonlinear heat transfer constant area fin problems.

M-PS-14851 B68-10504 02

FIRE CONTROL

Dispersion of borax in plastic is excellent.

ARG-5 B67-10016 03

FIRE EXTINGUISHERS

Fire extinguisher control system provides reliable cold weather operation.

M-PS-13031 B67-10622 05

Fire retardant foams developed to suppress fuel fires.

ARC-10098 B68-10358 03

FIRE PREVENTION

Solar film is fire-retardant in oxygen atmosphere.

MSC-11604 B68-10177 03

Ambient temperature catalyst for hydrogen ignition.

LEWIS-10551 B68-10520 03

Technique for assessing potential fire hazards.

NG-10279 B68-10287 03

Improved fire resistant radio frequency aerospace materials.

M-PS-16600 B68-10450 05

FIREPROOFING

Inorganic paint is durable, fireproof, easy to apply.

GSF-366 B65-10156 03

Glass fabric fire barrier for silicone rubber parts.

MSC-15555 B69-10629 03

FIBERS

Infrared television used to detect hydrogen fires.

M-PS-654 B66-10363 01

Hydrogen fire detection system features sharp discrimination.

M-PS-643 B66-10368 01

Emergency escape system protects personnel from explosion and fire.

KSC-66-12 B66-10634 05

FIRING (IGNITING)

Computer program provides steady state analysis for liquid propellant propulsion systems.

MSC-10064 B67-10414 06

Preparation of silver-activated zinc sulfide thin films.

GSF-10667 B68-10271 03

FIRST AID

Buoyant stokes litter assembly used for sea rescue operations.

MSC-131 B66-10019 05

Miniature oxygen resuscitator.

KSC-10398 B69-10319 04

FISHES

Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ra-226.

ARG-10345 B69-10258 02

Inhibition of browning in foodstuft.

I-246
Telescoping of instrumentation tubing eliminates swaging
N-PS-586 B66-10116 05

Seal surfaces protected during assembly
N-PS-0067 B66-10266 05

Portable fixture facilitates pressure testing of instrumentation fittings
N-PS-2032 B67-10121 03

Computer program performs rectangular fitting stress analysis
N-PS-13010 B67-10520 06

Determining gas leakage from bubble formations
N-PS-14841 B67-10393 05

Hand-tightened, high-pressure seal
N-PS-18416 B68-10417 05

Teflon-packed flexible joint
LBWIS-90252 B69-10049 03

FIXED WINGS
Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
LANGL-19191 B67-10666 06

FIXING
Technique for abrasive cutting of thick-film conductors for hybrid circuits
MSC-13242 B69-10235 03

FIJTTURES
Jig and fixture aid fabrication of tungsten rivets
LEWIS-185 B65-10101 05

Multisurface fixture permits easy grinding of tool bit angles
N-PS-586 B66-10171 05

Vacuum test fixture improves leakage rate measurements
MSC-271 B66-10286 01

Nonwoven glass fiber mat reinforces polyurethane adhesive
N-PS-2309 B67-10113 03

Cable clamp bolt fixture facilitates assembly in close quarters
KSC-67-80 B67-10244 05

Fixture facilitates soldering operations
K-PS-14456 B68-10573 05

Tape reading fixture
K-PS-14146 B69-10008 05

PIZZAU EFFECT
Determination of the absolute contours of optical flats
ARG-10352 B69-10209 05

PLANKING
Simple test indicates degree of cure of polysulfide coatings
KSC-15497 B69-10330 03

Improved nickel plating of Inconel X-750
N-PS-18604 B69-10463 05

PLANE DEFLECTORS
Process produces chlorinated aromatic isocyanate in high yield
N-PS-1658 B66-10646 03

PLANE HOLDERS
Mounting facilitates removal and installation of flame-detector rods
N-PS-555 B66-10150 05

PLANE IONIZATION
Chromatographic detection and analysis of traces of hydrocarbons
K-PS-13569 B67-10534 03

PLANES
Magnetic field controls carbon arc tail flame
MSC-139 B65-10108 01

An infrared television system for hydrogen flame detection
KSC-10368 B69-10354 01

PLANARITY
Improved head-controlled TV system produces high-quality remote image
ARG-128 B67-10317 01

Thermal protective visor for entering high temperature areas
MSC-10285 B68-10277 05

Testing the flammability of materials exposed to arcs
MSC-12225 B69-10531 03

Burn-rate testing apparatus
KSC-10947 B69-10740 03

PLANAR BLENDING CASES
Sniffer used as portable hydrogen leak detector
N-PS-846 B66-10356 01

Infrared television used to detect hydrogen fires
N-PS-654 B66-10363 01

Hydrogen fire detection system features sharp discrimination
N-PS-643 B66-10368 01

Design concept for nonarcing electrical connector
N-PS-14937 B69-10404 01

Heat-shrinkable jacket holds fluid in contact with tensile test specimen
MSC-13195 B69-10495 05

PLANES
Plunge on microwave antenna subreflector cuts ground noise
JPL-362 B69-10229 01

Pressure transducer 3/8-inch in size can be fastened into surface
WGO-206 B64-10021 05

Connector seals fluid lines at cryogenic temperatures and high vacuums
GSFC-253 B64-10327 05
Metal parts hydrosized by explosive force

Hydraulic system

Pressure seal ring may be effective over wide temperature range

Pressure vessels fabricated with high-strength wire and electroformed nickel

Pressure-welded flange assembly provides leak tight seal at reduced bolt loads

Diffusion bonding makes strong seal at flanged connector

Radial coolant channels fabricated by simplified method

Fastener provides for bolt misalignment and quick release of flange

Remotely controlled system couples and decouples large diameter pipes

External linkage tie permits reduction in ducting system flange thickness

Rubber and alumina gaskets retain vacuum seal in high temperature ERF cell

Feed-thru flange is useful in vacuum applications to cryogenic temperatures

Spherical pipe joint delivers loads equally to mating flange

Weld procedure produces quality welds for thick sections of Hastelloy-X

Spherical joint connects axially misaligned flanges

Static seal concept to accommodate seat tolerances

Study made to establish parameters and limitations of explosive welding

Study made of transfer of heat energy through metal joints in vacuum environment

Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessels

Development of helical seal for high temperature /2000 degrees F/ application

Asbestos and Inconel combined to form hot-gas seal
color industrial radiography  ARG-10235
FLASH LAMPS  ARG-10274
High-intensity flashing beacon powered by mercury cells  B69-10001 02
LANGLEY-80
Small, high-intensity flasher permits continuous close-in photography  B69-10035 06
B66-10119 03
Nozzle for size reclassification of microfog particles  B69-10047 02
Octalizing-filter method for obtaining flashing-light visibility data  B69-10076 05
MESC-13097
Hydrogen flash lamps studied  ARG-10274
ARG-10292
B69-10107 02
B69-10209 05
High voltage pulse generator  B69-10316 03
MESC-12176
Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes  B69-10353 01
ARG-10352
FLASHING (VAPORIZING)  ARG-10331
Improved process for making thin-film sodium niobate capacitors  ARG-262
MESC-11231
B69-10406 03
B69-10456 04
B69-10121 03
NPO-10170
Portable fixture facilitates pressure testing of instrumentation fittings  B69-10282 05
11-FS-2032
Portable fixture facilitates pressure testing of instrumentation fittings  B69-10646 05
11-PS-2297
Work platform is supported by self-locking blades  B69-10667 05
I-PS-1658
Quick-set temporary bonding clamps  B69-10190 03
NPO-10695
Cryostat permits rapid oxidation of manganese for easy spectrophotometric determination  B69-10117 03
ARG-10331
Detennination of the absolute contours of optical flats  B69-10209 05
ARG-10352
PORTING FLAT SURFACES  ARG-251
Sensitive level sensor made with spirit level, gives electrical output  B65-10003 06
LANGLEY-49
B69-10076 05
B69-10498 01
I-PS-14079
Portable fixture facilitates pressure testing of instrumentation fittings  B69-10498 01
I-PS-48
Portable fixture facilitates pressure testing of instrumentation fittings  B69-10667 05
I-PS-18076
ACCELERATION-COMPENSATED PRESSURE TRANSDUCER  ARG-10274
NESC-12044
Flexed curtain shields equipment from intense heat fluxes  B69-10035 06
NPS-48
B69-10047 02
PLAT SURFACES
FLEXIBILITY
Flexible Bodies

Aluminized fiberglass insulation conforms to curved surfaces
M-FS-877 B66-10024 03
Flexible protective coatings made from silicon-nitrogen materials
M-FS-528 B66-10027 03
Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 B66-10187 02
Bellows design features low spring rate and long life
NESC-521 B66-10190 05
Electrical cabling withstands severe environmental conditions
M-FS-1585 B66-10427 01
Flexible drive allows blind machining and welding in hard-to-reach areas
NESC-524 B66-10428 05
Metal tube can be folded for compact storage, in self-erecting
LEWIS-288 B66-10450 05
Plastic tubing protects flexible copper hose
M-FS-772 B66-10588 05
Pressure probe compensates for dimensional tolerance variations
LEWIS-302 B66-10599 01
Film coating permits low-force scribing
NESC-990 B66-10609 03
Lightweight, all-metal hose assembly has high flexibility and strength over wide range of temperature and pressure
M-FS-1031 B66-10635 05
Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line
80-0077 B66-10702 05
Thermocouple-flexible cable connector insulator is highly reliable
NU-0082 B66-10709 01
Evaluation of high temperature stranded hookup wires
M-FS-2478 B67-10122 03
Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks
NPO-10031 B67-10319 06
Improved computer program for elastic analysis of highly redundant structural configurations
M-FS-13087 B67-10330 06
Development of technology for hot-drape forming of large torus sections
M-FS-12141 B67-10341 05
Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning
NESC-10073 B67-10348 06
Scribable coating for plastic films
NESC-11194 B67-10409 03
Computer program provides steady state analysis for liquid propellant propulsion systems
NESC-10064 B67-10414 06
Composite solar cell matrix is reliable, lightweight and flexible
NPO-10821, B67-10503 01
Toggle operated double latch
NESC-11377 B68-10117 05

Encapsulation technique eliminates thermal stresses in welded electronic modules
M-FS-14581 B66-10307 01
Improved electromechanical master-slave manipulator
ARG-10027 B66-10372 05
SPAN C - Terminal sterilization process analysis program
NPO-10805 B69-10039 06
Structural Analysis and Matrix Interpretive System /SAMIS/
NPO-10839 B69-10093 01
SPAN - Terminal sterilization process analysis program
NPO-10804 B69-10104 06
Continuous analysis of nitrogen dioxide in gas streams of plants
ARG-10356 B69-10254 03
TFB-fluorocarbon liners for flexible hoses
M-FS-16480 B66-10288 05
A mechanically extendible boom
NPO-11118 B69-10328 05
Shock-absorbent mountings for bearings
NPO-10526 B69-10331 05
Quick-acting backup tool for welding ducts
M-FS-19404 B69-10396 05
Flexible rivet-set
M-FS-20317 B69-10459 05
Improved primer for bonding polyurethane adhesives to metals
M-FS-9059 B69-10540 03

Flexible Bodies
Dispensing system eliminates torsion in deployed hoses
NESC-80 B65-10185 05
Fatigue tester achieves true axial motion through flex plates and bars
NU-0021 B66-10164 01
Flexible arms provide constant force for pressure switch calibration
HQ-38 B66-10317 05
Bellows joint absorbs torsional deflections in duct system
M-FS-882 B66-10332 04
Hydraulically controlled flexible arm can bend in any direction
ESC-66-20 B66-10626 05
Method for predicting frictional loss in metal bellows and flexible hose
M-FS-883 B66-10662 05
Rigid-body motion extracted from total motion of a flexible body
ARC-63 B67-10081 05
Suspended chains damp wind-induced oscillations of tall flexible structures
LANGLEY-10193 B66-10082 05

Computer program provides steady state analysis for liquid propellant propulsion systems
NESC-10064 B67-10414 06
Composite solar cell matrix is reliable, lightweight and flexible
NPO-10821, B67-10503 01
Toggle operated double latch
NESC-11377 B68-10117 05

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning
NESC-10073 B67-10348 06
Scribable coating for plastic films
NESC-11194 B67-10409 03

Subject Index
FLIP-PLOPS

vacuum purge jackets
M-PS-12646 B69-10564 03

FLUXING
Flexure support system protects thermally and
dynamically loaded models
LANGLEY-39 B65-10042 05

Apparatus permits flexure testing of specimens
at cryogenic temperatures
M-PS-257 B65-10129 02

Improved fluid control valve extends diaphragms
life
JPL-345 B65-10147 05

Mount enables precision adjustment of
optical-instrumentation mirror
MSC-1084 B66-10199 02

Fuel and oxidizer valve assembly employs
single solenoid actuator
MSC-1046 B66-10648 05

Cracks in glass electrical connector
headers removed by dry blasting with fine
abrasive
LEWIS-381 B67-10148 03

Mechanical properties of wire insulation
automatically determined
MSC-10983 B67-10370 01

FLIGHT ALTITUDE
Sextant measures spacecraft altitude without
gravitational reference
MSC-200 B66-10143 02

Internal velocity factors
MSC-15002 B68-10403 06

FLIGHT CHARACTERISTICS
Computer graphics data conditioning
M-PS-14695 B68-10296 06

FLIGHT CLOTHING
Biological isolation garment
MSC-12206 B68-10500 04

FLIGHT CONTROL
Master control data handling program uses
automatic data input
M-PS-22259 B67-10280 06

Accurate digital technique simulates flight
control system
M-PS-14787 B68-10569 02

FLIGHT INSTRUMENTS
Alternating current electromagnetic servo
induction meter
XFR-03830 B68-10100 01

FLIGHT PATHS
Internal velocity factors
MSC-15002 B68-10403 06

FLIGHT RECORDERS
Library of documents compressed into lap-held
display kit
MSC-125 B65-10030 01

FLIGHT SIMULATION
Space trajectories program for IBM 7909
NPO-10125 B67-10172 06

A phonocardiogram simulator
KSC-67-94 B67-10239 01

Accurate digital technique simulates flight
control system
M-PS-14787 B68-10569 02

FLIGHT TEST VEHICLES
Device measures fluid drag on test vehicles
LANGLEY-34 B65-10195 01

FLIGHT TESTS
Computer program performs aerothermodynamic
flight test data correlation
MSC-10075 B67-10494 06

FLIGHT TIME
Advanced mission analysis programs
GSPC-10575 B69-10171 06

FLIGHT VEHICLES
Analysis of space vehicle structures using the
transfer-function concept
NPO-11162 B69-10337 06

FLIP-PLOPS
Frequency-shift-keyer circuit improves PCM
conversion for radio transmission
GSPC-80 B63-10511 01

Master linearity of video cameras calibrated
with precision test
GSPC-200 B64-10209 01

Digital cardiometer computes and displays
heartbeat rate
MSC-93 B64-10258 01

Voltage generator sweeps oscillator frequency
linearly with time
M-PS-219 B64-10320 01

Instrument calibrates low gas-rate flowmeters
MSC-134 B65-10137 01

Logic circuit exhibits optimum performance
LANGLEY-129 B65-10193 01

Analog-to-digital converter has increased
reliability and reduced power consumption
GSPC-298 B65-10194 01

Single BCD circuit accurately counts to 24
GSPC-317 B65-10225 01

Simple pulse counting circuit computes sum
of squares
MSC-391 B65-10260 01

Frequency correction device uses digital
circuitry
GSPC-268 B65-10307 01

Frequency discriminator with binary output
eliminates tuned circuits
M-PS-376 B65-10349 01

Single circuit performs binary addition and
subtraction
GSPC-399 B65-10355 01

Binary counter uses fluid logic elements
M-PS-323 B65-10377 01

System proportions fluid-flow in response
to demand signals
GSPC-457 B66-10094 01

Ring counter circuit switches multiphase
motor direction of rotation
JPL-3C-166 B66-10101 01

New television camera eliminates vidicon tube
M-PS-472 B66-10112 01

FET comparator detects analog signal levels
without leading analog device
M-PS-503 B66-10224 01

Binary sequence detector uses minimum number
of decision elements
JPL-673 B66-10264 01

PN acquisition demodulator achieves automatic
synchronization of a telemetry channel
JPL-612 B66-10271 01

Pneumatic binary encoder replaces multiple
solenoid systems
M-PS-665 B66-10374 01

System monitors discrete computer inputs
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar current driver for memory circuits</td>
<td>B66-10139 01</td>
</tr>
<tr>
<td>Security warning system monitors up to fifteen remote areas simultaneously</td>
<td>B66-10540 01</td>
</tr>
<tr>
<td>Polarimeter provides transient response in nanosecond range</td>
<td>B66-10593 05</td>
</tr>
<tr>
<td>Variable-pulse switching circuit accurately controls solenoid-valve actuations</td>
<td>B67-10022 01</td>
</tr>
<tr>
<td>Digital-to-analog converter operates from low level inputs</td>
<td>B67-10357 01</td>
</tr>
<tr>
<td>Transient sensor development</td>
<td>B67-10471 01</td>
</tr>
<tr>
<td>Blood pressure reprosonmins assistant signal recording</td>
<td>B67-10565 01</td>
</tr>
<tr>
<td>Logic circuit detects both present and missing negative pulses in superimposed wave trains</td>
<td>B67-10475 01</td>
</tr>
<tr>
<td>Unique frequency-shift-keyed demodulation system</td>
<td>B67-10668 01</td>
</tr>
<tr>
<td>Self-correcting, synchronizing ring counter using integrated circuit devices</td>
<td>B68-10067 01</td>
</tr>
<tr>
<td>Parallel-to-serial biphase-data converter</td>
<td>B68-10241 01</td>
</tr>
<tr>
<td>Fluidic-thermochromic display device</td>
<td>B68-10350 01</td>
</tr>
<tr>
<td>Closed circuit TV system automatically guides welding arc</td>
<td>B68-10357 01</td>
</tr>
<tr>
<td>Integrated circuit with multiple collector current source</td>
<td>B69-10126 01</td>
</tr>
<tr>
<td>Highly linear, sensitive analog-to-digital converter</td>
<td>B69-10230 01</td>
</tr>
<tr>
<td>Pneumatic analog-to-pulse frequency converter</td>
<td>B69-10276 02</td>
</tr>
<tr>
<td>Circuit counts pulses and indicates time of occurrence of slow pulses</td>
<td>B69-10313 01</td>
</tr>
<tr>
<td>Phase-locked-loop phase modulator with high modulation index, low distortion</td>
<td>B69-10487 01</td>
</tr>
<tr>
<td>Load current sensor for a pulse width modulator power regulator</td>
<td>B69-10578 01</td>
</tr>
<tr>
<td>Compact assembly generates plastic foam, inflates flotation bag</td>
<td>B66-10090 05</td>
</tr>
<tr>
<td>Proposed method of rotary dynamic balancing by laser</td>
<td>B67-10452 02</td>
</tr>
<tr>
<td>Buoyant stokes litter assembly used for sea rescue operations</td>
<td>B66-10019 05</td>
</tr>
<tr>
<td>Self-inflating lifewest stores in small package</td>
<td>B66-10184 04</td>
</tr>
<tr>
<td>Device without electrical connections in tank measures liquid level W00-235</td>
<td>B66-10198 01</td>
</tr>
<tr>
<td>Resilient bearing supports are gas controlled</td>
<td>B67-10364 05</td>
</tr>
<tr>
<td>Circuit automatically calibrates flowmeter against liquid-level gage reference</td>
<td>B67-10376 01</td>
</tr>
<tr>
<td>Portable flooring protects finished surfaces, is easily moved</td>
<td>B63-10307 05</td>
</tr>
<tr>
<td>Work platform is supported by self-locking blades</td>
<td>B67-10180 05</td>
</tr>
<tr>
<td>Organic reactants rapidly produce plastic foam</td>
<td>B65-10288 03</td>
</tr>
<tr>
<td>Proposed gas generation assembly would recover deeply submerged objects</td>
<td>B68-10211 05</td>
</tr>
<tr>
<td>Improved gyro-flotation damping fluids</td>
<td>B69-10360 03</td>
</tr>
<tr>
<td>Selective tube roughening increases heat transfer capability</td>
<td>B66-10610 05</td>
</tr>
<tr>
<td>Oil-smeared models aid wind tunnel measurements</td>
<td>B63-10311 03</td>
</tr>
<tr>
<td>Probe measures characteristics of hot gas stress</td>
<td>B65-10133 02</td>
</tr>
<tr>
<td>Matching flow characteristics of standard shutoff valves eliminates need for custom fabricated valves</td>
<td>B66-10416 05</td>
</tr>
<tr>
<td>Computer program simplifies transient and steady-state temperature prediction for complex body shapes</td>
<td>B66-10619 01</td>
</tr>
<tr>
<td>Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates</td>
<td>B67-10418 05</td>
</tr>
<tr>
<td>Pump simulator provides variable pressure-flow characteristics</td>
<td>B67-10591 06</td>
</tr>
<tr>
<td>Computer program calculates peripheral water injection cooling of axisymmetric subsonic diffuser</td>
<td>B67-10543 06</td>
</tr>
<tr>
<td>Prediction of performance of centrifugal pumps during starts under pressure</td>
<td>B69-10263 05</td>
</tr>
<tr>
<td>Restricted-flow junction between liquids</td>
<td>B69-10332 02</td>
</tr>
</tbody>
</table>
FLOW REGULATORS

through turbines
LEWIS-236 B66-10496 01
Geometry and design point performance of axial flow turbines
LEWIS-10471 B69-10111 06

FLOW MEASUREMENT

Fluid-pressure meter can be calibrated without
residual from flow line
M-FS-98 B63-10502 05
Field-effect transistor improves electrometer
amplifier
ARC-36 B64-10143 01
Bell bearing used in design of rugged
flowmeter
LEWIS-159 B64-10170 05
Probe measures characteristics of hot gas
stream
M-FS-240 B65-10133 02
Instrument calibrates low gas-rate flowmeters
HSC-194 B65-10137 01
Inexpensive check valve is installed in standard AW fittings
JPL-2A B65-10222 05
Electromechanical flowmeter accurately
monitors fluid flow
GSFC-357 B65-10273 01
Magnetic fluid readily controlled in zero
gravity environment
LEWIS-126 B65-10335 03
Flowmeter measures low gas-flow rates
M-FS-215 B66-10036 01
Wide-range instrument monitors flow rates
of chemically active fluids
HSC-186 B66-10205 01
Studies reveal effects of pipe bends on fluid
flow cavitation
M-FS-516 B66-10228 05
Positive displacement cylinder measures
corrosive liquid volume
HSC-1038 B66-10589 05
Study of hot wire techniques in low density
flows with high turbulence levels
M-FS-1269 B66-10687 01
Local measurements in turbulent flows
through cross correlation of optical signals
M-FS-1268 B67-10030 01
Instrumet continuously measures density
of flowing fluids
LEWIS-309 B67-10080 01
Braze joint quality tested
electromagnetically
M-FS-12795 B67-10333 01
Low friction servo valve
LEWIS-10574 B68-10440 05
A mass flow probe for measurement in a
supersonic stream
LEWIS-10655 B68-10533 02

FLOW REGULATORS

Level of super-cold liquids automatically
maintained by levelometer
JPL-197 B63-10250 01
Flow control valve is independent of pressure
drop
JPL-WW-039 B65-10121 05
Electromechanical flowmeter accurately
monitors fluid flow
GSFC-357 B65-10273 01

FLOW GEOMETRY

Computer program performs flow analysis
M-FS-10456 B69-10146 06

Pneumatic flow comparator
M-FS-10372 B69-10400 05
Self-sustained hydrodynamic oscillations in
a natural-circulation two-phase-flow
boiling loop
ARG-10461 B69-10620 02
Flow properties of suspensions rich in
solids
ARG-10481 B69-10622 02

FLOW CHARTS

FORTRAN progras flow chart is automatically
produced
M-FS-359 B66-10662 01
Detection system ensures positive alarm
activation in digital message loss
W0C-298 B66-10287 01
Computer program calculates monotonic
maximum likelihood estimates using method
of reversals
M-FS-1516 B67-10136 01
Vis-A-Plan /visualize a plan/ management
technique provides performance-time scale
HSC-1073 B67-10240 06
Computer program developed for flowsheet
calculations and process data reduction
ARG-10134 B69-10023 06
Visual tank analysis /VISTA/
M-FS-14716 B69-10394 06

FLOW DIRECTION INDICATORS

Flow direction measurement with fixed probes
LEWIS-11044 B69-10714 02

FLOW DISTRIBUTION

gi-models models aid wind tunnel
measurements
LANGLEY-4 B63-10311 03
Fluid logic control circuit operates actuator
actuator actuator
LEWIS-294 B66-10593 05
Predicting surface heating rates and
pressures resulting from hot exhaust gases
HSC-971 B66-10633 05
Study of hot wire techniques in low density
flows with high turbulence levels
M-FS-1269 B66-10687 01
Problems of oscillating cone in supersonic
flow is solved by small perturbation
techniques
M-FS-869 B66-10700 02
Computer program calculates wing aerodynamic
characteristics for fixed wings with dihedral
and variable-sweep wings at subsonic speeds
LANGLEY-10197 B67-10666 06
Large-amplitude inviscid fluid motion in an
accelerating container
HSC-11560 B69-10170 02
Dynamically stable check valve concept for
wide flow range
M-FS-14579 B68-10247 05
Fluorescent particles enable visualization
of gas flow
M-FS-14583 B68-10259 02
Geometry and design point performance of
axial flow turbines
LEWIS-10471 B69-10111 06
Bell nozzle kernel analysis program
M-FS-10456 B69-10146 06
High-pressure, low temperature electrical connector makes no-leak seal
MSC-276  B66-10079  02

System proportions fluid-flow in response to demand signals
GSPC-457  B66-10094  01

Dual regulator controls two gases from a single reference
MSC-227  B66-10167  05

Pneumatic shutoff and time-delay valve operates at controlled rate
M-PS-602  B66-10189  05

Flow ring valve is simple, quick-acting
M-PS-752  B66-10255  05

Concept for passive system to control gas flow independently of temperature
M-PS-982  B66-10343  05

Diaphragm valve for corrosive and high temperature fluid flow control has unique features
LEWIS-304  B66-10365  05

Concept of planetary gear system to control fluid mixture ratio
M-PS-1785  B66-10477  05

Quick-response servo amplifies small hydraulic pressure differences
ARG-99  B66-10498  05

Internal machining accomplished at constant radii
M-PS-1573  B66-10546  05

Check valve installation in pilot operated relief valve prevents reverse pressurization
M-PS-1925  B66-10655  05

Solenoid valve design has one moving part
MPO-1039  B66-10219  05

Temperature responsive valve withstands high impact loading
MPO-10186  B66-10225  05

Dual photochemical replenisher system reduces chemical losses
KSC-67-111  B66-10485  02

Butterfly valve with metal seals controls flow of hydrogen from cryogenic through high temperatures
MSC-10034  B66-10567  05

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135  B66-10623  05

Solenoid hammer valve developed for quick-opening requirements
LEWIS-2510  B66-10639  05

Dynamically stable check valve concept for wide flow range
M-PS-14579  B66-10247  05

Dynamic-reservoir lubricating device
M-PS-14652  B66-10261  05

A method for using surface tension to determine the size of holes in hardware
MSC-15194  B69-10595  03

FLOW RESISTANCE
System automatically supplies precise analytical samples of high-pressure gases
M-PS-1814  B66-10090  01

FLOW STABILITY
Binary fluid amplifier solves stability and load problems
ERC-15  B66-10177  01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>FLOWMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>gas-flow rates</td>
<td>B66-10569 01</td>
</tr>
<tr>
<td>Laser Doppler flowmeter measures gas velocity</td>
<td>B66-10693 02</td>
</tr>
<tr>
<td>Low rate flow switch can be used for gas or liquid</td>
<td>B66-10696 01</td>
</tr>
<tr>
<td>Aspirator increases relief valve poppet stroke</td>
<td>B67-10154 05</td>
</tr>
<tr>
<td>A theoretical model for determining turbine flowmeter sensitivity</td>
<td>B67-10179 01</td>
</tr>
<tr>
<td>Water cooled anode increases life of high temperature arc lamp</td>
<td>B67-10247 02</td>
</tr>
<tr>
<td>High impact pressure regulator withstands impacts of over 15,000 g</td>
<td>B67-10274 01</td>
</tr>
<tr>
<td>Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident</td>
<td>B67-10281 06</td>
</tr>
<tr>
<td>Reaction of steam with molybdenum is studied</td>
<td>B67-10502 03</td>
</tr>
<tr>
<td>Flow liner extends operating life of high-temperature bellows</td>
<td>B67-10512 05</td>
</tr>
<tr>
<td>Analysis of dynamic systems with DAP48 computer program</td>
<td>B67-10523 06</td>
</tr>
<tr>
<td>Equation relates flow at free jet to flow downstream</td>
<td>B67-10612 06</td>
</tr>
<tr>
<td>Dynamic-reservoir lubricating device</td>
<td>B67-10261 05</td>
</tr>
<tr>
<td>Two-fluid, impinging-sheet injector</td>
<td>B67-10338 05</td>
</tr>
<tr>
<td>Cooled miniature pressure transducers effective at high temperatures</td>
<td>B68-10370 01</td>
</tr>
<tr>
<td>Multiple-orifice throttle valve</td>
<td>B69-10030 05</td>
</tr>
<tr>
<td>Ultra-high-flux heat exchanger</td>
<td>B69-10201 02</td>
</tr>
<tr>
<td>TFE-fluorocarbon liners for flexible hoses</td>
<td>B69-10288 05</td>
</tr>
<tr>
<td>Automatic filter-blowback system used with mintered-metal filters</td>
<td>B69-10342 05</td>
</tr>
<tr>
<td>Automatic calorimetry system monitors EF power</td>
<td>B69-10384 01</td>
</tr>
<tr>
<td>Method for predicting pump cavitation performance</td>
<td>B69-10446 02</td>
</tr>
<tr>
<td>Flow properties of suspensions in solids</td>
<td>B69-10622 02</td>
</tr>
<tr>
<td>Pulse-height analyzer with digital readout</td>
<td>B69-10640 01</td>
</tr>
<tr>
<td>Natural gas flow through critical nozzles</td>
<td>B69-10712 02</td>
</tr>
<tr>
<td>FLOW VISUALIZATION</td>
<td></td>
</tr>
<tr>
<td>Oil-smeared models aid wind tunnel measurements</td>
<td>B63-10311 03</td>
</tr>
<tr>
<td>Fluorescent particles enable visualization of gas flow</td>
<td>B68-10259 02</td>
</tr>
<tr>
<td>Computer program analyzes and designs supersonic wing-body combinations</td>
<td>B68-10335 06</td>
</tr>
<tr>
<td>FLOWMETERS</td>
<td></td>
</tr>
<tr>
<td>Meter accurately measures flow of low-conductivity fluids</td>
<td>B63-10280 01</td>
</tr>
<tr>
<td>Ball bearing used in design of rugged flowmeter</td>
<td>B64-10170 05</td>
</tr>
<tr>
<td>Electromechanical flowmeter accurately monitors fluid flow</td>
<td>B65-10273 01</td>
</tr>
<tr>
<td>Improved strain-wire flowmeter has fast response time</td>
<td>B65-10304 01</td>
</tr>
<tr>
<td>Volumetric system calibrates meters for large flow rates</td>
<td>B65-10323 05</td>
</tr>
<tr>
<td>Optical output enhances flowmeter accuracy</td>
<td>B65-10395 02</td>
</tr>
<tr>
<td>Flowmeter measures low gas-flow rates</td>
<td>B66-10036 01</td>
</tr>
<tr>
<td>Segmented ball valve is easy to open and close</td>
<td>B66-10195 05</td>
</tr>
<tr>
<td>Wide-range instrument monitors flow rates of chemically active fluids</td>
<td>B66-10205 01</td>
</tr>
<tr>
<td>Bearing puller facilitates removal and replacement of bearing assemblies</td>
<td>B66-10418 05</td>
</tr>
<tr>
<td>Flowmeter measures flow rates of high temperature fluids</td>
<td>B66-10521 01</td>
</tr>
<tr>
<td>Positive displacement cylinder measures corrosive liquid volume</td>
<td>B66-10589 05</td>
</tr>
<tr>
<td>Laser Doppler flowmeter measures gas velocity</td>
<td>B66-10693 02</td>
</tr>
<tr>
<td>Low rate flow switch can be used for gas or liquid</td>
<td>B66-10696 01</td>
</tr>
<tr>
<td>A theoretical model for determining turbine flowmeter sensitivity</td>
<td>B67-10179 01</td>
</tr>
<tr>
<td>Automated microsyringe is highly accurate and reliable</td>
<td>B67-10203 01</td>
</tr>
<tr>
<td>Circuit automatically calibrates flowmeter against liquid-level gage reference</td>
<td>B67-10376 01</td>
</tr>
<tr>
<td>Flowmeter determines mix ratio for viscous adhesives</td>
<td>B67-10378 01</td>
</tr>
<tr>
<td>Performance of turbine-type flowmeters in liquid hydrogen</td>
<td>B67-10506 01</td>
</tr>
<tr>
<td>Calibration technique for electromagnetic flowmeters</td>
<td></td>
</tr>
</tbody>
</table>
Air sampler collects and protects minute particles.

High-pressure gas facilitates calibration of turbine flowmeters for liquid hydrogen.

Computer program developed for flowsheet calculations and process data reduction.

Automatic calorimetry system monitors HF power.

Natural gas flow through critical nozzles.

Chromatographic detection and analysis of traces of hydrocarbons.

Dynamic calibration of turbine flowmeters.

FLUORESC
Neutron detector simultaneously measures fluence and dose equivalent.

FLUIDS
Magnetic field controls carbon arc tail flame.

FLUID AMPLIFIERS
Binary counter uses fluid logic elements.

Queuing register uses fluid logic elements.

Binary fluid amplifier solves stability and load problems.

Improved fluid control circuit operates on low power input.

Experimental scaling study of fluid amplifier elements.

Study indicates fluid digital computation systems are feasible.

Review of research and development in fluid logic elements.

Fluidic transducer gives pressure output as function of temperature.

Fluidic analog amplifier.

FLUID DYNAMICS
A theoretical model for determining turbine flowmeter sensitivity.

Computer program MCAP-TOSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid.

FLUID FILTERS
Process reduces pore diameters to produce superior filters.

Fiber length and orientation prevent migration in fluid filters.

Valve effectively controls amount of contaminant in flow stream.

Electron beam selectively seals porous metal filters.

Hydrostatic testing of porous assemblies.

Replacement of fluid-filter elements without interruption of flow.

Automatic filter-blowback systems used with sintered-metal filters.

FLUID FLOW
Vented piston seal prevents fluid leakage between two chambers.

Meter accurately measures flow of low-conductivity fluids.

Pressure transducer 3/8-inch in size can be faired into surface.

Ball bearing used in design of rugged flowmeter.

Nonresonant support facilitates vibration testing of structures.

Fluid control valve is independent of pressure drop.

Quick-disconnect coupling safe transfer of hazardous fluids.

Fluid check valve has fail-safe feature.

Electromechanical flowmeter accurately monitors fluid flow.
Coaxial capacitor used to determine fluid density
LEWIS-232 B65-10296 02

Improved strain-wire flowmeter has fast response time
LEWIS-241 B65-10304 01

Pressure responsive seal handles static and dynamic loads
GSFC-441 B65-10327 05

Improved poppet valve provides positive damageproof seal
M-PS-293 B65-10346 05

System proportions fluid-flow in response to demand signals
GSFC-457 B66-10094 01

Pneumatic shutoff and time-delay valve operates at controlled rate
M-PS-602 B66-10189 05

Wide-range instrument monitors flow rates of chemically active fluids
MSC-186 B66-10205 01

Fluid damping reduces bellows seal fatigue failures
M-PS-565 B66-10249 05

Diaphragm valve for corrosive and high temperature fluid flow control has unique features
LEWIS-304 B66-10365 05

Rotary valve controls multiple hydraulic leveling cylinders
M-PS-361 B66-10402 05

Concept of planetary gear system to control fluid mixture ratio
M-PS-1705 B66-10477 05

Quick-response servo amplifies small hydraulic pressure differences
ABC-99 B66-10498 05

Monitoring circuit accurately measures movement of solenoid valve
M-PS-1029 B66-10568 01

Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MSC-989 B66-10619 01

Method for predicting frictional loss in metal bellows and flexible hose
M-PS-883 B66-10662 05

Photographic method measures particle size and velocity in fluid stream
M-PS-1536 B66-10668 01

Variable-pulse switching circuit accurately controls solenoid-valve actuations
M-PS-1895 B67-10022 01

Flow test device fits into restricted access passages
MSC-1078 B67-10074 01

Solenoid valve design has one moving part
NPO-10039 B67-10219 05

Segmented, arch-bound carbon seal is pressure loaded
M-PS-12777 B67-10325 05

Fuel cell life improved by metallic sinter activation after electrode assembly welding
MSC-10965 B67-10436 03

Pump simulator provides variable pressure-flow characteristics
LEWIS-10122 B67-10453 05

Study made of thin-walled pipe response to turbulent fluids
M-PS-1521 B67-10518 05

Analysis of dynamic systems with DAP48 computer program
M-PS-13999 B67-10523 06

Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel
MCC-10098 B67-10539 05

Dynamic captive plastic seal M-PS-12988 B67-10600 03

Flow tube used to cool solar-pumped laser
MSC-11026 B68-10010 02

Dual rate pressure relief valve
MSC-11606 B68-10237 05

Fluorescent particles enable visualization of gas flow
I-PS-14583 B68-10259 05

Wide-range instrument monitors flow rates of chemically active fluids
USC-186 B66-10205 01

Dynamic reservoir lubricating device
I-PS-14652 B68-10261 05

Fluid damping reduces bellows seal fatigue failures
I-PS-565 B66-10249 05

Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction
UUC-10189 B68-10450 06

Quick-response servo amplifies small hydraulic pressure differences
ABC-99 B66-10498 05

Monitoring circuit accurately measures movement of solenoid valve
M-PS-1029 B66-10568 01

Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MSC-989 B66-10619 01

Method for predicting frictional loss in metal bellows and flexible hose
M-PS-883 B66-10662 05

Photographic method measures particle size and velocity in fluid stream
M-PS-1536 B66-10668 01

Variable-pulse switching circuit accurately controls solenoid-valve actuations
M-PS-1895 B67-10022 01

Flow test device fits into restricted access passages
MSC-1078 B67-10074 01

Solenoid valve design has one moving part
NPO-10039 B67-10219 05

Segmented, arch-bound carbon seal is pressure loaded
M-PS-12777 B67-10325 05

Fuel cell life improved by metallic sinter activation after electrode assembly welding
MSC-10965 B67-10436 03

Pump simulator provides variable pressure-flow characteristics
LEWIS-10122 B67-10453 05
FLUID INJECTION

*Fluid exchangers*

N-PS-20438

B69-10541 02

FLUID INJECTION

Fluid filler device for handling hot corrosive materials

MSC-85

B64-10166 03

Study of vortex valve for medium temperature solid propellants

LANGLY-204

B66-10524 01

Two-fluid, impinging-sheet injector

WPO-10547

B68-10338 05

**FLUID JETS**

Fluid power-transmitting gas bearing

BRC-10097

B68-10503 05

**FLUID LOGIC**

Binary counter uses fluid logic elements

B65-10377 01

Queuing register uses fluid logic elements

B66-10100 05

**FLUID MECHANICS**

Studies reveal effects of pipe bends on fluid flow cavitation

B-PS-316

B66-10226 05

Computer program determines gas flow rates in piping systems

P-FS-443

B66-10300 01

Stationary device produces homogeneous mixture of fluids

B-PS-525

B66-10570 05

Temperature-sensed cryogenic bleed maintains liquid state in transfer line

B-PS-12681

B67-10424 01

Fluid behavioral patterns found in subscale geysering study

B-PS-13582

B67-10462 02

Acoustic wave analysis

B-PS-18076

B68-10265 02

Axially symmetric reacting gas nonequilibrium performance program

MSC-11781

B68-10377 06

An investigation of particle mixing in a gas-fluidized bed

AR-10182

B68-10407 05

A mass flux probe for measurement in a supercritical stream

LEWIS-10495

B66-10533 02

Combination probe for airflow measurements

LEWIS-10281

B68-10558 01

Channel-wall limitations in the magnetohydrodynamic induction generator

AR-10128

B69-10255 02

Flow direction measurement with fixed probes

LEWIS-11044

B69-10714 02

**FLUID POWER**

Pickup device reads pressures from ports in rotating mechanisms

LEWIS-158

B65-10024 03

Fluid pressure used to test turbopump bearings

NU-0001

B65-10024 03

Fluid-pressure measurement apparatus uses short-length manometer tubes

LEWIS-28

B65-10027 05

Fluid power-transmitting gas bearing

BRC-10097

B68-10503 05

**FLUID SWITCHING ELEMENTS**

Liquid switch is remotely operated by low dc voltage

GSPC-119

B63-10599 01

Positive displacement cylinder measures corrosive liquid volume

MSC-1038

B66-10589 05

Design concept for pressure switch calibrator

HE-36

B66-10598 01

Fluidic-thermoscopic display device

BRC-10031

B68-10350 01

**FLUID TRANSMISSION LINES**

Safety restrainer prevents whipping of ruptured high-pressure hose

LEWIS-99

B64-10348 05

Device disconnects several couplings simultaneously

JPL-226

B65-10163 05

Sensor detects hydrocarbon oil contaminants in fluid lines

B-PS-522

B66-10068 01

Radioactive tracer system detects oil contaminants in fluid lines

B-PS-512

B66-10900 03

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons

LEWIS-263

B66-10104 03

Cryogenic trap valve has no moving parts

B-PS-407

B66-10136 05

Portable power tool machines weld joints in field

B-PS-258

B66-10145 05

Reactively controlled system couples and decouples large diameter pipes

NU-0062

B66-10276 05

Vacuum test fixture improves leakage rate measurements

MSC-271

B66-10286 01

Inexpensive insulation is effective for cryogenic transfer lines

MSC-618

B66-10348 02

High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation

LEWIS-310

B66-10394 01

Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket

B-PS-888

B66-10412 02

Metal tube can be folded for compact stowage, is self-erecting

LEWIS-288

B66-10450 05

Tool facilitates installation of Harmon clamps

B-PS-2039

B67-10105 05

Improved cryogenic refrigeration system

JPL-731

B67-10128 02

Line adapter provides quick disconnect under moderate side loading

B-PS-2159

B67-10256 05

Inexpensive cryogenic insulation replaces vacuum jacketed line

BPS-10061

B67-10264 02

Accumulator isolator prevents malfunctioning of faulty hydraulic system

B-PS-1415

B67-10528 05

Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>FLOWSCIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed-thru conduit minimizes heat pickup</td>
<td>Oil smeared models aid wind tunnel measurements</td>
</tr>
<tr>
<td>JPL-847</td>
<td>LANGLEY-4</td>
</tr>
<tr>
<td>Reconnect mechanism</td>
<td>Instrument accurately measures extremely low air densities</td>
</tr>
<tr>
<td>T-PS-12968</td>
<td>M-PS-193</td>
</tr>
<tr>
<td>Synchronized circuit improves accuracy of fluid transfer measurements</td>
<td>Distant objects detected visually with optical filters</td>
</tr>
<tr>
<td>MSC-11167</td>
<td>LANGLEY-166</td>
</tr>
<tr>
<td>Fluid sample collection and storage device</td>
<td>Sensor detects hydrocarbon oil contaminants in fluid lines</td>
</tr>
<tr>
<td>B66-10057</td>
<td>M-PS-522</td>
</tr>
<tr>
<td>FLUIDICS</td>
<td>Microorganisms detected by enzyme catalyzed reaction</td>
</tr>
<tr>
<td>Negative feedback system reduces pump oscillations</td>
<td>JPL-782</td>
</tr>
<tr>
<td>H-PS-1852</td>
<td>B66-10117</td>
</tr>
<tr>
<td>Fluidic-thermochromic display device</td>
<td>Circular, explosion-proof lamp provides uniform illumination</td>
</tr>
<tr>
<td>ERC-10031</td>
<td>ERC-382</td>
</tr>
<tr>
<td>Fluid power-transmitting gas bearing</td>
<td>Sea dye marker provides visibility for 20 hours</td>
</tr>
<tr>
<td>ERC-10097</td>
<td>MSC-714</td>
</tr>
<tr>
<td>Fluidic analog amplifier</td>
<td>Fluorescent particles enable visualization of gas flow</td>
</tr>
<tr>
<td>ERC-10102</td>
<td>M-PS-14583</td>
</tr>
<tr>
<td>Effect of interparticle forces on the fluidization of fine particles</td>
<td>Fluorescence particles enable visualization of gas flow</td>
</tr>
<tr>
<td>B66-10195</td>
<td>B68-10259</td>
</tr>
<tr>
<td>Pneumatic analog-to-pulse frequency converter</td>
<td>Optometric system facilitates colorimetric and fluorometric measurements</td>
</tr>
<tr>
<td>LEWIS-10345</td>
<td>B68-10316</td>
</tr>
<tr>
<td>Piezoelectric linear actuator</td>
<td>Microprobe investigation of brittle segregates in aluminum TIG and TIG welds</td>
</tr>
<tr>
<td>ERC-13194</td>
<td>M-PS-19720</td>
</tr>
<tr>
<td>FLUIDIZED BED PROCESSORS</td>
<td>Ceric and ferrous dosimeters show precision for 50-5000 rad range</td>
</tr>
<tr>
<td>Characteristics of fluidized-packed beds</td>
<td>ARG-10173</td>
</tr>
<tr>
<td>ARG-10049</td>
<td>B68-10324</td>
</tr>
<tr>
<td>An investigation of particle mixing in a gas-fluidized bed</td>
<td>Fluorescent photography of spray droplets using a laser light source</td>
</tr>
<tr>
<td>ARG-10182</td>
<td>LEWIS-10777</td>
</tr>
<tr>
<td>Abrasion and resistant discharge valve developed</td>
<td>Moessbauer vibration calibration systems evaluated</td>
</tr>
<tr>
<td>ARG-10219</td>
<td>B68-10125</td>
</tr>
<tr>
<td>Direct indication of particle size in fluidized beds</td>
<td>A prototype high power portable lamp</td>
</tr>
<tr>
<td>ARG-10130</td>
<td>B68-10189</td>
</tr>
<tr>
<td>Automatic filter-blowback systems used with sintered-metal filters</td>
<td>Recent development in organic scintillators</td>
</tr>
<tr>
<td>ARG-10324</td>
<td>ARG-10344</td>
</tr>
<tr>
<td>Surface-renewal models for heat transfer between walls and fluidized beds</td>
<td>The Quantasyn, an improved quantum detector</td>
</tr>
<tr>
<td>ARG-10372</td>
<td>ERC-10148</td>
</tr>
<tr>
<td>FLUIDS</td>
<td>Airborne Fraunhofer Line Discriminator</td>
</tr>
<tr>
<td>Improved fluid control valve extends diaphragm life</td>
<td>MSC-13146</td>
</tr>
<tr>
<td>JPL-345</td>
<td>B69-10448</td>
</tr>
<tr>
<td>Closed fluid system without moving parts controls temperature</td>
<td>B69-10443</td>
</tr>
<tr>
<td>LEWIS-222</td>
<td>B69-10122</td>
</tr>
<tr>
<td>Magnetic fluid readily controlled in zero gravity environment</td>
<td>A prototype high power portable lamp</td>
</tr>
<tr>
<td>LEWIS-126</td>
<td>B69-10125</td>
</tr>
<tr>
<td>Three dimensional wire mesh capacitor system measures fluid density</td>
<td>ARG-200114</td>
</tr>
<tr>
<td>WOO-194</td>
<td>B68-10229</td>
</tr>
<tr>
<td>Optical output enhances flowmeter accuracy</td>
<td>Recent development in organic scintillators</td>
</tr>
<tr>
<td>H-PS-482</td>
<td>ARG-10344</td>
</tr>
<tr>
<td>Electrically heated diaphragm eliminates use of pyrotechnics</td>
<td>The Quantasyn, an improved quantum detector</td>
</tr>
<tr>
<td>MSC-241</td>
<td>ERC-10148</td>
</tr>
<tr>
<td>Fluid logic control circuit operates nutator actuator motor</td>
<td>Airborne Fraunhofer Line Discriminator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FLUORIDES</th>
<th>FLOWS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composites of porous metal and solid lubricants increase bearing life</td>
<td>Lewis-294</td>
</tr>
<tr>
<td>LEWIS-307</td>
<td>B66-10593</td>
</tr>
<tr>
<td>Fluid bed fluoride volatility process recovers uranium from spent uranium alloy fuels</td>
<td>B67-10007</td>
</tr>
<tr>
<td>ARG-232</td>
<td>02</td>
</tr>
<tr>
<td>Xeon fluoride solutions effective as fluorinating agents</td>
<td>B68-10189</td>
</tr>
<tr>
<td>ARG-217</td>
<td>02</td>
</tr>
<tr>
<td>Xeon fluoride show potential as fluorinating agents</td>
<td>B67-10133</td>
</tr>
<tr>
<td>ARG-113</td>
<td>03</td>
</tr>
<tr>
<td>Pure xenon hexafluoride prepared for thermal properties studies</td>
<td>B67-10185</td>
</tr>
<tr>
<td>ARG-10344</td>
<td>03</td>
</tr>
</tbody>
</table>

I-259
| Characteristics of fluidized-packed beds | ARG-10049 | B68-10278 03 |
| Study of actinide chemistry in saturated potassium fluoride solution | ARG-10204 | B69-10004 03 |
| A new solid lubricant | LEWIS-10412 | B69-10250 03 |

**FLUOROBIBOIDS**

**FLUOROCOMPOUNDS**

| High-energy, high-power, long-life battery | LEWIS-10724 | B69-10131 01 |
| Metals plated on fluorocarbon polymers | JFL-584 | B63-10612 03 |
| Machine tests crease durability of sheet materials | JFL-604 | B64-10178 05 |

**FLUOROMETALS**

| Study of actinide chemistry in saturated potassium fluoride solution | ARG-10204 | B69-10004 03 |
| A new solid lubricant | LEWIS-10412 | B69-10250 03 |

**FLUOROTHERMALS**

**FLUOROTHERMOS**

| High-temperature bearing lubricants | LEWIS-10408 | B68-10591 05 |

**FLUOROTHERMOSOFT**

| Evaluation of a fluorocarbon plastic used in cryoplastic valve seals | N-FS-455 | B68-10288 03 |

**FLUOROTHERMOND**

| Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol | N-PS-14962 | B69-10636 03 |

**FLUOROTHEROMETALS**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOSOFT**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROMETALS**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROCOMPOUNDS**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROTHERMALS**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROTHERMOSOFT**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROTHERMALS**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROTHERMOSOFT**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROTHERMOSOFT**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROTHERMOSOFT**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |

**FLUOROTHERMOFLUOROTHERMOSOFT**

| Preparation of high purity copper fluoride by fluorinating copper hydride | LEWIS-10794 | B69-10136 03 |
SUBJECT INDEX

FLUTTER ANALYSIS
System measures angular displacement without
contact
LANGLEY-46 B65-10073 01
Analysis of flutter in tape transport
systems
M-FS-11970 B68-10027 01

PLEX
Metallic diffusion measured by a modified
Knudsen technique
HQ-10145 B69-10309 03

PLEX (SPACE)
Multiaxial analyzer detects low-energy
electrons
GSPC-329 B65-10213 01
Computer program VARI-QUIR 3 provides
solution of steady-state, multigroup,
two-dimensional neutron diffusion equations
NUC-10052 B67-10345 06
Neutron irradiation of A2-241 effectively
produces curium
ARG-10030 B67-10501 03
Computer program calculates gamma ray
source strengths of materials exposed to
neutron fluxes
NUC-10143 B69-10390 01
Low scatter lightweight fission spectrometer
constructed for biological research
ARG-1094 B66-10174 02
Portable, high intensity isotopic neutron
source provides increased experimental
accuracy
ARG-90250 B69-10243 02
Method for reducing snap in magnetic
amplifiers
LEWIS-10388 B66-10388 01
Daughter growth in freshly separated
Ra-226, Ac-227 and U-232
ARG-10226 B69-10003 02
Dewpoint temperature inversions analyzed
ARG-10316 B69-10057 02
Miniaturization of magnetic logic circuitry
LANGLEY-10037 B69-10148 06
Synthesis of calculational methods for design
and analysis of radiation shields for
nuclear rocket systems
M-FS-14447 B69-10543 06
Tungsten thermal neutron dosimeter
LEWIS-10880 B69-10249 02
The Quantasyn, an improved quantum
detector
EBR-10148 B69-10443 01
Cryogenic fluid flow instabilities in heat
exchangers
M-FS-20438 B69-10541 02
A polar graphic method for determining the
attitude of rocket vehicles
GSPC-10860 B69-10591 02

PLEX DENSITY
Shaped superconductor cylinder retains intense
magnetic field
JPL-381 B63-10230 01
Auxiliary silver electrode eliminates two-step
voltage discharge characteristic of silver-
zinc cells
GSPC-165 B64-10114 01
Computer programs simplify optical system
analysis
GSPC-306 B65-10093 01

FLUXES
Aluminum core structures brazed without use of
flux
M-FS-659 B66-10360 05
Ultrasound permits brazing complex stainless
steel assembly without flux
NU-0115 B67-10094 05
Preparation of thorium magnesium-zinc
reduction
ARG-10245 B69-10079 03

FLUXES
High permeability semiconductors permit
close-tolerance soldering
GSPC-319 B65-10134 05
High-reductance rotor rings improve
homopolar generator performance
ARG-104 B66-10543 01
Crystal microbalance measures condensible
molecular fluxes
JPL-885 B67-10012 03
A power-spectral-density computer program
BPO-10126 B67-10160 01
High power dc/dc and dc/ac electrical power
conversion techniques developed
M-FS-13227 B67-10390 01
Zinc-oxygen primary cell yields high
energy density
M-FS-14661 B68-10218 01
Detection sensitivities in 3-8 Mev
neutron activation
ARG-10210 B68-10298 02
High-energy, high-power, long-life battery
LEWIS-10724 B69-10131 01
Preparation of high purity copper fluoride
by fluorinating copper hydroxyfluoride
LEWIS-10794 B69-10136 03
Studies of cycles for liquid-metal
magnetohydrodynamic generation of power
ARG-10250 B69-10194 02
An improved atomic hydrogen frequency and
time standard
GSPC-10706 B69-10341 02
Synchronizing redundant power oscillators
XGS-09377 B69-10546 01
Cryogenic flux-concentrator
ARG-10494 B69-10654 02
Optical frequency waveguide and ion
transmission system
M-FS-109541 B69-10746 01

FLUXES
Pocket-sized tone-modulated FM
transmitter
NPO-11180 B69-10725 01

FOAMS
Compact assembly generates plastic foam,
inflates flotation bag
LANGLEY-96 B65-10090 05
Organic reactants rapidly produce plastic foam
LANGLEY-37 B65-10288 03
Soluble undercoating facilitates removal of
foamed-in-place insulation
LEWIS-193 B65-10344 03
Argon purge gas cooled by chill box
M-FS-560 B66-10153 02
Silazane polymers show promise for high-
temperature application
M-FS-866 B66-10194 03

I-261
Fresnel cup reflector directs maximum energy from light source

Aerial-image enables diagrams and animation to be inserted in motion pictures

Light ray modulation controls optical systems alignment

Ballpoint probe gives optimal results in ultrasonic testing

Electron beam deflected to determine focal point location

Digital laser-beam deflection sensor

Laser microprobe facility used in the elemental analysis of small features of a sample

Spherical ion source

Method of directing a laser beam with very high accuracy

Fogging technique used to coat magnesium with plastic

Nozzles for size reclassification of microfog particles

Cryogenic fluid flow instabilities in heat exchangers

Foil bearing support for high-speed rotors

Practical new method of measuring thermal-neutron fluence

Crack growth measured on flat and curved surfaces at cryogenic temperatures

FOIL BEARINGS

FOILS

FOILS (MATERIALS)

Presented on single sheet

Metallic diffusion measured by a modified Knudsen technique

Screw locking cups quickly and neatly crimped

Thermocouple-to-instrumentation connector features quick assembly

Junction connectors permit strategic placement of television cameras

Interior servicing platform simplifies maintenance of storage tanks

Improved thermal insulation materials made of foamed refractory oxides

Newly developed foam ceramic body shows promise as thermal insulation material at 3000 deg F

Blast deflector traps smoke and debris from explosive trains

High-temperature bearing lubricants

FOCUSING

FORCE

FORCE DISTRIBUTION

FOOD

FOILS

FOLDING

FOCUS

SUBJECT INDEX

Computer program analyzes and designs supersonic wing-body combinations

Improved electromagnetic master-slave manipulator

Effect of interparticle forces on the solidification of fine particles

Improved design of item in high speed rotating machinery

Instabilities encountered during heat transfer to a supercritical fluid

Four pi-recoil proportional counter used as...
neutron spectrometer  ARG-10101  B66-10326  02

FORECASTING
Probaabilitic approach to long range planning of manpower  NMC-1152A  B67-10510  06

Computerized Schedule Effectiveness
Technique /SP/ determines present and future schedule position  M-PS-13012  B67-10522  06

FOREIGN BODIES
Tool samples subsurface soil free of surface contaminants  NMC-10988  B67-10473  05

FORGING
Upsetting butt edge increases weld-joint strength  M-PS-175  B66-10164  05
Jig and fixture aid fabrication of tungsten rivets  LEWIS-185  B66-10101  05
Study made of procedures for externally loading and corrosion testing stress corrosion specimens  M-PS-12064  B67-10451  03

TRAINING MANUALS
Tooling frame facilitates handling of large objects  M-PS-16166  B66-10575  05

FORGINGS
High-energy, high-power, long-life battery  LEWIS-1072A  B66-10139  01
Primary radical yields in pulse irradiated alkaline aqeous solution  ARG-10322  B66-10167  02

FORMING TECHNIQUES
Integral ribs formed in metal panels by cold-press extrusion  M-PS-230  B66-10141  05
Metal parts hydrosized by explosive force  M-PS-209  B66-10170  05
Fiber glass dies speed forming of large metal sheets  M-PS-214  B66-10210  05
Angular glass tubing drawn from round tubing  HQ-20  B66-10235  05
Die and telescoping punch form convolutions in thin diaphragm  JPL-SC-135  B66-10393  05
Forming tool improves quality of tubing flares  WOO-231  B66-10001  05
Coiled sheet metal strip opens into tubular configuration  GSFC-825  B66-10009  03
Rotating mandrel speeds assembly of plastic inflatables  LANLEY-155  B66-10137  05
Process sequence produces strong, lightweight reflectors of excellent quality  LEWIS-331  B67-10010  05
Development of technology for hot-drape forming of large torus sections  LEWIS-331  B67-10136  01

FORMS (PAPER)
Improved system for documenting measurement data  M-PS-18269  B66-10513  01

FORMULAS (MATHEMATICS)
Minimum permissible leakage resistance established for instrumentation systems  M-PS-848  B66-10397  01
Thermal resistances of solder-boss/potting compound combinations  M-PS-12074  B66-10157  01

FORTRAN
FORTRAN program flow chart is automatically produced  M-PS-369  B66-10062  01
Computer program simplifies selection of structural steel columns  M-PS-0044  B66-10097  01
Computer program determines gas flow rates in piping systems  M-PS-443  B66-10300  01
Computer program generates mathematical equations  M-PS-441  B66-10364  01
Computer program reduces calculation time of normal response functions  M-PS-1456  B67-10077  01
Computer program calculates monotonic maximum likelihood estimates using method of reversals  M-PS-1517  B67-10108  01

A power-spectral-density computer program  
NPO-10126  B67-10160  01

Study of dynamic response of elastic space stations  
NPO-10124  B67-10169  06

Structural Analysis and Matrix Interpretive System /SAXIS/  
NPO-10130  B67-10171  01

Space trajectories program for IBM 7090  
NPO-10125  B67-10172  06

Linear circuit analysis program for IBM 1620 Monitor 2, 1311/1443 data processing system /CIICS/  
NPO-10131  B67-10173  06

Computer program simulates physical systems by solving the simultaneous differential equations describing the systems  
NPO-10019  B67-10193  06

A modal combination computer program for dynamic analysis of structures  
NPO-10129  B67-10217  06

Subroutines GEORGE and DRASTC simplify operation of automatic digital plotter  
NDC-10044  B67-10222  06

Calculation of resonance neutron absorption in two-region problems /the GAROL code/  
NDC-10045  B67-10223  06

Computer program calculates steady-state temperature distribution within plane or axisymmetric solids  
NDC-10049  B67-10224  06

Land landing couch dynamics computer program  
MSC-1210  B67-10233  06

Computer program simplifies design of rotating components of turbomachinery  
NDC-10046  B67-10235  06

Computer program samples digital data for CRT display  
MSC-999  B67-10249  01

CINDA - Chrysler Improved Numerical Differencing Analyzer computer program  
K-PS-2298  B67-10278  06

Computer program for determination of natural frequencies of closed spherical sandwich shells  
MSC-1246  B67-10279  06

Master control data handling program uses automatic data input  
K-PS-2259  B67-10280  06

Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident  
NDC-10054  B67-10281  06

Computer program provides linear sampled-data analysis for high order systems  
K-PS-12821  B67-10287  06

Computer program determines thermal environment and temperature history of lunar orbiting space vehicles  
K-PS-12916  B67-10307  06

Computer program for mass optional solutions of some endpoint trajectory problems  
K-PS-12916  B67-10310  06

Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks  
NRO-10031  B67-10319  06

Computer program utilizes FORTRAN 4  


SUBJECT INDEX

subroutines for contour plotting  
NPO-10127  B67-10323  06

Multiple correlation computer program determines relationships between several independent and dependent variables  
K-PS-13024  B67-10327  06

Computer optimization program finds values for several independent variables that minimize a dependent variable  
K-PS-13030  B67-10328  06

Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries  
K-PS-1910  B67-10329  06

General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions  
K-PS-13094  B67-10331  06

Computer subroutine ISUDS accurately solves large system of simultaneous linear algebraic equations  
NDC-10051  B67-10344  06

Computer program VARI-QUIR 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations  
NDC-10052  B67-10345  06

Saturn S-2 Automatic Software System /SASS/  
K-PS-1741  B67-10405  06

Computer program for network synthesis by frequency response fit  
K-PS-12686  B67-10406  06

Earth orbit rendezvous evaluation program  
K-PS-13016  B67-10407  06

Computer program generates averaged value data tapes  
K-PS-12728  B67-10411  06

Computer program provides steady state analysis for liquid propellant propulsion systems  
MSC-10064  B67-10414  06

Computer program analyzes generalized environmental control and life support systems  
MSC-1157  B67-10415  06

Computer program FPIP-REV calculates fission product inventory for U-235 fission  
NDC-10089  B67-10450  06

Computer program MCAP-TGSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid  
NDC-10042  B67-10456  06

Computer program MCAP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solid  
NDC-10043  B67-10457  06

Computer program conducts facilities utilization and occupancy survey  
NDC-10326  B67-10476  06

KOPE /Kalendar Oriented Program Effort/ provides data for management decisions  
K-PS-12331  B67-10478  06

FORTRAN 4 program for two-impulse rendezvous analysis  
K-PS-13971  B67-10479  06


X-264
### SUBJECT INDEX

**Numerical least-square method for resolving complex pulse height spectra**
- GSFC-10142
- B67-10480 06

**Computer program uses characteristics method for free-jet investigation**
- LANGLEY-10117
- B67-10490 06

**Computer program reduces and provides profile plot of surface plate calibration data**
- N-FS-13066
- B67-10492 06

**Computer program performs aerothermodynamic flight test data correlation**
- MSC-10075
- B67-10494 06

**Multidimensional reaction kinetic ablation program /BDXAR/**
- B67-10495 06

**Computer programs for antenna feed system design and analysis**
- NFO-10359
- B67-10504 06

**Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures**
- LANGLEY-10090
- B67-10509 06

**Computer program performs rectangular fitting stress analysis**
- N-FS-13010
- B67-10520 06

**General frequency response program calculates frequency response of system, open at any specified element**
- N-FS-12817
- B67-10521 06

**Computerized Schedule Effectiveness Technique /SMT/ determines present and future schedule position**
- N-FS-13012
- B67-10522 06

**Analysis of dynamic systems with DAP48 computer program**
- N-FS-13999
- B67-10523 06

**DYANA - An advanced programming system for large classes of dynamic and equivalent systems**
- N-FS-12084
- B67-10524 06

**Program computes zero lift wave drag of arbitrary aircraft**
- LANGLEY-10079
- B67-10530 06

**Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles**
- LANGLEY-10063
- B67-10531 06

**N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program**
- NUC-10126
- B67-10536 06

**SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield**
- NUC-10142
- B67-10537 06

**Computer program calculates peripheral water injection cooling of axisymmetric subsonic diffuser**
- NUC-10541
- B67-10543 06

**Computer program for optical systems ray tracing**
- PRC-10107
- B67-10549 06

**Computer program BPC improves computation of elastic transfer matrices of Legendre polynomials /E/0/ and /P/1/**
- NUC-10070
- B67-10566 06

**Propellant tank pressurization analysis program**
- N-FS-1506
- B67-10625 06

Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts
- N-FS-13058
- B67-10631 06

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes
- USC-10143
- B67-10665 06

Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
- LANGLEY-10191
- B67-10666 06

Computer program /PI-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas
- USC-10141
- B67-10670 06

Computer program for calculation of ideal gas thermodynamic data
- LEWIS-10254
- B67-10678 06

Computer program calculates equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
- LANGLEY-10090
- B67-10509 06

Computer program performs rectangular fitting stress analysis
- N-FS-13010
- B67-10520 06

General frequency response program calculates frequency response of system, open at any specified element
- N-FS-12817
- B67-10521 06

Computerized Schedule Effectiveness Technique /SMT/ determines present and future schedule position
- N-FS-13012
- B67-10522 06

Analysis of dynamic systems with DAP48 computer program
- N-FS-13999
- B67-10523 06

DYANA - An advanced programming system for large classes of dynamic and equivalent systems
- N-FS-12084
- B67-10524 06

Program computes zero lift wave drag of arbitrary aircraft
- LANGLEY-10079
- B67-10530 06

Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
- LANGLEY-10063
- B67-10531 06

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
- NUC-10126
- B67-10536 06

SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield
- NUC-10142
- B67-10537 06

Computer program calculates peripheral water injection cooling of axisymmetric subsonic diffuser
- NUC-10541
- B67-10543 06

Computer program for optical systems ray tracing
- PRC-10107
- B67-10549 06

Computer program BPC improves computation of elastic transfer matrices of Legendre polynomials /E/0/ and /P/1/
- NUC-10070
- B67-10566 06

Propellant tank pressurization analysis program
- N-FS-1506
- B67-10625 06

Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts
- N-FS-13058
- B67-10631 06

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes
- USC-10143
- B67-10665 06

Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
- LANGLEY-10191
- B67-10666 06

Computer program /PI-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas
- USC-10141
- B67-10670 06

Computer program for calculation of ideal gas thermodynamic data
- LEWIS-10254
- B67-10678 06

Computer program calculates equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
- LANGLEY-10090
- B67-10509 06

Computer program performs rectangular fitting stress analysis
- N-FS-13010
- B67-10520 06

General frequency response program calculates frequency response of system, open at any specified element
- N-FS-12817
- B67-10521 06

Computerized Schedule Effectiveness Technique /SMT/ determines present and future schedule position
- N-FS-13012
- B67-10522 06

Analysis of dynamic systems with DAP48 computer program
- N-FS-13999
- B67-10523 06

DYANA - An advanced programming system for large classes of dynamic and equivalent systems
- N-FS-12084
- B67-10524 06

Program computes zero lift wave drag of arbitrary aircraft
- LANGLEY-10079
- B67-10530 06

Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
- LANGLEY-10063
- B67-10531 06

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
- NUC-10126
- B67-10536 06

SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield
- NUC-10142
- B67-10537 06

Computer program calculates peripheral water injection cooling of axisymmetric subsonic diffuser
- NUC-10541
- B67-10543 06

Computer program for optical systems ray tracing
- PRC-10107
- B67-10549 06

Computer program BPC improves computation of elastic transfer matrices of Legendre polynomials /E/0/ and /P/1/
- NUC-10070
- B67-10566 06

Propellant tank pressurization analysis program
- N-FS-1506
- B67-10625 06
GERT EXCLUSIVE-OR combining paths and loops of electrical networks
B68-10435 06

Modified Melthopp mean camber computer program
LANGLEY-10376 B68-10446 06

Phase radiation program
M-FS-13202 B68-10447 06

Performance analysis of electrical circuits
SPAN - Terminal sterilization process analysis program
NPO-10804 B69-10104 06

Midcourse maneuver operations program
NPO-10735 B69-10105 06

Geometry and design point performance of axial flow turbines
LEWIS-10471 B69-10111 06

MAGNET - Program for calculating velocities in magnified region of turbomachines
LEWIS-10789 B69-10132 06

Mass spectograph analysis
NPO-13239 B69-10134 06

VICAR - Digital image processing system
NPO-10770 B69-10139 06

Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction
NUC-10189 B69-10146 06

Francis turbine performance program
LEWIS-10471 B69-10147 06

Computer program for off-design performance of radial inflow turbines
LEWIS-10764 B69-10267 06

A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt line profile
ARC-10221 B69-10222 06

Finite element analysis of compressible solids with nonlinear material properties
NUC-10342 B69-10238 06

Thermal Network Analyzer Program
NUC-10540 B69-10239 06

Thermophysical properties of sodium
ARG-10363 B69-10240 03

Computer program for off-design performance of radial inflow turbines
LEWIS-10764 B69-10267 06

Buckling Of Shells Of Revolution
BOSOE/ with various wall constructions
LANGLEY-10441 B69-10300 06

LM lookangle program
MSC-13779 B69-10369 06

Sonic boom propagation in stratified atmosphere
LANGLEY-10480 B69-10391 06

Visual tank analysis
M-FS-14716 B69-10394 06
SUBJECT INDEX

GAMBIT program
NDC-10243 B69-10433 06

Fast Fourier Transform Spectral Analysis
Program
N-FS-15062 B69-10434 06

Water-glycol system volume calculation
MSC-15193 B69-10563 02

System for computing operational
probability equations
N-FS-16430 B69-10566 06

Spacecraft Thermal Radiation Environment
Computer Program
N-FS-15054 B69-10574 06

Long range holographic contour
mapping
HQ-10350 B69-10700 02

Fast Fourier Transform Spectral Analysis
Program
I-FS-15062 B69-10434 06

Water-glycol system volume calculation
MSC-15193 B69-10563 02

System for computing operational
probability equations
N-FS-16430 B69-10566 06

Spacecraft Thermal Radiation Environment
Computer Program
N-FS-15054 B69-10574 06

Long range holographic contour
mapping
HQ-10350 B69-10700 02

FRACTOGRAPHY
Fractography can be used to analyze failure
modes in polytetrafluoroethylene
N-FS-20294 B69-10066 03

Tensile and fatigue properties of Inconel
718 at cryogenic temperatures
N-FS-18192 B69-10068 03

Technique for pinpointing submicron
particles in the electron microprobe
HQ-10043 B69-10405 01

FRACTURE MECHANICS
Study made of mechanisms of deformation and
fracture of fibrous composites
HQ-10035 B67-10660 03

Nondestructive testing of welds on
thin-walled tubing
N-FS-18144 B69-10402 01

FRACTURE STRENGTH
Pressure molding of powdered materials
improved by rubber mold insert
WOO-100 B64-10270 03

Crack growth measured on flat and curved
surfaces at cryogenic temperatures
LEWIS-389 B67-10388 01

Survey of fracture toughness test methods
LEWIS-10379 B68-10046 03

Weld joint strength and mechanical properties
in 2219-T81 aluminum alloy
LEWIS-10479 B68-10561 03

Abrasion and fracture testing in a
high-pressure hydrogen environment
N-FS-18480 B69-10457 03

Optimum structural design based on
reliability and proof-load testing
NFO-11228 B69-10723 31

FRACTURES (MATERIALS)
Fatigue zones in metals identified by
polarized light photography
WOO-286 B67-10082 02

Polarized light reveals stress in machined
laminated plastics
LEWIS-10018 B67-10383 03

Study made of ductility limitations of
aluminum-silicon alloys
M-FS-12524 B67-10392 03

Fractography can be used to analyze failure
modes in polytetrafluoroethylene
N-FS-20294 B69-10066 03

FRAGMENTATION
Break-up of metal tube makes one-time shock
absorber, bars rebound
LANGLEY-1 B63-10304 05

FRAME PHOTOGRAPHY
Simple circuit positions film frames in
projector
JPL-508 B65-10132 02

Beam splitter used in dual filming technique
N-FS-501 B66-10072 02

Scan rate converter for tape recording and
playback of TV pictures
NFO-10166 B67-10676 01

FRAMES
Apparatus alters position of objects to
facilitate demagnetization
GSFC-234 B64-10277 05
<table>
<thead>
<tr>
<th>FRAMING CARRIERS</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf-spring suspension provides accurate parallel displacements</td>
<td>alkaline aqueous solution B69-10167 02</td>
</tr>
<tr>
<td>JPL-480</td>
<td></td>
</tr>
<tr>
<td>Universal transloader moves delicate equipment without stress</td>
<td>Gas chromatograph injection port protective device M-PS-10585 B69-10798 03</td>
</tr>
<tr>
<td>MSC-654</td>
<td></td>
</tr>
<tr>
<td>Test device prevents weld joint damage by eliminating axial pin forces on unpotted</td>
<td>FREE VIBRATION</td>
</tr>
<tr>
<td>nodules</td>
<td>Study of dynamic response of elastic space stations BFO-10124 B67-10169 06</td>
</tr>
<tr>
<td>LWIS-10201</td>
<td></td>
</tr>
<tr>
<td>Computer program generates averaged value data tapes N-PS-12728</td>
<td>Computer program for determination of natural frequencies of closed spherical</td>
</tr>
<tr>
<td></td>
<td>sandwich shells MSC-1246 B67-10279 06</td>
</tr>
<tr>
<td>B67-10411</td>
<td></td>
</tr>
<tr>
<td>Burst-rate testing apparatus HSC-10947</td>
<td>Shock and vibration response of multistage structure M-PS-14972 B68-10353 05</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>FRAMING CARRIERS</td>
<td>FREEZING</td>
</tr>
<tr>
<td>High-speed camera synchronization</td>
<td>A technique for making animal restraints ABC-25 B63-10564 05</td>
</tr>
<tr>
<td>H-PS-18062</td>
<td></td>
</tr>
<tr>
<td>Fast framing cameras provide high-speed multi-channel data recording</td>
<td>Freon provides heat transfer for solid CO2 calibration standard M-PS-644 B66-10257 02</td>
</tr>
<tr>
<td>ARG-10252</td>
<td></td>
</tr>
<tr>
<td>FREUNHOFER LINES</td>
<td>Fire extinguisher control system provides reliable cold weather operation</td>
</tr>
<tr>
<td>Fresnel diffraction plates are simple and inexpensive H-PS-12731</td>
<td>M-PS-13031 B67-10622 05</td>
</tr>
<tr>
<td>Airborne Fraunhofer Line Discriminator HSC-13146 B69-10594 02</td>
<td></td>
</tr>
<tr>
<td>FREE CONVECTION</td>
<td>FREEFLow</td>
</tr>
<tr>
<td>Instabilities encountered during heat transfer to a supercritical fluid</td>
<td>Freon provides heat transfer for solid CO2 calibration standard M-PS-644 B66-10257 02</td>
</tr>
<tr>
<td>ARG-10266</td>
<td></td>
</tr>
<tr>
<td>FREE ELECTRONS</td>
<td>Corrosion of aluminum alloys by chlorinated hydrocarbon/wetzelol mixture</td>
</tr>
<tr>
<td>Thin carbon film serves as UV bandpass filter BRC-8 B66-10060 02</td>
<td>M-SC-11365 B67-10442 03</td>
</tr>
<tr>
<td>FREE ENERGY</td>
<td>Diffusion of trace gases for leak detection – A study M-PS-20254 B69-10067 03</td>
</tr>
<tr>
<td>Computer program determines chemical composition of physical system at</td>
<td></td>
</tr>
<tr>
<td>equilibrium HSC-1119 B66-10670 01</td>
<td>Freeon, T-81 cutting fluid M-SC-11486 B69-10485 05</td>
</tr>
<tr>
<td>Thermodynamic properties of solid palladium-silver alloys and other alloys</td>
<td></td>
</tr>
<tr>
<td>investigated by torsion-effusion technique ARG-277 B67-10324 03</td>
<td>FREEZING</td>
</tr>
<tr>
<td>The thermodynamic properties of the wustite phase are studied</td>
<td>Pressure transducers dynamically tested with sinusoidal pressure generator</td>
</tr>
<tr>
<td>ARG-10200</td>
<td>LEWIS-268</td>
</tr>
<tr>
<td>FREE FALL</td>
<td>Neon isotopes cancel errors in gas laser M-PS-1476 B66-10583 02</td>
</tr>
<tr>
<td>Calculations enable optimum design of magnetic brake LEWIS-251 B66-10073 05</td>
<td></td>
</tr>
<tr>
<td>Low level accelerometer test methods are investigated H-PS-908 B66-10510 01</td>
<td>Amplitude and frequency readout overlay GSPC-10183 B68-10056 01</td>
</tr>
<tr>
<td>FREE FLOW</td>
<td></td>
</tr>
<tr>
<td>Blade valve isolates compartment in pipe, opens to allow free flow JFL-585</td>
<td>Microelectronic oscillator, 2 GSPC-10387 B69-10063 01</td>
</tr>
<tr>
<td>Average probe reduces static-pressure sensing errors LANGLEY-36 B65-10114 05</td>
<td>Microelectronic oscillator GSPC-10375 B69-10064 01</td>
</tr>
<tr>
<td>FREE JETS</td>
<td>Tunable bandpass filter with variable selectivity ABC-10191 B69-10130 01</td>
</tr>
<tr>
<td>Computer program uses characteristics method for free-jet investigation</td>
<td></td>
</tr>
<tr>
<td>LANGLEY-10117 B67-10490 06</td>
<td>Analysis of space vehicle structures using the transfer-function concept</td>
</tr>
<tr>
<td>Equation relates flow at free jet to flow downstream H-PS-13789 B67-10612 06</td>
<td>NPS-11162 B69-10337 06</td>
</tr>
<tr>
<td>FREE RADICALS</td>
<td></td>
</tr>
<tr>
<td>Primary radical yields in pulse irradiated</td>
<td>An improved atomic hydrogen frequency and time standard GSPC-10706 B69-10341 02</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy-storage of a prescribed impedance ABG-10428 B69-10431 02</td>
</tr>
<tr>
<td></td>
<td>Damping of thermoelastic structures M-PS-20002 B69-1067 02</td>
</tr>
</tbody>
</table>

I-268
Shaker slip-plate adapter
N-PS-14063
B69-10785 05

FREQUENCY ANALYZERS
A calibration means for spectrum analyzers
MSC-10987 B67-10254 01
Oscilloscope used as X-Y plotter or
two-dimensional analyzer
LEWIS-311 B67-10269 01
Improved computer program for elastic
analysis of highly redundant structural
configurations
M-PS-13087 B67-10330 06
Computer program performs frequency
analysis of nonuniform turbine disk
subjected to temperature gradients
NOC-10301 B68-10006 06
Dynamic linearity measurement technique
KSC-10186 B68-10290 01
Cryogenic liquid level measuring probe
ABG-10138 B68-10291 01
Survey of man-made electrical noise
affecting radio broadcasting
HQ-10290 B69-10308 01

FREQUENCY CONTROL
Transistorized trigger circuit is frequency-
controllable
GSFC-111 B63-10553 01
FM oscillator uses tetrode transistor
JPL-82 B65-10055 01
Simple circuit functions as frequency
discriminator for PPM signals
GSFC-267 B65-10102 01
Variable frequency transistor inverters use
multiple core transformers
GSFC-103 B65-10119 01
Variable frequency magnetic multivibrator
generates stable square-wave output
GSFC-1E-21 B65-10124 01
Frequency offset in linear FM/CW transponder
generates clutter
M-PS-249 B65-10146 01
Frequency correction device uses digital
circuitry
GSFC-268 B65-10307 01
Hybrid circuit achieves pulse regeneration
with low power drain
GSFC-382 B65-10314 01
Zener diode controls switching of large
direct currents
MSC-108 B65-10350 01
Design concepts using ring lasers for
frequency stabilization
N-PS-2048 B67-10143 01
Digital voltage-controlled oscillator
GSFC-512 B67-10449 01
Apparatus makes klystron operating
frequency adjustable from remote point
NPO-09831 B67-10514 01
Phase-lock loop frequency control and the
dropout problem
M-PS-13948 B68-10130 01
Communication system features dual mode
range acquisition plan time delay
measurement
M-PS-14323 B68-10306 01
Active frequency control system for
argon FM laser
B69-10099 02
Magnetron tuner has locking feature
IBS-09771 B69-10119 05
Frequency-shift-keyer circuit improves
PN conversion for radio transmission
GSFC-80 B63-10511 01
Circuit converts AM signals to PM for
magnetic recording
GSFC-227 B65-10001 01
Traveling-wave tube circuit simplifies
microwave relay
GSFC-299 B65-10127 01
Electronic amper-hour integrator is accurate
to one percent
GSFC-203 B65-10308 01
Frequency discriminator with binary output
eliminates tuned circuits
M-PS-376 B65-10349 01
Optical superheterodyne receiver uses laser
for local oscillator
M-PS-1605 B66-10584 01
Fast-response frequency-to-analog converter
M-PS-709 B67-10257 01
Transistor biased amplifier minimizes diode
discriminator threshold attenuation
ABG-163 B67-10311 01
SiC/Si diode trigger circuit provides
automatic range switching for log amplifier
GSFC-1879 B67-10314 01
Ultrasonic wrench produces leaktight
connections
M-PS-12561 B67-10353 05
Blood pressure reprogramming adapter
assists signal recording
MSC-265 B67-10475 01
Improved circuit for measuring capacitive
and inductive reactances
M-PS-13083 B67-10513 01
Regulated dc-to-dc converter features low
power drain
GSFC-03429 B68-10017 01
Automatic patient respiration failure
detection system with wireless transmission
MSC-10174 B68-10365 01
System converts optical phase changes to
RF phase changes
M-PS-20091 B68-10430 01
Linear voltage-to-frequency converter
GSFC-1056 B69-10220 01
Pneumatic analog-to-pulse frequency converter
LEWIS-10345 B69-10276 02

FREQUENCY DISTRIBUTION
Increased performance reliability obtained
with dual/redundant oscillator system
GSFC-36 B63-10027 01
Computer determines high-frequency phase
stability
GSFC-113 B63-10555 01
Dielectric prisms would improve performance
of quasi-optical microwave components
EBC-10011 B67-10416 01
Astronaut space suit communication antenna
MSC-92101 B68-10238 01
One hundred MHz voltage-controlled oscillator
I-269
FREQUENCY DIVIDERS

FREQUENCY DIVIDERS

- Unijunction frequency divider is free of backward loading JPL-20004 86-10112 01
- Frequency divider is free of spurious outputs GSFC-300 86-10334 05
- Interference effects eliminated in random oriented space station antenna system NFO-11004 86-10435 01
- Improved frequency divider employs transistor avalanche effect NFO-10008 86-10575 01
- Parallel-to-serial biphase-data converter NFO-11600 86-10241 01

FREQUENCY MEASUREMENT

- Small foamed polystyrene shield protects low-frequency microphones from wind noise NFO-11004 86-10579 01
- Nonresonant support facilitates vibration testing of structures NFO-20244 86-10039 05
- Hydrogen maser as a highly stable frequency reference NFO-20437 86-10146 01

FREQUENCY MODULATION

- Subminiature biotelemetry unit permits remote physiological investigations ARC-39 86-10171 01
- Voltage generator sweeps oscillator frequency linearly with time NFO-20219 86-10320 01
- Tunnel-diode circuit features zero-level clipping GSFC-240 86-10092 01
- FM oscillator uses tetrode transistor JPL-80 86-10055 01
- Traveling-wave tube circuit simplifies microwave relay GSFC-299 86-10127 01
- Circuit reduces distortion of FM modulator GSFC-257 86-10152 01
- Voltage variable oscillator has high phase stability LANGLEY-123 86-10204 01
- FM/CW system measures aircraft attitude NFO-20276 86-10290 01
- Miniature bioelectric device accurately measures and telemeters temperature NFO-11004 86-10057 01
- FM carrier deviation measured by differential probability method NFO-20216 86-10213 01
- Experimental coherent fractional frequency multiplier at S-band NFO-20247 86-10250 01
- Absolute frequency stabilization of laser oscillator against laser amplifier NFO-20259 86-10255 01
- Multichannel pulse height analyzer is inexpensive, features low power requirements HQ-10020 86-10258 01
- X-Y plotter adapter developed for SDS-930 computer NFO-10220 86-10654 06

SUBJECT INDEX

- Deep space FM system, a concept KSC-11825 86-10289 01
- Dynamic linearity measurement technique KSC-10186 86-10290 01
- Automatic patient respiration failure detection system with wireless transmission ARC-10174 86-10365 01
- System converts optical phase changes to RF phase changes KPS-20091 86-10430 01
- Technique for tuning antenna systems producing negligible signal radiation KSC-10066 86-10215 01
- New passive telemetry system HQ-10214 86-10312 01
- Optima FM pre-emphasis KSC-10151 86-10359 01

FREQUENCY MULTIPLIERS

- Phase detector circuit synthesizes own reference signal NPS-2047 86-10080 01
- Circuit provides accurate four-quadrant multiplication WGO-272 86-10331 02
- Efficient millimeter wave 1160 GHz/diode for harmonic power generation HQ-61 86-10166 01
- Experimental coherent fractional frequency multiplier at S-band NPS-20247 86-10250 01

FREQUENCY RANGES

- Photoresistance analog multiplier has wide range GSFC-360 86-10287 01
- Damping technique gives accelerometer flat frequency response NPS-471 86-10293 01
- Solid-state switch increases switching speed WGO-298 86-10430 01
- Single-sideband modulator accurately reproduces phase information in 2-Mc signals NPS-664 86-10437 01
- Continuous wave detector has wide frequency range NPS-1849 86-10386 01
- Analysis and design of a class-D amplifier NPS-14803 86-10313 01
- Power consumption in acoustic amplifiers under conditions of maximum stable gain GSFC-10067 86-10327 01
- Study of optimum discrete estimators in measurement analysis NPS-19115 86-10348 02
- Frequency domain analysis and synthesis of lumped parameter systems using nonlinear least squares techniques NPS-15033 86-10577 02
- Deposition monitor and control NPS-10706 86-10722 01

FREQUENCY RESPONSE

- Simple device produces accelerometer calibration pulse NPS-363 86-10269 01
- Device detects unbonded areas in plastic laminates WGO-206 86-10308 01
Remote preamplifier circuit maintains stability over wide temperature range

MINIATURE CAPACITIVE ACCELEROMETER IS ESPECIALLY APPLICABLE TO TELMETRY

MINIATURE PIEZOELECTRIC TRIAXIAL ACCELEROMETER MEASURES CRANIAL ACCELERATIONS

COMPUTER PROGRAMS PERFORM SPECTRAL ANALYSES OF UP TO SEVEN TIME SERIES

PRESSURE PROBE COMPENSATES FOR DIMENSIONAL TOLERANCE VARIATIONS

HIGH FREQUENCY WIDEBAND TRANSFORMER USES COAX TO ACHIEVE HIGH TURN RATIO AND FLAT RESPONSE

LOCAL MEASUREMENTS IN TURBULENT FLOWS THROUGH CROSS CORRELATION OF OPTICAL SIGNALS

VOLTAGE REGULATOR/AMPLIFIER IS SELF-REGULATED

COMPUTER PROGRAM FOR NETWORK SYNTHESIS BY FREQUENCY RESPONSE FIT

GENERAL FREQUENCY RESPONSE PROGRAM CALCULATES FREQUENCY RESPONSE OF SYSTEM, OPEN AT ANY SPECIFIED ELEMENT

DYANA - AN ADVANCED PROGRAMMING SYSTEM FOR LARGE CLASSES OF DYNAMIC AND EQUIVALENT SYSTEMS

CARDIACOMETER WITH LINEAR BEAT-TO-BEAT FREQUENCY RESPONSE

VICAR-DIGITAL IMAGE PROCESSING SYSTEM

NEW TYPE PRESSURE TRANSDUCER FOR SEVERE THERMAL ENVIRONMENTS

FREQUENCY STABILITY

Temperature-sensitive network drives astable multivibrator

Oscillator circuit measures liquid level in tanks

Electronic phase-locked-loop speed control system is stable

Damping technique gives accelerometer flat frequency response

Dielectricometer design permits measurement in vacuum under irradiation

TV synchronization system features stability and noise immunity

Design concepts using ring lasers for frequency stabilization

Hydrogen maser as a highly stable frequency reference

Glow discharge density sensor probe life is extended

Absolute frequency stabilization of laser oscillator against laser amplifier

Apparatus makes klystron operating frequency adjustable from remote point

General frequency response program calculates frequency responses of system, open at any specified element

Highly stable microwave delay line

Simple, accurate automatic frequency control circuit

FREQUENCY STANDARDS

Hydrogen maser as a highly stable frequency reference

Electronic frequency discriminator

Highly stable microwave delay line

Improved atomic resonance gas cell for use in frequency standards

FREQUENCY SYNCHRONIZATION

TV synchronization system features stability and noise immunity

FREQUENCY SYNTHESIZERS

Phase shift frequency synthesizer is efficient, small in size

An improved nuclear magnetic resonance spectrometer

Oscillator circuit operates as digitally controlled frequency synthesizer
Device enables calibration of microphones at high sound pressure levels
M-PS-11960 B67-10336 01

Flow liner extends operating life of high-angulation bellows
M-PS-12023 B67-10512 05

FUEL-AIR RATIO
Test instrumentation evaluates electrostatic hazards in fluid system
M-PS-2277 B67-10145 01

FUEL CELLS
Fuel cell serves as oxygen level detector
JPL-SC-072 B66-10066 01
Wire bundle formed into grids with minute interstices
WOO-089 B65-10372 03
Resilient clamp holds fuel cell stack through resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05

New energy storage concept uses tapes
LEWIS-239 B66-10097 02

Vapor diffusion electrode improves fuel cell operation
LEWIS-187 B66-10281 03

Low input voltage converter/regulator minimizes external disturbances
GSPC-527 B66-10689 01

Fuel cell life improved by metallic fiber activation after electrode assembly welding
MSC-10965 B67-10436 03

Improved fuel-cell-type hydrogen sensor
M-PS-14656 B66-10263 01

Improved inorganic ion exchange membranes
LEWIS-10737 B69-10451 03

Device separates hydrogen from solution in water at ambient temperatures
MSC-13336 B69-10535 03

FUEL COMBUSTION
Fire retardant foams developed to suppress fuel fires
ABC-10098 B66-10358 03

FUEL CONTAMINATION
Fiber length and orientation prevent migration in fluid filters
M-PS-541 B66-10319 05

Valve effectively controls amount of contaminant in flow stream
M-PS-1777 B66-10663 05

Trace hydrazines in aqueous solutions accurately determined by gas chromatography
MSC-11222 B67-10250 03

FUEL FLOW
Combustion chamber inlet manifold separates vapor from liquid
M-PS-531 B66-10052 05

Fiber length and orientation prevent migration in fluid filters
M-PS-541 B66-10319 05

Valve effectively controls amount of contaminant in flow stream
M-PS-1777 B66-10663 05

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135 B67-10623 05

Fuel element concept for long life high power nuclear reactors

FUELS
LEWIS-10309 B69-10154 03

Two-step rocket engine bipropellant valve concept
MSC-10951 B69-10280 05

FUEL INJECTION
Development of detonation reaction engine
M-PS-11960 B67-10652 01

Two-fluid, impinging-injector engine
MPO-11047 B68-10338 05

FUEL PUMPS
Pressure probe compensates for dimensional tolerance variations
LEWIS-302 B66-10599 01

Negative feedback system reduces pump oscillations
M-PS-1058 B67-10064 05

Between-bearing shaft seal, a concept
M-PS-18175 B68-10286 05

FUEL SYSTEMS
Fuel transfer system permits rapid coupling
MPS-91326 B66-10039 05

FUEL TANK PRESSURIZATION
Gas diffuser facilitates withdrawal of cryogenic liquids from tanks
M-PS-915 B66-10342 05

Closed loop operation eliminates need for auxiliary gas in high pressure pumping station
M-PS-903 B66-10408 05

Propellant tank pressurization analysis program
M-PS-12623 B69-10007 06

FUEL TANKS
Magnetic position X-ray film for weld inspection
M-PS-253 B65-10110 05

Automatic fluid separator supplies own driving power
WOO-085 B66-10008 02

Control system maintains selected liquid level
M-PS-670 B66-10039 01

In-tank shutoff valve is provided with maximum blast protection
M-PS-1529 B66-10514 05

Test instrumentation evaluates electrostatic hazards in fluid system
M-PS-2277 B67-10145 01

A new method for fabrication of flexible vacuum purge jackets
M-PS-12646 B69-10564 03

FUEL VALUES
Fuel and oxidizer valve assembly employs single solenoid actuator
MSC-10946 B66-10648 05

Two-step rocket engine bipropellant valve concept
MSC-10951 B69-10280 05

FUELS
Study of hydrogen slush-hydrogen gel utilization
M-PS-13086 B67-10413 02

Study made of large amplitude fuel sloshing
M-PS-12301 B67-10439 03

Single-element coaxial injector for rocket fuel
MPO-11095 B69-10547 05
FUNCTION GENERATORS

PUICTIOII

FUNCTION GENERATORS

Control jet placement on spacecraft
ESC-13365 B69-10671 01

Zener diode function generator requires no external reference voltage
JPL-0031 B65-10013 01

Function generator eliminates necessity of series summation
GSFC-214 B66-10351 01

One-shot pulse shaper circuit
IGS-11379 E68-10012 01

Synthesis of electro-optic modulators for amplitude modulation of light
N-PS-14268 B66-10275 02

Two devices for analysis of nystagmus
NQ-10273 B69-10224 01

Reducing quantizer deadband with a range
switching digital filter
N-PS-20419 B69-10259 01

Simple quasi-exponential slope generator
NWG-11130 B69-10439 01

FUNCTIONAL ANALYSIS

Real fluid properties of normal and parahydrogen
LEWIS-10458 B68-10361 06

FUNCTIONS (MATHEMATICS)

Computer program utilizes FORTRAN 4 subroutines for contour plotting
NPO-10127 B67-10323 06

Computer program for calculation of ideal gas thermodynamic data
LEWIS-10254 B68-10025 06

Deep gamma ray penetration in thick shields
N-PS-14368 B68-10143 02

Solution of differential equations by application of transformation groups
N-PS-11882 B68-10276 02

FORTRAN optical lens design program
NPO-10603 B68-10354 06

FUSILAGE

Cam-operated limit switch features safe fuse replacement
IISC-218 B65-10322 01

Clamp for detonating fuze
I-FS-13999 B68-10072 05

Cesium iodide crystals fused to vacuum tube faceplates
GSFC-67 B64-10476 03

Circuit reliability boosted by soldering pins of disconnect plugs to sockets
JPL-147 B64-10100 01

FUSIONS

Program computes zero lift wave drag of entire aircraft
LANGLEY-1 C079 B67-10530 06

Cylotronics

Removable preheater elements improve oxide induction furnace
JPL-288 B63-10193 01

Rapid billet loader aids extrusion of refractory metals
LEWIS-50 B63-10354 05

New sintering process adjusts magnetic value of ferrite cores
GSFC-129 B63-10606 01

Lead oxide ceramic makes excellent high-temperature lubricant
LEWIS-144 B64-10116 03

Refractory metal shielding/insulation increases operating range of induction furnace
LEWIS-202 B65-10168 02

Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055 05

Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01

Refractory coating protects intricate graphite elements from high-temperature hydrogen
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Galvanometers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Braze alloys used as temperature indicators</td>
<td>Gallium arsenide lasers</td>
</tr>
<tr>
<td>NU-0063</td>
<td>Solid-state laser transmitter is amplitude modulated</td>
</tr>
<tr>
<td>B66-10279</td>
<td>B65-10238</td>
</tr>
<tr>
<td>Composite weld rod corrects individual filler weaknesses</td>
<td>Electro-optic modulator for infrared laser using gallium arsenide crystal</td>
</tr>
<tr>
<td>N-PFS-1923</td>
<td>B68-10255</td>
</tr>
<tr>
<td>Effect of welding position on porosity formation in aluminum alloy welds</td>
<td></td>
</tr>
<tr>
<td>N-PFS-2318</td>
<td></td>
</tr>
<tr>
<td>Weld procedure produces quality welds for thick sections of Hastelloy-X</td>
<td></td>
</tr>
<tr>
<td>WDC-10048</td>
<td></td>
</tr>
<tr>
<td>Rhenium-plated barrier against high-temperature fusion bonding</td>
<td></td>
</tr>
<tr>
<td>N-PFS-92155</td>
<td></td>
</tr>
<tr>
<td>Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes</td>
<td></td>
</tr>
<tr>
<td>AHS-10145</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fusion Welding</td>
</tr>
<tr>
<td></td>
<td>Upsetting butt edge increases weld-joint strength</td>
</tr>
<tr>
<td>N-PFS-175</td>
<td>B64-10114</td>
</tr>
<tr>
<td>Thermmocouples easily installed in hard-to-get-to places</td>
<td></td>
</tr>
<tr>
<td>N-PFS-91946</td>
<td></td>
</tr>
<tr>
<td>System maintains constant penetration during fusion welding</td>
<td></td>
</tr>
<tr>
<td>N-PFS-937</td>
<td>B67-10091</td>
</tr>
<tr>
<td>Clamp provides efficient connection for high-density currents</td>
<td></td>
</tr>
<tr>
<td>N-PFS-2047</td>
<td>B67-10140</td>
</tr>
<tr>
<td>Continuous internal channels formed in aluminum fusion welds</td>
<td></td>
</tr>
<tr>
<td>N-PFS-2309</td>
<td>B67-10183</td>
</tr>
<tr>
<td>Workmanship standards for fusion welding</td>
<td></td>
</tr>
<tr>
<td>WDC-10050</td>
<td>B67-10200</td>
</tr>
<tr>
<td>Portable machine welding head automatically controls arc</td>
<td></td>
</tr>
<tr>
<td>N-PFS-12763</td>
<td>B67-10272</td>
</tr>
<tr>
<td>Welding, brazing, and soldering handbook</td>
<td></td>
</tr>
<tr>
<td>N-PFS-20504</td>
<td>B69-10266</td>
</tr>
<tr>
<td></td>
<td>Gallium Arsenide Lasers</td>
</tr>
<tr>
<td></td>
<td>Solid-state laser transmitter is amplitude modulated</td>
</tr>
<tr>
<td>HSC-121</td>
<td>B65-10238</td>
</tr>
<tr>
<td></td>
<td>Electro-optic modulator for infrared laser using gallium arsenide crystal</td>
</tr>
<tr>
<td>GSPC-10686</td>
<td>B68-10255</td>
</tr>
<tr>
<td></td>
<td>Gallium Arsenides</td>
</tr>
<tr>
<td></td>
<td>New method used to fabricate gallium arsenide photovoltaic device</td>
</tr>
<tr>
<td>WOO-0062</td>
<td>B64-10119</td>
</tr>
<tr>
<td></td>
<td>Economical fabrication process produces high quality junction transistors</td>
</tr>
<tr>
<td>JPL-SC-065</td>
<td>B66-10330</td>
</tr>
<tr>
<td></td>
<td>Thermocompression bonding produces efficient surface-barrier diode</td>
</tr>
<tr>
<td>JPL-SC-066</td>
<td>B65-10007</td>
</tr>
<tr>
<td></td>
<td>Optical arrangement increases useful light output of semiconductor diodes</td>
</tr>
<tr>
<td>JPL-SC-064</td>
<td>B65-10202</td>
</tr>
<tr>
<td></td>
<td>Laser beam transmits electric power</td>
</tr>
<tr>
<td>GSPC-293</td>
<td>B65-10158</td>
</tr>
<tr>
<td></td>
<td>Selenium bond decreases ON resistance of light-activated switch</td>
</tr>
<tr>
<td>JPL-SC-101</td>
<td>B65-10324</td>
</tr>
<tr>
<td></td>
<td>Cuprous selenide and sulfide form improved photovoltaic barriers</td>
</tr>
<tr>
<td>WOO-212</td>
<td>B66-10025</td>
</tr>
<tr>
<td></td>
<td>Optically driven switch turn-off time reduced by opaque coatings</td>
</tr>
<tr>
<td>JPL-SC-107</td>
<td>B66-10141</td>
</tr>
<tr>
<td></td>
<td>Single-crystal semiconductor films grown on foreign substrates</td>
</tr>
<tr>
<td>WOO-076</td>
<td>B66-10225</td>
</tr>
<tr>
<td></td>
<td>Electrically controlled optical latch and switch requires less current</td>
</tr>
<tr>
<td>JPL-SC-111</td>
<td>B66-10414</td>
</tr>
<tr>
<td></td>
<td>Efficient millimeter wave 1140 GHz diode for harmonic power generation</td>
</tr>
<tr>
<td>HQ-61</td>
<td>B67-10166</td>
</tr>
<tr>
<td></td>
<td>Improved method of fabricating planar gallium arsenide diodes</td>
</tr>
<tr>
<td>XRE-00235</td>
<td>B69-10271</td>
</tr>
<tr>
<td></td>
<td>Gallium Probes</td>
</tr>
<tr>
<td></td>
<td>System measures response time of photomultiplier tubes</td>
</tr>
<tr>
<td>LEWIS-10437</td>
<td>B68-10382</td>
</tr>
<tr>
<td></td>
<td>Galvanic Skin Response</td>
</tr>
<tr>
<td></td>
<td>Improved conductive paste secures biomedical electrodes</td>
</tr>
<tr>
<td>HSC-107</td>
<td>B65-10015</td>
</tr>
<tr>
<td></td>
<td>Improved electrode paste provides reliable measurement of galvanic skin response</td>
</tr>
<tr>
<td>HSC-146</td>
<td>B66-10049</td>
</tr>
<tr>
<td></td>
<td>Galvanomagnetic Effects</td>
</tr>
<tr>
<td></td>
<td>Electromotive series established for metals used in aerospace technology</td>
</tr>
<tr>
<td>N-PFS-18327</td>
<td>B66-10385</td>
</tr>
<tr>
<td></td>
<td>Galvanometers</td>
</tr>
<tr>
<td></td>
<td>System measures angular displacement without contact</td>
</tr>
<tr>
<td>LANGLBY-46</td>
<td>B65-10073</td>
</tr>
<tr>
<td></td>
<td>Light-sensitive potentiometer measures product of two variables</td>
</tr>
<tr>
<td>GSPC-240</td>
<td>B65-10076</td>
</tr>
<tr>
<td></td>
<td>Improved strain-wire flowmeter has fast response time</td>
</tr>
<tr>
<td>LEWIS-241</td>
<td>B65-10304</td>
</tr>
</tbody>
</table>

I-275
<table>
<thead>
<tr>
<th>GAMMA PUBCTIOB</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved electrode paste provides reliable measurement of galvanic skin response</td>
<td>B66-10049</td>
</tr>
<tr>
<td>Monitoring circuit accurately measures movement of solenoid valve</td>
<td>B66-10568</td>
</tr>
<tr>
<td>Instrument accurately measures small temperature changes on test surface</td>
<td>B66-10637</td>
</tr>
<tr>
<td>Use of color-coded sleeve shutters accelerates oscillograph channel selection</td>
<td>B67-10362</td>
</tr>
<tr>
<td>Precision bolometer bridge</td>
<td>B68-10156</td>
</tr>
<tr>
<td>Nondestructive method for measuring residual stresses in metals, a concept</td>
<td>B68-10378</td>
</tr>
<tr>
<td>Method for measuring alternating voltage transients</td>
<td>B68-10513</td>
</tr>
<tr>
<td>Independent doubly truncated gamma variables</td>
<td>B68-10345</td>
</tr>
<tr>
<td>F-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program</td>
<td>B67-10536</td>
</tr>
<tr>
<td>Detection sensitivities in 3-8 MeV neutron activation</td>
<td>B68-10298</td>
</tr>
<tr>
<td>Mount makes liquid nitrogen-cooled gamma ray detector portable</td>
<td>B66-10103</td>
</tr>
<tr>
<td>Dicelometer design permits measurement in vacuum under irradiation</td>
<td>B66-10401</td>
</tr>
<tr>
<td>A fast-neutron spectrometer of advanced design</td>
<td>B66-10555</td>
</tr>
<tr>
<td>Ion exchange determines iodine-131 concentration in aqueous samples</td>
<td>B67-10129</td>
</tr>
<tr>
<td>Radiation counting technique allows density measurement of metals in high-pressure/high-temperature environment</td>
<td>B67-10316</td>
</tr>
<tr>
<td>Low-energy gamma ray inspection of brazed aluminum joints</td>
<td>B67-10337</td>
</tr>
<tr>
<td>Vibration analysis utilizing Mossbauer effect</td>
<td>B67-10339</td>
</tr>
<tr>
<td>Metal flame spray coating protects electrical cables in extreme environment</td>
<td>B67-10351</td>
</tr>
<tr>
<td>Computer program FPRI-RRV calculates fission product inventory for U-235 fission</td>
<td>B67-10450</td>
</tr>
<tr>
<td>Training course for radiation safety technicians</td>
<td>B67-10477</td>
</tr>
<tr>
<td>Numerical least-square method for resolving complex pulse height spectra</td>
<td>B67-10480</td>
</tr>
<tr>
<td>SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield</td>
<td>B67-10537</td>
</tr>
<tr>
<td>Compilation of detection sensitivities in thermal-neutron activation</td>
<td>B67-10641</td>
</tr>
<tr>
<td>Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes</td>
<td>B67-10665</td>
</tr>
<tr>
<td>Deep gamma ray penetration in thick shields</td>
<td>B68-10143</td>
</tr>
<tr>
<td>Steady-state differential calorimeter measures gamma heating in reactor</td>
<td>B68-10162</td>
</tr>
<tr>
<td>Four pi-recoll proportional counter used as neutron spectrometer</td>
<td>B68-10326</td>
</tr>
<tr>
<td>High resolution Ge/Li/ spectroimeter reduces rate-dependent distortions at high counting rates</td>
<td>B68-10420</td>
</tr>
<tr>
<td>Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectrometry</td>
<td>B69-10005</td>
</tr>
<tr>
<td>The response of monoenergetic gamma rays in finite media are investigated</td>
<td>B69-10080</td>
</tr>
<tr>
<td>Mossbauer vibration calibration system evaluated</td>
<td>B69-10125</td>
</tr>
<tr>
<td>Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems</td>
<td>B69-10158</td>
</tr>
<tr>
<td>Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons</td>
<td>B69-10211</td>
</tr>
<tr>
<td>Multichannel analyzers at high rates of input</td>
<td>B69-10355</td>
</tr>
<tr>
<td>Remote balance weighs accurately amid high radiation</td>
<td>B69-10242</td>
</tr>
<tr>
<td>Dual-mode operation of a neutron source, a concept</td>
<td>B69-10248</td>
</tr>
<tr>
<td>New shield for gamma-ray spectroscopy</td>
<td>B69-10388</td>
</tr>
<tr>
<td>Improved pulse shape discriminator for fast neutron-gamma ray detection system</td>
<td>B69-10344</td>
</tr>
<tr>
<td>Direct determination of lead-210 by liquid-scintillation counting</td>
<td>B69-10481</td>
</tr>
<tr>
<td>Manganese-56 coincidence-counting facility precisely measures neutron-source strength</td>
<td>B69-10621</td>
</tr>
<tr>
<td>Gamma radiation characteristics of plutonium dioxide fuel</td>
<td>B69-10733</td>
</tr>
<tr>
<td>Production of crystalline polymers via liquid crystal monomers</td>
<td>B69-10744</td>
</tr>
<tr>
<td>Pulse-height defect due to electron interaction in dead layers of Ge/Li/ gamma-ray detectors</td>
<td>B69-10744</td>
</tr>
</tbody>
</table>
SUBJECT INDEX

ARG-10362  869-10767  02

GAUHY CRAWNS
Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates
M-FS-10346  867-10418  05
Proposed technique for vertical alignment of a crane's cable
M-FS-16456  869-10202  05

GAPS
Spherical electrode eliminates high-voltage breakdown
LEWIS-105  865-10139  01
Shrinkable sleeve eliminates shielding gap in RF cable
WOO-207  865-10387  01
Dielectric prism would improve performance of quasi-optical microwave components
ERC-10011  867-10416  01
Journal gas bearing for curved surfaces
M-FS-20423  869-10182  05

GARNETS
Simplified technique demonstrates magnetic domain switching
M-FS-13153  867-10342  02

GAUHY ANALYSIS
Rapid helium-air analyzer can measure other binary gas mixtures
LANGT-16  863-10557  03
Plastic bags in evacuated chamber make lightweight gas sampling system
FEC-31  865-10264  01
Hot-wire detector for chemically active materials used in gas chromatography
MSC-269  866-10139  03
Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735  866-10182  01
Cold trap increases sensitivity of gas chromatography
M-FS-1617  866-10517  03
Gas chromatographic column enables analysis of propellant hydrazines
MSC-1161  866-10586  03
System automatically supplies precise analytical samples of high-pressure gases
M-FS-1814  867-10090  01

GAUHY BAGS
Vapor pressure measured with inflatable plastic bag
GSFC-281  865-10136  03

GAUHY BEARING
Elastic orifice automatically regulates gas bearings
JFL-135  863-10123  05
Pneumatic power is transmitted through air bearing
MSC-8  864-10141  05
Slit feeds reduce unbalanced torques in gas-lubricated bearings
JFL-264  865-10099  05
Air brake-dynamometer accurately measures torque
LEWIS-163  865-10312  05
Electron beam seals outer surfaces of porous bodies
M-FS-562  866-10033  03
A conceptual design for squeeze film bearings
M-FS-573  866-10226  05
Simulator effects partial gravity conditions
MSC-152  866-10339  05
Air bearing provides friction-free support for shaker system slip table
NB-0086  866-10708  05
Squeeze-film gas bearing technology
M-PS-14821  868-10180  05
Low friction servo valve
LEWIS-10647  868-10040  05
Low cost techniques for fabricating lobed bearings
LEWIS-10286  868-10041  05
Fluid power-transmitting gas bearing
ERC-10097  868-10503  05
Electronic visualization of gas bearing behavior
LEWIS-10711  869-10073  01
Journal gas bearing for curved surfaces
M-FS-20423  869-10182  05
High temperature coatings for gas bearings
LEWIS-11617  869-10200  03
Vole bearing support for high-speed rotor
NB-1035  869-10661  05

GAS CHROMATOGRAPHY
Hot-wire detector for chemically active materials used in gas chromatography
MSC-269  866-10139  03
Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735  866-10182  01
Cold trap increases sensitivity of gas chromatography
M-FS-1617  866-10517  03
Gas chromatographic column enables analysis of propellant hydrazines
MSC-1161  866-10586  03
System automatically supplies precise analytical samples of high-pressure gases
M-FS-1814  867-10090  01
Analytical technique characterizes all trace contaminants in water
MSC-11032  867-10243  03
Trace hydrazines in aqueous solutions accurately determined by gas chromatography
MSC-11222  867-10290  01
Effects of surface preparation on quality of aluminum alloy weldments
M-FS-13152  868-10302  03
Two systems developed for purifying inert atmospheres
ARG-10234  869-10026  03
Spiral-flow apparatus for measuring permeation of solids by gases
M-FS-16517  869-10357  03
Gas chromatograph injection port protective device
M-FS-18585  869-10788  03

GAS COMPOSITION
Bell nozzle kernel analysis program
M-PS-18450  869-10146  06

GAS COOLING
High-temperature, high-pressure spherical segment valve provides quick opening
ARC-13  863-10431  05
Improved cryogenic refrigeration system
JPL-731  867-10128  02

GAS DENSITY
Instrument accurately measures extremely low air densities
M-FS-193  865-10221  01
Propellant tank pressurization analysis
GAS DETECTORS

program
I-PS-1506 B67-10625 06
Magneticohydrodynamic generators using
two-phase liquid-metal flows
ARG-10168 B69-10162 01

GAS DETECTORS

Hot-wire detector for chemically active
materials used in gas chromatography
MSC-269 B66-10139 03
Subminiaturized gas chromatograph gives fast,
efficient analysis
JPL-735 B66-10162 01
Sniffer used as portable hydrogen leak
detector
I-PS-846 B66-10356 01
Portable detector set discloses helium
leak rates
I-PS-1733 B67-10065 01
Portable fixture facilitates pressure
testing of instrumentation fittings
I-PS-2032 B67-10121 03
Quartz crystals detect gas contaminants
during vacuum chamber evacuation
NPO-10144 B67-10205 01
New shield for gamma-ray spectroscopy
ANS-10386 B69-10344 02

GAS DISCHARGE TUBES

Neon isotopes cancel errors in gas laser
I-PS-1476 B66-10583 02
Design concepts using ring lasers for
frequency stabilization
I-PS-2448 B67-10143 01
Uranium isotopes quantitatively determined
by modified method of atomic absorption
spectrophotometry
I-PS-2277 B67-10145 01

GAS DISCHARGERS

Concept for cryogenic liquid reclamation
system
NPO-10322 B67-10420 02
Two-fluid, impinging-sheet injector
NPO-10547 B68-10338 05
Axisymmetric two-phase perfect gas
performance program
MSC-11774 B68-10374 06
Rapid-response, light-exposure control
system
I-PS-10236 B68-10502 01

GAS DYNAMICS

Advances in light-gas gun technology
I-PS-14270 B68-10583 02
Computer simulation of high-frequency
combustion instability and its suppression
BG-10351 B69-10368 06

GAS EVOLUTION

Plated nickel wire mesh makes superior
catalyst bed
MSC-216 B65-10321 03
A method for observing gas evolution during
plastic laminate cure
MSC-15592 B69-10530 03

GAS EXPANSION

Splice plate design assures structural
separation by mild explosive
MSC-137 B65-10166 05
Volume-ratio calibration system for vacuum
gages
Lewis-303 B66-10640 01

SUBJECT INDEX

Thermodynamic properties related to
expansion of two-component gas
MSC-1133 B67-10112 03
Development of detonation reaction engine
I-PS-19020 B67-10565 01
Axisymmetric two-phase perfect gas
performance program
MSC-11774 B68-10374 06
One-dimensional two-phase reacting gas
nonequilibrium performance program
MSC-11780 B68-10376 06
Liquid-metal-piston MHD generator
I-PS-10500 B69-10771 02

GAS EXPLOSIONS

Test instrumentation evaluates electrostatic
hazards in fluid system
I-PS-2277 B67-10185 01

GAS FLOW

Elastic orifice automatically regulates gas
bearings
JPL-135 B63-10123 05
High-pressure regulating system prevents
pressure surges
JPL-231 B63-10170 05
Low-cost insulation system for cryostats
eliminates need for a vacuum
Lewis-64 B63-10365 03
Connector for vacuum-jacketed lines cuts
tubing system cost
Lewis-66 B63-10367 05
Fine-particle filter prevents damage to vacuum
pumps
Lewis-106 B63-10489 05
Miniature oxygen-hydrogen cutting torch
constructed from hypodermic needle
JPL-545 B63-10517 05
Modified gas bearing is adjustable to optimum
stiffness ratio
I-PS-145 B64-10050 05

Blade valve isolates compartment in pipe,
opens to allow free flow
JPL-585 B64-10188 05

Apparatus measures concentration of suspended
droplets in gas streams
Langley-31 B64-10237 01

Gas diffusion cell removes carbon dioxide from
occupied airtight enclosures
MSC-118 B64-10319 03
Nitrogen dioxide produced by self-sustained
pyrolysis of nitrous oxide
Langley-32 B65-10074 05

Slit feeds reduce unbalanced torques in
gas-lubricated bearings
JPL-264 B65-10099 05

Instrument calibrates low gas-rate flowmeters
MSC-136 B65-10137 01

Fluid check valve has fail-safe feature
JPL-0019 B65-10207 05

Spiraled channels improve heat transfer between
fluids
JPL-694 B66-10291 02

Flowmeter measures low gas-flow rates
I-PS-215 B66-10336 01

Radioactive tracer system detects oil
contaminants in fluid lines
I-PS-512 B66-10090 03
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>GAS INJECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool provides constant purge during tube welding</td>
<td>flow M-FS-13757 B67-10455 03</td>
</tr>
<tr>
<td>Oxygen-hydrogen torch is a small-scale steam generator</td>
<td>Computer program uses characteristics method for free-jet investigation LANGLEY-10117 B67-10490 06</td>
</tr>
<tr>
<td>High temperature thermocouple operates in reduction atmosphere</td>
<td>High temperature thermocouple design provides gas cooling without increasing overall size of unit NWC-10515 B67-10497 01</td>
</tr>
<tr>
<td>Dual regulator controls two gases from a single reference</td>
<td>Analysis of dynamic systems with DAP48 computer program M-FS-13999 B67-10523 06</td>
</tr>
<tr>
<td>Subminiaturized gas chromatograph gives fast, efficient analysis</td>
<td>Study made of heat transfer and pressure drop through tubes with internal interrupted fins LEWIS-10280 B67-10555 05</td>
</tr>
<tr>
<td>Quick-closing valve is actuated by explosive discharge</td>
<td>Eddy current disk valve LEWIS-10123 B67-10638 05</td>
</tr>
<tr>
<td>Flow ring valve is simple, quick-acting</td>
<td>Solenoid hammer valve developed for quick-opening requirements LEWIS-10134 B67-10639 05</td>
</tr>
<tr>
<td>O-rings with mylar back-up provide high-pressure cryogenic seal</td>
<td>Device provides controlled gas leaks NPO-10298 B66-10142 03</td>
</tr>
<tr>
<td>Computer program determines gas flow rates in piping systems</td>
<td>Dynamically stable check valve concept for wide flow range M-FS-14579 B66-10247 05</td>
</tr>
<tr>
<td>Gas diffuser facilitates withdrawal of cryogenic liquids from tanks</td>
<td>Fluorescent particles enable visualization of gas flow M-FS-14583 B66-10259 02</td>
</tr>
<tr>
<td>Concept for passive system to control gas flow independently of temperature</td>
<td>Laser-Doppler gas-velocity instrument M-FS-20039 B66-10349 02</td>
</tr>
<tr>
<td>Erasing retort manifold design concept may minimize air contamination and enhance uniform gas flow</td>
<td>Precise doping of metals by small gas flows LEWIS-10448 B66-10526 03</td>
</tr>
<tr>
<td>Miniature valve accurately controls small volume fluid flow</td>
<td>Plasma-heating by induction LEWIS-10528 B69-10185 02</td>
</tr>
<tr>
<td>Device accurately measures and records low gas-flow rates</td>
<td>Detecting hydrogen-containing contaminants on metal surfaces M-FS-20456 B69-10192 03</td>
</tr>
<tr>
<td>Gas chromatographic column enables analysis of propellant hydrazines</td>
<td>Improved liquid-level sensor for cryogenics ARG-10162 B69-10210 02</td>
</tr>
<tr>
<td>Laser Doppler flowmeter measures gas velocity</td>
<td>Report on a cryogenic gyroscope NPO-11200 B69-10504 02</td>
</tr>
<tr>
<td>Low rate flow switch can be used for gas or liquid</td>
<td>Measurement of gas flow at extremely low pressures NWC-13261 B69-10523 03</td>
</tr>
<tr>
<td>System automatically supplies precise analytical samples of high-pressure gases</td>
<td>Natural gas flow through critical nozzles LEWIS-11031 B69-10712 02</td>
</tr>
<tr>
<td>Toroidal ring prevents gas ignition at vent stack outlet</td>
<td>Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites CRC-10161 B69-10732 01</td>
</tr>
<tr>
<td>Liquid hydrogen densitometer utilizes open-ended microwave cavity</td>
<td>A simple electrometer for measuring small photoelectric currents GSPC-10603 B69-10734 01</td>
</tr>
<tr>
<td>Quartz crystals detect gas contaminants during vacuum chamber evacuation</td>
<td>GAS GENERATORS Resilient bearing supports are gas controlled LEWIS-10109 B67-10364 05</td>
</tr>
<tr>
<td>High impact pressure regulator withstands impacts of over 15,000 g</td>
<td>Study made of acoustical monitoring for mechanical checkout M-FS-13372 B67-10430 02</td>
</tr>
<tr>
<td>A method of determining combustion gas flow</td>
<td>Proposed gas generation assembly would recover deeply submerged objects SAN-10007 B66-10211 05</td>
</tr>
<tr>
<td>GAS INJECTION Gas-injection valve operates at high speed</td>
<td></td>
</tr>
</tbody>
</table>
GAS IONIZATION

Xenon forms stable compound with fluorine

Elimination of rocket engine asymmetric loads during tests at sea level

Diffusion of trace gases for leak detection - A study

GAS IONIZATION

Ionization vacuum gage starts quickly, is unaffected by spurious currents

Vacuum gage system for radiation environment

GAS LASERS

Neon isotopes cancel errors in gas laser

Laser Doppler flowmeter measures gas velocity

System enables more complete calibrations of dynamic-pressure transducers

Fresnel diffraction plates are simple and inexpensive

Improved gas ring laser

Repetitively pulsed, wavelength-selective carbon dioxide laser

Active frequency control system for argon FS laser

Rectangular-bore, high-gain laser plasma tube

Two-color holography

GAS-LIQUID INTERACTIONS

Mixer conditions temperature of liquified gas streams

Temperature-sensed cryogenic bleed maintains liquid state in transfer line

A rotating, noncapillary heat pipe

GAS LUBRICANTS

Journal gas bearing for curved surfaces

GAS MASERS

Hydrogen maser as a highly stable frequency reference

An improved atomic hydrogen frequency and time standard

GAS METERS

A radiometer- pyrometer

GAS DETECTORS

Rapid helium-air analyzer can measure other binary gas mixtures

Submicron holes in thin films increase sampling range of mass spectrometers

SUBJECT INDEX

Xenon forms stable compound with fluorine

Elimination of rocket engine asymmetric loads during tests at sea level

Diffusion of trace gases for leak detection - A study

Thermodynamic properties related to expansion of two-component gas

Lamp enables measurement of oxygen concentration in presence of water vapor

Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures

GAS LASERS

Neon isotopes cancel errors in gas laser

Laser Doppler flowmeter measures gas velocity

System enables more complete calibrations of dynamic-pressure transducers

Fresnel diffraction plates are simple and inexpensive

Improved gas ring laser

Repetitively pulsed, wavelength-selective carbon dioxide laser

Active frequency control system for argon FS laser

Rectangular-bore, high-gain laser plasma tube

Two-color holography

GAS-LIQUID INTERACTIONS

Mixer conditions temperature of liquified gas streams

Temperature-sensed cryogenic bleed maintains liquid state in transfer line

A rotating, noncapillary heat pipe

GAS LUBRICANTS

Journal gas bearing for curved surfaces

GAS MASERS

Hydrogen maser as a highly stable frequency reference

An improved atomic hydrogen frequency and time standard

GAS METERS

A radiometer- pyrometer

GAS DETECTORS

Rapid helium-air analyzer can measure other binary gas mixtures

Submicron holes in thin films increase sampling range of mass spectrometers

X-280
Modified McLeod pressure gage eliminates measurement errors

ARC-62  B66-10481  01

Gas leak detector is simple and inexpensive

I-FS-1206  B66-10669  01

Hermetically sealed cells protected from internal gas pressure

OSP-555  B66-10692  01

Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer

MSC-924  B67-10083  03

Fixture facilitates helium leak testing of pipe welds

I-FS-2167  B67-10178  05

Porous mandrels provide uniform deformation in hydrostatic powder metallurgy

I-FS-1972  B67-10209  03

Single-source mechanical loading system produces biaxial stresses in cylinders

I-FS-12530  B67-10380  05

Analysis of dynamic systems with DAP computer program

I-FS-13999  B67-10523

Automatic transducer switching provides accurate wide range measurement of pressure differential

BUC-10001  B67-10540  01

Gas pressure in sealed electrochemical cells measured externally

GSFC-10004  B67-10551  03

Explosive-train initiated through solid bulkhead by pressure cartridge

MSC-11395  B67-10569  03

Compact monitoring and control console for pressurized gas bottles

I-FS-14874  B68-10401  05

Hydrogen flash lamps studied

ARG-10419  B69-10411  02

Calibratable solid-state pressure switch

I-FS-20474  B69-10437  05

GAS-TUBES

Characteristics of fluidized-packed beds

ARG-10049  B68-10278  03

GAS SPECTROSCOPY

A radiometer-pyrometer

LEWIS-289  B66-10606  01

GAS STEAMERS

Apparatus measures concentration of suspended droplets in gas streams

LANGLEY-31  B66-10237  01

Probe measures characteristics of hot gas stream

I-FS-240  B65-10133  02

Instrument calibrates low gas-rate flowmeters

MSC-134  B65-10137  01

Internal cooling increases range of immersion-type temperature probe

LEWIS-171  B65-10157  02

Submicron holes in thin films increase sampling range of mass spectrometers

JPL-SC-027  B66-10380  03

Multilayer refractory nozzles produced by plasma-spray process

WDC-318  B66-10611  05

Study made of Raney nickel technology

I-281

GAS TUBES

Automatic cryogenic liquid level controller is safe for use near combustible substances

LEWIS-195  B66-10882  01

GAS TRANSPORT

Grit blasting nozzle fabricated from mild tool steel proves satisfactory

I-PS-1420  B66-10597  05

GAS TUBING

Refractory metals welded or brazed with tungsten inert gas equipment

LEWIS-219  B65-10319  05

Tungsten wire and tubing joined by nickel brazing

I-FS-394  B65-10391  05

Argon purge gas cooled by chill box

I-FS-560  B66-10153  02

Large seals fabricated from small segments reduce procurement lead time

I-FS-1117  B66-10864  05

Continuous internal channels formed in aluminum fusion welds

I-PS-2399  B67-10162  01

Weld procedure produces quality welds for thick sections of Hastelloy-X

LEWIS-1002  B67-10167  05

Welding of AH350 and AM355 steel

I-FS-2314  B67-10292  05

Magnesium-lithium alloys developed for low temperature use

I-FS-1541  B67-10365  03

Protected, high-temperature connecting cable

LEWIS-1049  B67-10461  01

Dual wire weld feed proportioner

I-FS-18037  B68-10332  05

Microprobe investigation of brittle segregates in aluminum B5 and TIG welds

I-FS-14720  B68-10334  03

Effects of high frequency current in welding aluminum alloy 6061

I-FS-18337  B67-10365  03
Weld joint strength and mechanical properties in 2219-T81 aluminum alloy
LEWIS-10417 B69-10561 03
Welding skate with computerized controls
M-FS-20224 B69-10566 01
Mig welding offers advantages
M-FS-16413 B69-10454 05
Conversion of continuous-direct-current TIG welder to pulse-arc operation
M-FS-16411 B69-10393 05
Gas diffuser facilitates withdrawal of welding smoke with computerized controls
cryogenic liquids from tanks
B69-10303
Reducing bubbles in glass coatings improves electrical breakdown strength
LEWIS-10278 B69-10214 03
Device separates hydrogen from solution in water at ambient temperatures
MSC-13335 B69-10635 03
GAS TURBINE ENGINES
Improved high-temperature-strength nickel-base superalloy
LEWIS-10874 B69-10352 03
GAS TURBINES
Analysis of annular combustors
LEWIS-10399 B69-10356 06
Dual-purpose chamber-cooling system
JPL-10467 B69-10566 02
Properties of air and combustion products of fuels with air
LEWIS-11030 B69-10711 03
GAS VALVES
Probe measures characteristics of hot gas stream
M-FS-240 B65-10133 02
Vapor pressure measured with inflatable plastic bag
GSFC-281, B65-10136 03
Quick-closing valve is actuated by explosive discharge
ABC-55 B66-10233 05
Pneumatic binary encoder replaces multiple solenoid system
M-FS-665 B66-10374 01
Gas-injection valve operates at high speed
EQ-49 B66-10381 05
Modified 1cLeod pressure gage eliminates measurement errors
ABC-62 B66-10481 01
System automatically supplies precise analytical samples of high-pressure gases
M-FS-1814 B67-10090 01
Piezoelectric linear actuator
KSC-11904 B69-10469 02
Chromatographic detection and analysis of traces of hydrocarbons
KSC-10388 B69-10716 02
GAS VISCOSITY
Direct indication of particle size in fluidized beds
ABC-10130 B69-10083 05
GAS WELDING
Simple device facilitates inert-gas welding of tubes
M-FS-558 B66-10155 05
Effect of welding position on porosity formation in aluminum alloy welds
M-FS-2318 B67-10177 05
Microprobe investigation of brittle segregates in aluminum KIG and TIG welds
M-FS-14720 B68-10334 03
GASEOUS DIFFUSION
Cryogenic filter method produces super-pure helium and helium isotopes
JPL-10374 B63-10235 03
Impurity diffusion process for silicon
JPL-374 B63-10235 03
Pressure seal ring may be effective over wide temperature range

Composite gaskets are compatible with liquid oxygen, resist compression set

Rubber and alumina gaskets retain vacuum seal in high temperature EMF cell

Combination spacer and gasket provides effective static seal

Feed-thru flange is useful in vacuum applications to cryogenic temperatures

Silazane elastomer remains resilient at 400 deg C

Thin plastic sheet eliminates need for expensive plating

Combination double door high-vacuum valve provides access to vacuum chamber

Tools made of ice facilitate forming of soft, sticky materials

Inert gas spraying device aids in repair of hazardous systems

Computer circuit will fit on single silicon chip

Novel circuit combines pulse stretcher with NOR gate

Variable frequency magnetic multivibrator generates stable square-wave output

Logic circuit exhibits optimum performance

Analog-to-digital converter has increased reliability and reduced power consumption

Sensitive electrometer features digital output

Simple BCD circuit accurately counts to 24

Field effect transistor presents high input impedance in ac amplifier

Simple pulse counting circuit computes sum of squares

Nonlinear feedback reduces analog-to-digital converter error

Field-effect transistor replaces bulky transformer in analog-gate circuit

Frequency divider is free of spurious outputs

Simple circuit performs binary addition and subtraction

Queuing register uses fluid logic elements

Simplified circuit corrects faults in parallel binary information channels

Exclusive-or logic circuit has useful properties

Instrument automatically selects peak acceleration signal from several accelerometers

Solid state circuit controls direction, speed, and braking of dc motor

Security warning system monitors up to fifteen remote areas simultaneously

Multichannel pulse height analyzer is inexpensive, features low power requirements

Vibration analysis utilizing Mössbauer effect

Signal generator converts direct current to multiphase supplies

Improved circuit for measuring capacitive and inductive reactances

Unique frequency-shift-keyed demodulation system

Input gate circuit converted for use as linear amplifier

Self-correcting, synchronizing ring counter using integrated circuit devices

Electronic gating circuit and ultraviolet laser excitation permit improved dosimeter sensitivity

Parallel-to-serial biphase-data converter
High-speed camera synchronization
-PS-10662  B68-10282  02

Fluidic-thermochromic display device
BCC-10031  B68-10350  01

Circuitry selectively limits data storage in general purpose computer
GSFC-10605  B69-10121  01

Multichannel analyzers at high rates of input
ANG-10355  B69-10214  02

Linear voltage-to-frequency converter
GSFC-10546  B69-10220  01

An electronic circuit for sensing malfunctions in test instrumentation
KSC-10209  B69-10392  01

Automatic tuning of hydrogen masers
GSFC-10127  B69-10452  01

Simplified, reliable circuit sorts binary numbers in order of magnitude
NPO-10112  B69-10503  01

Pulse-code-modulation baseline correction for low signal-to-noise ratios
MSC-13268  B69-10750  01

GATES (OPENINGS)
Gate value with ceramic-coated base operates at high temperatures
ARC-23  B63-10562  03

Low-power transistorized circuit provides staircase waveform
GSFC-48  B64-10007  01

GAUSS EQUATION
Computer program VARI-QUIR provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations
NWC-10052  B67-10345  06

Conditioning of pulses from aerosol-particle detectors
ZEC-10250  B69-10691  01

GEAR
Chain friction system gives positive, reversible drive
ARC-8  B63-10099  05

Self-lubricating gear
-PS-14971  B69-10408  05

GEAR TEETH
Device measures curved surface finish on gear teeth
W00-112  B65-10064  05

Rotating filters permit wide range of optical pyrometry
LANGLEY-33  B65-10100  02

Unique gear design provides self-lubrication
JPL-SC-079  B65-10366  03

Gear drive automatically indexes rotary table
-PS-753  B66-10383  05

GEARS
Shock absorber protects motive components against overloads
W00-092  B65-10008  05

Bidirectional torque filter eliminates backlash
GSFC-335  B65-10148  05

Hydraulic drive system prevents backlash
JPL-371  B65-10351  05

Unique gear design provides self-lubrication
JPL-SC-079  B65-10366  03

SUBJECT INDEX
Torque wrench designed for restricted areas
LEWIS-246  B66-10011  05

Modified power tool rapidly drives series of torque bolts
MSC-221  B66-10058  05

Sun-in with chemical additive protects gear surface
-PS-548  B66-10069  05

Intermediate rotating ring improves reliability of dynamic shaft seal
-PS-575  B66-10197  05

Compact actuator converts rotary to linear motion
JPL-786  B66-10265  05

Gear drive automatically indexes rotary table
-PS-753  B66-10383  05

Concept of planetary gear system to control fluid mixture ratio
MSC-1038  B66-10589  05

Positive displacement cylinder measures corrosive liquid volume
MSC-1038  B66-10589  05

Fluid logic control circuit operates actuator actuator actuator
LEWIS-246  B66-10053  05

Role saw drill attachment has zero force reaction
MSC-543  B66-10604  05

Welding torch and wire feed manipulator
JPL-13102  B67-10385  05

Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates
NPO-10316  B67-10818  05

Improved control system power unit for large parachutes
MSC-12052  B67-10677  05

Electromechanical rotary actuator operates over wide temperature range
-PS-18402  B69-10100  05

Magnetron tuner has locking feature
EBC-09711  B69-10119  05

Diffusion bond method of joining steel and a TPE-bronze composite
-PS-20482  B69-10237  03

Precise gimbaling mechanism
NPO-10317  B69-10270  01

Automatic leveling and equalizing hoist device
-PS-16545  B69-10514  05

Improved camera for better X-ray powderographs
EQ-10424  B69-10537  01

GEIGER COUNTERS
Automatic bird watcher
ARG-10195  B69-10286  02

Life detection
NPO-10510  B69-10475  04

GELATINS
Gelatin coated electrodes allow prolonged bioelectronic measurements
MSC-153  B66-10088  01

Rate constants measured for hydrated electron reactions with peptides and proteins
ARG-10195  B68-10424  04
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Geometry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development and test of flexible film coupon strips for use as a sampling technique</td>
<td>B69-10339 03</td>
</tr>
<tr>
<td>A ceramic composite thermal insulation for use in the environment</td>
<td>B67-10608 03</td>
</tr>
<tr>
<td>Study of hydrogen slush-hydrogen gel utilization</td>
<td>B67-10413 02</td>
</tr>
<tr>
<td>Study of behavior of sterols at interfaces</td>
<td>B68-10281 03</td>
</tr>
<tr>
<td>Earth orbit rendezvous evaluation program</td>
<td>B67-10407 06</td>
</tr>
<tr>
<td>Study of radiation effects on mammalian cells in vitro</td>
<td>B66-10294 02</td>
</tr>
<tr>
<td>Binary system generates sidereal rate from standard solar rate</td>
<td>B64-10200 01</td>
</tr>
<tr>
<td>Improved technique for localizing electropolishing features novel nozzles</td>
<td>B64-10271 01</td>
</tr>
<tr>
<td>Digital system accurately controls velocity of electromechanical drive</td>
<td>B65-10096 01</td>
</tr>
<tr>
<td>High-reluctance rotor rings improve homopolar generator performance</td>
<td>B65-10543 01</td>
</tr>
<tr>
<td>Transient Analysis Generator (TAG) simulates behavior of large class of electrical networks</td>
<td>B67-10319 06</td>
</tr>
<tr>
<td>Simple first order data compression processor concept</td>
<td>B67-10553 01</td>
</tr>
<tr>
<td>Studies of cycles for liquid-metal magnetohydrodynamic generation of power</td>
<td>B69-10194 02</td>
</tr>
<tr>
<td>Technique for tuning antenna systems producing negligible signal radiation</td>
<td>B69-10215 01</td>
</tr>
<tr>
<td>Study of radiation effects on mammalian cells in vitro</td>
<td>B68-10294 02</td>
</tr>
<tr>
<td>Cytology is advanced by studying effects of deuterium environment</td>
<td>B67-10304 04</td>
</tr>
<tr>
<td>Study made of relationship between growth and metabolism</td>
<td>B67-10604 04</td>
</tr>
<tr>
<td>Microscopes and computers combined for analysis of chromosomes</td>
<td>B69-10088 04</td>
</tr>
<tr>
<td>Internal and ancestral controls of cell-generation times</td>
<td>B69-10205 04</td>
</tr>
<tr>
<td>Production of solvated electrons</td>
<td>B69-10430 03</td>
</tr>
<tr>
<td>Reusable chelating resins concentrate metal ions from highly dilute solutions</td>
<td>B66-10451 03</td>
</tr>
<tr>
<td>Nondispersive X-ray emission analysis for geochemical exploration</td>
<td>B69-10011 02</td>
</tr>
<tr>
<td>Dual-mode operation of a neutron source, a concept</td>
<td>B69-10248 02</td>
</tr>
<tr>
<td>Hydrogen maser as a highly stable frequency reference</td>
<td>B67-10146 01</td>
</tr>
<tr>
<td>Theory of a refined earth model</td>
<td>B68-10228 02</td>
</tr>
<tr>
<td>Theory of a refined earth model</td>
<td>B68-10228 02</td>
</tr>
<tr>
<td>Density trace made with computer printout</td>
<td>B65-10200 01</td>
</tr>
<tr>
<td>Rock bit requires no flushing medium to maintain drilling speed</td>
<td>B65-10109 05</td>
</tr>
<tr>
<td>Preparing rock powder specimens of controlled size distribution</td>
<td>B68-10297 05</td>
</tr>
<tr>
<td>Dual-mode operation of a neutron source, a concept</td>
<td>B69-10106 01</td>
</tr>
<tr>
<td>Iris-leaf core retainer for a surface drill</td>
<td>B69-10496 05</td>
</tr>
<tr>
<td>Desert soil collection at the JPL soil science laboratory</td>
<td>B69-10571 04</td>
</tr>
<tr>
<td>New backup-bar groove configuration improves heliarc welding of 2014-T6 aluminum</td>
<td>B66-10443 05</td>
</tr>
<tr>
<td>Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries</td>
<td>B67-10329 06</td>
</tr>
<tr>
<td>Braze joint quality tested electromagnetically</td>
<td>B67-10345 06</td>
</tr>
<tr>
<td>Computer program VARIO-QUT 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations</td>
<td>B67-10352 06</td>
</tr>
<tr>
<td>Study made of procedures for externally loading and corrosion testing stressed corrosion specimens</td>
<td>B67-10451 03</td>
</tr>
<tr>
<td>Computer program analyzes and designs supersonic wing-body combinations</td>
<td>B68-10335 06</td>
</tr>
<tr>
<td>Radial inflow turbine design charts</td>
<td>B68-10567 05</td>
</tr>
<tr>
<td>Monte Carlo direct view factor and generalized radiative heat transfer programs</td>
<td>B69-10038 06</td>
</tr>
<tr>
<td>Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems</td>
<td>B69-10158 06</td>
</tr>
<tr>
<td>Finite element analysis of compressible solids with nonlinear material properties</td>
<td>B69-10238 06</td>
</tr>
</tbody>
</table>
Technique for predicting temperature distribution in gases
LEWIS-10918 B69-10329 01

Determination of quadratic equation coefficients describing three-dimensional surfaces, their constraint and skew planes, and view point areas
N-FS-15043 B69-10435 06

Calibration standard for dynamic evaluation of a profile plotter
N-FS-16476 B69-10458 05

Optimizing solar cell grid geometry
EQ-10417 B69-10460 01

A biaxial weld strength prediction method
N-FS-20019 B69-10471 05

A theoretical study of radar backscatter from distributed targets with emphasis on polarization dependence
N-FS-13775 B69-10560 02

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
ARG-10461 B69-10620 02

Engineering thermal analyzer /BETA 2/
N-FS-15035 B69-10760 06

GERMANIUM
Economical fabrication process produces high-quality junction transistors
JPL-SC-065 B64-10330 01

Wedge imersed thermistor bolometer measures infrared radiation
GSPC-443 B65-10330 02

Mount makes liquid nitrogen-cooled gamma ray detector portable
LEWIS-259 B66-10103 01

Circuit protects regulated power supply against overload current
GSPC-453 B66-10292 01

Resistance thermometer has linear resistance-temperature coefficient at low temperatures
W00-190 B66-10512 01

Infrared radiometer
N-FS-13373 B67-10422 01

Feasibility study of wireless power transmission systems
N-FS-14691 B68-10309 01

Hydrogen peroxide etching proves useful for germanium
ABB-10170 B68-10454 03

Electron beam recrystallization of amorphous semiconductor materials
LEWIS-10443 B68-10556 02

Calibration of a resistance thermometer down to 0.04 degrees K
ABB-10318 B69-10149 01

Multichannel analyzers at high rates of input
ABB-10355 B69-10214 02

Method for copper staining of germanium crystals
ABB-10403 B69-10257 03

Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors
ABB-10362 B69-10747 02

GERMANIUM ALLIOTS
Single-crystal semiconductor films grown on foreign substrates
W00-056 B66-10225 01

GERMANIUM COMPOUNDS
Segmented SiGe-PbTe couples
GSFC-10746 B69-10233 01

GERMANIUM DIOXIDE
High resolution Ge/Li/ spectrometer reduces rate-dependent distortions at high counting rates
ABB-10144 B68-10420 01

Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectroscopy
ABB-10190 B68-10005 02

Improved liquid-level sensor for cryogenics
ABB-10162 B69-10210 02

Multichannel analyzers at high rates of input
ABB-10355 B69-10214 02

GETTERS
Ion pump provides increased vacuum pumping speed
MEO-13 B65-10239 02

Auxiliary titanium sublimation pump produces ultrahigh 10 to the minus 11 torr vacuum
LANGLEY-212 B66-10338 02

Titanium-nitrogen reaction investigated for application to gettering systems
ABB-10208 B68-10414 03

GEYERS
Fluid behavioral patterns found in subscale geysering study
N-FS-13582 B67-10462 02

GIMBALLESS INERTIAL NAVIGATION
Improved gas ring laser
MSC-11584 B68-10304 02

GIMBALS
Ball and socket joints provide accurate biaxial gimbals
JPL-658 B65-10205 05

Simulator effects partial gravity conditions
MSC-152 B66-10339 05

Fluid logic control circuit operates nutator actuator motor
LEWIS-294 B66-10593 05

Device measures reaction engine thrust vector deviations
JPL-SC-163 B66-10642 05

Gimbaled-mirror scanning system capable of spiral pattern
GSPC-10170 B67-10609 02

Gibral angle sensor
GSPC-10305 B68-10315 01

Liquid laser cavities
GSPC-10592 B69-10234 02

Precise gimballing mechanism
NFO-11057 B69-10270 01

Multipurpose binocular scanning apparatus
NFO-11002 B69-10311 02

Hermetically sealed vibration damper
MSC-10595 B69-10634 05

GLANDS (SEALS)
Soft-seal valve holds hazardous fluids safely
LEWIS-275 B66-10216 05

Vacuum test fixture improves leakage rate measurements
Inflatable holding fixture permits X-rays to be taken of inner weld areas
M-FS-856 B66-10327 03

Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel
NUC-10008 B67-10539 05

Panels illuminated by edge-lighted lens technique
MSC-871 B66-10507 02

Antiglare improvement for optical imaging system
HPO-10337 B68-10090 02

Multiple test tubes stirred mechanically
ARC-42 B65-10120 01

Thin transparent films formed from powdered glass
GSFC-352 B65-10217 03

Angular glass tubing drawn from round tubing
HC-20 B65-10235 05

Porous glass makes effective substrate for ozone-neutralizing reagent
GSFC-388 B65-10364 03

Thin-film semiconductor rectifier has improved properties
MSC-207 B66-10012 01

High-pressure, low temperature electrical connector makes no-leak seal
MSC-276 B66-10079 02

Split glass tube assures quality in electron beam brazing
M-FS-564 B66-10151 05

Thin-film gage measures low heat-transfer rates
LANGLEY 205 B66-10180 01

Fibers of newly developed refractory ceramics produced by improved process
HPO-149 B66-10196 03

Improved thermal insulation materials made of foamed refractory oxides
M-FS-735 B66-10288 03

Special treatment reduces helium permeation of glass in vacuum systems
HQ-25 B66-10372 02

High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation
LEWIS-310 B66-10394 01

Mechanism facilitates coating of inner surfaces of metal cylinders
GSFC-515 B66-10698 05

Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables
NU-0083 B66-10704 05

Glass formulation has high coefficient of thermal expansion
NU-0084 B66-10705 03

Cracks in glass electrical connector headers removed by dry blasting with fine abrasive
LEWIS-381 B67-10146 03

Fast-acting calorimeter measures heat output of plasma gun accelerator
LEWIS-388 B67-10192 01

Glass bead shot peening retards stress corrosion failure of titanium tanks
LANGLEY-319 B67-10198 05

Liquid mercury chamber and microsyringe designs allow more efficient micromanipulations
ARG-251 B67-10305 04

Heat-shrink plastic tubing seals joints in glass tubing
LEWIS-10329 B66-10040 05

Glassy materials investigated for nuclear reactor applications
ARG-10075 B66-10103 03

Multichip packaging with thermal insulation
M-FS-14676 B66-10119 02

Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics
SAN-10012 B66-10204 03

Inspection criteria ensure quality control of parallel gap soldering
M-FS-14530 B66-10257 05

Thermal protective visor for entering high temperature areas
MSC-10265 B66-10277 05

Optometric system facilitates colorimetric and fluorometric measurements
HPO-10233 B68-10316 01

Indium adhesion provides quantitative measure of surface cleanliness
SAN-10024 B68-10342 01

Thermal conductivity and dielectric constant of silicate materials
11-38-14856 B68-10351 03

High dielectric thick films for screened circuit capacitors
LANGLEY-10294 B68-10351 03

Protective clothing for workers with 5-kW and 20-kW short-arc lamps
NPO-11155 B69-10218 01

Restricted-flow junction between liquids
NPO-10682 B69-10332 02

Surface-renewal models for heat-transfer between walls and fluidized beds
ARG-10274 B69-10772 02

Cracking in glass electrical connector headers removed by dry blasting with fine abrasive
LEWIS-381 B67-10146 03

Fast-acting calorimeter measures heat output of plasma gun accelerator
LEWIS-388 B67-10192 01

Glass bead shot peening retards stress corrosion failure of titanium tanks
LANGLEY-319 B67-10198 05

Fused diode provides visual indication of fuse condition
KSC-67-16 B67-10230 01

Liquid mercury chamber and microsyringe designs allow more efficient micromanipulations
ARG-251 B67-10305 04

Heat-shrink plastic tubing seals joints in glass tubing
LEWIS-10329 B66-10040 05

Glassy materials investigated for nuclear reactor applications
ARG-10075 B66-10103 03

Multichip packaging with thermal insulation
M-FS-14676 B66-10119 02

Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics
SAN-10012 B66-10204 03

Inspection criteria ensure quality control of parallel gap soldering
M-FS-14530 B66-10257 05

Thermal protective visor for entering high temperature areas
MSC-10265 B66-10277 05

Optometric system facilitates colorimetric and fluorometric measurements
HPO-10233 B68-10316 01

Indium adhesion provides quantitative measure of surface cleanliness
SAN-10024 B68-10342 01

Thermal conductivity and dielectric constant of silicate materials
11-38-14856 B68-10351 03

High dielectric thick films for screened circuit capacitors
LANGLEY-10294 B68-10351 03

Protective clothing for workers with 5-kW and 20-kW short-arc lamps
NPO-11155 B69-10218 01

Restricted-flow junction between liquids
NPO-10682 B69-10332 02

Surface-renewal models for heat-transfer between walls and fluidized beds
ARG-10274 B69-10772 02

Reducing bubbles in glass coatings improves electrical breakdown strength
LEWIS-10278 B68-10214 03

Glass coated single grid for charged particle acceleration
LEWIS-10166 B68-10215 03

Flexible honeycomb structure can bend to fit compound curves
M-FS-12 B62-10384 05

Flexible honeycomb structure can bend to fit compound curves
M-FS-13 B63-10305 05
### GLASSWARE

<table>
<thead>
<tr>
<th>Integral coolant channels supply made by melt-out method</th>
<th>M-FS-91</th>
<th>B63-10497 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelted curtain shields equipment from intense heat fluxes</td>
<td>M-FS-48</td>
<td>B65-10044 03</td>
</tr>
<tr>
<td>Fiberglass parts cured during filament winding eliminates oven, saves time</td>
<td>M-FS-14</td>
<td>B65-10088 03</td>
</tr>
<tr>
<td>Fiberglass dies speed forming of large metal sheets</td>
<td>M-FS-214</td>
<td>B65-10210 05</td>
</tr>
<tr>
<td>Adhesive-backed terminal board eliminates mounting screws</td>
<td>MSC-173</td>
<td>B65-10396 01</td>
</tr>
<tr>
<td>Aluminized fiberglass insulation conforms to curved surfaces</td>
<td>M-FS-477</td>
<td>B66-10020 03</td>
</tr>
<tr>
<td>Spray-on technique simplifies fabrication of complex thermal insulation blanket</td>
<td>M-FS-497</td>
<td>B66-10053 03</td>
</tr>
<tr>
<td>Hydrogen-atmosphere induction furnace has increased temperature range</td>
<td>LEWIS-153</td>
<td>E66-10055 05</td>
</tr>
<tr>
<td>Reflective insulator layers separated by bonded silica beads</td>
<td>MSC-215</td>
<td>E66-10070 03</td>
</tr>
<tr>
<td>Polytetrafluoroethylene lubricates ball bearings in vacuum environment</td>
<td>M-FS-379</td>
<td>E66-10081 03</td>
</tr>
<tr>
<td>Nylon bit removes cork insulation without damage to substrate</td>
<td>MSC-381</td>
<td>B66-10152 05</td>
</tr>
<tr>
<td>Insulation for cryogenic tanks has reduced thickness and weight</td>
<td>M-FS-326</td>
<td>B66-10163 02</td>
</tr>
<tr>
<td>Fiberglass container shells form contamination-free storage units</td>
<td>WWG-275</td>
<td>B66-10217 05</td>
</tr>
<tr>
<td>Strippable grid facilitates removal of grid-surfaced conical workpiece from die</td>
<td>M-FS-716</td>
<td>B66-10336 01</td>
</tr>
<tr>
<td>Inexpensive insulation is effective for cryogenic transfer lines</td>
<td>MSC-616</td>
<td>B66-10348 02</td>
</tr>
<tr>
<td>Composite gaskets are compatible with liquid oxygen, resist compression set</td>
<td>M-FS-485</td>
<td>B66-10395 03</td>
</tr>
<tr>
<td>Electrical cabling withstands severe environmental conditions</td>
<td>M-FS-1585</td>
<td>B66-10427 01</td>
</tr>
<tr>
<td>Study made to control depth of potting compound for honeycomb sandwich fasteners</td>
<td>LEWIS-370</td>
<td>E66-10577 05</td>
</tr>
<tr>
<td>Nonwoven glass fiber mat reinforces polyurethane adhesive</td>
<td>M-FS-2309</td>
<td>B67-10113 03</td>
</tr>
<tr>
<td>Inexpensive cryogenic insulation replaces vacuum jacketed line</td>
<td>NUC-10061</td>
<td>B67-10268 02</td>
</tr>
<tr>
<td>Liquid crystals detect voids in fiber glass laminates</td>
<td>LEWIS-10104</td>
<td>B67-10286 03</td>
</tr>
<tr>
<td>Improved compression molding process</td>
<td>LANGLIT-10027</td>
<td>B67-10302 03</td>
</tr>
<tr>
<td>Jacketed cryogenic piping is stress relieved</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SUBJECT INDEX

<table>
<thead>
<tr>
<th>M-FS-985</th>
<th>B67-10308 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warpage eliminated in copper-clad microwave circuit laminates</td>
<td>M-FS-13892</td>
</tr>
<tr>
<td>Composite solar cell matrix is reliable, lightweight and flexible</td>
<td>NRC-10821</td>
</tr>
<tr>
<td>Holding a high-density laminate</td>
<td>LANGLIT-10051</td>
</tr>
<tr>
<td>Astronaut space suit communication antenna</td>
<td>M-SC-12101</td>
</tr>
<tr>
<td>Fiber glass reinforced structural materials for aerospace application</td>
<td>M-FS-14806</td>
</tr>
<tr>
<td>Fiber glass prevents cracking of polyurethane foam insulation on cryogenic vessels</td>
<td>M-FS-20058</td>
</tr>
<tr>
<td>Adhesive for cryogenic temperature applications</td>
<td>LEWIS-10264</td>
</tr>
<tr>
<td>Novel terminal strips for transformers</td>
<td>NPO-10842</td>
</tr>
<tr>
<td>Handbook for design of containers of fluids and gases for spacecraft</td>
<td>M-FS-20502</td>
</tr>
<tr>
<td>Automated measurement of thermal conductivity</td>
<td>M-FS-20454</td>
</tr>
<tr>
<td>Glass fabric fire barrier for silicone rubber parts</td>
<td>MSC-15555</td>
</tr>
</tbody>
</table>

### GLASSWARE

| Method for X-ray study under extreme temperature and pressure conditions | M-SC-11232 | B67-10474 02 |
| Study of actinide chemistry in saturated potassium fluoride solution | ARG-10204 | B69-10004 03 |
| Control for maintaining constant level of a cryogenic liquid | NPO-11177 | B69-10573 05 |

### GLOVES

| Experiments with ceramic coatings | M-FS-10150 | B68-10355 03 |
| Double gloves reduce contamination of dry box atmosphere | LEWIS-211 | B65-10117 03 |
| Dispenser leak-tests and sterilizes rubber gloves | MUC-295 | B66-10166 03 |
| Self-contained clothing system provides protection against hazardous environments | M-FS-536 | B66-10201 05 |
| Protective clothing for workers with 5-kw and 20-kw short-arc lamps | NPO-11155 | B69-10218 01 |

### GLOW DISCHARGES

| Glow discharge density sensor probe life is extended | M-FS-1707 | B67-10299 01 |

### GLUCOSE

| Large volume continuous counterflow dialyzer has high efficiency | BQ-10055 | B67-10395 04 |
GLYCEROLS
Inhibition of browning in foodstuffs
HQ-10177  B69-10493  04

Improved conductive paste secures biomedical electrodes
MSC-107  B65-10015  03

Radiation effects on bacterial cells
ABG-10064  B68-10169  04

Development and test of flexible film coupon strips for use as a sampling technique
M-FS-20448  B69-10339  03

Sea dye marker provides visibility for 20 hours
MSC-714  B66-10313  03

Method for copper staining of germanium crystals
ABG-10403  B69-10257  03

Water-glycol system volume calculation
MSC-15193  B65-10563  02

Protective clothing for workers with 5-kW and 20-kW short-arc lamps
NPS-2049  B69-10211  01

Braze joint quality tested electromagnetically
J-FS-12795  B65-10250  03

Penetrant test device prevents weld joint damage by eliminating axial pin forces on unpotted modules
LBUIS-10201  B67-10359  01

Infrared radiometer
J-FS-13373  B67-10530  02

Inspection criteria ensure quality control of parallel gap soldering
J-FS-14530  B68-10257  05

Neutron diffractometer allows both magnetic and crystallographic analyses
ARG-10057  B68-10131  02
**GORES**

- Polycrystalline materials
- Rotating mandrel speeds assembly of plastic inflatables
- Electrical upsetting of metal sheet forms weld edge
- Composite bulkhead fabrication development
- Preformed stiffeners used to fabricate structural components for pressurized tanks

**GRADES**

- Radial furnace shows promise for growing straight boron carbide whiskers
- Grain-boundary migration in KCl bicrystals
- Surface profilometer for examining grain-boundary grooves
- Generation of sonic power during welding

**GRAIN BOUNDARIES**

- Effects of high frequency current in welding aluminum alloy 6061
- Grain-boundary migration in KCl bicrystals
- Surface profilometer for examining grain-boundary grooves
- Generation of sonic power during welding

**GRAINITY**

- Air bearing provides friction-free support for shake system slip table
- Metal flame spray coating protects electrical cables in extreme environment

**GRANULAR MATERIALS**

- Improved conductive paste secures biomedical electrodes
- Aluminum oxide filler prevents obstructions in tubing during welding
- Subminiaturized gas chromatograph gives fast, efficient analysis
- Improved thermal insulation materials made of foamed refractory oxides
- New weldable high strength aluminum alloy developed for cryogenic service

**GRAPHITE**

- Improved molybdenum disulfide-silver motor brushes have extended life
- Improved conductive paste secures biomedical electrodes
- Metal sheath improves thermocouple using graphite in one leg
- Graphite element serves as radiant heat source
- Angular glass tubing drawn from round tubing
- Boron carbide whiskers produced by vapor deposition
- Refractory coating protects intricate graphite elements from high-temperature hydrogen
- Dry film lubricant is effective at extreme loads
- Friction loading device enables accurate testing of brittle materials
- Primary cells utilize halogen-organic charge transfer complex
- Radioactive method enables determination of surface areas rapidly and accurately
- Resistance heating releases structural adhesive
- Sensing disks for slag-type calorimeters have higher temperature stability
- Modified blackbody device emits high-density radiation
- Standard surface grinder for precision machining of thin-wall tubing
- Control apparatus for spectral energy source
- Thoriated tungsten tube provides improved high temperature thermocouple sheath

**GRAPHIC ARTS**

- Disk calculator indicates legible lettering for slide projection
- Modified procedure speeds camera copy layout for offset printing
- Offset lenses add versatility to phototypesetting machine
- Instrument transmits vanishing point to illustration point
- Projection transparencies from printed material
- A polar graphic method for determining the attitude of rocket vehicles
Reaction rates of graphite with ozone measured by etch decoration
ABO-10086 B68-10101 03

Analytical techniques for determining boron in graphite
ABG-10107 B68-10102 03

Graphite cloth facilitates vacuum evaporation of silicon monoxide
M-FS-14764 B68-10256 03

Corrosion reduction of aluminum alloys in flowing high-temperature water
ABG-10244 B69-10029 03

Carbon offers advantages as implant material in human body
M-FS-18207 B68-10641 03

Analytical techniques for determining boron in graphite
ABG-10087 B68-10102 03

Graphite cloth facilitates vacuum evaporation of silicon monoxide
M-FS-14764 B68-10256 03

Corrosion reduction of aluminum alloys in flowing high-temperature water
ABG-10244 B69-10029 03

Carbon offers advantages as implant material in human body
M-FS-18207 B68-10641 03
GRavitational effects

Theory of a refined earth model  
N-FS-14679  B66-10228  02

Journal gas bearing for curved surfaces  
N-FS-20423  B66-10162  05

A mechanically extendible boom  
NFO-11118  B66-10328  05

Suppressor plate eliminates undesired arcing during electron beam welding  
N-FS-1126  B66-10357  05

Direction indicator system does not require complicated optics  
WGO-305  B66-10407  01

Computer program utilizes FORTRAN 4 subroutines for contour plotting  
830-10127  02

Improved vacuum deposition apparatus  
NPO-11009  B66-10357  05

System for measuring spatial distribution of ejected droplets, a concept  
NPO-10185  B66-10402  01

Optimizing solar-cell grid geometry  
EQ-1047  01

Fragile electrochemical cell and sealing technique  
XGS-10010  B66-10056  01

Electrochemical sintering process for producing electrodes from cadmium felt  
GSFC-10764  B66-10227  05

Welded repairs of punctured thin-walled aluminum pressure vessels  
I-FS-14836  B66-10051  05

Imprinting of confining sites for cell cultures on thermoplastic substrates  
LANGLEY-10495  B66-10236  04

Apparatus automatically measures soluble residue content of volatile solvents  
SAR-10032  B66-10292  03

Breakaway electrical connector  
NPO-11190  B66-10407  01

Study of lattice defect vibration  
ARG-10221  B66-10078  02

Polychart contour plotter enables data extrapolation from multiple plotting charts  
M-FS-37  B66-10406  05

Forcing blocks speed production of strain gage grids  
LEWIS-182  B66-10009  05

Simple scale interpolator facilitates reading of graphs  
LANGLEY-88  B65-10070  05

Wire bundle formed into grids with minute interstices  
WGO-089  B65-10372  03

I-292
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GROWTH</strong></td>
</tr>
<tr>
<td>T-handle wrench has torque-limiting action</td>
</tr>
<tr>
<td>Plugged hollow shaft makes fatigue-resistant shear pin</td>
</tr>
<tr>
<td>Modified drill permits one-step drilling operation</td>
</tr>
<tr>
<td>Flexible coiled spline securely joins mating cylinders</td>
</tr>
<tr>
<td>Pressure seal ring may be effective over wide temperature range</td>
</tr>
<tr>
<td>Mill profiler machines soft materials accurately</td>
</tr>
<tr>
<td>Versatile machine mills, saws light materials</td>
</tr>
<tr>
<td>Hollow spherical rotors fabricated by electroplating</td>
</tr>
<tr>
<td>New backup-bar groove configuration improves helical welding of 2014-T6 aluminum</td>
</tr>
<tr>
<td>Valve effectively controls amount of contaminant in flow stream</td>
</tr>
<tr>
<td>Cryogenic seal remains leaktight during thermal displacement</td>
</tr>
<tr>
<td>Continuous internal channels formed in aluminum fusion welds</td>
</tr>
<tr>
<td>Static seal concept to accommodate seat tolerances</td>
</tr>
<tr>
<td>Quick-attach clamp</td>
</tr>
<tr>
<td>Spiral-grooved shaft seals substantially reduce leakage and wear</td>
</tr>
<tr>
<td>Hermetically sealed pump</td>
</tr>
<tr>
<td>Surface profilometer for examining grain-boundary grooves</td>
</tr>
<tr>
<td>Sealing a rubber bladder between two sections of an accumulator</td>
</tr>
<tr>
<td>Indexing device ensures proper mating of electrical connectors</td>
</tr>
<tr>
<td>Shallow grooves in journal improve air bearing performance</td>
</tr>
<tr>
<td>Preparing rock powder specimens of controlled size distribution</td>
</tr>
<tr>
<td>Shock-absorbent mountings for bearings</td>
</tr>
<tr>
<td><strong>GROUND MACHINES</strong></td>
</tr>
<tr>
<td>Air-cushion lift pad</td>
</tr>
</tbody>
</table>

**GROUND HANDLING**

- Body-fitted harness provides safe and easy component handling | MPS-533 | B66-10202 | 05 |

**GROUND STATE**

- Vibration analysis utilizing Ramsauer effect | NF-11974 | B67-10339 | 01 |
- Automatic tuning of hydrogen masers | GSFC-10127 | B69-10452 | 01 |

**GROUND STATIONS**

- Omni-directional antennas transmit and receive over large bandwidth | GSFC-836 | B66-10133 | 01 |
- An investigation of phase-lock loop swept-frequency synchronization | MPS-556 | B66-10823 | 01 |
- Automatic telemetry checkout system | MPS-12580 | B67-10402 | 01 |
- Interference effects eliminated in random oriented space station antenna system | MSC-11004 | B67-10435 | 01 |
- Video synchronization processor overcomes poor signal-to-noise ratio | NPO-10002 | B67-10515 | 01 |
- Millimeter-wave atmospheric loss prediction method | NPO-11054 | B69-10584 | 04 |

**GROUND SUPPORT EQUIPMENT**

- Work platform is supported by self-locking blades | MPS-2297 | B67-10180 | 05 |
- Tube joint leak repair coupling | MPS-15022 | B68-10540 | 05 |
- Programmed schedule holds for improving launch vehicle holds | MPS-14502 | B69-10602 | 03 |

**GROUND SUPPORT SYSTEMS**

- Assembly, checkout, and operation optimization analysis technique for complex systems | MPS-14105 | B68-10222 | 05 |

**GROUND TESTS**

- Teflon-packed flexible joint | LEWIS-90252 | B69-10049 | 03 |

**GROUND WAVE PROPAGATION**

- Improved VHF direction finding system | MPS-20435 | B69-10378 | 01 |

**GROWTH**

- Cryology is advanced by studying effects of deuterium environment | ARG-205 | B67-10308 | 04 |
- Continuous microbial cultures maintained by electronically-controlled device | ARG-177 | B67-10556 | 04 |
- Study made of relationship between growth and metabolism | ARG-10086 | B67-10604 | 04 |
- Dynamics of moving bubbles in single and binary component systems | MPS-14845 | B69-10339 | 02 |
- Compound equation developed for postnatal growth of birds and mammals | ARG-10192 | B68-10427 | 04 |
- Investigation of temperature dependence of development and aging | ARG-10145 | B69-10022 | 04 |

I-293
GUARDS (SHEILDs)

Key-locked guard prevents accidental switch actuation
MSC-419 B66-10235 05

GUIDANCE (MOTION)
Visual attitude orientation and alignment system
MSC-687 B67-10120 02
Earth orbit rendezvous evaluation program
N-PS-13016 B67-10407 06
Conceptual nonorthogonal gyro configuration for guidance and navigation
MSC-11363 B67-10433 01

Closed circuit TV system automatically guides welding arc
N-PS-20084 B68-10357 01

GUIDANCE SENSORS
The Quantasyn, an improved quantum detector
MSC-10748 B69-10443 01
Hermetically sealed vibration damper
MSC-10959 B69-10634 05
Image position sensor
N-PS-14101 B69-10783 02

GUNS (SUBSTANCES)
Sea dye marker provides visibility for 20 hours
MSC-714 B66-10313 03

GUNS
Shoulder adapter steadies spot welding gun
N-PS-321 B66-10076 05
Fingertip current control facilitates use of arc welding gun
MSC-289 B66-10092 05

GYROS
Oceanborne transponder platform has good stability
N-PS-171 B65-10035 05

Gypsum
Epoxy-resin patterns speed shell-molding of aluminum parts
N-PS-363 B65-10177 05

GYRATION
Study of high-speed angular-contact ball bearings under dynamic load
N-PS-20562 B69-10367 05

GYRATORS
Gyrator-type circuits replace ungrounded inductors
JAC-10606 B66-10084 01
Energy-storage of a prescribed impedance
N-PS-10428 B69-10431 02

GYROSCOPE FLUIDS
Improved gyro-flotation /damping/ fluids
MSC-13217 B69-10360 03

GYROSCOPES
Slit feeds reduce unbalanced torques in gas-lubricated bearings
JPL-264 B65-10099 05
Electron beam seals outer surfaces of porous bodies
N-PS-562 B66-10033 03
Developmental instrument supplies accurate attitude and attitude-rate data
HQ-57 B66-10607 01
Conceptual nonorthogonal gyro configuration for guidance and navigation
MSC-11363 B67-10433 01

Stable ac phase and amplitude comparator
N-PS-13086 B67-10459 01
Squeeze-film gas bearing technology
N-PS-14821 B68-10180 05
Laser system used for dynamic balancing of gyroes
N-PS-12218 B68-10225 05
Improved gas ring laser
MSC-11584 B68-10304 02
Compensation of pulse-rebalanced inertial instruments
MSC-13058 B68-10216 01

H

HAPHTON
High-strength tungsten alloy with improved ductility
LEWIS-10257 B67-10340 03

HAPHTON ALLOYS
New tungsten alloy has high strength at elevated temperatures
LEWIS-356 B66-10551 03

HAPHTON OXIDES
Protective coating withstands high temperature in oxidizing atmosphere
N-PS-529 B66-10084 03

HAIL
Simulated hailstone fabrication and use in testing weatherability of structures
NPO-10783 B68-10552 03

HALIDES
Welding, bonding, and sealing of refractory metals by vapor deposition
LEWIS-123 B67-10232 03
Improved high-temperature silicide coatings
LEWIS-10817 B69-10266 03
Improved gyro-flotation /damping/ fluids
MSC-13217 B69-10360 03
Improved retort for cleaning metal powders with hydrogen
LEWIS-10718 B69-10466 03
Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
N-PS-10452 B69-10613 01

HALL EFFECTS
System measures arc energy dissipated in relay contact cycling
N-PS-10454 B68-10312 01

HALOGEN COMPOUNDS
Xenon fluoride solutions effective as fluorinating agents
ARG-217 B67-10133 03
Fire retardant foams developed to suppress fuel fires
ARC-10098 B68-10356 03
Zone purification of potassium chloride
ARG-10377 B69-10241 03

HALOGENATION
Synthesis of various highly halogenated monomers and polyurea
N-PS-2143 B67-10100 03
Fire retardant foams developed to suppress fuel fires
ARC-10098 B68-10356 03

HALOGENS
Silazane elastomer remains resilient at 400 deg C
N-PS-1144 B66-10667 05
SUBJECT INDEX

Primary cells utilize halogen-organic charge transfer complex
JPL-926 B66-10682 02

HAMMERS
Versatile impact hand tool
H-PS-20140 B68-10371 05

HAMSTERS
Study of radiation effects on mammalian cells in vitro
ABG-10191 B68-10294 02

HANDBOOKS
Pyrometry handbook describes practical aspects of surface temperature measurements of opaque materials
LEWIS-349 B66-10520 01

Materials data handbooks prepared for aluminum alloys 2014, 2219, and 5456, and stainless steel alloy 301
M-PS-1959 B67-10089 03

Materials data handbook, Inconel alloy 718
M-PS-2348 B67-10282 03

Materials data handbook, aluminum alloy 7075
M-PS-2349 B67-10301 03

Handbooks describe eddy current techniques used in nondestructive testing of metal parts and components
M-PS-13172 B67-10374 03

Fluid properties handbook
M-PS-13462 B67-10840 03

Handbook of cryogenic data in graphic form
KSC-10009 B67-10610 02

Training manuals for nondestructive testing using magnetic particles
M-PS-20187 B68-10391 03

Contamination control handbook
M-PS-20195 B68-10392 03

Failure rates for accelerated acceptance testing of silicon transistors
EMC-10198 B68-10541 01

Thermal expansion properties of aerospace materials
M-PS-18335 B69-10055 03

Materials data handbook, aluminum alloy 6061
M-PS-20381 B69-10065 03

Tape welding and brazing
M-PS-20346 B69-10085 05

Handbooks for nondestructive testing using ultrasonics
M-PS-20409 B69-10108 03

Welding, brazing, and soldering handbook
M-PS-20504 B69-10264 05

Sterilization training manual
M-PS-20437 B69-10277 04

Handbook for design of containers of fluids and gases for spacecraft
M-PS-20502 B69-10279 05

Microelectronic device handbook
EMC-10322 B69-10687 01

Handbook explaining the fundamentals of nuclear and atomic physics
EMC-10330 B69-10705 02

HANDLES
Special pliers connect hose containing liquid under pressure
JPL-IT-1003 B63-10291 05

Heavy-duty staple remover operated by hand
JPL-IT-1004 B63-10292 05

Electronic assembly rack panels snap on and off
GSFC-59 B64-10121 05

Torque wrench designed for restricted areas
LEWIS-246 B66-10011 05

T-handle wrench has torque-limiting action
M-PS-2039 B66-10065 05

Fingertip current control facilitates use of arc welding gun
M-PS-289 B66-10092 05

Latching mechanism operates in limited access area
M-PS-230 B66-10338 05

Tool facilitates installation of Marmon clamps
M-PS-205 B67-10105 05

Coaxial cable stripping device facilitates RF cabling fabrication
NPO-10315 B67-10419 05

HANDLING EQUIPMENT
Filler device for handling hot corrosive materials
M-PS-85 B66-10166 03

Remotely operated clamping tool has positive grip
NU-0020 B65-10254 05

Hollow plastic hoops protect thermocouple in storage and handling
NU-0023 B65-10256 05

Dispenser leak-tests and sterilizes rubber gloves
M-PS-205 B66-10166 03

Universal transloader moves delicate equipment without stress
M-PS-654 B66-10384 05

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
ARG-104 B67-10202 05

Detachable caster adapter
M-PS-91215 B69-10164 05

Proposed technique for vertical alignment of a crane’s cable
M-PS-16496 B69-10202 05

HANDEL FUNCTIONS
Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes
ARG-10274 B69-10047 02

Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices
ARG-10445 B69-10415 02

HANDERS
Stringent cleaning technique assures reliable epoxy bond
GSFC-161 B64-10142 03

Epoxy blanket protects milled part during explosive forming
M-PS-307 B66-10029 03

Sprayable birefringent coating enables strain measurements on large surfaces
M-PS-1784 B66-10578 03

Flowmeter determines mix ratio for viscous adhesives
M-PS-2308 B67-10378 01
Removable preheater elements improve oxide induction furnace JPL-288 B63-10193 01

Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application LANGLEY-6A B63-10318 03

Boron-deoxidized copper withstands brazing temperatures N-FS-762 B66-10273 03

Quick-set temporary bonding clamps RPO-10695 B69-10406 03

Dry film lubricant is effective at extreme loads N-FS-628 B66-10256 03

Valve seat pores sealed with thermosetting monomer N-FS-900 B66-10322 03

Traveling wire electrode increases productivity of Electrical Discharge Machining /EDM/ equipment R65-136 B67-10238 05

A new method for producing optical mirrors HQ-10227 B69-10529 02

Composite bulkhead fabrication development N-FS-1264 B66-10582 05

Computer program determines chemical equilibria in complex systems LEWIS-281 B66-10671 01

Data retrieval system provides unlimited hardware design information MSC-1144 B67-10170 01

Chemical milling solution reveals stress corrosion cracks in titanium alloy LANGLEY-10077 B67-10322 03

Multiple correlation computer program determines relationships between several independent and dependent variables N-FS-13024 B67-10327 06

Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules LEWIS-10201 B67-10359 01

Eccentric drive mechanism is adjustable during operation N-FS-2576 B67-10373 05

Reidentifying hardware after loss of serial number N-FS-16133 B69-10059 05

Technique for assessing potential fire hazards HQ-10279 B69-10287 03

A method for using surface tension to determine the size of holes in hardware MSC-15194 B69-10595 03

Investigation of the development of cracks in solder joints N-FS-20448 B69-10807 01

Harmonic distortion analyzer speeds setup of magnetic tape recorders GSTC-10198 B68-10254 01

Large-amplitude inviscid fluid motion in an accelerating container MSC-11560 B68-10170 02

HARMONIC GENERATIONS
Wide-band doubler and sine wave quadrature generator FPO-11133 B69-10383 01

HARMONIC GENERATORS
Efficient millimeter wave 1140 GHz diode for harmonic power generation HQ-61 B67-10166 01

Experimental coherent fractional frequency multiplier at S-band M-FS-2427 B67-10250 01

HARMONIC OSCILLATION
Improved circuit for measuring capacitive and inductive reactances N-FS-13083 B67-10513 01

HARMONICS
Synthesis of electro-optic modulators for amplitude modulation of light N-FS-14268 B68-10275 02

HARMONIC OSCILLATORS
Double emitter suppressed carrier modulator uses commercially available components N-FS-2494 B67-10101 01

Vibration damping composition has flush-away feature N-FS-597 B67-10432 03

HARMESS
Nylon shock absorber prevents injury to parachute jumpers MSC-226 B66-10080 05

Body-fitted harness provides safe and easy component handling N-FS-533 B66-10202 05

Simulator effects partial gravity conditions MSC-152 B66-10339 05

Web belt load measuring instrument has excellent stability MSC-921 B67-10242 01

Safety yoke would protect construction workers from falling KSC-10075 B67-10445 05

HASTELLOY (TRADEMARK)
Composite weld rod corrects individual filler weaknesses N-FS-1923 B67-10107 05

Weld procedure produces quality welds for thick sections of Hastelloy-X NDC-10048 B67-10195 05

Hastelloy X properties, data, and metallurgical characteristics NDC-10302 B68-10023 03

Magnetic forming of resistive materials N-FS-20417 B69-10397 03

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys NDC-10554 B69-10707 02

HATCHES
Concealed hinge permits flush mounting of doors and hatches MSC-623 B66-10336 03

Inflatable O-ring seal would ease closing of hatch cover plate MSC-740 B66-10385 05

Interior servicing platform simplifies maintenance of storage tanks N-FS-1300 B66-10425 05

HAULING
Detachable caster adapter
SUBJECT INDEX

MSC-91215  B69-10164  05

HAZARDS

Low-cost insulation system for cryostats eliminates need for a vacuum
LEUIS-64  B63-10365  03

System transmits mechanical vibration into hazardous environment
NU-0025  B65-10248  05

Electromechanical flowmeter accurately monitors fluid flow
GSPC-357  B65-10273  01

Oxygen-hydrogen torch is a small-scale steam generator
NO-0042  B66-10120  03

Soft-seal valve holds hazardous fluids safely
MSC-500  B66-10216  05

Lathe chuck key incorporates safety feature
MSC-506  B66-10243  05

Magnetic latches provide positive overpressure control
NU-0057  B66-10279  01

Sniffer used as portable hydrogen leak detector
B-PS-846  B66-10356  01

Nonhazardous acid etches weld samples
B-PS-975  B66-10378  05

Ion exchange determines iodine-131 concentration in aqueous samples
ARG-208  B67-10129  04

Test instrumentation evaluates electrostatic hazards in fluid system
M-PS-2777  B67-10145  01

Remotely operated high pressure valve protects test personnel
MSC-11010  B67-10291  05

Chemistry laboratory safety manual available
SAM-10030  B68-10419  03

Ambient temperature catalyst for hydrogen ignition
LEUIS-10551  B68-10520  03

Improved combustion chamber optical probe
MSC-10953  B69-10142  02

Technique for assessing potential fire hazards
HQ-10279  B69-10287  03

Device separates hydrogen from solution in water at ambient temperatures
MSC-1335  B69-10635  03

HEAD (ANAHEIM)

Electronic dummy for acoustical testing
MSC-206  B67-10298  01

HEAD FLOW

Pump simulator provides variable pressure-flow characteristics
LEUIS-1032  B67-10453  05

HEAD MOVEMENT

Improved head-controlled TV system produces high-quality remote image
ARG-108  B67-10317  01

HEADERS

Tube-to-header joint for bimetallic construction
LEUIS-10282  B67-10464  05

HEALTH

Ion exchange determines iodine-131 concentration in aqueous samples
ARG-208  B67-10129  04

Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ra-226 in aquatic fauna
ARG-10345  B69-10256  02

Health hazards of ultrafine metal and metal oxide powders
LEUIS-10878  B69-10266  04

HEARING

Electronic dummy for acoustical testing
MSC-206  B67-10296  01

HEART DISEASES

Neutron therapy of cancer
ARG-10310  B69-10203  04

HEART FUNCTION

A phonocardiogram simulator
MSC-67-94  B67-10239  01

Cardiac R-wave detector
LEUIS-10394  B68-10144  01

HEART RATE

Digital cardiometer computes and displays heart rate
MSC-33  B68-10258  01

Inexpensive, stable circuit measures heart rate
MSC-95  B65-10010  01

Digital-output cardiotachometer measures rapid changes in heartbeat rate
MSC-133  B65-10143  01

Photocardiograph system monitors heart sounds
MSC-185  B66-10154  04

Cardiotachometer with linear beat-to-beat frequency response
MSC-10033  B67-10598  01

Direct reading of electrocardiograms and respiration rates
MSC-10233  B69-10188  04

HEATERS

Laboratory arc furnace features interchangeable hearths
ARG-125  B67-10052  05

HEAT

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10010  B67-10399  01

Studies of cycles for liquid-metal magnetohydrodynamic generation of power
ARG-10256  B69-10194  02

Concept for improved vacuum pressure measuring device
M-PS-20172  B69-10421  02

Deposition monitor and control
MPS-10706  B69-10722  01

HEAT BALANCE

Electronic calorimetric computer
LEUIS-90254  B68-10138  01

HEAT EXCHANGERS

New method used to fabricate light-weight heat exchanger for rocket motor
LEUIS-43  B63-10346  02

Refractory ceramic has wide usage, low fabrication cost
M-PS-67  B63-10481  03

Integral coolant channels supply made by melt-out method
M-PS-91  B63-10497  05
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Reference</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study of theory and application of long duration heat flux transducers</td>
<td>B66-10614</td>
<td>01</td>
</tr>
<tr>
<td>Study of hot wire techniques in low density flows with high turbulence levels</td>
<td>B66-10687</td>
<td>01</td>
</tr>
<tr>
<td>Plasma jet electrode has longer operating life</td>
<td>B67-10024</td>
<td>02</td>
</tr>
<tr>
<td>Computer program MCPAT-TOSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid</td>
<td>B67-10456</td>
<td>06</td>
</tr>
<tr>
<td>Closed loop operation eliminates need for auxiliary gas in high pressure pumping station</td>
<td>B66-10408</td>
<td>05</td>
</tr>
<tr>
<td>Rotational fluid coupling eliminates hose entanglements</td>
<td>B66-10585</td>
<td>05</td>
</tr>
<tr>
<td>Coldplate of pin fin design makes efficient heat exchanger</td>
<td>B67-10073</td>
<td>05</td>
</tr>
<tr>
<td>Tool facilitates installation of Marmo clamps</td>
<td>B67-10105</td>
<td>05</td>
</tr>
<tr>
<td>Development of dual solid cryogens for high reliability refrigeration system</td>
<td>B67-10644</td>
<td>02</td>
</tr>
<tr>
<td>Concept to comfort-condition subjects wearing restrictive clothing</td>
<td>B66-10178</td>
<td>02</td>
</tr>
<tr>
<td>Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated</td>
<td>B69-10091</td>
<td>02</td>
</tr>
<tr>
<td>A method for predicting interfacial freezing of a liquid flowing over a cold surface</td>
<td>LEWIS-10813</td>
<td>02</td>
</tr>
<tr>
<td>Measurement of gas flow at extremely low pressures</td>
<td>B69-10522</td>
<td>03</td>
</tr>
<tr>
<td>Cryogenic fluid flow instabilities in heat exchangers</td>
<td>B69-10541</td>
<td>02</td>
</tr>
<tr>
<td>Liquid-metal-piston MED generator</td>
<td>B69-10771</td>
<td>02</td>
</tr>
<tr>
<td>Flexible curtain shields equipment from intense heat fluxes</td>
<td>B69-10044</td>
<td>03</td>
</tr>
<tr>
<td>Graphite element serves as radiant heat source</td>
<td>B69-10218</td>
<td>01</td>
</tr>
<tr>
<td>Air-cured ceramic coating insulates against high heat fluxes</td>
<td>B69-10321</td>
<td>02</td>
</tr>
<tr>
<td>Circular, explosion-proof lamp provides uniform illumination</td>
<td>B69-10522</td>
<td>03</td>
</tr>
<tr>
<td>Improved thermal insulation materials made of foamed refractory oxides</td>
<td>B69-10286</td>
<td>03</td>
</tr>
<tr>
<td>Heat flux sensor design reduces extraneous source effects</td>
<td>B66-10156</td>
<td>02</td>
</tr>
<tr>
<td>Light-intensity modulator withstands high heat fluxes</td>
<td>B66-10532</td>
<td>02</td>
</tr>
</tbody>
</table>

**Heat Flux**

- Cantilever springs maintain tension in thermally expanded wires (LEWIS-136)
- Spiraled channels improve heat transfer between fluids (JPL-694)
- Reaction heat used in static water removal from fuel cells (M-PS-532)
- Self-contained clothing system provides protection against hazardous environments (M-PS-536)
- Closed loop operation eliminates need for auxiliary gas in high pressure pumping station (M-PS-893)
- Rotational fluid coupling eliminates hose entanglements (MSC-312)
- Coldplate of pin fin design makes efficient heat exchanger (MSC-1093)
- Tool facilitates installation of Marmo clamps (M-PS-2039)
- Development of dual solid cryogens for high reliability refrigeration system (GSFC-10188)
- Concept to comfort-condition subjects wearing restrictive clothing (MSC-10964)
- Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated (MSC-10264)
- A method for predicting interfacial freezing of a liquid flowing over a cold surface (LEWIS-10813)
- Measurement of gas flow at extremely low pressures (MSC-11261)
- Cryogenic fluid flow instabilities in heat exchangers (M-PS-20438)
- Liquid-metal-piston MED generator (M-PS-15050)
- Flexible curtain shields equipment from intense heat fluxes (M-PS-48)
- Graphite element serves as radiant heat source (M-PS-105)
- Air-cured ceramic coating insulates against high heat fluxes (M-PS-150)
- Circular, explosion-proof lamp provides uniform illumination (MSC-382)
- Improved thermal insulation materials made of foamed refractory oxides (M-PS-735)
- Heat flux sensor design reduces extraneous source effects (MSC-400)
- Light-intensity modulator withstands high heat fluxes (MSC-246)

**Heat Generation**

- Study made of anodized aluminum circuit boards (M-PS-1358C)
- Computer program MCPAT-TOSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid (NUC-10042)
- Computer program MCPAT provides for steady state thermal and flow analysis of multiple parallel channels in heat-generating solid (NUC-10043)
- Study of thermal effects on nickel-cadmium batteries (GSFC-10003)
- Improved calorimeter provides accurate thermal measurements of space batteries (GSFC-10003A)
- Cooling of 2 kW H subscript 2 fuel cell (M-PS-13737)
- Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes (ARG-10274)
- Thermal Network Analyzer Program (NUC-10540)
- Temperature-controlled resistor (NPO-10713)
Rate of heat extraction controller for environmental control
HQ-10318 B66-10516 01

**HEAT MEASUREMENT**

Simple transducer measures low heat-transfer rates
JPL-466 B66-10122 01

Probe measures characteristics of hot gas stream
N-FS-240 B66-10133 02

Calorimeter accurately measures thermal radiation energy
LANGLER-173 B66-10058 02

Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique
ARG-277 B67-10324 03

Twin solution calorimeter determines heats of formation of alloys at high temperatures
ARG-10114 B66-10083 01

Steady-state differential calorimeter measures gamma heating in reactor
ARG-10120 B66-10182 01

A mass flux probe for measurement in a supersonic stream
LEWIS-10695 B66-10533 02

Calibration of a resistance thermometer down to 0.04 degrees K
ARG-10318 B66-10189 01

Continuous analysis of nitrogen dioxide in gas streams of plants
ARG-10356 B66-10254 03

Automatic calorimetry system monitors RF power
RFQ-11033 B66-10384 01

**HEAT OF FORMATION**

Twin solution calorimeter determines heats of formation of alloys at high temperatures
ARG-10114 B66-10083 01

One-dimensional reacting gas nonequilibrium performance program
MSC-11777 B66-10375 06

**HEAT OF VAPORIZATION**

Reaction heat used in static water removal from fuel cells
N-FS-532 B66-10013 01

Complementary system vaporizes subcooled liquid, improves transformer efficiency
N-FS-550 B66-10045 02

Cryogenic liquid transfer system reduces residual boiloff
LEWIS-274 B66-10157 02

Development of dual solid cryogens for high reliability refrigeration system
GSPC-10168 B67-10644 02

Cooling of 2 kW H subscript 2-0 subscript 2 fuel cell
N-FS-19737 B66-10544 01

A rotating, noncapillary heat pipe
LEWIS-10298 B66-10684 05

**HEAT PIPES**

A rotating, noncapillary heat pipe
LEWIS-10298 B66-10684 05

**HEAT RADIATORS**

Graphite element serves as radiant heat source
N-FS-105 B66-10218 01

**HEAT RESISTANT ALLOYS**

Nickel-base superalloys developed for high-temperature applications
LEWIS-226 B66-10222 03

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics
LEWIS-320 B66-10373 03

Nonhazardous acid etches weld samples
N-FS-975 B66-10378 05

Cobalt-tungsten, ferromagnetic high-temperature alloy
LEWIS-10378 B66-10095 03

Manual of industrial diamonds plus dressing and grinding criteria for machining superalloys
N-FS-14582 B66-10239 05

Nickel base alloy with improved stress rupture properties
LEWIS-10263 B66-10344 03

Tungsten fiber-reinforced nickel superalloy
LEWIS-10424 B66-10369 03

Twist solution calorimeter determines heats of formation of alloys at high temperatures
ARG-10114 B66-10083 01

High strength, superplastic superalloy
LEWIS-10355 868-10380 03

Nickel-hase superalloy's excellent properties promote its service to 2200 degrees F
LEWIS-10355 868-10380 03

A mass flux probe for measurement in a supersonic stream
LEWIS-10695 B68-10533 05

Evaluation of lubricants for ball bearings at high temperatures
LEWIS-10578 B69-10025 03

High strength, superplastic superalloy
LEWIS-10805 B69-10293 03

Improved high-temperature-strength nickel-base superalloy
LEWIS-10874 869-10352 03

**HEAT SHIELDING**

Refractory thermal insulation for smooth metal surfaces
N-FS-160 B66-10099 03

Flexible curtain shields equipment from intense heat fluxes
N-FS-48 B65-10044 03

Air-cured ceramic coating insulates against high heat fluxes
N-FS-150 B65-10357 03

Jig protects transistors from heat while tinning leads
MSC-515 B66-10240 05

Modified thermocouple in effective from minus 250 deg to 5000 deg F
MSC-220 B66-10461 01

Heat flux sensor design reduces extraneous source effects
MSC-400 B66-10531 01

Tungsten insulated susceptor cup for high temperature induction furnace eliminates contamination
LEWIS-283 B66-10538 03

Sensors measure surface ablation rate of reactor vehicle heat shield
LANGLER-287 B66-10592 01

Predicting surface heating rates and pressures resulting from hot exhaust gases
MSC-971 B66-10633 05

Multidimensional reaction kinetic ablation program / REKAP/
MSC-10079 B67-10405 06

**HEAT SINKS**

Indium foil with beryllia washer improves
HEAT SOURCES

- Transistor heat dissipation
  GSFC-42  B63-10033  01

- Mounting for diodes provides efficient heat sink
  M-PS-197  B64-10283  01

- Wide-angle sensor measures radiant heat energy in corrosive atmospheres
  M-PS-228  B65-10019  05

- Automatic thermal switch accelerates cooling-down of cryogenic system
  JPL-655  B65-10068  01

- Refractory oxides evaluated for high-temperature use
  Langley-121  B65-10167  03

- Electronic modules easily separated from heat sink
  MSC-142  B65-10186  02

- Wire mesh isolator protects sensitive electronic components
  GSFC-347  B65-10216  05

- Servo calorimeter measures material heating rate
  EV-0024  B65-10247  01

- Boron nitride housing cools transistors
  W00-079  B65-10289  01

- Copper foil provides uniform heat sink path
  MSC-262  B66-10004  02

- Calorimeter accurately measures thermal radiation energy
  Langley-173  B66-10058  02

- Mounting improves heat-sink contact with beryllia washer
  MSC-194  B66-10144  01

- Jig protects transistors from heat while tinning leads
  MSC-515  B66-10240  05

- Rugged microelectronic module package supports circuitry on heat sink
  MSC-814  B66-10245  01

- Bypass rod transfers heat developed in thermionic diode
  JPL-SC-136  B66-10303  05

- Collector/collector guard ring balancing circuit eliminates edge effects
  JPL-SC-143  B66-10563  01

- Technique for measuring absorptance and emittance by using cyclic incident radiation
  Lewis-121  B66-10630  02

- Switching-type regulator circuit has increased efficiency
  MSC-1063  B67-10190  01

- Separable, high-density microelectronic module provides effective heat sink
  M-PS-13075  B67-10356  01

- Study made of anodized aluminum circuit boards
  M-PS-1350  B67-10425  01

- Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board
  M-PS-13663  B67-10426  01

- Study made of transfer of heat energy through metal joints in vacuum environment
  M-PS-12534  B67-10465  02

- Plume sprayed dielectric coatings improve heat dissipation in electronic packaging
  M-PS-13569  B67-10534  01

SUBJECT INDEX

- Method of disjoining adhesively bonded electronic cordwood modules
  MSC-12060  B68-10086  01

- Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
  ARC-10110  B68-10328  01

- Heat-load simulator for heat sink design
  MSC-15170  B68-10510  02

- High conductance vapor thermal switch
  GSFC-10109  B68-10519  02

- Self-shielding printed circuit boards for high frequency amplifiers and transmitters
  EQ-10433  B69-10314  01

- Quick-acting backup tool for welding ducts
  M-PS-18404  B69-10396  05

HEAT SOURCES

- Emergency solar still desalts seawater
  MSC-135  B69-10216  03

- Graphite element serves as radiant heat source
  M-PS-105  B65-10218  01

- High-speed furnace uses infrared radiation for controlled brazing
  NU-0047  B66-10268  02

- High intensity radiation heat source is capable of sustained operation
  ARC-61  B66-10547  02

- Pyrotechnic device provides one-shot heat source
  Lewis-10131  B68-10062  03

- Electrochemical cell has internal resistive heater element
  GSFC-10358  B68-10325  01

- Optically exciting a magnetic memory - A feasibility study
  M-PS-14854  B69-10060  02

- Techniques for controlling warpage and residual stresses in welded structures
  M-PS-20307  B67-10086  05

- Improved vacuum deposition apparatus
  NV-10099  B69-10365  02

HEAT STORAGE

- Balloon batteries, charged and heated by solar energy
  GSFC-10769  B69-10585  01

HEAT TRANSFER

- High purity electroforming yields superior metal models
  ABC-6  B63-10007  05

- Indium foil with beryllia washer improves transistor heat dissipation
  GSFC-42  B63-10033  01

- Cooling method prolongs life of hot-wire transducer
  Lewis-41  B63-10348  02

- New method used to fabricate light-weight heat exchanger for rocket motor
  Lewis-43  B63-10346  02

- Insulated weld tooling permits uniform, high quality weld
  MSC-62  B64-10058  05

- Adhesive for vacuum environments resists shock and vibration
  MSC-56  B65-10016  03
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>HEAT TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermistor connector assembly increases accuracy of measurements</td>
<td>LANGLEY-62 B65-10045 01</td>
</tr>
<tr>
<td>Pulsed plasma accelerator operates repetitively without complex controls</td>
<td>LANGLEY-48 B65-10062 01</td>
</tr>
<tr>
<td>Automatic thermal switch accelerates cooling-down of cryogenic system</td>
<td>JPL-655 B65-10068 01</td>
</tr>
<tr>
<td>Internal cooling increases range of immersion-type temperature probe</td>
<td>LEWIS-171 B65-10157 02</td>
</tr>
<tr>
<td>Electronic modules easily separated from heat sink</td>
<td>MSC-142 B65-10186 02</td>
</tr>
<tr>
<td>Insulation accelerates rate of cooling with cryogenic fluid</td>
<td>MSC-161 B65-10240 02</td>
</tr>
<tr>
<td>Spiraled channels improve heat transfer between fluids</td>
<td>JPL-694 B65-10291 02</td>
</tr>
<tr>
<td>Closed fluid system without moving parts controls temperature</td>
<td>LEWIS-222 B65-10331 02</td>
</tr>
<tr>
<td>Vacuum chamber provides improved insulation and support for cryostat</td>
<td>M-FS-415 B65-10368 02</td>
</tr>
<tr>
<td>Mounting improves heat-sink contact with beryllia washer</td>
<td>MSC-194 B66-10144 01</td>
</tr>
<tr>
<td>Transducer measures force in vacuum environment</td>
<td>LEWIS-218 B66-10161 01</td>
</tr>
<tr>
<td>Control system maintains compartment at constant temperature</td>
<td>JPL-SC-145 B66-10188 05</td>
</tr>
<tr>
<td>Solid state thermostat has integral probe and circuitry</td>
<td>M-FS-43A B66-10193 01</td>
</tr>
<tr>
<td>Freon provides heat transfer for solid CO2 calibration standard</td>
<td>M-FS-634 B66-10257 02</td>
</tr>
<tr>
<td>Differential expansion provides pressure for diffusion bonding of large diameter rings</td>
<td>M-FS-588 B66-10269 05</td>
</tr>
<tr>
<td>Boron-deoxidized copper withstands brazing temperatures</td>
<td>M-FS-762 B66-10273 03</td>
</tr>
<tr>
<td>Apparatus enables accurate determination of alkali oxides in alkali metals</td>
<td>LEWIS-256 B66-10296 03</td>
</tr>
<tr>
<td>Computer program determines gas flow rates in piping systems</td>
<td>M-FS-443 B66-10300 01</td>
</tr>
<tr>
<td>Bypass rod transfers heat developed in thermionic diode</td>
<td>JPL-SC-136 B66-10303 05</td>
</tr>
<tr>
<td>New computer program solves wide variety of heat flow problems</td>
<td>M-FS-421 B66-10404 01</td>
</tr>
<tr>
<td>Computer simulation program is adaptable to industrial processes</td>
<td>LEWIS-240 B66-10426 01</td>
</tr>
<tr>
<td>Computational procedure for finite difference solution of one-dimensional heat conduction problems reduces computer time</td>
<td>MSC-1120 B66-10566 01</td>
</tr>
<tr>
<td>Selective tube roughening increases heat transfer capability</td>
<td>M-FS-599 B66-10610 05</td>
</tr>
<tr>
<td>Computer program simplifies transient and steady-state temperature prediction for complex body shapes</td>
<td>M-PS-989 B66-10619 01</td>
</tr>
<tr>
<td>Instrument accurately measures small temperature changes on test surface</td>
<td>LANGLEY-174 B66-10637 01</td>
</tr>
<tr>
<td>Combustion chamber struts can be effectively transpiration cooled</td>
<td>M-FS-1830 B66-10643 03</td>
</tr>
<tr>
<td>Study of fast response thermocouple measurement of temperatures in cryogenic gases</td>
<td>M-FS-1659 B66-10661 01</td>
</tr>
<tr>
<td>Low input voltage converter/regulator minimizes external disturbances</td>
<td>GSPC-527 B66-10689 01</td>
</tr>
<tr>
<td>Plasma jet electrode has longer operating life</td>
<td>NU-0098 B67-10024 02</td>
</tr>
<tr>
<td>Correlation established between heat transfer and ultrasonic transmission properties of copper braze bonds</td>
<td>ABC-247 B67-10037 02</td>
</tr>
<tr>
<td>Thermodynamic properties related to expansion of two-component gas</td>
<td>MSC-1133 B67-10112 03</td>
</tr>
<tr>
<td>Clamp provides efficient connection for high-density currents</td>
<td>M-FS-2417 B67-10140 01</td>
</tr>
<tr>
<td>Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries</td>
<td>M-FS-1910 B67-10329 06</td>
</tr>
<tr>
<td>Design for high-temperature /1800 deg F/ liquid metal pressure transducer</td>
<td>LEWIS-10144 B67-10458 01</td>
</tr>
<tr>
<td>Study made of transfer of heat energy through metal joints in vacuum environment</td>
<td>M-FS-12534 B67-10485 01</td>
</tr>
<tr>
<td>Study made of heat transfer and pressure drop through tubes with internal interrupted fins</td>
<td>LEWIS-10260 B67-10555 05</td>
</tr>
<tr>
<td>Study made of transfer of heat energy through metal joints in vacuum environment</td>
<td>M-FS-12534 B67-10665 02</td>
</tr>
<tr>
<td>Propellant tank pressurization analysis program</td>
<td>M-FS-1506 B67-10625 06</td>
</tr>
<tr>
<td>Properties of optics at high temperature and their measurement, a study</td>
<td>M-FS-14696 B68-10240 02</td>
</tr>
<tr>
<td>Characteristics of fluidized-packed beds</td>
<td>ABC-10089 B68-10278 03</td>
</tr>
<tr>
<td>Thermal conductivity and dielectric constant of silicate materials</td>
<td>M-FS-14856 B68-10351 03</td>
</tr>
<tr>
<td>Analysis of annular combustors</td>
<td>LEWIS-10359 B68-10356 06</td>
</tr>
<tr>
<td>Rating of electrical wires in vacuum environments</td>
<td>M-PS-1506 B68-10362 01</td>
</tr>
<tr>
<td>An investigation of particle mixing in a gas-fluidized bed</td>
<td>ABC-10182 B68-10407 05</td>
</tr>
<tr>
<td>Solving nonlinear heat transfer constant area fin problems</td>
<td>LEWIS-10280 B68-10426 01</td>
</tr>
</tbody>
</table>

I-301
HEAT TRANSFER COEFFICIENTS

- Cooling of 2 kW H fuel cell N-PS-13737 B68-10544 01
- Gage measures total radiation, including vacuum UV, from ionized high-temperature gases NMP-03902 B69-10026 02
- Instabilities encountered during heat transfer to a supercritical fluid ANG-10266 B69-10042 02
- Propagation of density disturbances in air-water flow AOB-10260 B69-10043 02
- Abrasion and resistant discharge valve developed AOB-10219 B69-10044 05
- Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes ANG-10274 B69-10047 02
- Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated ANG-10261 B69-10091 02
- Experimental prediction of performance by superconducting cables ANG-10215 B69-10161 01
- Effect of interparticle forces on the fluidization of fine particles ANG-10264 B69-10195 03
- Ultra-high-flux heat exchanger N-PS-10135 B69-10201 02
- Improved liquid-level sensor for cryogenics ANG-10162 B69-10210 02
- Thermophysical properties of sodium ANG-10363 B69-10240 03
- Method for predicting pump cavitation performance LNWIS-10916 B69-10446 02
- A comparison of two methods of measuring particle size of Al203 produced by a small rocket motor NNO-11199 B69-10572 03
- Design of multilayer insulation systems ANG-10166 B69-10615 05
- New type pressure transducer for severe thermal environments N-PS-20208 B69-10652 01
- Engineering thermal analyzer /BETA 2/ N-PS-15055 B69-10760 06

HEAT TRANSFER COEFFICIENTS

- Thin-film gage measures low heat-transfer rates LANGLEY 205 B66-10160 01
- Wide-range instrument monitors flow rates of chemically active fluids MSC-166 B66-10205 01
- Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures N-PS-600 B66-10325 02
- Computer program calculates steady-state temperature distribution within plane or axisymmetric solids NUC-10049 B67-10224 06
- CINDA - Chrysler Improved Numerical

SUBJECT INDEX

- Differencing Analyzer computer program N-PS-2298 B67-10278 06
- Evaluation of superconducting magnets, a study N-PS-14808 B68-10396 02
- Heat transfer coefficients for liquid hydrogen turbopumps N-PS-16345 B68-10517 02
- Monte Carlo direct view factor and generalized radiative heat transfer programs N-PS-15051 B69-10038 06
- Instabilities encountered during heat transfer to a supercritical fluid ANG-10266 B69-10042 02
- Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated ANG-10261 B69-10091 02
- A method for predicting interfacial freezing of a liquid flowing over a cold surface LEWIS-10813 B69-10321 02
- Technique for predicting temperature distribution in gases LEWIS-10918 B69-10329 01
- Surface-renewal models for heat-transfer between walls and fluidized beds ANG-10372 B69-10772 02

HEAT TRANSMISSION

- Electronic device simulates respiration rate and depth MSC-59 B64-10255 01
- Servo calorimeter measures material heating rate US-0024 B65-10247 01
- Apparatus measures thermal conductivity of honeycomb-core panels LANGLBP-202 B66-10127 01
- New computer program solves wide variety of heat flow problems N-PS-421 B66-10404 01
- Experiments to investigate particulate materials in reduced gravity fields N-PS-13306 B67-10394 02
- Solution of differential equations by application of transformation groups N-PS-14802 B68-10276 02
- Dynamics of moving bubbles in single and binary component systems N-PS-16845 B68-10339 02
- Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction NUC-10189 B68-10450 06
- Solving nonlinear heat transfer constant area fin problems N-PS-14851 B68-10504 02
- Hydraulic calipers N-PS-18052 B69-10399 05

HEAT TREATMENT

- New cobalt alloys have high-temperature strength and long life in vacuum environments LEWIS-57 B63-10351 03
- Fiber glass parts cured during filament winding eliminates oven, saves time N-PS-16 B65-10088 03
High permeability semiconductors permit close-tolerance soldering
GSFC-319 B65-10134 05
Coiled sheet metal strip opens into tubular configuration
GSFC-425 B66-10009 03
Assembly jig assures reliable solar cell modules
GSFC-455 B66-10040 05
Refractory coating protects intricate graphite elements from high-temperature hydrogen
M-PS-1027 B66-10084 01
Aluminum/steel wire composite plates exhibit high tensile strength
M-PS-401 B66-10268 05
High-speed furnace uses infrared radiation for controlled brazing
NO-0047 B66-10268 03
Aluminum core structures brazed without use of flux
M-PS-12410 B66-10268 03
Special treatment reduces helium permeation of glass in vacuum systems
HQ-25 B66-10372 02
Heat treatment stabilizes welded aluminum jigs and tool structures
ESC-800 B66-10360 03
Electroless nickel plating on stainless steels and aluminum
GSFC-533 B66-10479 03
Tensile and fatigue properties of Inconel 718 at cryogenic temperatures
M-PS-18174 B66-10285 03
Improved thermal treatment of aluminum alloy 7075
M-PS-20083 B66-10534 05
SPAN C - Terminal sterilization process analysis program
NPO-10805 B69-10039 06
Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam
ABG-226 B67-10050 03
Simplified method introduces drift fields into cells
GSFC-572 B67-10102 03
Coating protects magnesium-lithium alloys against corrosion
M-PS-2446 B67-10149 03
Heat treatment study of aluminum casting alloy M-PS-2397 B67-10159 03
Porous mandrels provide uniform deformation in hydrostatic powder metallurgy
M-PS-1972 B67-10209 03
Simplified method measures changes in tensile yield strength using least number of specimens
NO-00075 B67-10266 03
Welding of AM350 and AM355 steel
M-PS-2314 B67-10292 05
High-strength tungsten alloy with improved ductility
LEWIS-10257 B67-10340 03
Development of technology for hot-drape forming of large torus sections
M-PS-12181 B67-10341 05
Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures
M-PS-10084 B67-10349 03
Magnesium-lithium alloys developed for low temperature use
M-PS-1541 B67-10365 03
Heat treatment procedure to increase ductility of degraded nickel alloy
M-PS-12410 B66-10039 05
Antechamber facilitates loading and unloading of vacuum furnace
LEWIS-10265 B68-10135 02
Weld microfusing in Inconel 718 minimized by minor elements
M-PS-18105 B66-10251 03
Pre-weld heat treatment improves welds in June 91
M-PS-18174 B66-10285 03
Simplified method measures changes in tensile yield strength using least number of specimens
NOC-10075 B67-10266 03
Renewal of corrosion protection of coated aluminum after welding
M-PS-20361 B66-10150 05
High strength, superplastic superalloy LEWIS-10805 B69-10293 03
Electrothermal linear actuator NPO-10637 B69-10296 05
Effects of hydrogen on metals M-PS-20364 B69-10372 03
Adjustable thermal **tree** BSC-15556 B69-10484 01
Retention of ductility in high-strength steels ARB-10497 B69-10616 03
Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces ERC-10254 B69-10689 01
Effects of high-pressure hydrogen on storage vessel materials M-PS-18605 B69-10730 03
Determination of permissible applied load stress in structural elements M-PS-16556 B69-10823 02
Wire winding increases lifetime of oxide coated cathodes LEWIS-154 B65-10032 03
Experimental investigation of megawatt dc arc heating of nitrogen
Heater decomposes oil backstreaming from high-vacuum pumps
B65-10224 02

Angular glass tubing drawn from round tubing
HO-20  B65-10235 05

Complementary system vaporizes subcooled liquid, improves transformer efficiency
H-PS-550  B66-10045 02

Heated die facilitates tungsten forming
LEWIS-25A  B66-10047 05

Refractory coating protects intricate graphite elements from high-temperature hydrogen
HU-0027  B66-10084 01

Soldering tool heats workpieces and applies solder in one operation
LEWIS-247  B66-10115 05

Apparatus measures thermal conductivity of honeycomb-core panels
LANGLEY-202  B66-10127 01

Soldering iron temperature is automatically reduced
ARC-57  B66-10203 01

Wide-range instrument monitors flow rates of chemically active fluids
BSC-106  B66-10205 01

Low power heating element provides thermal control during swaging operations
H-PS-857  B66-10206 05

Special tool seals conductors with combination of plastic sleeves
H-PS-579  B66-10209 05

Tool permits damage-free removal of solar cell
GSPC-667  B66-10219 05

Electric arc heater is self starting
LANGLEY-208  B66-10230 03

Modified soldering iron speeds cutting of synthetic materials
H-PS-725  B66-10246 05

Apparatus enables automatic microanalysis of body fluids
JPL-962  B66-10515 04

Temperature responsive valve withstands high impact loading
HPO-10186  B67-10225 05

High-strength tungsten alloy with improved ductility
LEWIS-10257  B67-10340 03

Modified blackbody device emits high-density radiation
H-PS-12744  B67-10388 02

Concept for cryogenic liquid reclamation system
HPO-10322  B67-10420 02

Concept for design of variable stiffness damper
ARC-11225  B67-10483 05

Liquid gallium rotary electric contract
LEWIS-10208  B69-10138 03

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331  B69-10208 04

Thermophysical properties of sodium
ARG-10363  B69-10240 03

Automated measurement of thermal conductivity
I-PS-20456 B69-10283 03 Self-actuating grapple automatically engages and releases loads from overhead cranes.

A rotating, noncapillary heat pipe LEWIS-10298 B69-10688 05

Refrigeration
Air-cushion lift pad
KSC-10358

Heavy elements
Daughter growth in freshly separated Ra-226, Ac-227 and U-232
ARG-10226 B69-10527

Heavy water
Cytology is advanced by studying effects of deuterium environment
ARG-205 B69-10304 04 Purification and characterization of two fully deuterated enzymes
ARG-10314 B69-10207 04

Height
System enables dimensional inspection of very large structures
H-PS-2477 B69-10214 05

Measuring coplanarity of surfaces
M-PS-12044 B69-10371 02

Helical antennas
Comfortable, lightweight safety helmet holds radio transmitter, receiver
KSC-53 B69-10015 05

Low-loss C-band parasitic probe
KSC-0948 B69-10251 01

Helical flow
Stationary device produces homogeneous mixture of fluids
H-PS-525 B66-10570 05

Hermetically sealed pump
LEWIS-10837 B69-10320 05

Torsional tubular disconnect
NPO-10704 B69-10499 05

Helical windings
Helium tube separates nitrogen gas from liquid nitrogen
JPL-298 B63-10251 05

Helical coaxial- resonator makes excellent RF filter
GSFC-243 B65-10012 01

High frequency wide-band transformer uses coax to achieve high turn ratio and flat response
ARG-107 B66-10600 01

Development of helical seal for high temperature /2000 degrees F/ application
H-PS-13304 B67-10655 05

Dynamically stable check valve concept for wide flow range
H-PS-14579 B68-10247 05

Helical tape forming device
GSFC-10830 B69-10137 05

Helical recorder
GSFC-10614 B69-10340 01

A positive taper traveling-wave tube
LANGLEY-10263 B69-10407 01

Helicopters
Scoop attachment makes helicopter recoveries easier and safer
MSC-130 B65-10229 05

Self-actuating grapple automatically engages and releases loads from overhead cranes.

Helium
Supercold technique duplicates magnetic field in second superconductor
JPL-376 B63-10237 05

Low-cost insulation system for cryostats eliminates need for a vacuum
LEWIS-64 B63-10365 03

Rapid helium-air analyzer can measure other binary gas mixtures
LANGLEY-16 B63-10557 03

Sensitive low-pressure relief valve has positive seating against leakage
WGO-081 B64-10278 05

Automatic thermal switch accelerates cooling-down of cryogenic system
JPL-655 B65-10068 01

Transmission system isolates pressure transducer from severe environment
WGO-239 B66-10064 01

Thin-film gage measures low heat-transfer rates
LANGLEY 205 B66-10180 01

Insulation for cryogenic tanks has reduced thickness and weight
H-PS-326 B66-10183 02

Expandable rubber plug seals openings for pressure testing
NU-0048 B66-10229 05

Brazing process using Al-Si filler alloy reliably bonds aluminum parts
MSC-448 B66-10241 05

Sniffer used as portable hydrogen leak detector
H-PS-846 B66-10356 01

Special treatment reduces helium permeation of glass in vacuum systems
NU-25 B66-10372 02

Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket
H-PS-888 B66-10412 01

Large diameter metal ring seal prevents gas leakage at 5000 psi
H-PS-1064 B66-10422 05

Cold trap increases sensitivity of gas chromatography
H-PS-1617 B66-10517 03

A continuously operating source of vacuum ultraviolet below 500 angstrom
GSFC-545 B66-10576 01

Resistor monitors transfer of liquid helium
LANGLEY-229 B66-10580 01

Neon isotopes cancel errors in gas laser
H-PS-1478 B66-10583 02

Laser Doppler flowmeter measures gas velocity
H-PS-1747 B66-10693 02

Portable detector set discloses helium leak rates
H-PS-1733 B67-10065 01

Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer
MSC-924 B67-10983 03

Fixture facilitates helium leak testing of
BBLIUM ISOTOPES

pipe welds
M-FS-2167
B67-10178 05

Fresnel diffraction plates are simple
and inexpensive
M-FS-12731
B67-10297 02

Single-source mechanical loading system
produces biaxial stresses in cylinders
M-FS-12530
B67-10380 05

Study made of pneumatic high pressure piping
materials /10,000 psi/
KSC-10133
B67-10437 03

Fluid properties handbook
M-FS-13462
B67-10440 03

Environmental control system for cryogenic
testing of tensile specimens
MUC-10523
B67-10618 02

Reducing bubbles in glass coatings improves
electrical breakdown strength
LEWIS-10278
B68-10214 03

Quasi-static vapor pressure measurements
on reactive systems in inert atmosphere box
ARG-90142
B68-10236 01

Advances in light-gas gun technology
M-FS-14270
B68-10286 05

Cryogenic liquid level measuring probe
ARG-10138
B68-10291 01

Reliable method for testing gross leaks in
semiconductor component packages
MUC-10150
B68-10562 01

Levitation-melting technique for metals
and alloys
ARG-10240
B69-10006 03

Two systems developed for purifying inert
atmospheres
ARG-10234
B69-10026 03

Diffusion of trace gases for leak detection -
a study
M-FS-20254
B69-10067 03

Prediction of friction coefficients for
gases
LEWIS-10778
B69-10112 02

Mixing weld gases offers advantages
M-FS-16413
B69-10185 05

Calibration of a resistance thermometer
down to 0.04 degrees K
ARG-10318
B69-10149 01

Experimental prediction of performance
by superconducting cables
ARG-10215
B69-10161 01

Computer program for high pressure real
gas effects
LEWIS-10820
B69-10222 06

Spiral-flow apparatus for measuring
permeation of solids by gases
M-FS-16517
B69-10357 03

Report on a cryogenic gyroscope
NPO-11200
B69-10504 02

Flared-tube fittings with replaceable seat
inserts
MSC-15372
B69-10519 05

A new method for fabrication of flexible
vacuum purge jackets
M-FS-12646
B69-10564 03

Two-color holography
NQ-10349
B69-10662 02

SUBJECT INDEX

High pressure real gas effects for helium
and nitrogen
LEWIS-10819
B69-10669 06

Thermal conductivity probe
M-FS-20566
B69-10760 03

BELLMIS ISOTOPES

Cryogenic filter method produces super-pure
helium and helium isotopes
JPL-374
B63-10235 03

A fast-neutron spectrometer of advanced
design
M-FS-1664
B66-10555 01

BELLS

Comfortable, lightweight safety helmet holds
radio transmitter, receiver
MSC-53
B69-10015 05

Self-contained clothing system provides
protection against hazardous environments
M-FS-536
B66-10201 05

One-piece transparent shell improves design of
helmet assembly
MSC-187
B66-10390 05

Helmet system broadcasts
electroencephalograms of wearer
ABC-70
B66-10536 01

Protective clothing for workers with 5-kW
and 20-kW short-arc lamps
NPO-11155
B69-10218 01

Helmholtz equations
Torque meter aids study of hysteresis
motor rings
M-FS-12219
B67-10412 01

Hemisphere cylinder bodies
Hollow spherical rotors fabricated by
electroplating
JPL-SC-117
B66-10366 05

Hemispherical shells
Improved method of dicing integrated circuit
wafer into chips
MUC-10138
B69-10441 01

Hemolysis
Blood oxygen saturation determined by
transmissivity spectrophotometry of
hemolyzed blood samples
MSC-11018
B67-10252 04

Improved sample capsule for determination
of oxygen in hemolyzed blood
MSC-11017
B67-10408 04

Henry law
Effects of helium and nitrogen as
pressurants in nitrogen tetroxide transfer
MSC-924
B67-10083 03

Heparins
Heparin insolubilized with crosslinking
agent
NPO-10834
B69-10299 03

heptanes
Magnetic fluid readily controlled in zero
gravity environment
LEWIS-126
B65-10335 03

Hermetic seals
Device transmits rotary motion through
hermetically sealed wall
JPL-303
B63-10198 05

Mountpiece adapter for pipettes protects mouth
from harmful liquids
LANGLEY-47
B65-10043 03

Automatic thermal switch accelerates
cooling-down of cryogenic system
JPL-655
B65-10068 01
Transducer measures temperature differentials in presence of strong electromagnetic fields
ARC-27 B65-10089 01

One-shot valve may be remotely actuated
WOO-195 B65-10266 05

Can-operated limit switch features safe fuse replacement
MSC-218 B65-10322 01

Solid state thermostat has integral probe and circuitry
M-FS-434 B66-10193 01

Critical parts are stored and shipped in environmentally controlled reusable container
I-FS-703 B66-10258 05

Brazing process provides high-strength bond between aluminum and stainless steel
I-FS-803 B66-10352 05

Miniature capacitive accelerometer is especially applicable to telemetry
ARC-72 B66-10491 01

Fuel and oxidizer valve assembly employs single solenoid actuator
MSC-1046 B66-10648 05

Hermetically sealed cells protected from internal gas pressure
GSFC-555 B66-10193 01

Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables
WU-0063 B66-10704 05

Glass formulation has high coefficient of thermal expansion
WU-0064 B66-10705 03

Multichannel implantable telemetry system
ARC-10083 B66-10565 01

Conceptual hermetically sealed elbow actuator
M-FS-14710 B66-10300 05

New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
LANGLBY-113 B69-10122 02

Hermetically sealed pump
LANGLBY-10837 B69-10320 05

Hermetically sealed vibration damper
MSC-1059 B69-10634 05

%HEXOCYCLIC COMPOUNDS
Polymer film exhibits thermal and radiation stability
LANGLBY-100 B66-10043 03

HYPERDYNAMICS
Study of random process theory aids digital data processing
M-FS-1475 B67-10309 06

Laser communication system is insensitive to atmospherically induced noise
GSFC-10396 B67-10587 01

Laser-Doppler gas-velocity instrument
M-FS-20039 B68-10249 02

HYDROGEN SENSORS
Laser microprobe facility used in the elemental analysis of small feature of a sample
ARG-10359 B69-10165 02

HEURISTIC METHODS
COGENT programming manual
ARC-10461 B69-10656 06
Fatigue cracks detected and measured without test interruption
LEWIS-266 B66-10178 02

High frequency wide-band transformer uses coax to achieve high turn ratio and flat response
ARG-107 B66-10600 01

Monitoring system determines amplitude and time of vibration channel peaks
JPL-679 B66-10699 01

Current pulse amplifier transmits detector signals with minimum distortion and attenuation
NRC-10055 B67-10347 01

Ultrasonic wrench produces leaktight connections
M-PS-12561 B67-10353 05

Pressure levels and pulsation frequencies can be varied on high pressure/frequency testing device
LEWIS-10205 B67-10360 05

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10010 B67-10399 01

Metal resistor is noninductive and nonreactive
SAN-1020 B68-10267 01

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401 B68-10370 01

Effects of high frequency current in welding aluminum alloy 6061
M-PS-10337 B68-10383 05

Induction probe determines levels of liquid metals
ARG-1038 B69-10256 03

Survey of man-made electrical noise affecting radio broadcasting
HO-10290 B69-10308 01

Self-shielding printed circuit boards for high frequency amplifiers and transmitters
HO-10433 B69-10314 01

Computer simulation of high-frequency combustion instability and its supression
HO-10391 B69-10360 06

Improved ferrous shielding for flat cables
M-PS-14524 B69-10401 01

Cryogenic flux-concentrator ARC-10094 B69-10654 02

HIGH GAIN
Lightweight load support serves as vibration damper
JPL-661 B65-10144 05

Apparatus presents visual display of semiconductor surface characteristics
JPL-665 B66-10200 01

Circuit provides accurate four-quadrant multiplication
W00-272 B66-10331 02

Voltage regulator/amplifier is self-regulated
NRC-1240 B67-10156 01

FM carrier deviation measured by differential probability method
N-PS-2166 B67-10213 01

Review of research and development in fluid logic elements
N-PS-420 B67-10438 01

Blood pressure reprogramming adapter assists signal recording
M-SC-265 B67-10475 01

Improved fire resistant radio frequency anechoic materials
M-PS-16600 B69-10450 05

HIGH GRAVITY ENVIRONMENTS
Modified algesimeter provides accurate depth measurements
M-SC-616 B66-10647 04

HIGH PASS FILTERS
High-pass RF coaxial filter rejects dc and low frequency signals
GSFC-73 B64-10173 01

Compact microwave mixer has high conversion efficiency
GSFC-197 B66-10625 01

Study of optimum discrete estimators in measurement analysis
M-PS-10915 B68-10348 02

Design of dissipative linear phase filters
M-PS-14698 B68-10572 01

HIGH POLYMERS
Study of high-speed angular-contact ball bearings under dynamic load
M-PS-2056 B69-10367 05

HIGH PRESSURE
High-pressure regulating system prevents pressure surges
JPL-231 B63-10170 05

Filter for high-pressure gases has easy take-down, assembly
JPL-373 B63-10234 03

Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems
LEWIS-67 B63-10368 05

High-temperature, high-pressure spherical segment valve provides quick opening
ARC-13 B63-10431 05

Safety restrainer prevents whipping of ruptured high-pressure hose
LEWIS-99 B64-10348 05

Fluid-pressure measurement apparatus uses short-length manometer tubes
LEWIS-28 B65-10227 05

High-pressure, low temperature electrical connector makes no-leak seal
M-SC-276 B66-10079 02

Radioactive tracer system detects oil contaminants in fluid lines
M-PS-512 B66-10090 03

Transducer measures force in vacuum environment
LEWIS-218 B66-10161 01

Bellows design features low spring rate and long life
M-SC-521 B66-10190 05

Quick-closing valve is actuated by explosive discharge
ARC-55 B66-10233 05

Diffusion bonding makes strong seal at flanged connector
M-PS-637 B66-10250 05

Flow ring valve is simple, quick-acting
M-PS-752 B66-10255 05

Remotely controlled system couples and decouples large diameter pipes
NU-0062 B66-10276 05
O-rings with mylar back-up provide high-pressure cryogenic seal

High pressure tube coupling requires no threads or flares

External linkage tie permits reduction in ducting system flange thickness

Adapter assembly prevents damage to tubing during high pressure tests

Shock-operated valve would automatically protect fluid systems

High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation

Closed loop operation eliminates need for auxiliary gas in high pressure pumping station

Combustion chamber struts can be effectively transpiration cooled

Improved cryogenic refrigeration system

Line adapter provides quick disconnect under moderate side loading

A piezo-bar pressure probe

Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi

High impact pressure regulator withstands impacts of over 15,000 g

Remotely operated high pressure valve protects test personnel

Radiation counting technique allows density measurement of metals in high-pressure, high-temperature environment

Segmented, arch-bound carbon seal is pressure loaded

Device enables calibration of microphones at high sound pressure levels

Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment

Pressure levels and pulsation frequencies can be varied on high pressure/frequency testing device

Study made of pneumatic high pressure piping materials /10,000 psi/

Reaction of steam with molybdenum is studied

Dynamic valve seal is reliable at cryogenic temperatures

Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel

Device dampens fluid pressure oscillations in vent valve

High-pressure gas facilitates calibration of turbine flowmeters for liquid hydrogen

High-torque power wrench, a concept

Performance of low pressure thermionic converters is evaluated

Computer program for high pressure real gas effects

Leakage measuring method

Abrasion and fracture testing in a high pressure hydrogen environment

High pressure real gas effects for helium and nitrogen

Effects of high pressure hydrogen on storage vessel materials

Electro-optic modulator for infrared laser using gallium arsenide crystal

Temperature or pressure controller

Instrumentation for potentiostatic corrosion studies with distilled water

Raster linearity of video cameras calibrated with precision tester

Plant respirometer enables high resolution of oxygen consumption rates

Means for improving apparent resolution of television

Surface irregularities detected by flare inspection instrument

Nondestructive testing of welds on thin-walled tubing

Magnetomotive forming for precision sizing and joining of large diameter tubes

A new method for producing optical mirrors

Miniaturized high-resolution mass/charge spectrometer /design study/
HIGH SPEED

Gauge senses depletion of lubricant in journal bearings
LEWIS-37  B64-10042  01
Intermediate rotating ring improves reliability of dynamic shaft seal
M-PS-575  B66-10197  05
High-speed furnace uses infrared radiation for controlled brazing
NU-0047  B66-10268  02
Gas-injection valve operates at high speed
HQ-89  B66-10381  05
Selective tube coagulation increases heat transfer capability
M-PS-599  B66-10610  05
Resilient bearing supports are gas controlled
LEWIS-10109  B67-10364  05
Flow liner extends operating life of high-temperature bellows
M-PS-11023  B67-10512  05
Simplified, high-speed binary data decoder
NPO-10118  B68-10058  01
High-speed camera synchronization
M-PS-18062  B68-10282  02
Communication system features dual mode range acquisition plus time delay measurement
M-PS-18132  B68-10306  01
Solid state high-voltage pulser operates with low supply voltage
M-PS-10434  B68-10308  01
Foil bearing support for high-speed rotor
HQ-10315  B69-10661  05

HIGH SPEED CAMERAS
Rotating filters permit wide range of optical pyrometry
LANGLEY-33  B65-10100  02
Rocket engine vibration accurately measured by photography
M-PS-19116  B66-10652  02
High-speed camera synchronization
M-PS-18062  B68-10282  02
High-speed pulse cameras
M-SC-11353  B68-10329  02
Fast framing cameras provide high-speed multi-channel data recording
'ARG-10252  B69-10102'  02

HIGH STRENGTH
New method used to fabricate light-weight heat exchanger for rocket motor
LEWIS-43  B63-10346  02
Refractory ceramic has wide usage, low fabrication cost
M-PS-67  B63-10481  03
Flexible curtain shields equipment from intense heat fluxes
M-PS-48  B65-10044  03
Bellows design features low spring rate and long life
M-SC-521  B66-10190  05
Pressure vessels fabricated with high-strength wire and electroformed nickel
M-PS-580  B66-10218  05
Nickel-base superalloys developed for high-temperature applications
LEWIS-226  B66-10222  03
Aluminum/steel wire composite plates exhibit high tensile strength
M-PS-301  B66-10262  05
Boron-deoxidized copper withstands brazing temperatures
M-PS-762  B66-10273  03
Electrolytic etching process provides effective bonding surface on stainless steel
GSPC-488  B66-10399  03
Brazing process provides high-strength bond between aluminum and stainless steel
M-PS-803  B66-10352  05
Aluminum core structures brazed without use of flux
M-PS-659  B66-10360  05
High-strength braze joints between copper and steel
M-PS-2519  B67-10211  05
Aluminum-titanium hydride-boron carbide composite provides lightweight neutron shield material
MUC-10069  B67-10265  03
High-strength tungsten alloy with improved ductility
LEWIS-10257  B67-10340  03
Carbon offers advantages as implant material in human body
M-PS-10207  B69-10087  04

HIGH STRENGTH ALLOYS
New cobalt alloys have high-temperature strength and long life in vacuum environments
LEWIS-47  B63-10351  03
Study of stress corrosion in aluminum alloys
M-PS-13906  B67-10533  03
High-strength nickel-base alloy with improved oxidation resistance up to 2200 degrees F
LEWIS-10115  B68-10094  03
High strength, superplastic superalloy
LEWIS-10805  B69-10293  03
Explosive bonding of metal-matrix composites
M-PS-20657  B69-10804  05

HIGH STRENGTH STEELS
Flexible coiled spline securely joins mating cylinders
WOO-270  B66-10172  05
Study to minimize hydrogen embrittlement of ultrahigh-strength steels
M-PS-2855  B67-10141  03

HIGH TEMPERATURE
Radiant heater for vacuum furnaces offers high structural rigidity, low heat loss
LEWIS-39  B63-10342  01
High-temperature, high-pressure spherical segment valve provides quick opening
ARC-13  B63-10831  05
Refractory ceramic has wide usage, low fabrication cost
M-PS-67  B63-10481  03
Flexure support system protects thermally and dynamically loaded models
LANGLEY-35  B65-10042  05
Thoriated nickel bonded by solid-state
Brazing process using Al-Si filler alloy reliably bonds aluminum parts

B66-10248 05

Boron-deoxidized copper withstands brazing temperatures

B66-10273 03

Diffusion bonding makes strong seal at flanged connector

B66-10250 05

Substituted silane-diol polymers have improved thermal stability

B66-10259 03

Differential expansion provides pressure for diffusion bonding of large diameter rings

B66-10269 05

Aluminum doping improves silicon solar cells

B66-10181 02

Insulation for cryogenic tanks has reduced thickness and weight

B66-10183 02

Radiation used to temperature compensate semiconductor strain gages

B66-10186 02

Liquid trap seals thermocouple leads

B66-10212 05

Nickel-base superalloys developed for high-temperature applications

B66-10222 03

Chromium oxide coatings improve thermal emissivity of alumina

B66-10227 03

Quick-closing valve is actuated by explosive discharge

B66-10233 05

Insert sleeve prevents tube soldering contamination

B66-10238 05

Electrical upsetting of metal sheet forms weld edge

B66-10248 05

Diffusion bonding makes strong seal at flanged connector

B66-10250 05

Substituted silane-diol polymers have improved thermal stability

B66-10259 03

Differential expansion provides pressure for diffusion bonding of large diameter rings

B66-10269 05

Boron-deoxidized copper withstands brazing temperatures

B66-10273 03

Brazing process using Al-Si filler alloy reliably bonds aluminum parts

B66-10248 05

Quick-closing valve is actuated by explosive discharge

B66-10233 05

Insert sleeve prevents tube soldering contamination

B66-10238 05

Electrical upsetting of metal sheet forms weld edge

B66-10248 05

Diffusion bonding makes strong seal at flanged connector

B66-10250 05

Substituted silane-diol polymers have improved thermal stability

B66-10259 03

Differential expansion provides pressure for diffusion bonding of large diameter rings

B66-10269 05

Boron-deoxidized copper withstands brazing temperatures

B66-10273 03
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>HIGH TEMPERATURE AIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALTH Y temperaturer bearing-cage materials</td>
<td>ARC-10166</td>
</tr>
<tr>
<td>Weld microfissuring in Inconel 718 minimized by minor elements</td>
<td>Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces</td>
</tr>
<tr>
<td>Inverted grounding technique for electron beam heating</td>
<td>Lateral PNP bipolar transistor with aiding field diffusions</td>
</tr>
<tr>
<td>Study of fluoride corrosion of nickel alloys</td>
<td>Arcing-10166</td>
</tr>
<tr>
<td>Thermal expansion properties of aerospace materials</td>
<td>LEWIS-10411</td>
</tr>
<tr>
<td>Materials data handbook, aluminum alloy 6061</td>
<td>LEWIS-10543</td>
</tr>
<tr>
<td>Direct indication of particle size in fluidized beds</td>
<td>ARC-10166</td>
</tr>
<tr>
<td>New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>High temperature coatings for gas bearings</td>
<td>LEWIS-10793</td>
</tr>
<tr>
<td>Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled</td>
<td>ARC-10166</td>
</tr>
<tr>
<td>Study of high temperature bearing materials</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Improved high-temperature silica coatings</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Simple test indicates degree of cure of polyimide coatings</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Improved high-temperature-strength nickel-base superalloy</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>High-temperature, gas-filled ceramic rectifiers, thyristors, and voltage-reference tubes</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Development of structural test articles from magnesium-lithium and beryllium</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Method for determining properties of microinstabilities of a magnetized plasma</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Device for obtaining separation of oxygen</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Radiometric temperature reference</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Plated-tube fittings with replaceable seat inserts</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Rhodium-plated barrier against high-temperature fusion bonding</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Cryogenic pressure transducer</td>
<td>LEWIS-10486</td>
</tr>
<tr>
<td>Design of multilayer insulation system</td>
<td>LEWIS-10486</td>
</tr>
</tbody>
</table>
Thermionic diode switching has high temperature application
NPO-10404  B67-10672  01

Asbestos and Inconel combined to form hot-gas seal
N-FS-14004  B68-10162  05

High temperature alloy
LEWIS-10377  B68-10259  03

Ultrasonic temperature measuring device
LEWIS-10446  B68-10319  01

HIGH TEMPERATURE FLUIDS
Diaphragm valve for corrosive and high temperature fluid flow control has unique features
LEWIS-304  B66-10365  05

Flowmeter measures flow rates of high temperature fluids
LEWIS-326  B66-10521  01

Consolidation and fabrication techniques for vanadium-20 w/o titanium /TV-20/
ARG-10148  B68-10309  03

Corrosion reduction of aluminum alloys in flowing high-temperature water
ARG-10244  B69-10029  03

HIGH TEMPERATURE GASES
Probe measures characteristics of hot gas stream
N-FS-240  B65-10133  02

Self-balancing line-reversal pyrometer automatically measures gas temperatures
LEWIS-348  B67-10268  01

A method of determining combustion gas flow
N-FS-13757  B67-10455  03

Computer program calculates peripheral water injection cooling of axisymmetric subsonic diffuser
MSEC-10541  B67-10543  06

HIGH TEMPERATURE LUBRICANTS
Lead oxide ceramic makes excellent high-temperature lubricant
LEWIS-144  B68-10116  03

Solid-film lubricant is effective at high temperatures in vacuum
LEWIS-228  B66-10087  03

High-temperature bearing lubricants
LEWIS-10408  B68-10249  05

Evaluation of lubricants for ball bearings at high temperatures
LEWIS-10578  B69-10025  03

HIGH TEMPERATURE NUCLEAR REACTORS
An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10187  B69-10082  02

HIGH TEMPERATURE PLASMA
Imaging slitless spectrometer for X-ray astronomy
N-FS-14369  B68-10546  02

HIGH TEMPERATURE RESEARCH
Modified thermocouple is effective from minus 250 deg to 5000 deg F
MSC-420  B66-10461  01

Tungsten insulated susceptor cup for high temperature induction furnace eliminates contamination
LEWIS-203  B66-10538  03

Properties of optics at high temperature and their measurement, a study
N-FS-14666  B68-10240  02

High-temperature thermionic emission microscope
NPO-10584  B68-10516  01

Metallic diffusion measured by a modified Knudsen technique
BO-10145  B68-10309  03

Retention of ductility in high-strength steels
ARG-10497  B69-10616  03

Mass-spectrometric study of the rhenium-oxygen system
ARG-10421  B69-10645  02

HIGH TEMPERATURE TESTS
Apparatus facilitates pressure-testing of metal tubing
LEWIS-174  B65-10131  05

Evaluation of high temperature stranded hookup wire
N-FS-2478  B67-10122  03

Teensile testing grips ensure uniform loading of bimetal tubing specimens
LEWIS-10267  B68-10248  05

Renewal of corrosion protection of coated aluminum after welding
N-FS-2036  B69-10150  05

Self-balancing line-reversal pyrometer automatically measures gas temperatures
LEWIS-348  B67-10268  01

Self-lubricating gear
M-FS-1497  B69-10408  05

A method of determining combustion gas flow
11-FS-13757  B68-10455  03

Instrument accurately measures extremely low air densities
N-FS-193  B65-10221  01

Titanium diaphragm makes excellent amplitz cathode support
GSPC-394  B65-10298  01

Polytetrafluoroethylene lubricates ball bearings in vacuum environment
N-FS-379  B66-10081  03

Rod and dish cathode improves penning-type vacuum gage
GSPC-447  B66-10082  01
Solid-film lubricant is effective at high temperatures in vacuum

Gallium alloy films investigated for use as boundary lubricants

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics

Improved design provides faster response time in photo multiplier

Tantalum alloys resist creep deformation at elevated temperatures

Feed-thru flange is useful in vacuum applications to cryogenic temperatures

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment

Combination double door high-vacuum valve provides access to vacuum chamber

An improved soft X-ray photoionization detector

Environmental study of miniature slip rings

Machine tests slow-speed sliding friction in high vacuum

Improved process for making thin-film sodium niobate capacitors

High-emittance coatings on metal substrates

Study of high temperature bearing materials

Evaluation of magnetic materials for static inverters and converters

High VOLTAGES

Efficient circuit triggers high-current, high-voltage pulses

Cold cathode ionization gage has rigid metal housing

Rod and dish cathode improves penning-type vacuum gage

Electric arc heater is self starting

Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio

Process reduces secondary resonant emission in electronic components

Low input voltage converter/regulator minimizes external disturbances

High-energy-rate magnetohydraulic metal
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulator-holder protects transistors in dense electronic assemblies</td>
</tr>
<tr>
<td>MSC-214</td>
</tr>
<tr>
<td>Specimen holder design improves accuracy of X-ray powder analysis</td>
</tr>
<tr>
<td>JPL-SC-165</td>
</tr>
<tr>
<td>Pipe cutting tool is useful in limited space</td>
</tr>
<tr>
<td>MSC-36</td>
</tr>
<tr>
<td>Fixture aids soldering of electronic components on circuit board</td>
</tr>
<tr>
<td>ARC-56</td>
</tr>
<tr>
<td>Multisurface fixture permits easy grinding of tool bit angles</td>
</tr>
<tr>
<td>M-PS-586</td>
</tr>
<tr>
<td>Tool post modification allows easy turret lathe cutting-tool alignment</td>
</tr>
<tr>
<td>M-PS-581</td>
</tr>
<tr>
<td>Soldering iron temperature is automatically reduced</td>
</tr>
<tr>
<td>M-PS-597</td>
</tr>
<tr>
<td>Tool separates sleeve-type unions without heat</td>
</tr>
<tr>
<td>MSC-497</td>
</tr>
<tr>
<td>Fixed vacuum plate clamps styrofoam for machining</td>
</tr>
<tr>
<td>M-PS-663</td>
</tr>
<tr>
<td>Swiveling lathe jaw concept for holding irregular pieces</td>
</tr>
<tr>
<td>M-PS-763</td>
</tr>
<tr>
<td>Inflatable holding fixture permits X-rays to be taken of inner weld areas</td>
</tr>
<tr>
<td>M-PS-856</td>
</tr>
<tr>
<td>Inspection of fine wires simplified by capillary tube wire holder</td>
</tr>
<tr>
<td>MSC-358</td>
</tr>
<tr>
<td>Adapter assembly prevents damage to tubing during high pressure tests</td>
</tr>
<tr>
<td>MSC-563</td>
</tr>
<tr>
<td>Device serves as hinge and electrical connector for circuit boards</td>
</tr>
<tr>
<td>M-PS-743</td>
</tr>
<tr>
<td>Versatile machine mills, saves light materials</td>
</tr>
<tr>
<td>M-PS-827</td>
</tr>
<tr>
<td>Special tool kit aids heavily garmented workers</td>
</tr>
<tr>
<td>MSC-163</td>
</tr>
<tr>
<td>Flexible drive allows blind machining and welding in hard-to-reach areas</td>
</tr>
<tr>
<td>MSC-524</td>
</tr>
<tr>
<td>Heat treatment of metal parts facilitated by sand exsudent</td>
</tr>
<tr>
<td>M-PS-1543</td>
</tr>
<tr>
<td>Holding fixture facilitates pipe thread gage measurements</td>
</tr>
<tr>
<td>M-PS-2009</td>
</tr>
<tr>
<td>Cable clamp bolt fixture facilitates assembly in close quarters</td>
</tr>
<tr>
<td>KSC-67-60</td>
</tr>
<tr>
<td>Tensile testing grips ensure uniform loading of bimetal tubing specimens</td>
</tr>
<tr>
<td>LEWIS-10267</td>
</tr>
<tr>
<td>Application of the solid lubricant molybdenum disulfide by sputtering</td>
</tr>
<tr>
<td>LEWIS-10544</td>
</tr>
<tr>
<td>Indium adhesion provides quantitative measure of surface cleanliness</td>
</tr>
<tr>
<td>SAN-10024</td>
</tr>
<tr>
<td>X-ray film holder permits single continuous picture of tubing joint</td>
</tr>
<tr>
<td>LEWIS-10382</td>
</tr>
<tr>
<td>Versatile impact hand tool</td>
</tr>
<tr>
<td>M-PS-20140</td>
</tr>
<tr>
<td>Tape reading fixture</td>
</tr>
<tr>
<td>M-PS-14146</td>
</tr>
</tbody>
</table>

**HOLDING**

- Residual magnetism holds solenoid armature in desired position |
  LEWIS-343 | B67-10038 | 01 |
- Programmed schedule holds for improving launch vehicle holds |
  M-PS-14502 | B69-10602 | 03 |

**HOLE DISTRIBUTION (ELECTRONICS)**

- Electroformed screens with uniform hole size |
  LEWIS-10117 | B68-10107 | 05 |
- Nondestructive evaluation of printed wiring boards by microhm resistance measurements |
  SAN-10034 | B67-10272 | 01 |

**HOLE DISTRIBUTION (MECHANICS)**

- Gear drive automatically indexes rotary table |
  M-PS-753 | B66-10303 | 05 |
- Computer program calculates and plots surface area and pore size distribution data |
  GSFC-10362 | B68-10009 | 06 |
- A method for using surface tension to determine the size of holes in hardware |
  M-SC-15194 | B69-10595 | 03 |

**HOLES**

- Hole saw drill attachment has zero force reaction |
  M-SC-583 | B66-10604 | 05 |

**HOLLOW**

- Plugged hollow shaft makes fatigue-resistant bearing pin |
  LANGLEY-195 | B66-10077 | 05 |
- Hollow needle used to cut metal honeycomb structures |
  M-SC-486 | B66-10244 | 05 |
- Self-sealing closure enables access to several fluid containers |
  KFO-10123 | B67-10207 | 04 |

**HOLOGRAPHY**

- Improvement in recording and reading holograms |
  ERC-10151 | B68-10347 | 02 |
- Fine-line sensitivity for holographic interferograms |
  HQ-10348 | B69-10663 | 02 |
- Long range holographic contour mapping concept |
  HQO-10350 | B69-10700 | 02 |

**HOMOGENEITY**

- Stationary device produces homogeneous mixture of fluids |
  M-PS-525 | B66-10570 | 05 |
- Improved compression molding process |
  LANGLEY-10027 | B67-10302 | 03 |
- Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation |
  ARG-10288 | B69-10081 | 03 |

**HOMOGENIZING**

- Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique |
  ARG-277 | B67-10324 | 03 |
Sintering characteristics and properties of PUF and PUF are determined
ABG-10228 B69-10058 03

Flexible honeycomb structure can bend to fit
compound curves
M-PS-17 B63-10385 05

Fastener distributes stress evenly from
sandwich-panel-hung items
MSC-236 B65-10358 05

Apparatus measures thermal conductivity of
honeycomb-core panels
LANGLEY-202 B66-10127 01

Insulation for cryogenic tanks has reduced
thickness and weight
M-PS-326 B66-10183 02

Ultrasonic emission method enables testing of
adhesive bonds
MSC-475 B66-10237 05

Alumina core structures brazed without use of
flex
M-PS-659 B66-10360 05

Composite bulkhead fabrication development
M-PS-1264 B66-10582 05

Refractory ceramic has wide usage, low
fabrication cost
M-PS-67 B63-10401 03

Apparatus permits flexure testing of specimens
at cryogenic temperatures
M-PS-257 B65-10129 02

Adjustable Knife cuts honeycomb material to
specified depth
MSC-475 B66-10237 05

Hollow needle used to cut metal honeycomb
structures
MSC-486 B66-10244 05

Ultrasonic quality inspection of bonded
honeycomb assemblies in automated
MSC-659 B66-10544 01

Study made to control depth of potting
compound for honeycomb sandwich fasteners
LEWIS-370 B66-10677 05

Detection of entrapped moisture in
honeycomb sandwich structures
MSC-1103 B67-10116 01

Application of distorted models in
developing scaled structural models
M-PS-2580 B67-10321 05

Analysis of stability-critical orthotropic
cylinders subjected to axial compression
M-PS-12669 B67-10375 03

Heavy-gage bonded honeycomb sandwich as
primary load-bearing structure
M-PS-12060 B67-10427 05

Nondestructive testing techniques used in
analysis of honeycomb structure bond
strength
M-PS-1214 B67-10574 01

Honeycomb seal backing ring increases
turbine-generator disk life
M-PS-13303 B67-10607 05

Repair of honeycomb panels with welded
breakaway studs
MSC-15046 B69-10261 05

Technique for anchoring fasteners to
honeycomb panels
LEWIS-10888 B69-10265 03

Instrumentation for nondestructive testing
of composite honeycomb materials
M-PS-20405 B69-10366 03

Nondestructive determination of cohesive
strength of adhesive-bonded composites
M-PS-20397 B69-10464 03

Freon, T-B1 cutting fluid
MSC-11486 B69-10485 05

Run-in with chemical additive protects gear
surface
M-PS-288 B66-10069 05

Heavy-duty staple remover operated by hand
JPL-IT-1004 B63-10292 05

Simple mechanism combines positive locking and
quick-release features
WOO-4 B68-10420 05

Tool pre-tensions covers prior to lacing
ISC-631 B66-10301 05

Insulation for cryogenic tanks has reduced
thickness and weight
I-FS-326 B66-10183 02

Ultrasonic emission method enables testing of
adhesive bonds
I-FS-799 B66-10341 01

Aluminum structures brazed without use of
flux
I-FS-659 B66-10360 05

Composite bulkhead fabrication development
I-FS-1264 B66-10582 05

Refractory Ceramic has wide usage, low
fabrication cost
MSC-651 B69-10164 01

Adjustable Knife cuts honeycomb material to
specified depth
MSC-659 B66-10544 01

Study made to control depth of potting
compound for honeycomb sandwich fasteners
MSC-370 B66-10677 05

Detection of entrapped moisture in
honeycomb sandwich structures
MSC-1103 B67-10116 01

Application of distorted models in
developing scaled structural models
MSC-2580 B67-10321 05

Analysis of stability-critical orthotropic
cylinders subjected to axial compression
MSC-12669 B67-10375 03

Heavy-gage bonded honeycomb sandwich as
primary load-bearing structure
MSC-12060 B67-10427 05

Nondestructive testing techniques used in
analysis of honeycomb structure bond
strength
MSC-1214 B67-10574 01

Honeycomb seal backing ring increases
turbine-generator disk life
MSC-13303 B67-10607 05

Repair of honeycomb panels with welded
breakaway studs
MSC-15046 B69-10261 05

Technique for anchoring fasteners to
honeycomb panels
MSC-10888 B69-10265 03

Study made to control depth of potting
compound for honeycomb sandwich fasteners
LEWIS-370 B66-10677 05

Detection of entrapped moisture in
honeycomb sandwich structures
MSC-1103 B67-10116 01

Application of distorted models in
developing scaled structural models
MSC-2580 B67-10321 05

Analysis of stability-critical orthotropic
cylinders subjected to axial compression
MSC-12669 B67-10375 03

Heavy-gage bonded honeycomb sandwich as
primary load-bearing structure
MSC-12060 B67-10427 05

Nondestructive testing techniques used in
analysis of honeycomb structure bond
strength
MSC-1214 B67-10574 01

Ultrasonic quality inspection of bonded
honeycomb assemblies in automated
MSC-659 B66-10544 01

Study made to control depth of potting
compound for honeycomb sandwich fasteners
LEWIS-370 B66-10677 05

Detection of entrapped moisture in
honeycomb sandwich structures
MSC-1103 B67-10116 01

Analysis of stability-critical orthotropic
cylinders subjected to axial compression
MSC-12669 B67-10375 03

Hollow plastic hoops protect thermocouple
in storage and handling
USC-1103 B65-10256 05

Analysis of stability-critical orthotropic
structures subjected to axial compression
MSC-12669 B67-10375 03

Single-source mechanical loading system
MSC-12650 B67-10380 05

Quick-acting backup tool for welding ducts
M-PS-1840 B69-10396 05

Star/horizon simulator used to test space
guidance system
MSC-407 B67-10110 02

Horn antenna reduces side lobes.
JPL-12540 B63-10264 01

Special pliers connect hose containing liquid
under pressure
JPL-IT-1003 B63-10291 05

Dispensing system eliminates tension in

deployed hoses
MSC-80 B65-10185 05

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 B66-10187 02

Rotational fluid coupling eliminates hose entanglements
MSC-372 B66-10585 05

Plastic tubing protects flexible copper hose
M-PS-772 B66-10588 05

Method for predicting frictional loss in metal bellows and flexible hose
M-PS-883 B66-10662 05

Hand-tightened, high-pressure seal
M-PS-18446 B66-10662 05

Teflon-packed flexible joint
LEWIS-90252 B66-10049 03

TFE-fluorocarbon linings for flexible hoses
N-PS-16480 B66-10288 05

Flexible rivet-set
N-PS-20317 B66-10499 05

Torsional tubular disconnect
NPO-10704 B66-10434 06

Two-functional seal for hose connection
M-PS-14062 B67-10588 05

HOSPITALS
Electrocardiograph transmitted by RF and telephone links in emergency situations
PRC-10031 B68-10233 01

HOT CATHODES
Vacuum gage system for radiation environment
LEWIS-10797 B66-10156 01

HOT ELECTROS
Vacuum gage system for radiation environment
LEWIS-10797 B66-10156 01

HOT PRESSING
Aluminum/steel wire composite plates exhibit high tensile strength
M-PS-601 B66-10262 05

HOT-WIRE AMMETERS
- Cooling method prolongs life of hot-wire transducer
LEWIS-41 B63-10344 02
- Experimental design for research on shock-turbulence interaction
M-PS-20031 B66-10604 02

HOT-WIRE FLOWMETERS
- Study of hot wire techniques in low density flows with high turbulence levels
M-PS-1269 B66-10687 01
- Thermal conductivity probe
M-PS-20566 B66-10780 03

HOT WORKING
Development of technology for hot-drape forming of large torus sections
M-PS-12141 B67-10341 05

Magnesium-lithium alloys developed for low temperature use
M-PS-1541 B67-10365 03

Basal-plane metallography of deformed pyrolytic carbon
BPO-11196 B69-10488 03

HOUSINGS
Cold cathode ionization gage has rigid metal housing
GSPC-645 B66-10041 01

Seismometer designed for remote operation in random orientation
JPL-320 B66-10085 01

High temperature thermocouple operates in reduction atmosphere
MU-0046 B66-10134 01

Solid state thermostat has integral probe and circuitry
M-PS-484 B66-10193 01

Segmented ball valve is easy to open and close
WO-10186 B66-10195 05

Temperature responsive valve withstands high impact loading
NPO-10186 B67-10225 05

Tool sample subsurface soil free of surface contaminants
MSC-10988 B67-10473 05

Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing
MSC-10308 B69-10034 06

Improved mouse cage provides versatility and ease in handling laboratory mice
MSC-12250 B69-10124 04

Hermetically sealed pump
LEWIS-10837 B69-10320 05

HUBS
Device measures curved surface finish on gear teeth
WO-112 B65-10064 05

Computer program performs flow analysis through turbines
LEWIS-236 B66-10496 01

Improved design of item in high speed rotating machinery
M-PS-10841 B69-10373 05

HUMAN BEHAVIOR
Modified algometer provides accurate depth measurements
MSC-616 B66-10647 04

HUMAN EYES
Gelatin coated electrodes allow prolonged bioelectronic measurements
MSC-153 B66-10088 01

Electrocardiograph transmitted by RF and telephone links in emergency situations
PRC-10031 B68-10233 01

HUMAN BODY
Novel shock absorber features varying yield strengths
MSC-63A B64-10130 03

HUMAN FACTORS ENGINEERING
Optical projectors simulate human eyes to establish operator's field of view
WO-250 B66-10010 02

Shoulder adapter steadies spot welding gun
N-PS-321 B66-10076 05

Fingertip current control facilitates use of arc welding gun
MSC-289 B66-10092 05

Body-fitted harness provides safe and easy component handling
M-PS-533 B66-10202 05

Legibility of electroluminescent instrument panels investigated
MSC-494 B66-10316 02

Portable lightweight cell provides controlled environment

X-317
One-piece transparent shell improves design of helmet assembly

Production of solvated electrons

One-piece transparent shell improves design of helmet assembly

Production of solvated electrons

One-piece transparent shell improves design of helmet assembly

Production of solvated electrons
Quick-response servo amplifies small hydraulic pressure differences ARG-99

Hydraulic fluid serves as mandrel for small diameter refractory tube drawing ARG-44

Combination double door high-vacuum valve provides access to vacuum chamber JPL-049

Orbital tube flaring system produces tubing connectors with zero leakage M-P-2016

Pressure levels and pulsation frequencies can be varied on high pressure/frequency testing device LWIS-10205

Single-source mechanical loading system produces biaxial stresses in cylinders M-P-10280

Metal tube reducer is inexpensive and simple to operate ARG-49

Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates NPO-10316

Material fatigue data obtained by card-programmed hydraulic loading system LANGLEY-10042

Analysis of dynamic systems with DAP4E computer program M-P-13999

Accumulator isolator prevents malfunctioning of faulty hydraulic system M-P-1615

Hydraulic servo system increases accuracy in fatigue testing LANGLEY-2017

Pressure variable orifice for hydraulic control valve MSC-11323

High-torque power wrench, a concept M-P-18194

Conceptual hermetically sealed elbow actuator M-P-18770

Conceptual apparatus for detecting leaks of nonconductive liquids M-P-14713

Hand-tightened, high-pressure seal M-P-18416

Torsion system for creep testing with multiple stress reversals EQ-10039

Two-step rocket engine bipropellant valve concept MSC-10951

Repair of weld defects in thin-walled stainless steel tubes M-P-16293

Vibration damper for Miles vertical boring mill ram MSC-15529

Hydraulic calipers M-P-18052

Temperature-controlled resistor NPO-10713

Improved solenoid valve design GSEF-10607

Closed fluid system without moving parts controls temperature LWIS-222

Hydraulic fluid serves as mandrel for small diameter refractory tube drawing ARG-44

Valve effectively controls amount of contaminant in flow stream M-P-1771

High-energy-rate magnetohydraulic metal forming system M-P-2142

Test instrumentation evaluates electrostatic hazards in fluid system M-P-2277

Accumulator isolator prevents malfunctioning of faulty hydraulic system M-P-1415

Pressure variable orifice for hydraulic control valve MSC-11323

High-torque power wrench, a concept M-P-18194

Conceptual hermetically sealed elbow actuator M-P-18770

Conceptual apparatus for detecting leaks of nonconductive liquids M-P-14713

Hand-tightened, high-pressure seal M-P-18416

Torsion system for creep testing with multiple stress reversals EQ-10039

Two-step rocket engine bipropellant valve concept MSC-10951

Repair of weld defects in thin-walled stainless steel tubes M-P-16293

Vibration damper for Miles vertical boring mill ram MSC-15529

Hydraulic calipers M-P-18052

Temperature-controlled resistor NPO-10713

Improved solenoid valve design GSEF-10607

Closed fluid system without moving parts controls temperature LWIS-222

Hydraulic fluid serves as mandrel for small diameter refractory tube drawing ARG-44

Valve effectively controls amount of contaminant in flow stream M-P-1771

High-energy-rate magnetohydraulic metal forming system M-P-2142

Test instrumentation evaluates electrostatic hazards in fluid system M-P-2277

Accumulator isolator prevents malfunctioning of faulty hydraulic system M-P-1415

Pressure variable orifice for hydraulic control valve MSC-11323

High-torque power wrench, a concept M-P-18194

Conceptual hermetically sealed elbow actuator M-P-18770

Conceptual apparatus for detecting leaks of nonconductive liquids M-P-14713

Hand-tightened, high-pressure seal M-P-18416

Torsion system for creep testing with multiple stress reversals EQ-10039
**HYDROCARBONS**

- Hazards in fluid system
  - BIDBOCABBOBS SUBJECT
  - I-FS-2277

- Variable-transparency wall regulates temperatures of structures
  - LANGLEY-25
  - B63-10528

- Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
  - LEWIS-263
  - B66-10104

- Process reduces secondary resonant emission in electronic components
  - JPL-934
  - B66-10685

- New class of thermosetting plastics has improved strength, thermal and chemical stability
  - LEWIS-10108
  - B67-10197

- Improved inorganic ion exchange membranes
  - LEWIS-10737
  - B69-10451

- Improved primer for bonding polyurethane adhesives to metals
  - I-FS-90591
  - B69-10560

- Chromatographic detection and analysis of traces of hydrocarbons
  - KSC-10388
  - B69-10716

**HYDROCHLORIC ACID**

- Solder flux leaves corrosion-resistant coating on metal
  - JPL-611
  - B66-10206

- Modification increases light output of injection-luminescent diodes
  - I-FS-192
  - B65-10006

- Gate of 6.5 per cent Si-Fe sheet is chemically reduced
  - NSC-537
  - B66-10454

- Zone purification of potassium chloride
  - AEG-10377
  - B69-10241

- Improved nickel plating of Inconel X-750
  - I-FS-18604
  - B69-10463

**HYDRODYNAMICS**

- Spiral-grooved shaft seals substantially reduce leakage and wear
  - LEWIS-10397
  - B68-10270

- Hydrodynamics of a new concept of primary containment by energy absorption
  - AEG-10242
  - B69-10046

- Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
  - AEG-10461
  - B69-10620

- Foil bearing support for high-speed rotor
  - HQ-10315
  - B69-10661

**HYDROFLUORIC ACID**

- Nonhazardous acid etches weld samples
  - I-FS-975
  - B66-10378

- Xenon fluoride solutions effective as fluorinating agents
  - AEG-217
  - B67-10133

- Copper and nickel adherently electroplated on titanium alloy
  - I-FS-13952
  - B67-10532

- Transplutonium elements processed from rock debris of underground detonations
  - AEG-10222
  - B69-10054

- Improved nickel plating of Inconel X-750
  - I-FS-18604
  - B69-10463

- A method for precision anodize stripping
  - KSC-15040
  - B69-10581

**HYDROGEN**

- Cryopumping of hydrogens in vacuum chambers is aided by catalytic oxidation of hydrogens
  - LEWIS-15
  - B63-10340

- Fuel cell serves as oxygen level detector
  - JPL-SC-072
  - B65-10066

- Impurity diffusion process for silicon semiconductors is fast and precise
  - GSFC-397
  - B65-10300

- Brazing method produces solid-solution bond between refractory metals
  - LEWIS-212
  - B65-10370

- Process reduces porosity to produce superior filters
  - WOO-093
  - B66-10037

- Process reduces secondary resonant emission in electronic components
  - JPL-934
  - B66-10685

- Cryopanning of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogens
  - LEWIS-15
  - B63-10340

- Process reduces porosity to produce superior filters
  - WOO-093
  - B66-10037

- Cryopanning of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogens
  - LEWIS-15
  - B63-10340

- Process reduces porosity to produce superior filters
  - WOO-093
  - B66-10037

- Cryopanning of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogens
  - LEWIS-15
  - B63-10340

- Process reduces porosity to produce superior filters
  - WOO-093
  - B66-10037

- Cryopanning of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogens
  - LEWIS-15
  - B63-10340

- Process reduces porosity to produce superior filters
  - WOO-093
  - B66-10037
SUBJECT INDEX

Cryogenic liquid level measuring probe
ARG-10138 B68-10291 01

Hydrogen safety manual
LEWIS-10467 B68-10323 01

Real fluid properties of normal and parahydrogen
LEWIS-10456 B68-10361 06

One-dimensional reacting gas nonequilibrium performance program
BSC-11777 B68-10375 06

One-dimensional two-phase reacting gas nonequilibrium performance program
BSC-11780 B68-10376 06

Axially symmetric reacting gas nonequilibrium performance program
BSC-11781 B68-10377 06

Ambient temperature catalyst for hydrogen ignition
LEWIS-10557 B68-10520 03

Two systems developed for purifying inert atmospheres
ARG-10234 B68-10026 03

Prediction of friction coefficients for gases
LEWIS-10774 B69-10112 02

One hundred MHz voltage-controlled oscillator
HP-11004 B69-10133 01

Qualitative and quantitative analysis of mixtures of compounds containing both hydrogen and deuterium
ABG-10312 B69-10177 04

An improved atomic hydrogen frequency and time standard
GSFC-10706 B69-10341 02

An infrared television system for hydrogen flame detection
ESCC-10368 B69-10354 01

Effects of hydrogen on metals
ARG-20364 B69-10372 03

Hydrogen flash lamps studied
ARG-10419 B69-10411 02

Abrasion and fracture testing in a high-pressure hydrogen environment
ARG-10480 B69-10457 03

Improved retort for cleaning metal powders with hydrogen
LEWIS-10718 B69-10468 03

Literature review on pickling inhibitors and cadmium electroplating processes
ARG-14421 B69-10606 03

Device separates hydrogen from solution in water at ambient temperatures
NMC-13335 B69-10635 03

Effects of high-pressure hydrogen on storage vessel materials
NFS-18605 B69-10730 03

Thermal conductivity probe
NPS-20566 B69-10780 03

HYDROGEN ATOMS

Production of metals and compounds by
HYDROGEN COMPOUNDS

radiation chemistry
LEWIS-10231 B69-10123 03

Primary radical yields in pulse irradiated
alumina aqueous solution
N-PS-10322 B69-10167 02

Automatic tuning of hydrogen masers
GSPC-10127 B69-10452 01

HYDROGEN COMPOUNDS

Miniature oxygen-hydrogen cutting torch
crafted from hypodermic needle
JPL-545 B63-10517 05

Fire retardant foams developed to suppress
fuel fires
IRC-10098 B68-10358 03

Improved gyro-flotation/damping/fluids
B69-10360 03

HYDROGEN OXYGEN FUEL CELLS

Regenerative fuel cell combines high
efficiency with low cost
W00-090 B65-10363 01

Reaction heat used in static water removal
from fuel cells
N-PS-522 B66-10013 01

Fluidic oscillator used as humidity sensor
LEWIS-340 B67-10063 05

Cooling of 2 kW H subscript 2 O subscript 2
fuel cell
N-PS-13737 B68-10544 01

Mass transport mechanism in porous fuel cell
electrodes
B69-10135 01

HYDROGEN PEROXIDE

Plated nickel wire mesh makes superior
catalyst bed
MSC-271 B65-10321 03

Microorganisms detected by enzyme-catalyzed
reaction
JPL-782 B66-10117 04

Gage of 6.5 per cent Si-Fe sheet is
chemically reduced
MSC-537 B66-10454 03

Study made of Raney nickel technology
N-PS-2054 B67-10208 03

Tube swaging device uses explosive force
LANGLEY-10092 B68-10235 05

Hydrogen peroxide etching proves useful for
germanium
ARG-10170 B68-10454 03

Primary radical yields in pulse irradiated
alkaline aqueous solution
ARG-10322 B69-10167 02

Improved nickel plating of Inconel X-750
N-PS-18604 B69-10463 05

HYDROGRAPHY

Airborne Fraunhofer Line Discriminator
MRC-13146 B69-10594 02

HYDROLYSIS

Refractory-metal compound impregnation of
polytetrafluoroethylene
LEWIS-10733 B69-10072 03

Inhibition of browning in foodstuffs
B69-10493 04

HYDROPHOBICS

Electronic circuitry used to automate paper
chromatography
JPL-840 B67-10201 01

SUBJECT INDEX

HYDROSPHERING
Stainless-steel elbows formed by spin forging
N-PS-122 B65-10090 05

HYDROSTATIC PRESSURE
Resonant support facilitates vibration
testing of structures
N-PS-224 B65-10039 05

Weld leaks rapidly and safely detected
N-PS-362 B65-10265 01

Porous mandrels provide uniform
defomation in hydrostatic powder
metallurgy
N-PS-1972 B67-10209 03

Resilient bearing supports are gas
controlled
LEWIS-10109 B67-10364 05

Hydrostatic testing of porous assemblies
N-PS-10298 B68-10439 05

Device separates hydrogen from solution in
water at ambient temperatures
MSC-13338 B69-10635 03

HYDROSTATICS

Hydrostatic force used to handle oversized,
heavy objects
BQ-90 B67-10167 05

HYDROTHERMAL CRYSTAL GROWTH
Vapor grown silicon dioxide improves
transistor base-collector junctions
GSPC-389 B66-10091 01

HYDROXIDES

Inorganic paint is durable, fireproof, easy
to apply
GSPC-386 B65-10156 03

Chemical milling solution produces smooth
surface finish on aluminum
MSC-549 B66-10312 03

Improved fuel-cell-type hydrogen sensor
N-PS-14656 B68-10263 01

Preparation of high purity copper fluoride
by fluorinating copper hydroxylfluoride
LEWIS-10794 B69-10136 03

Cobalt improves nickel hydroxide electrodes
for batteries
LEWIS-10760 B69-10228 01

Laser action from a terbium beta-ketoenolate
at room temperature
MSC-10593 B69-10324 02

HYDROXYL COMPOUNDS

Storage-stable foambale polyurethane is
activated by heat
LANGLEY-167 B66-10111 03

Tritiated alumina serves as reagent for
self-labeling analysis
ARG-209 B67-10315 03

Syntesis of polyethers of hexafluorobenzene
and hexafluoropropenediol
N-PS-14962 B69-10636 03

HYGIENE

Health hazards of ultrafine metal and metal
oxide powders
LEWIS-10878 B69-10268 04

HYGROSCOPICITY

Dewpoint temperature inversions analyzed
ARG-10316 B69-10057 02

HYPERBOLAS

Glancing incidence telescope for far
ultraviolet and soft X-rays
GSPC-10052 B67-10508 02
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>IBM COMPUTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-feed cone for Cassegrainian antenna</td>
<td>MINIATURE CAPACITOR FUNCTIONS AS PRESSURE SENSOR JPL-903 B67-10020 01</td>
</tr>
<tr>
<td>Resonant microwave dichroic surface</td>
<td>RESONANT MICROWAVE</td>
</tr>
<tr>
<td>HYPERBOLIC FUNCTIONS</td>
<td>DIAPHRAGMS SPRING GIVES CLUTCH OVER-CENTER TOGGLE EFFECT GSPC-499 B66-10297 05</td>
</tr>
<tr>
<td>Bell nozzle kernel analysis program M-PS-18456</td>
<td>PROCESS YIELD CO-Fe ALLOYS WITH SUPERIOR HIGH TEMPERATURE MAGNETIC PROPERTIES LEWIS-333 B66-10535 03</td>
</tr>
<tr>
<td>HYPERBOLIC ROCKET PROPPELLANTS</td>
<td>DEVICE MEASURES REACTION ENGINE THRUST VECTOR DEVIATIONS JPL-OC-163 B66-10642 05</td>
</tr>
<tr>
<td>Two-step rocket engine bipropellant valve concept MSC-10951</td>
<td>ELASTIC GUIDES REDUCE Hysteresis EFFECT IN BELLEVILLE SPRING PACKAGE JPL-910 B67-10011 05</td>
</tr>
<tr>
<td>Elimination of dissolved gases in hypergolic engine propellant M-PS-16179</td>
<td>CIRCUIT INCREASES CAPABILITY OF Hysteresis SYNCHRONOUS MOTOR MSC-1080 B67-10084 01</td>
</tr>
<tr>
<td>HYPERSONIC HEAT TRANSFER</td>
<td>SiC/Si DIODE TRIGGER CIRCUIT PROVIDES AUTOMATIC RANGE SWITCHING FOR LOG AMPLIFIER M-PS-1879 B67-10314 01</td>
</tr>
<tr>
<td>Thin-film gage measures low heat-transfer rates LANGLEY 205</td>
<td>TORQUE METER AIDS STUDY OF Hysteresis MOTOR RINGS M-PS-12219 B67-10412 01</td>
</tr>
<tr>
<td>HYPERSONIC NOZZLES</td>
<td>DESIGN FOR HIGH-TEMPERATURE /1800 deg F/ LIQUID METAL PRESSURE TRANSDUCER LEWIS-10144 B67-10458 01</td>
</tr>
<tr>
<td>High-temperature, high-pressure spherical segment valve provides quick opening ARC-13 B66-10431 05</td>
<td>CIRCUIT MEASURES Hysteresis LOOP AREAS AT 30 Hz M-PS-13069 B67-10519 01</td>
</tr>
<tr>
<td>HYPERSONIC SHOCK</td>
<td>SCHMITT TRIGGER MULTIVIBRATOR MSC-10955 B69-10143 01</td>
</tr>
<tr>
<td>Acceleration-compensated pressure transducer has fast response LANGLEY-113 B66-10353 01</td>
<td>EVALUATION OF MAGNETIC MATERIALS FOR STATIC INVERTERS AND CONVERTERS LEWIS-10343 B69-10306 01</td>
</tr>
<tr>
<td>HYPERSONIC SPEED</td>
<td>CALIBRATABLE SOLID-STATE PRESSURE SWITCH M-PS-20474 B69-10437 05</td>
</tr>
<tr>
<td>Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart JEL-805 B66-10386 01</td>
<td>ADDING CALCIUM IMPROVES LITHIUM FERRITE CORE B69-10686 06</td>
</tr>
<tr>
<td>Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures LANGLEY-10090 B67-10509 06</td>
<td></td>
</tr>
<tr>
<td>HYPERSONIC TEST APPARATUS</td>
<td></td>
</tr>
<tr>
<td>Metal diaphragm used to calibrate miniature transducers M-PS-207 B65-10059 01</td>
<td></td>
</tr>
<tr>
<td>HYPERSONIC VEHICLES</td>
<td></td>
</tr>
<tr>
<td>Molecular radiation — Its application in physical measurements and analyses M-PS-18416 B69-10562 02</td>
<td></td>
</tr>
<tr>
<td>HYPERSONIC VELOCITIES</td>
<td></td>
</tr>
<tr>
<td>Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio GSPC-509 B66-10347 01</td>
<td></td>
</tr>
<tr>
<td>ADVANCES IN LIGHT-GAS GUN TECHNOLOGY M-PS-14270 B68-10288 05</td>
<td></td>
</tr>
<tr>
<td>HYPERSONIC VELOCITY IMPACT</td>
<td></td>
</tr>
<tr>
<td>High impact pressure regulator withstands impacts of over 15,000 g MPO-10175 B67-10274 01</td>
<td></td>
</tr>
<tr>
<td>HYPERSONIC VELOCITY PROJECTILES</td>
<td></td>
</tr>
<tr>
<td>High-temperature, high-pressure spherical segment valve provides quick opening ARC-13 B63-10431 05</td>
<td></td>
</tr>
<tr>
<td>SEGMENTED ELECTRODE INCREASES OPERATING PRESSURE OF HHD ACCELERATOR LANGLEY-95 B65-10356 02</td>
<td></td>
</tr>
<tr>
<td>Thin-film gage measures low heat-transfer rates LANGLEY 205 B66-10180 01</td>
<td></td>
</tr>
<tr>
<td>EXPERIMENTAL INVESTIGATION OF MEGAWATT DC ARC HEATING OF NITROGEN LEWIS-313 B66-10508 02</td>
<td></td>
</tr>
</tbody>
</table>

**I BEAMS**

Self-balancing beam permits safe, easy load handling under overhang M-PS-84 B63-10571 05

Safety yoke would protect construction workers from falling KSC-10075 B67-10445 05

Fiber glass reinforced structural materials for aerospace application M-PS-18086 B68-10360 03

Two-axis winch installer for heavy ducts in confined space M-PS-14254 B69-10062 05

Calibrated water tank facilitates proof-loading of cranes and derricks M-PS-15059 B69-10109 05

**IBM COMPUTERS**

Computer optimization program finds values for several independent variables that minimize a dependent variable M-PS-13030 B67-10328 06

Computer program for network synthesis by frequency response fit
<table>
<thead>
<tr>
<th>IBM 360 COMPUTER</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-FS-12686</td>
<td>B67-10406 06</td>
</tr>
<tr>
<td>GERT simulation program for GERT network analysis</td>
<td>B68-10457 06</td>
</tr>
<tr>
<td>FORTRAN 4 program calculates velocities and streamlines in a tandem blade turbine</td>
<td>B69-10219 06</td>
</tr>
<tr>
<td>Sonic boom propagation in stratified atmosphere</td>
<td>B69-10391 06</td>
</tr>
<tr>
<td>Computer program reduces and provides profile plot of surface plate calibration data</td>
<td>B67-10492 06</td>
</tr>
<tr>
<td>CIRCU-1A digital computer program for transient analysis of electronic circuits</td>
<td>B68-10416 06</td>
</tr>
<tr>
<td>Generalized Newton-Raphson trajectory optimization-generator 1</td>
<td>B68-10422 06</td>
</tr>
<tr>
<td>Performance analysis of electrical circuits /FANZ/</td>
<td>B68-10448 06</td>
</tr>
<tr>
<td>Propellant tank pressurization analysis program</td>
<td>B69-10007 06</td>
</tr>
<tr>
<td>Variable-mesh method of solving differential equations</td>
<td>B69-10017 02</td>
</tr>
<tr>
<td>Monte Carlo direct view factor and generalized radiative heat transfer program</td>
<td>B69-10038 06</td>
</tr>
<tr>
<td>VICAR-DIGITAL image processing system</td>
<td>B69-10139 06</td>
</tr>
<tr>
<td>Bell nozzle kernel analysis program</td>
<td>B69-10146 06</td>
</tr>
<tr>
<td>Performance statistics of the FORTRAN 4 /F/ library for the IBM system/360</td>
<td>B69-10157 06</td>
</tr>
<tr>
<td>JFLIP-JPL FORTRAN language with interval pre-processor</td>
<td>B69-10167 06</td>
</tr>
<tr>
<td>VICAR-DIGITAL image processing system</td>
<td>B69-10139 06</td>
</tr>
<tr>
<td>Performance statistics of the FORTRAN 4 /F/ library for the IBM system/360</td>
<td>B69-10157 06</td>
</tr>
<tr>
<td>Geometry and design point performance of axial flow turbines</td>
<td>B69-10173 06</td>
</tr>
<tr>
<td>Computer program for off-design performance of radial inflow turbines</td>
<td>B69-10267 06</td>
</tr>
<tr>
<td>Linear circuit analysis program for IBM</td>
<td>B69-10671 01</td>
</tr>
</tbody>
</table>
SUBJECT INDEX

A power-spectral-density computer program
NPO-10126 B67-10160 01

Structural Analysis and Matrix Interpretive System /SAMIS/
NPO-10130 B67-10171 01

Space trajectories program for IBM 7090
NPO-10125 B67-10172 06

CINDA - Chrysler Improved Numerical Differencing Analyzer computer program
M-FS-2298 B67-10278 06

Computer program for determination of natural frequencies of closed spherical sandwich shells
NRC-1246 B67-10279 06

Computer program utilizes FORTRAN 4 subroutines for contour plotting
NPO-10127 B67-10323 06

Computer programs for antenna feed system design and analysis
NPO-10359 B67-10504 06

DYANA - An advanced programming system for large classes of dynamic and equivalent systems
M-FS-12084 B67-10504 06

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes
NUC-10149 B67-10665 06

Computer program /P-1-ALS/ calculates the P-1 and P-3 transfer matrices for neutron moderation in a monatomic gas
NUC-10141 B67-10670 06

Computer program analyzes and designs supersonic wing-body combinations
ARC-10141 B68-10335 06

IBM 7094 COMPUTER

Computer program simplifies selection of structural steel columns
NU-0044 B66-10097 01

Computer program determines gas flow rates in piping systems
M-FS-443 B66-10300 01

New computer program solves wide variety of heat flow problems
M-FS-421 B66-10404 01

Subroutine allows easy computation in extended precision arithmetic
M-FS-1136 B66-10504 01

Computer routine adds plotting capabilities to existing programs
GSFC-490 B66-10511 01

Computer program performs statistical analysis for random processes
M-FS-723 B66-10525 01

Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MRC-989 B66-10619 01

Computer program determines chemical composition of physical system at equilibrium
MSC-1119 B66-10670 01

Computer program determines chemical equilibria in complex systems
LAWIS-291 B66-10671 01

Computer program simulates design, test, and analysis phases of sensitivity experiments
M-FS-1496 B67-10077 01

A power-spectral-density computer program
NPO-10126 B67-10160 01

Study of dynamic response of elastic space stations
NPO-10124 B67-10169 06

Structural Analysis and Matrix Interpretive System /SAMIS/
NPO-10130 B67-10171 01

A modal combination computer program for dynamic analysis of structures
NPO-10129 B67-10217 06

Computer program calculates steady-state temperature distribution within plane or axisymmetric solids
NUC-10049 B67-10224 06

Land landing couch dynamics computer program
MSC-1210 B67-10233 06

Computer program simplifies design of rotating components of turbomachinery
NUC-10046 B67-10235 06

Master control data handling program uses automatic data input
M-FS-2259 B67-10280 06

Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident
NUC-10054 B67-10281 06

Computer program provides linear sampled-data analysis for high order systems
M-FS-12821 B67-10287 06

Computer program uses Monte Carlo techniques for statistical system performance analysis
M-FS-2234 B67-10306 06

Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
M-FS-12916 B67-10307 06

Computer program for mass optional solutions of some endpoint trajectory problems
M-FS-12976 B67-10310 06

Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks
NUC-10031 B67-10319 06

Multiple correlation computer program determines relationships between several independent and dependent variables
M-FS-13024 B67-10327 06

Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries
M-FS-1910 B67-10329 06

General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions
M-PS-13094 B67-10331 06

Computer subroutine ISUPS accurately solves large system of simultaneous linear algebraic equations
NUC-10051 B67-10344 06

Computer program FORTRAN 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations
NUC-10052 B67-10345 06

Earth orbit rendezvous evaluation program
M-FS-13016 B67-10407 06

Computer program generates averaged value
X-325
data tapes
I-PS-12728 B67-10411 06

Computer program provides steady state analysis for liquid propellant propulsion systems
MSC-10064 B67-10414 06

Computer program analyzes generalized environmental control and life support systems
MSC-1157 B67-10445 06

Computer program NCAF-TOSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid
NUC-10042 B67-10456 06

Computer program NCAF provides for steady-state thermal and flow analysis of multiple parallel channels in heat generating solid
NUC-10043 B67-10457 06

KOPP /Calendar Oriented Program Efforts/ provides data for management decisions
I-PS-12331 B67-10478 06

Numerical least-square method for resolving complex pulse height spectra
GSFC-10142 B67-10480 06

Computer program uses characteristics method for free-jet investigation
LANGLIEY-10117 B67-10490 06

Computer program performs aerothermodynamic flight test data correlation
MSC-10075 B67-10494 06

Multidimensional reaction kinetic ablation program /BEKAP/
MSC-10079 B67-10495 06

Computer programs for antenna feed system design and analysis
NPO-10359 B67-10504 06

Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
LANGLIEY-10090 B67-10509 06

Computer program performs rectangular fitting stress analysis
I-PS-13010 B67-10520 06

General frequency response program calculates frequency response of system, open at any specified element
I-PS-12817 B67-10521 06

Computerized Schedule Effectiveness Technique /SRE/ determines present and future schedule position
I-PS-13012 B67-10522 06

DYANA – An advanced programming system for large classes of dynamic and equivalent systems
I-PS-12084 B67-10524 06

Program computes zero lift wave drag of entire aircraft
LANGLIEY-10079 B67-10530 06

Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLIEY-10093 B67-10531 06

M-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
NUC-10126 B67-10536 06

SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield
NUC-10542 B67-10537 06

Computer program calculates peripheral water injection cooling of axisymmetric subsonic diffuser
NUC-10541 B67-10543 06

Computer program ETC improves computation of elastic transfer matrices of Legendre polynomials P/0/ and P/1/
NUC-10070 B67-10566 06

Propellant tank pressurization analysis program
I-PS-1506 B67-10625 06

Computer program for Video Data Processing System /TEPS/
NPO-10042 B67-10630 06

Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts
I-PS-13058 B67-10631 06

HICON - Newton-Raphson calculus of variation with automatic transversalities
I-PS-1446E B68-10232 06

Computer program analyzes and designs supersonic wing-body combinations
ARC-10041 B67-10457 06

Computer program uses characteristics method for free-jet investigation
LANGLEP-10079 B67-10509 06

FORTRAN optical lens design program
NFO-10603 B68-10354 06

Analysis of annular combustors
LEWIS-10399 B68-10356 06

Real fluid properties of normal and parahydrogen
LEWIS-10458 B68-10361 06

Axisymmetric two-phase perfect gas performance program
MSC-11774 B68-10374 06

One-dimensional reacting gas nonequilibrium performance program
MSC-11777 B68-10375 06

One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780 B68-10376 06

Axisymmetric reacting gas nonequilibrium performance program
MSC-11781 B68-10377 06

Internal velocity factors
MSC-15002 B68-10403 06

Analysis of filament reinforced metal-shell pressure vessels
LEWIS-10352 B68-10405 06

DSM seven day/twelve week schedule program
NPO-10752 B68-10410 06

Computer program for machine design of Cassegrain feed systems
NPO-10588 B68-10421 06

Symbolic reduction of block diagrams using FORMAC
LEWIS-10409 B68-10423 06

Plume radiation program
I-PS-13202 B68-10447 06

Single degree of freedom antenna pointing program /ANTENA/
NPO-10756 B68-10449 06

A request-oriented information selection program
LEWIS-10255 B68-10451 06

I-326
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>IGNITION SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer program for parameter optimization</td>
<td>freezing of a liquid flowing over a cold surface</td>
</tr>
<tr>
<td>ARC-10168</td>
<td>LEWIS-10813</td>
</tr>
<tr>
<td>Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing</td>
<td></td>
</tr>
<tr>
<td>NUC-10308</td>
<td>B69-10344</td>
</tr>
<tr>
<td>SPAN C - Terminal sterilization process analysis program</td>
<td></td>
</tr>
<tr>
<td>NFO-10805</td>
<td></td>
</tr>
<tr>
<td>Ratio matching of half-bridge weldable strain gages, computer program</td>
<td></td>
</tr>
<tr>
<td>PRC-10032</td>
<td></td>
</tr>
<tr>
<td>Weight Control System</td>
<td></td>
</tr>
<tr>
<td>N-PS-15029</td>
<td></td>
</tr>
<tr>
<td>Structural Analysis and Matrix Interpretive System /SAKIS/</td>
<td></td>
</tr>
<tr>
<td>NFO-10839</td>
<td></td>
</tr>
<tr>
<td>SPAN - Terminal sterilization process analysis program</td>
<td></td>
</tr>
<tr>
<td>NFO-10804</td>
<td></td>
</tr>
<tr>
<td>Midcourse maneuver operations program</td>
<td></td>
</tr>
<tr>
<td>NFO-10735</td>
<td></td>
</tr>
<tr>
<td>Geometry and design point performance of axial flow turbines</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10471</td>
<td></td>
</tr>
<tr>
<td>MAGNET - Program for calculating velocities in magnified region of turbomachines</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10789</td>
<td></td>
</tr>
<tr>
<td>Synthesis of calculation methods for design and analysis of radiation shields for nuclear rocket systems</td>
<td></td>
</tr>
<tr>
<td>N-PS-19467</td>
<td></td>
</tr>
<tr>
<td>Advanced mission analysis program</td>
<td></td>
</tr>
<tr>
<td>GSFC-10575</td>
<td></td>
</tr>
<tr>
<td>Computer programs for axial flow compressor design</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10765</td>
<td></td>
</tr>
<tr>
<td>JFLIF-JPL FORTRAN language with interval pre-processor</td>
<td></td>
</tr>
<tr>
<td>NFO-10635</td>
<td></td>
</tr>
<tr>
<td>Computer program for high pressure real gas effects</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10820</td>
<td></td>
</tr>
<tr>
<td>A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voight line profile</td>
<td></td>
</tr>
<tr>
<td>ARC-10221</td>
<td></td>
</tr>
<tr>
<td>Thermal Network Analyzer Program</td>
<td></td>
</tr>
<tr>
<td>NUC-10540</td>
<td></td>
</tr>
<tr>
<td>Computer program for off-design performance of radial inflow turbines</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10764</td>
<td></td>
</tr>
<tr>
<td>Visual task analysis /VISTA/</td>
<td></td>
</tr>
<tr>
<td>N-PS-19716</td>
<td></td>
</tr>
<tr>
<td>System for computing operational probability equations</td>
<td></td>
</tr>
<tr>
<td>N-PS-16410</td>
<td></td>
</tr>
<tr>
<td>Biomedical bulk data processing program</td>
<td></td>
</tr>
<tr>
<td>PEC-10015</td>
<td></td>
</tr>
<tr>
<td>IFC - Tools made of ice facilitate forming of soft, sticky materials</td>
<td></td>
</tr>
<tr>
<td>KSC-10262</td>
<td></td>
</tr>
<tr>
<td>ICE FORMATION - A method for predicting interfacial</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>I-327</td>
<td></td>
</tr>
</tbody>
</table>
Cold solid propellant motor has stop-restart capability
JPL-836 B66-10673 03

Technique for assessing potential fire hazards
HQ-10279 B69-10287 03

High voltage pulse generator
MSC-12178 B69-10548 01

Burn-rate testing apparatus
MSC-10947 B69-10740 03

Evaluation of ignition mechanisms in selected nonmetallic materials
ISC-11645 B68-10167 03

Ambient temperature catalyst for hydrogens ignition
LECIIS-10551 B68-10520 03

Electromagnetic hammer removes weld distortions from aluminum tanks
I-FS-287 B65-10342 05

Compact SCB trigger circuit for ignitron switch operates efficiently
I-FS-371 B65-10347 01

Beam splitter used in dual filming technique
I-FS-501 B66-10520 03

Circular, explosion-proof lamp provides uniform illumination
MSC-382 B66-10156 02

Optical device enables small detector to see large field of view
WGO-253 B66-10263 02

Legibility of electroluminescent instrument panels investigated
MSC-494 B66-10316 01

A prototype high power portable lamp
M-PS-20229 B69-10189 02

Electrooptical scanning of film
RPO-11106 B69-10568 01

Illuminated display panel is easily changed
MSC-108 B65-10003 05

Panels illuminated by edge-lighted lens technique
MSC-871 B66-10507 02

Energy-storage of a prescribed impedance
RPO-10303 B69-10380 01

Checking flat conductor cable spacing by means of a noise pattern
M-PS-20426 B69-10456 05

Vibration tests on vidicons made by improved method
JPL-SC-115 B66-10042 01

Rectangular-bore, high-gain laser plasma tube
HQ-10234 B69-10193 02

Long range holographic contour mapping concept
HQ-10350 B69-10700 02

Legibility of electroluminescent instrument panels investigated
MSC-494 B66-10316 02

Electron-beam deflection controlled by digital signals
GSFC-385 B65-10283 02

New television camera eliminates vidicon tube
M-PS-472 B66-10112 01

Study made of application of stereoscopic display system to analog computer simulation
M-PS-1263 B66-10550 01

Improved television signal processing system
MPO-10140 B67-10246 01

Mounting method improves electrical and vibrational characteristics of screen electrodes
M-PS-20165 B69-10097 01

VICE-DEGITAL image processing system
NPO-10770 B69-10139 06

Optical automatic gain channel
M-PS-1550 B66-10596 02

Exposure Value /EV/ system expanded to include filter factors and transmittance
LANGLEY-150 B66-10602 02

New electron microscope employs new video display technique
ARG-158 B67-10312 03

Fluorescent particles enable visualization of gas flow
M-PS-15683 B68-10259 02

Occulting-filter method for obtaining flashing-light visibility data
MSC-13097 B69-10107 02

Method of directing a laser beam with very high accuracy
WPO-11087 B69-10508 02

Thermal neutron image intensifier tube provides bright, visible radiographic patterns
ARG-120 B67-10296 02

Aerial-image enables diagrams and animation to be inserted in motion pictures
ARG-165 B67-10398 02

Camera lens adapter magnifies image
M-PS-11955 B67-10431 02

Improved radiographic image amplifier panel
M-PS-15622 B68-10363 02

Shortened processing time technique for color industrial radiography
ARG-10235 B69-10001 02

VICAR-DEGITAL image processing system
NPO-10770 B69-10139 06

Image orthicon design concept for improved photo-scan tube
JPL-818 B67-10157 01

Electronic shutter gates image orthicon on and off
I-328
SUBJECT INDEX

IMAGE TUBES
Vibration tests on vidicons made by improved method
JPL-SC-115  B66-10042  01
Thermal neutron image intensifier tube provides bright visible radiographic pattern
ABC-120  B67-10296  02

IMAGE VELOCITY SENSORS
Plotter design simplifies determination of image sensor transfer characteristic
NPO-10164  B67-10206  01

IMAGES
Modified contour projector makes excellent contour densitometer
LANGLEY-93  B65-10084  02
Fresnel zone plate forms images at wavelengths below 1000 angstroms
GSFC-231  B65-10171  02
Improved head-controlled TV system produces high-quality remote image
ABC-128  B67-10317  01
Fluorescent photography of spray droplets using a laser light source
LWIS-10777  B69-10122  02
Improved combustion chamber optical probe
NSC-10953  B69-10142  02

IMAGING TECHNIQUES
Electro-mechanically operated camera shutter provides uniform exposure
JPL-357  B69-10227  01
Vibration tests on vidicons made by improved method
JPL-SC-115  B66-10042  02
Beam splitter used in dual filming technique
NSC-501  B66-10072  02
Screen of cylindrical lenses produces stereoscopic television pictures
NSC-273  B66-10086  02
Ultraviolet photographic pyrometer used in rocket exhaust analysis
NSC-499  B66-10095  02
Optical device enables small detector to see large field of view
WOO-253  B66-10263  02
Dot patterns provide reproducible flaw areas for study of adhesive bonds
NSC-862  B66-10367  05
Three-axis attitude and direction reference instrument has only one moving part
NSC-1019  B66-10644  01
Means for improving apparent resolution of television
H-SC-65  B67-10152  01
Design concept for improved photo-scan tube
JPL-818  B67-10157  01
Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique
AMB-203  B67-10295  02
Glancing incidence telescope for far ultraviolet and soft X-rays
GSFC-10052  B67-10508  02
Electronic aperture control devised for solid state imaging system
NSC-12428  B68-10028  01
New camera tube improves ultrasonic

IMAGINATION
Focused examination of system
JPL-357  B69-10227  01
Vibration tests on vidicons made by improved method
JPL-SC-115  B66-10042  02
Thermal neutron image intensifier tube provides bright visible radiographic pattern
ABC-120  B67-10296  02

IMAGINATION LOADS
Improved inspection system
AMB-90237  B66-10088  01
Antiglare improvement for optical imaging systems
NPO-10337  B66-10090  02
Color-television medical microscopy
MSC-13086  B68-10314  01
Selective video blanking technique
NSC-20013  B69-10434  01
Imaging slitless spectrometer for X-ray astronomy
NSC-14309  B68-10546  02
Shortened procedure for obtaining reproducible copies of 35 mm color slides
KSC-09957  B68-10560  02
Selective vignetting of Type 1 X-ray telescopes
NSC-10534  B68-10676  01
System converts slow-scan to standard fast-scan TV signals
MSC-90254  B69-10748  01
Image position sensor
NSC-14101  B69-10780  02

IMMIGRATIONS
Pressure transducer 3/8-inch in size can be faired into surface
WOO-065  B64-10021  05
Accurate depth control provided for thermocouple junction locations
LANGLEY-289  B66-10632  01

IMMUNES
New rapid-curing, stable polyamide polymers with high-temperature strength and thermal stability
LWIS-10576  B69-10118  03

IMMUNES
Trace hyrazines in aqueous solutions accurately determined by gas chromatography
HSC-11222  B67-10290  03

IMPACT
Single wrench separates nuts from free-floating bolts
NUC-10013  B67-10158  05

IMPACT ACCELERATION
Kinetico-energy absorber employs frictional force between mating cylinders
LWIS-75  B63-10442  05
Improved holder protects crystal during high acceleration and impact
JPL-463  B65-10037  05
A piezo-bar pressure probe
LWIS-393  B67-10259  01

IMPACT LOADS
Epoxy blanket protects milled part during explosive forming
NSC-307  B66-10029  03
Temperature responsive valve withstands high impact loading
NPO-10186  B67-10225  05
A piezo-bar pressure probe
LWIS-393  B67-10259  01
Manual of typical low temperature

I-329
IIPACT BBSISTAUCB SUBJECT IBDBX

mechanical properties of several materials
N-PS-10331 B69-10179 03

IIPACT RESISTANCE

Improved holder protects crystal during high acceleration and impact
JPL-463 B65-10037 05

Seismometer designed for remote operation in random orientation
JPL-320 B66-10095 01

Critical parts are stored and shipped in environmentally controlled reusable container
N-PS-703 B66-10258 05

Impact and puncture resistant material protects parts free damage
MSC-747 B66-10375 05

One-piece transparent shell improves design of helmet assembly
MSC-187 B66-10390 05

High impact pressure regulator withstands impacts of over 15,000 g
WPO-10175 B67-10274 01

Damages in rolling element bearings may be detected early
HQ-10031 B67-10658 01

Thermal protective visor for entering high temperature areas
MSC-10285 B68-10277 05

IIPACT STRENGTH

Heat treatment study of aluminum casting
alloy #65
N-PS-2397 B67-10159 03

Study made of pneumatic high pressure piping materials /10,000 psi/
MSC-10133 B67-10437 03

Improved high-temperature-strength nickel-base superalloy
LEWIS-10279 B69-10352 03

A sterilizable high-impact antenna
WPO-10231 B69-10697 01

IIPACT TESTS

Break-up of metal tube makes one-time shock absorber, bars rebound
LANGLEY-1 A B63-10304 05

Analysis of problems related to slingshot shock machine high-velocity shock testing
WPO-11913 B69-10506 05

Strain-age cracking in Rene 41 alloy
N-PS-18450 B69-10605 03

IIPACT TOLERANCES

Land landing couch dynamics computer program
MSC-1210 B67-10233 06

High impact pressure regulator withstands impacts of over 15,000 g
WPO-10175 B67-10274 01

Nickel base alloy with improved stress rupture properties
LEWIS-10283 B68-10344 03

Balloon batteries, charged and heated by solar energy
GSPC-10769 B69-10585 01

IIPACTORS

Pneumatic wrench retains or discharges nuts or bolts as desired
WPO-90085 B66-10707 05

Air sampler collects and protects minute particles
HQ-10037 B67-10661 01

Versatile impact hand tool
N-PS-20140 B66-10371 05

IMPEDANCE

Transistorized trigger circuit is frequency-controllable
GSPC-11 B63-10553 01

High-pass RF coaxial filter rejects dc and low frequency signals
GSPC-73 B66-10173 01

Bandwidth switching is transient-free, avoids loss of loop lock
WPO-054 B64-10349 01

Circuit improvement produces monostable multivibrator with load-carrying capability
GSPC-34A B65-10011 01

Helical coaxial-resonator makes excellent RF filter
GSPC-243 B65-10012 01

Zener diode function generator requires no external reference voltage
JPL-0031 B65-10013 01

Photoelectric semiconductor switch operates with low level inputs
JPL-SC-068 B65-10033 01

Microparticle impact sensor measures energy directly
GSPC-252 B65-10048 01

Zener diode is starter for transistor regulated power supply
WPO-0015 B65-10052 01

Vibrating-seabase electrometer has high conversion gain
ARC-38 B65-10056 01

Synchronized pulse generator needs no external power
GSPC-274 B65-10072 01

Tiny biomedical amplifier combines high performance, low power drain
ARC-41 B65-10203 01

Electrometer preamplifier has drift correction feedback
JPL-SC-074 B65-10267 01

Zener diode controls switching of large direct currents
MSC-188 B65-10350 01

Remote preamplifier circuit maintains stability over wide temperature range
WPO-278 B66-10432 01

Miniature electrometer preamplifier effectively compensates for input capacitance
ARC-69 B66-10549 01

MOSFET analog memory circuit achieves long duration signal storage
N-PS-860 B66-10603 01

Transistor biased amplifier minimizes diode discriminator threshold attenuation
ARG-163 B67-10311 01

Field effect transistors improve buffer amplifier
N-PS-916 B67-10334 01

Multiplexer uses insulated gate-field effect transistors
N-PS-13096 B67-10396 01

Silicon strain sensors enable pressure measurement at cryogenic temperatures
N-PS-14703 B68-10262 01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>IMPURITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electron beam selectively seals porous metal filters</td>
<td>Material in human body</td>
</tr>
<tr>
<td>Improved limiter for turn-on current transient</td>
<td>Remotely-actuated biomedical switch</td>
</tr>
<tr>
<td>Linear voltage-to-frequency converter</td>
<td>ARC-10105</td>
</tr>
<tr>
<td>Sweep frequency detector</td>
<td>p69-10087 04</td>
</tr>
<tr>
<td>Automatic Gaussian random-noise limiter</td>
<td>B69-10117 01</td>
</tr>
<tr>
<td>Phase multiplying electronic scanning array</td>
<td>IMPULSIONS</td>
</tr>
<tr>
<td>Nondestructive determination of cohesive strength of adhesive-bonded composites</td>
<td>Fluid behavioral patterns found in sub-scale geysering study</td>
</tr>
<tr>
<td>An unconventional magnetically-coupled multivibrator</td>
<td>JPL-13582</td>
</tr>
<tr>
<td>A theoretical study of radar backscatter from distributed targets with emphasis on polarization dependence</td>
<td>Study of cryogenic container thermodynamics during propellant transfer</td>
</tr>
<tr>
<td>Load current sensor for a pulse width modulator power regulator</td>
<td>p68-10108 02</td>
</tr>
<tr>
<td>IMPEDANCE MATCHING</td>
<td>IMPINGEauben</td>
</tr>
<tr>
<td>Ultrasonic wrench produces leaktight connections</td>
<td>Integral coolant channels supply made by melt-cost method</td>
</tr>
<tr>
<td>Dielectric prisms would improve performance of quasi-optical microwave components</td>
<td>B63-10497 05</td>
</tr>
<tr>
<td>Refractometer for receiver input system</td>
<td>Valve seat pores sealed with thermosetting monomer</td>
</tr>
<tr>
<td>Low-cost, fast-response drive circuit for electromagnetic torque motors</td>
<td>B66-10322 03</td>
</tr>
<tr>
<td>IMPEDANCE MEASUREMENTS</td>
<td>Composite gaskets are compatible with liquid oxygen, resist compression set</td>
</tr>
<tr>
<td>Energy-storage of a prescribed impedance</td>
<td>B66-10395 03</td>
</tr>
<tr>
<td>IMPULSERS</td>
<td>Study made of dielectric properties of promising materials for cryogenic capacitors</td>
</tr>
<tr>
<td>Segmented, arch-bound carbon seal is pressure loaded</td>
<td>B67-10362</td>
</tr>
<tr>
<td>Inflatable bladder to facilitate handling of heavy objects - A concept</td>
<td>B67-10366 03</td>
</tr>
<tr>
<td>Improved design of item in high speed rotating machinery</td>
<td>Refractory-metal compound impregnation of polytetrafluoroethylene</td>
</tr>
<tr>
<td>IMPINGEMENT</td>
<td>LEWIS-10773</td>
</tr>
<tr>
<td>Experiments shed new light on nickel-chlorine reactions</td>
<td>New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability</td>
</tr>
<tr>
<td>Two-fluid, impinging-sheet injector</td>
<td>LEWIS-10576</td>
</tr>
<tr>
<td>A comparison of two methods of measuring particle size of Al2O3 produced by a small rocket motor</td>
<td>B69-10118 03</td>
</tr>
<tr>
<td>IMPLOSIONS</td>
<td>IMPROVEMENT</td>
</tr>
<tr>
<td>Cold solid propellant motor has stop-restart capability</td>
<td>Study made of ductility limitations of aluminum-silicon alloys</td>
</tr>
<tr>
<td>IMPULSERS</td>
<td>B67-12524</td>
</tr>
<tr>
<td>Ceramic materials purified by experimental method</td>
<td>Modification to improve self-isolating transistor arrays</td>
</tr>
<tr>
<td>IMPURITY diffusion process for silicon semiconductors is fast and precise</td>
<td>B69-10678 01</td>
</tr>
<tr>
<td>Portable self-powered device detects internal flaws in tubular structures</td>
<td>IMPULSE GENERATORS</td>
</tr>
<tr>
<td>Trace levels of metallic corrosion in water determined by emission spectrography</td>
<td>Simple device produces accelerometer calibration pulse</td>
</tr>
<tr>
<td>Simplified method introduces drift fields into cells</td>
<td>B66-10038 01</td>
</tr>
</tbody>
</table>

Impurities

- Ceramic materials purified by experimental method
- Impurity diffusion process for silicon semiconductors is fast and precise
- Portable self-powered device detects internal flaws in tubular structures
- Trace levels of metallic corrosion in water determined by emission spectrography
- Simplified method introduces drift fields into cells
IN-FLIGHT MONITORING

Status of ultrachemical analysis for semiconductors
N-PS-2294 B67-10138 03

Trace hydrazines in aqueous solutions accurately determined by gas chromatography
MSC-11222 B67-10250 03

Process control introduction of selected impurities into semiconductor wafers
GSFC-523 B67-10303 01

Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation
ARG-10288 B69-10081 03

Silicon carbide diode for increased light output
K-PS-20063 B69-10096 01

Improved method of fabricating planar gallium arsenide diodes
XMP-04235 B69-10271 01

Improved retort for cleaning metal powders with hydrogen
LEWIS-10718 B69-10468 03

Rectilinear display gives acceleration load factor and velocity information
USC-1045 B67-10248 01

Illuminated display panel is easily changed
MSC-1045 B67-10248 01

Improved carbon electrode reduces arc sputtering
MSC-219 B66-10003 05

Silicon solar cell monitors high temperature furnace operation
NOC-10163 B68-10148 01

Occulting-filter method for obtaining flashing-light visibility data
MSC-13097 B69-10167 02

Testing the flammability of materials exposed to arcs
MSC-15223 B69-10531 03

INCIDENCE

Simple control device senses solar position
JPL-638 B65-10061 01

Glancing incidence telescope for far ultraviolet and soft X-rays
GSFC-10052 B67-10508 02

Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing
NOC-10010 B67-10542 02

INCIDENT RADIATION

Technique for measuring absorptance and existance by using cyclic incident radiation
LEWIS-321 B66-10630 02

Fast-acting calorimeter measures heat output of plasma gun accelerator
LEWIS-388 B67-10192 01

Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry
ARG-210 B67-10236 03

Ellipsoidal-mirror reflectometer accurately measures infrared reflectance of materials
GSFC-566 B67-10444 01

Optometric system facilitates colorimetric and fluorometric measurements
NPO-10233 B68-10316 01

Electron interaction in matter

INCOMPATIBILITY

Glass bead shot peening retards stress corrosion failure of titanium tanks
LANGLEY-319 B67-10198 05

INCOMPRESSIBLE FLOW

CZBD — Chrysler Improved Numerical Differentiating Analyzer computer program
K-PS-2298 B67-10278 06

INCOMPRESSIBLE FLUIDS

Metal parts hydrosized by explosive force
K-PS-209 B67-10170 05

Analysis of dynamic systems with DAPAH computer program
K-PS-13995 B67-10523 06

INCONEL (TRADEMARK)

Grit blasting nozzle fabricated from mild tool steel proves satisfactory
K-PS-1420 B66-10597 05

Wire material reduces compressor blade vibration
LEWIS-357 B66-10666 03

Silver plating technique seals leaks in thin wall tubing joints
NU-0090 B67-10703 05

Cryogenic fatigue data developed for Inconel 718
K-PS-702 B67-10049 03

Undercoat prevents blistering of silver plating at elevated temperatures
K-PS-2049 B67-10096 05

Silver plating ensures reliable diffusion bonding of dissimilar metals
K-PS-1975 B67-10124 03

Materials data handbook, Inconel alloy 718
K-PS-2348 B67-10262 03

Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment
NOC-10083 B67-10350 03

Asbestos and Inconel combined to form hot-gas seal
K-PS-14004 B68-10162 05

Weld microfissuring in Inconel 718 minimized by minor elements
K-PS-16185 B68-10251 03

Hot-cracking studies of Inconel 718 weld heat-affected zones
K-PS-16211 B66-10052 05

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures
K-PS-18192 B69-10068 03

Handbook for design of containers of fluids and gases for spacecraft
K-PS-20502 B69-10279 05

Improved nickel plating of Inconel X-750
K-PS-18604 B69-10463 05

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys
NOC-10554 B69-10707 02

INDEPENDENT VARIABLES

Mechanical properties of plastics predetermined by empirical method
NMC-2B B66-10068 03

Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379 01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>INDEPENDENT VARIABLES CONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study made of application of stereoscopic display system to analog computer simulation</td>
<td>material through variety of parameters</td>
</tr>
<tr>
<td>N-PS-1263</td>
<td>N-PS-12938 B67-10545 01</td>
</tr>
<tr>
<td>Treatment increases stress-corrosion resistance of aluminum alloys</td>
<td>Independent doubly truncated gamma variables</td>
</tr>
<tr>
<td>N-PS-1840</td>
<td>N-PS-20143 B68-10345 02</td>
</tr>
<tr>
<td>Study of theory and application of long duration heat flux transducers</td>
<td>Controllability of distributed-parameter systems</td>
</tr>
<tr>
<td>N-PS-1265</td>
<td>N-PS-14929 B68-10346 02</td>
</tr>
<tr>
<td>Magnetoresistor monitors relay performance</td>
<td>Computer program for parameter optimization</td>
</tr>
<tr>
<td>N-PS-1754</td>
<td>HABC-10168 B68-10453 06</td>
</tr>
<tr>
<td>Computer program reduces calculation time of normal response functions</td>
<td>SPAN C - Terminal sterilization process analysis program</td>
</tr>
<tr>
<td>N-PS-1517</td>
<td>NPO-10805 B69-10039 06</td>
</tr>
<tr>
<td>Computer program calculates monotonic maximum likelihood estimates using method of reversals</td>
<td>Analysis of magnetically-controlled processes in pulse-modulation systems</td>
</tr>
<tr>
<td>N-PS-1516</td>
<td>GSPC-10241 B69-10070 01</td>
</tr>
<tr>
<td>Master control data handling program uses automatic data input</td>
<td>ASTRAJ on-site tracking prediction program</td>
</tr>
<tr>
<td>N-PS-2259</td>
<td>NPO-10836 B69-10103 06</td>
</tr>
<tr>
<td>Multiple correlation computer program determines relationships between several independent and dependent variables</td>
<td>SPAN - Terminal sterilization process analysis program</td>
</tr>
<tr>
<td>N-PS-13024</td>
<td>NPO-10804 B69-10104 06</td>
</tr>
<tr>
<td>Computer optimization program finds values for several independent variables that minimize a dependent variable</td>
<td>Computer programs for axial flow compressor design</td>
</tr>
<tr>
<td>N-PS-13030</td>
<td>LEWIS-10745 B69-10174 06</td>
</tr>
<tr>
<td>General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions</td>
<td>Thermal Network Analyzer Program</td>
</tr>
<tr>
<td>N-PS-13094</td>
<td>NUC-10540 B69-10239 06</td>
</tr>
<tr>
<td>Computer program VABI-QUIR 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations</td>
<td>Simplified system displays complex curves corresponding to input data</td>
</tr>
<tr>
<td>NUC-10052</td>
<td>HQ-10073 B69-10247 01</td>
</tr>
<tr>
<td>Multiple meter monitoring circuits served by single alarm</td>
<td>Computer program for off-design performance of radial inflow turbines</td>
</tr>
<tr>
<td>MSC-10984</td>
<td>LEWIS-10764 B69-10267 06</td>
</tr>
<tr>
<td>High power dc/dc and dc/ac electrical power conversion techniques developed</td>
<td>New passive telemetry system</td>
</tr>
<tr>
<td>N-PS-13227</td>
<td>HQ-10214 B69-10312 01</td>
</tr>
<tr>
<td>Study made to establish parameters and limitations of explosive welding</td>
<td>The effect of mismatched components on microwave noise-temperature calibrations</td>
</tr>
<tr>
<td>N-PS-13006</td>
<td>NPO-11163 B69-10331 03</td>
</tr>
<tr>
<td>Wear studies made of slip rings and gas bearing components</td>
<td>Prediction of thermal radiation from a rocket's exhaust plume</td>
</tr>
<tr>
<td>N-PS-12802</td>
<td>N-PS-20414 B69-10371 02</td>
</tr>
<tr>
<td>Computer program generates averaged value data tapes</td>
<td>Wall-thickness changes predicted in hollow-drawn tubing</td>
</tr>
<tr>
<td>N-PS-12728</td>
<td>ARG-10625 B69-10428 02</td>
</tr>
<tr>
<td>Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors</td>
<td>Crossed-beam technique for measuring horizontal winds</td>
</tr>
<tr>
<td>N-PS-1887</td>
<td>N-PS-20160 B69-10447 02</td>
</tr>
<tr>
<td>Computer program HCAP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solid</td>
<td>Optimizing solar-cell grid geometry</td>
</tr>
<tr>
<td>NUC-10043</td>
<td>HQ-10417 B69-10460 01</td>
</tr>
<tr>
<td>Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures</td>
<td>Method for determining properties of microinstabilities of a magnetized plasma</td>
</tr>
<tr>
<td>LANLEY-10090</td>
<td>HQ-10447 B69-10462 02</td>
</tr>
<tr>
<td>DYANA - An advanced programming system for large classes of dynamic and equivalent systems</td>
<td>Stereo TV enhancement study</td>
</tr>
<tr>
<td>N-PS-12084</td>
<td>N-PS-14805 B69-10497 01</td>
</tr>
<tr>
<td>Instrumentation monitors transported</td>
<td>Rate of heat extraction controller for environmental control</td>
</tr>
<tr>
<td></td>
<td>HQ-10318 B69-10516 01</td>
</tr>
<tr>
<td>MINILOGAR - An advanced programming system for large classes of dynamic and equivalent systems</td>
<td>Miniaturized high-resolution mass/charge spectrometer /design study/</td>
</tr>
<tr>
<td>N-PS-13777</td>
<td>MSC-13279 B69-10554 02</td>
</tr>
<tr>
<td>Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow</td>
<td>A theoretical study of radar backscatter from distributed targets with emphasis on polarization dependence</td>
</tr>
<tr>
<td></td>
<td>N-PS-13775 B69-10560 02</td>
</tr>
</tbody>
</table>
boiling loop
ARG-10461 B69-10620 02
Optimum structural design based on reliability and proof-load testing
NPO-11228 B69-10723 31

INDICES (DOCUMENTATION)

JPKWIC - General key word in context and subject index report generator
NPO-10589 B69-10208 06
Direct reading of electrocardiograms and respiration rates
KSC-10233 B69-10168 04
Microelectronic device data handbook
BSC-10322 B69-10687 01

INDICES (RATIOS)

Gear drive automatically indexes rotary table
K-PS-753 B66-10383 05
Multilayer infrared beam splitter film system
XGS-11036 B69-10260 02

INDICATING INSTRUMENTS

Coaxial capacitor used to determine fluid density
LEWIS-232 B65-10296 02
Depth indicator and stop aid machining to precise tolerances
M-PS-553 B66-10149 05
Device facilitates centering of work pieces in lathe chuck
M-PS-605 B66-10277 05
Legibility of electroluminescent instrument panels investigated
BSC-494 B66-10316 02
Minimum permissible leakage resistance established for instrumentation systems
M-PS-848 B66-10397 01
Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket
M-PS-888 B66-10412 01
Portable fixture facilitates pressure testing of instrumentation fittings
M-PS-2032 B67-10121 03
IR vidicon scanner monitors many test points
M-PS-1937 B67-10277 01
Precision capacitor has improved temperature and operational stability
ARG-189 B67-10313 01
Conceptual nonorthogonal gyro configuration for guidance and navigation
BSC-11933 B67-10433 01
Transistor sensor development
M-PS-13370 B67-10471 01
Low cost SCR lamp driver indicates contents of digital computer registers
GSFC-10221 B67-10656 01
Reflectometer for receiver input system
NPO-10843 B67-10657 01
Dampers in rolling element bearings may be detected early
HG-10031 B67-10658 01
Detection and location of metallic objects imbedded in nonmetallic structures
M-PS-14790 B68-10183 01
Automatic, nondestructive test monitors in-process weld quality
M-PS-14996 B68-10333 01

SUBJECT INDEX

Superconductive thin film makes convenient liquid helium level sensor
LANGLEY-10289 B69-10341 01
Remotely operated gripper provides vertical control rod movement
ARG-10560 B69-10589 05
Low-cost voltage-level detector
LEWIS-10685 B69-10217 01
Leakage tester for flat conductor cable connector
K-PS-20427 B69-10284 05
Identification of thermostate material
M-PS-18540 B69-10356 01
Battery charge-discharge controller
BSC-11836 B69-10747 01

INDICATORS

Test strips detect different CO2 concentrations in closed compartments
KSC-210 B65-10390 03
Conceptual apparatus for detecting leaks of nonconductive liquids
M-PS-14713 B68-10303 01

INDIUM

Indium foil with beryllia washer improves transistor heat dissipation
GSFC-82 B69-10031 01
Mounting for diodes provides efficient heat sink
M-PS-197 B68-10283 01
Mounting improves heat-sink contact with beryllia washer
M-PS-194 B66-10144 01
Environmental study of miniature slip rings
M-PS-2443 B67-10210 05
Practical new method of measuring thermal-neutron fluence
NPO-10086 B67-10352 02
Neutrons detector simultaneously measures fluence and dose equivalent
ARG-10071 B67-10597 02
Indium adhesion provides quantitative measure of surface cleanliness
SAN-10024 B68-10342 01

INDIUM ALLOYS

Gallium alloy films investigated for use as boundary lubricants
LEWIS-245 B66-10165 03
Cryogenic seal remains leak tight during thermal displacement
BSC-96 B67-10134 02

INDUCTANCE

Tiny sensor-transmitter can withstand extreme acceleration, given digital output
ARC-22 B65-10561 01
Simple circuit produces high-speed, fixed duration pulses
GSFC-285 B65-10228 01
Increased junction lead inductance ballasts high-frequency transistors
GSFC-387 B65-10259 01
Large capacitor provides a distributed parameter pulse line
LEWIS-176 B66-10291 01
Improved circuit for measuring capacitive and inductive reactances
M-PS-13083 B67-10513 01

Roebius resistor is noninductive and
**SUBJECT INDEX**

<table>
<thead>
<tr>
<th>Nonreactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAR-10020</td>
</tr>
<tr>
<td>B68-10267</td>
</tr>
</tbody>
</table>

**High-Voltage Pulse Generator Developed for Wide-Gap Spark Chambers**

<table>
<thead>
<tr>
<th>High-Voltage Pulse Generator</th>
</tr>
</thead>
<tbody>
<tr>
<td>SACE-10136</td>
</tr>
<tr>
<td>B68-10283</td>
</tr>
</tbody>
</table>

**Induction Probe Determines Levels of Liquid Metals**

<table>
<thead>
<tr>
<th>Induction Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABG-10348</td>
</tr>
<tr>
<td>B69-10256</td>
</tr>
</tbody>
</table>

**Synchronous Charge-Constrained Electroquasistatic Generator**

<table>
<thead>
<tr>
<th>Synchronous Charge-Constrained Electroquasistatic Generator</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ-10231</td>
</tr>
<tr>
<td>B69-10461</td>
</tr>
</tbody>
</table>

**Design of Printed Circuit Coils**

<table>
<thead>
<tr>
<th>Design of Printed Circuit Coils</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ-10431</td>
</tr>
<tr>
<td>B69-10665</td>
</tr>
</tbody>
</table>

**INDUCTION HEATING**

**Removable Preheater Elements Improve Oxide Induction Furnace**

<table>
<thead>
<tr>
<th>Removable Preheater Elements Improve Oxide Induction Furnace</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPL-298</td>
</tr>
<tr>
<td>B63-10193</td>
</tr>
</tbody>
</table>

**Apparatus Facilitates Pressure-Testing of Metal Tubing**

<table>
<thead>
<tr>
<th>Apparatus Facilitates Pressure-Testing of Metal Tubing</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWIS-174</td>
</tr>
<tr>
<td>B65-10131</td>
</tr>
</tbody>
</table>

**Refractory Metal Shielding /Insulation/ Increases Operating Range of Induction Furnace**

<table>
<thead>
<tr>
<th>Refractory Metal Shielding /Insulation/ Increases Operating Range of Induction Furnace</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWIS-202</td>
</tr>
<tr>
<td>B65-10188</td>
</tr>
</tbody>
</table>

**Complementary System Vaporizes Subcooled Liquid, Improves Transformer Efficiency**

<table>
<thead>
<tr>
<th>Complementary System Vaporizes Subcooled Liquid, Improves Transformer Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-PS-550</td>
</tr>
<tr>
<td>B66-10045</td>
</tr>
</tbody>
</table>

**Hydrogen-atmosphere Induction Furnace Has Increased Temperature Range**

<table>
<thead>
<tr>
<th>Hydrogen-atmosphere Induction Furnace Has Increased Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWIS-153</td>
</tr>
<tr>
<td>B66-10055</td>
</tr>
</tbody>
</table>

**Auxiliary Coil Controls Temperature of RF Induction Heater**

<table>
<thead>
<tr>
<th>Auxiliary Coil Controls Temperature of RF Induction Heater</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSPC-428</td>
</tr>
<tr>
<td>B66-10067</td>
</tr>
</tbody>
</table>

**Refractory Coating Protects Intricate Graphite Elements from High-Temperature Hydrogen**

<table>
<thead>
<tr>
<th>Refractory Coating Protects Intricate Graphite Elements from High-Temperature Hydrogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW-0027</td>
</tr>
<tr>
<td>B66-10094</td>
</tr>
</tbody>
</table>

**Rotating Magnetic Poles Used to Pump Mercury**

<table>
<thead>
<tr>
<th>Rotating Magnetic Poles Used to Pump Mercury</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWIS-276</td>
</tr>
<tr>
<td>B66-10343</td>
</tr>
</tbody>
</table>

**Tungsten Insulated Susceptor Cup for High Temperature Induction Furnace Eliminates Contamination**

<table>
<thead>
<tr>
<th>Tungsten Insulated Susceptor Cup for High Temperature Induction Furnace Eliminates Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWIS-283</td>
</tr>
<tr>
<td>B66-10538</td>
</tr>
</tbody>
</table>

**Miniaturized Ring Furnace Permits Absorption Spectroscopy of Small Samples**

<table>
<thead>
<tr>
<th>Miniaturized Ring Furnace Permits Absorption Spectroscopy of Small Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABG-10177</td>
</tr>
<tr>
<td>B66-10418</td>
</tr>
</tbody>
</table>

**Plasma-heating by Induction**

<table>
<thead>
<tr>
<th>Plasma-heating by Induction</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWIS-10526</td>
</tr>
<tr>
<td>B69-10185</td>
</tr>
</tbody>
</table>

**Niobium-Uranium Alloys with Voids of Predetermined Size and Total Volume**

<table>
<thead>
<tr>
<th>Niobium-Uranium Alloys with Voids of Predetermined Size and Total Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABG-10490</td>
</tr>
<tr>
<td>B69-10641</td>
</tr>
</tbody>
</table>

**INDUCTORS**

**Circuit Controls Transients in SCR Inverters**

<table>
<thead>
<tr>
<th>Circuit Controls Transients in SCR Inverters</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSPC-120</td>
</tr>
<tr>
<td>B63-10600</td>
</tr>
</tbody>
</table>

**Tunnel-diode Circuit Features Zero-level Clipping**

<table>
<thead>
<tr>
<th>Tunnel-diode Circuit Features Zero-level Clipping</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSPC-241</td>
</tr>
<tr>
<td>B65-10002</td>
</tr>
</tbody>
</table>

**Carbon Arc Ignition Improved by Simple Auxiliary Circuit**

<table>
<thead>
<tr>
<th>Carbon Arc Ignition Improved by Simple Auxiliary Circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC-103</td>
</tr>
<tr>
<td>B65-10018</td>
</tr>
</tbody>
</table>

**Voltage Controlled Oscillator is Easily Aligned, Has Low Phase Noise**

<table>
<thead>
<tr>
<th>Voltage Controlled Oscillator is Easily Aligned, Has Low Phase Noise</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPL-510</td>
</tr>
<tr>
<td>B65-10223</td>
</tr>
</tbody>
</table>

**Simple Circuit Produces High-speed, Fixed Duration Pulses**

<table>
<thead>
<tr>
<th>Simple Circuit Produces High-speed, Fixed Duration Pulses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**INDUSTRIAL PLANTS**

**Computer Program Conducts Facilities Utilization and Occupancy Survey**

<table>
<thead>
<tr>
<th>Computer Program Conducts Facilities Utilization and Occupancy Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPO-10326</td>
</tr>
<tr>
<td>B67-10476</td>
</tr>
</tbody>
</table>

**INDUSTRIAL SAFETY**

**Emergency Escape System Protects Personnel from Explosion and Fire**

<table>
<thead>
<tr>
<th>Emergency Escape System Protects Personnel from Explosion and Fire</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSC-66-12</td>
</tr>
<tr>
<td>B66-10634</td>
</tr>
</tbody>
</table>

**Handbooks Describe Eddy Current Techniques Used in Nondestructive Testing of Metal Parts and Components**

<table>
<thead>
<tr>
<th>Handbooks Describe Eddy Current Techniques Used in Nondestructive Testing of Metal Parts and Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-PS-13172</td>
</tr>
<tr>
<td>B67-10374</td>
</tr>
</tbody>
</table>

**Safety Yoke Would Protect Construction Workers from Falling E materials**

<table>
<thead>
<tr>
<th>Safety Yoke Would Protect Construction Workers from Falling E materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSC-10075</td>
</tr>
<tr>
<td>B67-10445</td>
</tr>
</tbody>
</table>

**Technique for Assessing Potential Fire Hazards**

<table>
<thead>
<tr>
<th>Technique for Assessing Potential Fire Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ-10279</td>
</tr>
<tr>
<td>B69-10287</td>
</tr>
</tbody>
</table>

**INDUSTRIES**

**Computer Simulation Program Is Adaptable to Industrial Processes**

<table>
<thead>
<tr>
<th>Computer Simulation Program Is Adaptable to Industrial Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWIS-240</td>
</tr>
<tr>
<td>B66-10426</td>
</tr>
</tbody>
</table>

**Weight Control System**

<table>
<thead>
<tr>
<th>Weight Control System</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-PS-15025</td>
</tr>
<tr>
<td>B69-10041</td>
</tr>
</tbody>
</table>

**An Improved Method for Electrical Cable Terminations**

<table>
<thead>
<tr>
<th>An Improved Method for Electrical Cable Terminations</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPO-10694</td>
</tr>
<tr>
<td>B69-10327</td>
</tr>
</tbody>
</table>

**Sealed Container Sampling Device**

<table>
<thead>
<tr>
<th>Sealed Container Sampling Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSPC-10690</td>
</tr>
<tr>
<td>B69-10682</td>
</tr>
</tbody>
</table>

**INELASTIC COLLISIONS**

**The Response of Monoenergetic Gamma Rays in Finite Media Are Investigated**

<table>
<thead>
<tr>
<th>The Response of Monoenergetic Gamma Rays in Finite Media Are Investigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARG-10295</td>
</tr>
<tr>
<td>B69-10080</td>
</tr>
</tbody>
</table>

**INELASTIC SCATTERING**

**Dual-mode Operation of a Neutron Source, a Concept**

<table>
<thead>
<tr>
<th>Dual-mode Operation of a Neutron Source, a Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

I-335
**INERTIAL ATMOSPHERE**

**INERTIAL NAVIGATION**

- Ring laser angle encoder
  - MSC-13099
  - B69-10115

**INERTIAL REFERENCE SYSTEMS**

- Conceptual monolithic gyro configuration for guidance and navigation
  - MSC-11363
  - B67-10433

**INFLATABLE STRUCTURES**

- New inflatable liferaft is nontippable
  - MSC-44
  - B66-10001

- Inflatable bladder provides accurate calibration of pressure switch
  - MSC-367
  - B65-10279

- Buoyant stokes litter assembly used for sea rescue operations
  - MSC-131
  - B66-10019

- Rotating mandrel speeds assembly of plastic inflatables
  - LANGLY-155
  - B66-10137

- Self-inflating lifevest stores in small package
  - MSC-51
  - B66-10184

- Flexible fastener effects airtight material closure
  - JPL-684
  - B66-10304

- Inflatable holding fixture permits X-rays to be taken of inert weld areas
  - MSC-856
  - B66-10327

- Portable lightweight cell provides controlled environment
  - MSC-648
  - B66-10370

- Inflatable O-ring seal would ease closing of hatch cover plate
  - MSC-740
  - B66-10385

- Pneumatic raft automatically reforms after rupture of buoyant member
  - MSC-11562
  - B66-10011

- Inflatable bladder to facilitate handling of heavy objects
  - MSC-131
  - B66-10019

**INFLATING**

- Buoyant stokes litter assembly used for sea rescue operations
  - MSC-131
  - B66-10019

**INFORMATION**

- Encode/Decode facility for FORTRAN 4
  - ARG-10335
  - B69-10169

**INFORMATION RETRIEVAL**

- Pickup device reads pressures from ports in rotating mechanisms
  - LEUIS-158
  - B66-10021

- Computer program searches characteristic data of diodes and transistors
  - GSPC-493
  - B66-10529

- Optical automatic gain channel
  - MSC-11594
  - B66-10155

- JPL-10089 - General key word in context and subject index report generator
  - B66-10208

- Long-term data storage and retrieval system, a concept
  - MSC-14789
  - B66-10505

**INFRARED DETECTORS**

- Infrared television used to detect hydrogen fires
  - B69-10184
Infrared radiometer
Development of dual solid cryogens for high reliability refrigeration system

Photoelectric sensor output controlled by eyeball movements

PTFE-aluminum films serve as neutral density filters

Infrared television used to detect hydrogen fires

Thin film thermal detector

Inexpensive infrared source improvised from flashlight

Infrared viewing permits human iris response studies

An infrared television system for hydrogen flame detection

Electro-optic modulator for infrared laser using gallium arsenide crystal

Repetitively pulsed, wavelength-selective carbon dioxide laser

Surface temperature mapping with infrared photographic pyrometry

IR-transmission glasses formed from oxides of bismuth and tellurium

Infrared shield facilitates optical pyrometer measurements

Wedge immersed thermistor bolometer measures infrared radiation

Inexpensive infrared source improvised from flashlight

Optical gyro pickup operates at cryogenic temperatures

High-speed furnace uses infrared radiation for controlled brazing

Gimbaled-mirror scanning system capable of spiral pattern

Optical integrating sphere operates at visible and infrared wavelengths

Standards for compatibility of printed circuit and component lead materials

Automatic, nondestructive test monitors in-process weld quality

Surface temperature mapping with infrared photographic pyrometry

Method for copper staining of germanium crystals

Thermal calibration target

Radiometric temperature reference

Multichannel spectroscopy guide

Spacecraft Thermal Radiation Environment Computer Program

Inexpensive infrared source improvised from flashlight

Optical video pickoff operates at cryogenic temperatures

Gimbaled-mirror scanning system capable of spiral pattern

A ceramic composite thermal insulation

Solid-state switching used to speed up capacitive integrator

Twin helix system produces fast scan in infrared detector

IR vidicon scanner monitors many test points

Gimbaled-mirror scanning system capable of spiral pattern

Calculation of infrared spectral transmittances of inhomogeneous gases

Study made of far infrared spectra of silicate minerals

Xenon fluorides show potential as fluorinating agents

Detection of molecular infrared spectra

Multilayer infrared beamsplitter film system

Molecular radiation - its application in physical measurements and analyses

Infrared spectrophotometers

Infrared spectroscopy
Automatic gain control circuit handles wide input range
MSC-166  B66-10089  01

Electropneumatic transducer automatically limits actuator current
LEWIS-253  B66-10160  01

Offset lenses add versatility to phototypesetting machine
EQ-9   B66-10173  02

Electronic circuit provides accurate sensing and control of dc voltage
RU-9089  B66-10591  01

MOSFET analog memory circuit achieves long duration signal storage
M-FS-860  B66-10603  01

Transistor biased amplifier minimizes diode discriminator threshold attenuation
ARG-163  B66-10311  01

Field effect transistors improve buffer amplifier
M-FS-916  B67-10334  01

Limit circuit prevents overdriving of operational amplifier
NUC-10082  B67-10343  01

Digital-to-analog converter operates from low level inputs
JPL-907  B67-10357  01

Circuit automatically calibrates flowmeter against liquid-level gage reference
M-FS-2194  B67-10376  01

Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors
M-FS-1887  B67-10434  01

Material fatigue data obtained by card-programmed hydraulic loading system
LANGLEY-10042  B67-10491  03

Input gate circuit converted for use as linear amplifier
M-FS-14265  B68-10015  01

Tool reconstructs data input points corresponding to first order output graph
M-FS-10003  B68-10158  02

Parallel-to-serial biphase-data converter
MSC-11600  B68-10241  01

Self-starting circuit for switching regulators
LEWIS-10686  B69-10128  05

MAGITY - Program for calculating velocities in magnified region of turbo machines
LEWIS-10789  B69-10132  06

Encode/Decode facility for FORTRAN
ARG-10335  B69-10169  06

Magnetically coupled emission regulator
GSFC-10056  B69-10213  01

Multichannel analyzers at high rates of input
ABO-10355  B69-10218  02

Low-cost voltage-level detector
LEWIS-10885  B69-10217  01

Simplified system displays complex curves corresponding to input data
EQ-10073  B69-10247  01

Root-cubing and general root-powering methods for finding zeros of polynomials
ARG-10444  B69-10424  02

Special purpose computer provides programmable digital filter for sampled-data control systems
M-FS-20290  B69-10454  06

Live-timer method of automatic dead-time correction for precision counting
ABO-10478  B69-10612  01

COGENT programming manual
ABO-10463  B69-10656  06

INPUT/OUTPUT ROUTINES
Human transfer functions used to predict system performance parameters
LANGLEY-203  B66-10379  01

System monitors discrete computer inputs
M-FS-1021  B66-10389  01

Polynomial manipulator AP-168
MSC-1231  B67-10103  01

Structural Analysis and Matrix Interpretive System /SAMIS/
ABO-10130  B67-10171  01

Computer program simulates physical systems by solving the simultaneous differential equations describing the systems
NUC-10049  B67-10193  06

An conceptual, parallel operating data compression processor
NUO-10068  B67-10204  01

Master control data handling program uses automatic data input
M-FS-2259  B67-10280  06

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes
NUC-10143  B67-10665  06

Reducing quantizer deadband with a range switching digital filter
M-FS-20419  B69-10259  01

JPL lookangle program
MSC-13179  B69-10370  06

Wide-band doubler and sine wave quadrature generator
ABO-11133  B69-10383  01

Simplified, reliable circuit sorts binary numbers in order of magnitude
NUO-10112  B69-10503  01

INSECTS
Investigation of temperature dependence of development and aging
ABO-10145  B69-10022  04

INSERTION LOSS
Improved insertion-loss tester
JPL-358  B64-10080  01

Microwave technique measures plasma characteristics
LANL-134  B65-10122  02

Composite filter steepens rejection slopes in microwave application
GSFC-480  B66-10393  01

Low-loss C-band parasitic probe
KSC-09348  B69-10251  01

A compact rotary vane attenuator
NUO-10562  B69-10427  01

I-339
Rotary antenna attenuator
NFO-10648 B69-10502

Gate valve with ceramic-coated base operates
at high temperatures
ARC-23 B63-10562

Expandable insert serves as screw anchor
MSC-301 B66-10132

Insert sleeve prevents tube soldering
contamination
MSC-552 B66-10238

Study made to control depth of potting
compound for honeycomb sandwich fasteners
LEWIS-370 B66-10677

An improved nuclear magnetic resonance
spectrometer
JPL-762 B67-10234

Flared-tube fittings with replaceable seat
inserts
MSC-15372 B69-10519

An electrical connector pin protector
MSC-15660 B69-10742

Crack detection method is safe in presence of
liquid oxygen
M-FS-236 B65-10107

Surfactant for dye-penetrant inspection is
insensitive to liquid oxygen
M-FS-475 B66-10131

Ultrasonic recording scanner used for
nondestructive weld inspection
M-FS-284 B66-10220

Ultrasonic quality inspection of bonded
honeycomb assemblies is automated
MSC-829 B66-10546

System enables dimensional inspection of
very large structures
M-FS-2477 B67-10218

Improved ultrasonic TV images achieved by
use of Lamb-wave orientation technique
ARG-203 B67-10295

Thermal neutron image intensifier tube
provides brightly visible radiographic
patterns
ARG-120 B67-10296

Low-energy gamma ray inspection of brazed
aluminum joints
MSC-1189 B67-10337

Test and inspection for process control of
monolithic circuits
M-FS-13084 B67-10507

Plastic shoe facilitates ultrasonic
inspection of thin wall metal tubing
MUC-10010 B67-10542

Connector shorting cap provides pin
alignment, inspection, and stray voltage
protection
M-FS-13111 B67-10635

Optical system facilitates inspection of
printed circuit boards
GSPC-07971 B68-10021

New camera tube improves ultrasonic
inspection system
ARG-90237 B68-10088

Inspection criteria ensure quality control
of parallel gap soldering
M-FS-14530 B68-10257

Training manuals for nondestructive testing
using magnetic particles
M-FS-20187 B68-10391

Reidentifying hardware after loss of serial
number
M-FS-18133 B69-10059

Improved combustion chamber optical probe
MSC-10953 B69-10142

Surface irregularities detected by flare
inspection instrument
M-FS-20157 B69-10152

Instrumentation for nondestructive testing
of composite honeycomb materials
M-FS-20405 B69-10366

Low-cost tool minimizes damage to O-rings
during installation
MSC-140 B65-10116

Micro miniature thermocouple monitors own
installation
M-FS-1111 B66-10463

Pressure probe compensates for dimensional
tolerance variations
LEWIS-302 B66-10599

Thermocouples easily installed in hard-to-
get-to places
M-FS-1986 B66-10653

Tool facilitates installation of Marson
clamps
M-FS-2039 B67-10105

Application of distorted models in
developing scaled structural models
M-FS-2540 B67-10321

Vacuum jacketed transfer line installation
technique
M-FS-14896 B68-10125

Two-axis winch installer for heavy ducts
in confined space
M-FS-14254 B69-10062

Low-cost, fast-response drive circuit for
electromagnetic torque motors
LEWIS-10143 B68-10386

Coincident switch closing reduces error in
motor-driven timer
JPL-182 B63-10143

Computer program determines performance
efficiency of remote measuring systems
M-FS-1137 B66-10503

Instrument quickly transposes
ground reference
target to eye level
MSC-275 B66-10061

Seismometer designed for remote operation in
random orientation
JFL-320 B66-10085

Mount enables precision adjustment of
optical-instrumentation mirror
MSC-184 B66-10199

Three-axis attitude and direction reference
instrument has only one moving part
M-FS-1819 B66-10644

Improved ultrasonic TV images achieved by
SUBJECT INDEX

use of Lamb-wave orientation technique
ARO-203 B67-10295 02

INSTRUMENT PACKAGES

New package for Belleville spring permits
rate change, easy disassembly
JPL-392 B67-10247 05

Organic reactants rapidly produce plastic foam
LANGLEY-37 B65-10288 03

INSTRUMENTS

Instrument adjustment knob locks to prevent
accidental maladjustment
M-FS-190 B66-10249 05

Compact assembly generates plastic foam,
inflates flotation bag
LANGLEY-96 B65-10090 05

Gapped toroid provides infinite resolution
of delay-line pickup
GSFC-370 B65-10258 01

Multiple meter monitoring circuits served
by single alarm
MSC-10904 B67-10369 01

Environmental test planning, selection
and standardization aids available
SAN-10020 B66-10445 06

Dewpoint temperature inversions analyzed
ARG-10316 B65-10057 02

Restricted-flow junction between liquids
NPO-10682 B65-10098 05

INSULATED STRUCTURES

Vacuum chamber provides improved insulation
and support for cryostat
M-FS-415 B65-10368 02

INSULATION

Low-cost insulation system for cryostats
eliminates need for a vacuum
LEWIS-64 B66-10356 03

Composite, vacuum-jacketed tubing replaces
bellows in cryogenic systems
LEWIS-67 B65-10368 05

Ionization vacuum gage starts quickly, is
unaffected by spurious currents
JPL-304 B65-10057 02

Cutter and stripper reduces coaxial cable
connection time
ABC-40 B65-10094 05

Spherical electrode eliminates high-voltage
breakdown
LEWIS-155 B65-10139 01

Refractory oxides evaluated for
high-temperature use
LANGLEY-121 B65-10167 03

Electronic modules easily separated from heat
sink
MSC-142 B65-10186 02

Thin transparent films formed from powdered
glass
GSFC-352 B65-10217 03

Insulation accelerates rate of cooling with
cryogenic fluid
MSC-161 B65-10240 02

Closed fluid system without moving parts
controls temperature
LEWIS-222 B65-10331 02

Soluble undercoating facilitates removal of
foamed-in-place insulation
LEWIS-193 B65-10384 03

Air-cured ceramic coating insulates against
high heat fluxes
M-FS-150 B65-10357 03

Nylon bit removes cork insulation without
damage to substrate
MSC-381 B66-10152 05

Argon purge gas cooled by chill box
M-FS-560 B66-10153 02

Cold solid propellant motor has stop-restart
capability
JPL-836 B66-10673 03

Technique for stripping Teflon insulated
wire
M-FS-1774 B67-10048 05

Jacketed cryogenic piping is stress
relieved
M-FS-905 B67-10308 05

Cut-through tester accurately measures
insulation failure rates
M-FS-12506 B67-10354 03

Mechanical properties of wire insulation
automatically determined
MSC-10983 B67-10370 01

Multiplexer uses insulated gate-field
effect transistors
M-FS-13096 B67-10396 01

Temperature-sensed cryogenic bleed maintains
liquid state in transfer line
M-FS-12681 B67-10424 01

Adhesives for laminating polyside
insulated flat conductor cable
M-FS-12064 B67-10429 03

Hand-operated plug insertion valve
M-FS-12019 B67-10466 05

High temperature thermocouple design
provides gas cooling without increasing
overall size of unit
MSC-10515 B66-10497 01

Flat cable insulation stripping machine
M-FS-13776 B67-10581 05

Method of measuring thermal conductivity of
high performance insulation
M-FS-14088 B68-10013 02

Panelized high performance multilayer
insulation
M-FS-14023 B68-10031 03

Simple test for physical stability of
cryogenic task insulation
M-FS-12547 B66-10048 03

Lightweight heater generates high
temperatures from low current
SAN-10004 B66-10223 01

Mobius resistor is noninductive and
nonreactive
SAM-10020 B66-10267 01

Fiber glass prevents cracking of
cryogenic foam insulation on cryogenic
vessels
M-FS-20056 B66-10406 02

Device for diode tuning in a stripline
varactor harmonic multiplier
M-FS-20153 B69-10013 01

Thermal radiation shields for piping in
cryogenic environments
LEWIS-10859 B66-10262 03

Development of structural test articles
from magnesium-lithium and beryllium
M-FS-14959 B65-10417 03
Automated plotting of equipotentials
NFO-1134 B69-10570 01

Balloon batteries, charged and heated by solar energy
GSPC-10769 B69-10585 01

Liquid oxygen-compatible insulation system
M-FS-16113 B69-10599 03

Reducing contact resistance at semiconductor
metal or aluminum to metal interfaces
ERC-10234 B69-10689 01

Welded pressure transducer made as small as 1/8th-inch in diameter
ARC-11 B63-10429 03

Modified RF coaxial connector ends vacuum chamber wiring problem
GSPC-150 B64-10010 01

Standoff tool speeds placement of friction-fit electronic terminals
W00-029 B65-10348 05

Insulator-holder protects transistors in dense electronic assemblies
MSC-214 B65-10389 01

Rugged switch responds to minute pressure differentials
M-FS-12704 B67-10389 01

Technique eliminates high voltage arcing at electrode-insulator contact area
LEWIS-10133 B67-10470 01

Single switch activated by force applied over wide solid angle
INF-09808 B69-10032 01

Pulsed high-voltage dc RF sputtering
LEWIS-10920 B69-10599 01

Packless valve with all-metal seal handles wide temperature, pressure range
JPL-361 B63-10228 05

Spherical pipe joint delivers loads equally to mating flange
M-FS-807 B66-10665 05

Concept for sleeve induction motor with 1-msec mechanical time constant
ARG-10124 B68-10185 01

Method for predicting pump cavitation performance
LEWIS-10916 B69-10446 02

Linear systems of equations solved using mathematical algorithms
ARG-10416 B68-10292 06

Calculation of resonance neutron absorption in two-region problems /the GARON code/
NUC-10045 B67-10223 06

Computer program calculates the effective temperature for a crystalline solid /DEVS/
NUC-10161 B69-10036 06

Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices
ARG-10445 B69-10415 02

Finite element formulation for linear thermoviscoelastic materials
WFO-11229 B69-10660 03

Crystal measures short-term, large-magnitude forces
JPL-77 B65-10187 01

Field-effect transistor replaces bulky transformer in analog-gate circuit
GSPC-351 B65-10284 01

Frequency divider is free of spurious outputs
GSPC-308 B65-10334 05

Miniature bioelectric device accurately measures and telemeters temperature
ARC-52 B66-10057 01

Diffusion technique stabilizes resistor values
MSC-205 B66-10142 01

Binary fluid amplifier solves stability and load problems
ERC-15 E66-10177 01

Frequency divider is free of spurious outputs
GSFC-351 B65-10284 01

Welded pressure transducer made as small as 1/8th-inch in diameter
ARC-11 B63-10429 03

Modified RF coaxial connector ends vacuum chamber wiring problem
GSPC-150 B64-10010 01

Solid state thermostat has integral circuitry
M-PS-434 B66-10193 01

Diffusion technique stabilizes resistor values
MSC-205 B66-10142 01

Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
MSC-781 B66-10429 01

Integrator can easily be set and reset with an electronic switch
ARC-10002 B67-10135 01

Solid state phase detector replaces bulky transformer circuit
MSC-10067 B67-10253 01

Solid state circuit averages multiple signals and rejects those varying significantly from the average
NUC-10066 B67-10262 01

Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions
ARG-1047 B67-10294 01

Method of improving contact bonds in silicon integrated circuits
M-FS-1753 B67-10335 01

Digital-to-analog converter operates from low level inputs
JPL-907 B67-10357 01

Test and inspection for process control of monolithic circuits
M-FS-13084 B67-10507 01

Logic realization of simple majority voting connectives
JPL-727 B67-10511 06

Development of reliability prediction technique for semiconductor diodes
GSPC-10234 B67-10651 06
SUBJECT INDEX

Low cost SCE lamp driver indicates contents of digital computer registers
GSFC-10221 B67-10656 01

DC pin-to-pin testing of integrated circuits
GSFC-10284 B68-10001 01

Small, low power analog-to-digital converter
8-P5-13954 B68-10016 01

Accumulator for shaft encoder
8-P5-13599 B68-10093 01

Piggy-back mounting would increase microcircuit packaging density
8SC-12059 B68-10114 01

Active rc networks of low sensitivity for integrated circuit transfer function
ARC-10146 B68-10210 01

Random access-random release relay switching matrix
8-P5-12590 B68-10301 01

Improved process for epitaxial deposition of silicon on prediffused substrates
8-P5-14910 B68-10390 03

Amplifier improvement circuit
LEWIS-10712 B69-10064 01

Microelectronic oscillator
GSFC-10375 B69-10126 01

Simple demodulator for telemetry phase-shift keyed subcarriers
NPO-11000 B69-10095 01

Integrated circuit with multiple collector current source
8-P5-20177 B69-10126 01

Tunable bandpass filter with variable selectivity
ARC-10191 B69-10130 01

Low-cost voltage-level detector
LEWIS-10845 B69-10217 01

Multiple-mask chemical etching
ESC-13114 B69-10221 01

An integrated circuit switch
8-P5-11073 B69-10326 01

Automatic calomeltric system monitors SP power
NPO-11003 B69-10384 01

Dielectric materials for use in thin-film capacitors
8-P5-20471 B69-10387 02

Leads integral with the internal interconnection that penetrate the molded wall of a package
LANGLEY-10228 B69-10436 01

Improved method of dicing integrated circuit wafers into chips
ERC-10138 B69-10441 01

Modular packaging technique for combining integrated circuits and discrete components
GSFC-10369 B69-10453 01

Special purpose computer provides programmable digital filter for sampled-data control systems
8-P5-26290 B69-10454 06

Literal readout of identification signals in Morse code
LANGLEY-10222 B69-10479 01

Phase-locked-loop phase modulator with high modulation index, low distortion
GSFC-12247 B69-10487 01

Folded stick module
NPO-10054 B69-10498 01

Automatic frequency control of voltage-controlled oscillators
NPO-11064 B69-10565 01

Highly stable high-rate discriminator for nuclear counting
ARG-10483 B69-10614 01

Pulse-height analyzer with digital readout
ARG-10503 B69-10640 01

Microelectronic device data handbook
ERC-10322 B69-10667 01

INTEGRITY

Inexpensive, stable circuit measures heart rate
MSC-95 B65-10030 01

System selects framing rate for spectrograph camera
LANGLEY-55 B65-10086 01

Simple circuit functions as frequency discriminator for FPM signals
GSFC-267 B65-10102 01

Solid-state switching used to speed up capacitive integrator
LANGLEY-104 B65-10159 01

Frequency correction device uses digital circuitry
GSFC-268 B65-10307 01

Electronic ampere-hour integrator is accurate to one percent
GSFC-203 B65-10308 01

Automatic system determines moments of inertia of asymmetrical objects
N-PF-1769 B66-10636 01

Integrator can easily be set and reset with an electronic switch
ARC-10002 B67-10135 01

Accuracy of laser measurements improved by pulse autocorrelator electronic system
ESC-10033 B67-10338 01

Digital voltage-controlled oscillator
GSFC-512 B67-10449 01

Recharge unit provides for optimum recharging of battery cells
GSFC-10688 B68-10273 01

Solution of differential equations by application of transformation groups
N-PF-14802 B68-10276 02

System measures arc energy dissipated in relay contact cycling
N-PF-14541 B68-10312 01

Improved phase-shift-keyed detector
N-PF-20064 B69-10101 01

Tracer of electrical conduit pipes
ESC-15223 B69-10347 01

Measurement technique for the determination of antenna directivity
N-PF-12795 B69-10677 01

INTEGRITY

A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voight line profile
ARC-10221 B69-10232 06
INTERFACES
Seal allows blind assembly and thermal expansion of components
M-PS-6005 B65-10053 05

Brazing method produces solid-solution bond between refractory metals
LEWIS-212 B65-10370 05

Study made to establish parameters and limitations of explosive welding
M-PS-13006 E67-10393 05

Study of behavior of steros at interfaces
ARG-10085 B68-10281 03

Fluidic-thermochromic display device
ERC-60281 B68-10350 01

Electrochemical study of aluminum corrosion in boiling high purity water
ARG-10036 B69-10033 03

A method for predicting interfacial freezing of a liquid flowing over a cold surface
LEWIS-10813 B69-10321 02

INTERFACIAL TENSION
Aluminum alloys protected against stress-corrosion cracking
M-PS-235 B65-10172 03

Tool pre-tensions covers prior to lacing
NPO-631 B66-10301 05

Sprayable birefringent coating enables strain measurements on large surfaces
M-PS-1484 B66-10578 03

Improved method of edge coating flat ribbon wire
M-PS-902 B66-10684 03

Optometric system facilitates colorimetric and fluorometric measurements
NPO-10233 B66-10316 01

Dynamics of moving bubbles in single and binary component systems
M-PS-14845 B66-10339 02

A method for using surface tension to determine the size of holes in hardware
E69-10595 03

INTERFERENCE
Point-source light sensor circuit is insensitive to background light
JPL-778 B66-10502 01

SUBJECT INDEX
Measuring coplanarity of surfaces
BSC-12044 B67-10371 02

Interference effects eliminated in random oriented space station antenna system
BSC-11004 B67-10435 01

Improvement in recording and reading holograms
ERC-10151 B69-10347 02

PEN hit detection with correction for intersymbol interference
GSFC-10155 B69-10153 01

INTERFERENCE FACTOR TABLE
Basic suppression techniques are evaluated
E-PS-067 B66-10449 01

INTERFEROMETERS
Interferometer combines laser light source and digital counting system
ESC-151 B65-10161 01

Interferometer construction assures parallelism of critical components
JPL-704 B65-10292 02

Unique construction makes interferometer insensitive to mechanical stresses
JPL-725 B65-10295 02

Communication system uses modulated laser beam
GSFC-377 B65-10333 01

Presnel diffraction plates are simple and inexpensive
M-PS-12731 B67-10297 02

An interferometer tracking radar system
ESC-10956 B69-10523 01

Laser interferometer micrometer system
M-PS-19747 B69-10633 02

INTERFEROPHORS
Measuring coplanarity of surfaces
BSC-12044 B67-10371 02

Multilayer infrared beamsplitter film system
IGS-11036 B69-10260 02

Two-color holography
E-PS-10349 B69-10662 02

Fine-line sensitivity for holographic interferograms
E-PS-10348 B69-10663 02

INTERGRANULAR CORROSION
Boron-deoxidized copper withstands brazing temperatures
E-PS-762 B66-10273 03

Weld microfissuring in Inconel 718 sensitized by minor elements
E-PS-18185 B68-10251 03

Effects of high frequency current in welding aluminum alloy 6061
M-PS-18337 B68-10383 05

INTERLAMINAR
Technique for measuring magnetic tape interlayer adhesion
NPO-10011 B67-10417 03

INTERMEDIATE FREQUENCY AMPLIFIERS
Automatic gain control circuit handles wide input range
MPS-166 B66-10089 01

INTERMETALLICS
Brazing process provides high-strength bond
between aluminum and stainless steel
B-FS-603 B66-10352 05
Preformed stiffeners used to fabricate
structural components for pressurized
tanks
B-FS-1796 B66-10688 05
Silver plating ensures reliable diffusion
bonding of dissimilar metals
B-FS-1795 B67-10124 03
Thin film process forms effective electrical
contacts on semiconductor crystals
B-FS-2343 B67-10142 01
Method of improving contact bonds in
silicon integrated circuits
B-FS-1753 B67-10335 01
Crystal structure analysis of intermetallic
compounds
ARG-10092 B68-10198 03
High temperature alloy
LEWIS-10277 B68-10253 03
Microprobe investigation of brittle
 segregates in aluminum MIG and TIG welds
B-FS-14720 B68-10334 03
Levitation-melting technique for metals
and alloys
ARG-10240 B69-10006 03
INTERNAL COMBUSTION ENGINES
Indicator system provides complete data of
engine cylinder pressure variation
LEWIS-291 B66-10470 05
INTERNAL COMPRESSION INLETS
Perforations in jet engine supersonic inlet
increase shock stability
MDO-8 B66-10530 05
INTERNAL CONVERSION
Direct determination of lead-210 by
liquid-scintillation counting
ARG-10462 B69-10611 03
INTERNAL FRICTION
Stress-corrosion-induced property changes
in aluminum alloys
B-FS-20209 B68-10566 03
EXTERNAL PRESSURE
Transmission system isolates pressure
transducer from severe environment
WGO-239 B66-10064 01
Improved system measures output energy of
pyrotechnic devices
WGO-256 B66-10159 01
Control system maintains compartment at
constant temperature
JPL-SC-145 B66-10188 05
Diffusion bonding makes strong seal at flanged
connectors
B-FS-637 B66-10250 05
Hermetically sealed cells protected from
internal gas pressure
GSFC-555 B66-10692 01
Investigation of pressurized toroidal shells
H0-27 B67-10117 05
Buckling strength of filament-wound
 cylinders under axial compression is
investigated
H0-10032 B67-10659 03
A biaxial weld strength prediction method
B-FS-20019 B69-10471 05
INTERNATIONAL COOPERATION
Solar activity history model
B-FS-20525 B69-10776 01
INTERPLANETARY SPACECRAFT
Earth orbit rendezvous evaluation program
B-FS-1304 B67-10407 06
Midcourse maneuver operations program
NPO-10735 B69-10105 06
INTERPLANETARY TRAJECTORIES
Space trajectories program for IBM 7090
NPO-10125 B67-10172 06
Computer program for interplanetary conic
patching
B-FS-10296 B68-10033 06
INTERPOLATION
Simple scale interpolator facilitates
reading of graphs
LANGLEY-88 B65-10070 05
Simple scale interpolator facilitates reading
of graphs
LEWIS-92 B66-10302 05
Master control data handling program uses
automatic data input
B-FS-2259 B67-10280 06
Computer program utilizes FORTRAN 4
subroutines for contour plotting
NPO-10127 B67-10323 06
Computer program VARY-QUIR 3 provides
solution of steady-state, multigroup,
two-dimensional neutron diffusion equations
WUC-10052 B67-10345 06
Neutron properties of normal and
parahydrogen
LEWIS-10458 B68-10361 06
INTERROGATION
Frequency offset in linear FM/CW transponder
eliminates clutter
B-FS-249 B65-10146 01
INTERUPTION
Fatigue cracks detected and measured without
test interruption
LEWIS-266 B66-10178 02
INTERSTICES
Wire bundle formed into grids with minute
interstices
WGO-089 B65-10372 03
INTERSTITIALS
Isostatic compression process converts
polyacrylamides into structural material
JFL-092 B67-10166 03
Preparation of superconducting thin films
of transition-metal interstitial compounds
HQ-10445 B69-10470 01
INTERVALS
Electronic circuit delivers pulse of high
interval stability
HSC-673 B66-10501 01
Exposure Value /ET/ system expanded to
include filter factors and transmittance
LANGLEY-159 B66-10602 02
Computer program generates averaged value
data tapes
B-FS-12726 B67-10411 06
INTRAVENTOUS PROCEDURES
Experimental study and evaluation of
radioprotective drugs
ARG-10196 B68-10320 04
INVALENCE
Solution of differential equations by
application of transformation groups
B-FS-14802 B68-10276 02
INVENTIONS

Apparatus presents visual display of semiconductor surface characteristics
JPL-665 B66-10200 01

Thermal and bias cycling stabilizes planar silicon devices
SRC-48 B67-10176 01

Controllability of distributed-parameter systems
M-FS-14929 B68-10506 01

Molecular radiation — Its application in physical measurements and analyses
M-FS-14816 B69-10562 02

INVESTIGATIONS

Study of hydrogen slush-hydrogen gel utilization
M-FS-13068 B67-10413 02

Heavy-gage bonded honeycomb sandwich as primary load-bearing structure
M-FS-12060 B67-10368 01

Study made of acoustical monitoring for mechanical checkout
M-FS-13372 B67-10430 02

Study made of pneumatic high pressure piping materials /10,000 psi/
KSC-10133 B67-10437 03

Study made of large amplitude fuel sloshing
M-FS-12381 B67-10439 03

Study made of procedures for externally loading and corrosion testing stress correlation specimens
M-FS-12064 B67-10451 03

Computer magnetic tape rehabilitation study
GSFC-10283 B68-10635 05

INVESTIGATIONS

Glassy materials investigated for nuclear reactor applications
ARG-10075 B68-10103 03

Automatic planning concept — An analysis of optimum scheduling
M-FS-14718 B68-10127 06

Squeeze-film gas bearing technology
M-FS-14821 B68-10180 05

Study of convective magnetohydrodynamic channel flow
ARG-10102 B68-10181 02

Reaction studied of steam with niobium and tantalum
ARG-10051 B68-10189 03

Beryllium fastener technology
M-FS-20306 B69-10019 05

Instabilities encountered during heat transfer to a supercritical fluid
I-346

INVESTIGATION CASTING

Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns
KSC-7 B63-10008 05

INVISCID FLOW

Large-amplitude inviscid fluid motion in an accelerating container
MSC-11560 B68-10170 02

Axisymmetric two-phase perfect gas performance program
MSC-11774 B68-10374 06

One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780 B68-10376 06

Computer simulation of high-frequency combustion instability and its suppression
EQ-10391 B69-10368 06

IODIDES

New method used to fabricate gallium arsenide photovoltaic device
W00-062 B64-10019 01

Cuprous selenide and sulfide form improved photovoltaic barriers
W00-212 B66-10025 01

Improved retort for cleaning metal powders with hydrogen
LEWIS-10718 B69-10468 03

IODINE

Static electricity of polymers reduced by treatment with iodine
BGO-10062 B67-10132 03

Photovoltaic effect in organic polymer-iodine complex
BGO-10373 B67-10634 03

IODINE ISOTOPES

An economical method for the continuous production of iodine-123
LEWIS-10518 B68-10433 03

IODINE 131

Ion exchange determines iodine-131 concentration in aqueous samples
ARG-208 B67-10129 04

ION BEAMS

New apparatus increases ion beam power density
LEWIS-73 B63-10440 01

Highly sensitive solids mass spectrometer uses inert-gas ion source
ECC-11 B66-10114 02

Epitaxial crystalline growth upon cold substrates
MSC-11196 B69-10494 01

Monopole mass spectrometer with improved sensitivity and reduced background
EQ-10476 B69-10666 01

ION CHARGER

Thin film thermal detector
JPL-943 B67-10505 01
SUBJECT INDEX

ION CURRENTS
- Cold cathode ionization gage has rigid metal housing
  GSPC-445  B66-10041  01

ION DENSITY (CONCENTRATION)
- New apparatus increases ion beam power density
  LEWIS-73  B63-10440  01
- A continuously operating source of vacuum ultraviolet below 500 angstrom
  GSPC-545  B66-10576  01
- Thin film thermal detector
  JPL-943  B67-10505  01
- Spherical ion source
  WIP-08888  B69-10186  01
- Ion mass spectrometer for special uses
  HG-10418  B69-10510  02

ION EMISSION
- New apparatus increases ion beam power density
  LEWIS-73  B63-10440  01
- Suppressor plate eliminates undesired arcing during electron beam welding
  N-PS-1126  B66-10337  05
- Detecting hydrogen-containing contaminants on metal surfaces
  N-PS-20456  B69-10192  03

ION ENGINES
- New apparatus increases ion beam power density
  LEWIS-73  B63-10440  01
- Apparatus measures very small thrusts
  WOO-048  B64-10284  05
- Wire winding increases lifetime of oxide coated cathodes
  LEWIS-154  B65-10032  03
- Wire bundle formed into grids with minute interstices
  WOO-089  B65-10372  03
- Study made of destructive sectioning of complex structures for examination
  LEWIS-341  B66-10676  05
- High power dc/dc and dc/ac electrical power conversion techniques developed
  N-PS-13227  B67-10350  01
- Reducing bubbles in glass coatings improves electrical breakdown strength
  LEWIS-10278  B68-10214  03
- Glass coated single grid for charged particle acceleration
  LEWIS-10106  B68-10215  03
- Full wave dc-to-dc converter using energy storage transformers
  LEWIS-10375  B69-10140  01
- Precise gimballing mechanism
  HG-11057  B69-10270  01

ION EXCHANGE MEMBRANE ELECTROLYTES
- Improved inorganic ion exchange membranes
  LEWIS-10737  B69-10451  03

ION EXCHANGE RESINS
- Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods
  ARG-10065  B66-10425  03

ION EXCHANGING
- Iod exchange determines iodine-131 concentration in aqueous samples
  ARG-208  B67-10129  04
- Improved fuel-cell-type hydrogen sensor
  M-PS-14656  B68-10263  01

ION EXCITATION
- Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods
  ARG-10065  B66-10425  03
- Separation of the rare earths by anion-exchange in the presence of lactic acid
  ARG-10436  B69-10377  03
- Novel multipurpose timer for laboratories
  ARG-10147  B69-10410  01

ION EXTRACTION
- Ion-retarding lens improves the abundance sensitivity of tandem mass spectrometers
  ARG-10341  B69-10168  03

ION EMISSION
- Complex surfaces plated by thin-film deposition in one operation
  ARG-10147  B69-10006  05
- Hydrogen peroxide etching proves useful for germanium
  ARG-10170  B68-10545  03

ION EMISSION
- High-temperature thermionic emission microscope
  WPO-10584  B68-10516  01

ION EXCITATION
- Ion pump provides increased vacuum pumping speed
  NRO-13  B65-10239  02
- Method for x-ray study under extreme temperature and pressure conditions
  MSC-11232  B67-10474  02

ION SCATTERING
- Electrochemical study of aluminum corrosion in boiling high purity water
  ARG-10306  B69-10033  03

ION SOURCES
- New apparatus increases ion beam power density
  LEWIS-73  B63-10440  01
- Magnetically coupled emission regulator
  GSPC-10056  B69-10213  01
- Miniaturized high-resolution mass/charge spectograph /design study/
  MSC-13279  B69-10554  02

IONIC MOBILITY
- Junction membrane battery separator
  WPO-10591  B69-10501  03

IONIC REACTIONS
- Improved fuel-cell-type hydrogen sensor
  M-PS-14656  B68-10263  01

IONIZATION
- Rapid helium-air analyzer can measure other binary gas mixtures
  LANDLEY-16  B63-10557  03
- Magnetic field controls carbon arc tail flame
  MSC-139  B65-10108  01
- Radon gas, useful for medical purposes, safely fixed in quartz
  ARG-2  B66-10468  04
- Complex surfaces plated by thin-film deposition in one operation
  ARG-10147  B67-10006  05
- Primary cell uses neither liquid nor fused electrolytes
  WPO-10001  B67-10275  01
- Self-discharge in bimetallic cells

IONIZATION
**IONIZATION CHAMBERS**

- Aluminaized thin-window proportional-counter tube is stronger, more responsive in long wavelength region.
  - JPL-689
  - B67-10015

- Gage measures total radiation, including vacuum UV, from ionized high-temperature gases.
  - EM-00902
  - B69-10028

**IONIZATION CHAMBERS**

- Handbooks explaining the fundamentals of nuclear and atomic physics.
  - MRC-10330
  - B69-10705

- Ion chambers simplify absolute intensity measurements in the vacuum ultraviolet.
  - MRC-10
  - B66-10439

- Logarithmic current simulator generates electrical currents accurately between 10^-11 and 10^-3 ampere.
  - NU-0087
  - B65-10156

- Precision capacitor has improved temperature and operational stability.
  - ARG-189
  - B67-10313

- Fast framing cameras provide high-speed multi-channel data recording.
  - ARG-10252
  - B69-10102

- Circuit counts pulses and indicates time of occurrence of slow pulses.
  - XNP-06234
  - B69-10313

- Accurate nine-decade temperature-compensated logarithmic amplifier.
  - ARG-10480
  - B69-10429

**IONIZATION GAGES**

- Precision gage measures ultrahigh vacuum levels.
  - GSFC-114
  - B63-10597

- Ionization vacuum gage starts quickly, is unaffected by spurious currents.
  - JPL-304
  - B65-10036

- Cold cathode ionization gage has rigid metal housing.
  - GSFC-445
  - B66-10041

- Rod and dish cathode improves penning-type vacuum gage.
  - ARG-447
  - B66-10082

- Volume-ratio calibration system for vacuum gages.
  - LEWIS-303
  - B66-10640

- Electron multiplier has improved performance and stability.
  - GSFC-346
  - B67-10060

- Solar X-ray spectrum reproduced in vacuum.
  - MSC-228
  - B67-10164

- Vacuum gage system for radiation environment.
  - LEWIS-10797
  - B69-10156

- Automated measurement of thermal conductivity.
  - M-FS-2045a
  - B69-10283

**IONIZATION POTENTIALS**

- High-intensity flashing beacon powered by mercury cells.
  - LANGLEY-80
  - B65-10361

- Spherical ion source.
  - XNP-08898
  - B69-10186

- Pulse protects circuit from voltage and current overloads.
  - MSC-12135
  - B69-10490

**IONIZED GASES**

- Highly sensitive solids mas spectrometer uses inert-gas ion source.
  - MRC-11
  - B66-10114

**IONIZATION RADIATION**

- Inorganic paint is durable, fireproof, easy to apply.
  - GSFC-366
  - B65-10156

- Irradiation improves properties of an aromatic polymer.
  - LANGLLEY-115
  - B65-10164

- Polymer film exhibits thermal and radiation stability.
  - LANGLLEY-100
  - B66-10043

- Review of physics, instrumentation and dosimetry of radioactive isotopes.
  - ARG-10037
  - B67-10640

**IONS**

- Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination.
  - ARG-262
  - B67-10421

- Fuel cell life improved by metallic sinter activation after electrode assembly welding.
  - MSC-10965
  - B66-10436

**IONIZATION VACUUM GADES**

- Talking gage system for radiation environment.
  - LEWIS-10797
  - B69-10156

- Primary radial yields in pulse irradiated alkaline aqueous solution.
  - ARG-10322
  - B69-10167

- Production of solvated electrons.
  - ARG-10486
  - B66-10430

- Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors.
  - ARG-10362
  - B69-10767

**TOTIONS**

- Gammadation improves properties of thin film dielectrics.
  - ARG-10486
  - B66-10430

- Ionization vacuum gage starts quickly, is unaffected by spurious currents.
  - JPL-304
  - B66-10430

- Rod and dish cathode improves penning-type vacuum gage.
  - GSPC-445
  - B69-10430

- Volume-ratio calibration system for vacuum gages.
  - LEWIS-303
  - B66-10640

- Electron multiplier has improved performance and stability.
  - GSFC-346
  - B67-10060

- Solar X-ray spectrum reproduced in vacuum.
  - MSC-228
  - B67-10164

- Vacuum gage system for radiation environment.
  - LEWIS-10797
  - B69-10156

- Automated measurement of thermal conductivity.
  - M-FS-2045a
  - B69-10283

**IONIZATION CHAMBERS**

- Ionization vacuum gage starts quickly, is unaffected by spurious currents.
  - JPL-304
  - B65-10036

- Cold cathode ionization gage has rigid metal housing.
  - GSFC-445
  - B66-10041

- Rod and dish cathode improves penning-type vacuum gage.
  - ARG-447
  - B66-10082

- Volume-ratio calibration system for vacuum gages.
  - LEWIS-303
  - B66-10640

- Electron multiplier has improved performance and stability.
  - GSFC-346
  - B67-10060

- Solar X-ray spectrum reproduced in vacuum.
  - MSC-228
  - B67-10164

- Vacuum gage system for radiation environment.
  - LEWIS-10797
  - B69-10156

- Automated measurement of thermal conductivity.
  - M-FS-2045a
  - B69-10283

**IONIZATION POTENTIALS**

- High-intensity flashing beacon powered by mercury cells.
  - LANGLEY-80
  - B65-10361

- Spherical ion source.
  - XNP-08898
  - B69-10186

- Pulse protects circuit from voltage and current overloads.
  - MSC-12135
  - B69-10490

**IONIZED GASES**

- Highly sensitive solids mass spectrometer uses inert-gas ion source.
  - MRC-11
  - B66-10114

**IONIZATION RADIATION**

- Inorganic paint is durable, fireproof, easy to apply.
  - GSFC-366
  - B65-10156

- Irradiation improves properties of an aromatic polymer.
  - LANGLLEY-115
  - B65-10164

- Polymer film exhibits thermal and radiation stability.
  - LANGLLEY-100
  - B66-10043

- Review of physics, instrumentation and dosimetry of radioactive isotopes.
  - ARG-10037
  - B67-10640

- Experimental study and evaluation of radioprotective drugs.
  - ARG-10322
  - B69-10167

- Rate constants measured for hydrated electron reactions with peptides and proteins.
  - ARG-10155
  - B66-10424

- Readout system for radiation detector.
  - BSC-90180
  - B66-10501

- Vacuum gage system for radiation environment.
  - LEWIS-10797
  - B69-10156

- Primary radial yields in pulse irradiated alkaline aqueous solution.
  - ARG-10322
  - B69-10167

- Production of solvated electrons.
  - ARG-10486
  - B66-10430

- Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors.
  - ARG-10362
  - B69-10767

**IONS**

- Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination.
  - ARG-262
  - B67-10421

- Fuel cell life improved by metallic sinter activation after electrode assembly welding.
  - MSC-10965
  - B66-10436

- Ion plating technique improves thin film deposition.
  - SAN-10006
  - B68-10212

- Pulsed high-voltage dc RF sputtering.
  - LEWIS-10920
  - B69-10699

**X-RAYS**

- Intergalactic metal phase increases thermal shock resistance of ceramic coating.
  - M-FS-1062
  - B66-10651

**TRIGS (MECHANICAL APERTURES)**

- Variable light source with a million-to-one intensity ratio.
  - JPL-WOO-008
  - B63-10424

- Camera shutter is actuated by electric signal.
  - ARC-20
  - B66-10212

- Iris-leaf core retainer for a surface drill.
  - MSC-11402
  - B69-10496
Modified filter prevents conduction of microwave signals along high-voltage power supply leads. JPL-63

Fine-mesh screen made by simplified method. WOO-104

Submicron metal powders produced by ball milling with grinding aids. LEWIS-188

Hollow spherical rotors fabricated by electroplating. JPL-SC-117

A continuously operating source of vacuum ultraviolet below 500 angstrom. GSPC-545

Zirconia alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam. ABS-226

RF inductor has high Q, is stable at higher temperatures. JPL-1019

Iron serves as diffusion barrier in thermally regenerative galvanic cell. ARG-29

Simplified technique demonstrates magnetic domain switching. E-FS-13153

Eddy current probe measures size of cracks in nonmetallic materials. E-FS-18009

High-emittance coatings on metal substrates. LEWIS-10325

Improved ferrous shielding for flat cables. E-FS-19524

Electron interaction in matter. E-FS-18886

Iron alloy improved variable-reluctance transducer measures transient pressures. LANGLLEY-10

Gage of 6.5 per cent Si-Fe sheet is chemically reduced. SSC-537

Process yield Co-Fe alloys with superior high temperature magnetic properties. LEWIS-333

Study reveals effect of aluminum on saturation moment of Fe-Ni alloys. ARG-90259

Inspection criteria ensure quality control of parallel gap soldering. E-FS-14530

Handbook for design of containers of fluids and gases for spacecraft. E-FS-20502

Crack detection method is safe in presence of liquid oxygen. E-FS-236

Imprinting of confining sites for cell cultures on thermoplastic substrates. LANGLLEY-10495

New class of compounds have very low vapor pressures. ARG-115

Ceric and ferrous dosimeters show precision for 50-5000 rad range. ARG-10173

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel. NUC-10047

Cryogenic filter method produces super-pure helium and helium isotopes. JPL-374

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel. NUC-10194

Cryogenic filter method produces super-pure helium and helium isotopes. JPL-374

The thermodynamic properties of the wustite phase are studied. ARG-10200

Electron interaction in matter. I-FS-14886

Improved variable-reluctance transducer measures transient pressures. LANGLLEY-10

Improved variable-reluctance transducer measures transient pressures. LANGLLEY-10

Gage of 6.5 per cent Si-Fe sheet is chemically reduced. SSC-537

Process yield Co-Fe alloys with superior high temperature magnetic properties. LEWIS-333

Study reveals effect of aluminum on saturation moment of Fe-Ni alloys. ARG-90259

Inspection criteria ensure quality control of parallel gap soldering. E-FS-14530

Handbook for design of containers of fluids and gases for spacecraft. E-FS-20502

Crack detection method is safe in presence of liquid oxygen. E-FS-236

Imprinting of confining sites for cell cultures on thermoplastic substrates. LANGLLEY-10495

New class of compounds have very low vapor pressures. ARG-115

Ceric and ferrous dosimeters show precision for 50-5000 rad range. ARG-10173

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel. NUC-10047

Cryogenic filter method produces super-pure helium and helium isotopes. JPL-374

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel. NUC-10194

Cryogenic filter method produces super-pure helium and helium isotopes. JPL-374

The thermodynamic properties of the wustite phase are studied. ARG-10200

Ambient temperature catalyst for hydrogen ignition. LEWIS-10551

A continuously operating source of vacuum ultraviolet below 500 angstrom. GSPC-545

Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam. ARG-226

A prototype high power portable lamp. H-PS-20229

Tungsten thermal neutron dosimeter. LEWIS-10880

Beryllia insubstantialized with crosslinking agent. NPO-10834

Swiveling lathe jaw concept for holding irregular pieces. E-FS-783

Special mandrel permits uniform welding of out-of-round tubing. E-FS-706

Special purpose reflectometer uses modified Ulbricht sphere. I-349
I-350

ISEOTROPIC PROCESSES

Computer program for high pressure real
gas effects
LEWIS-10820 B69-10222 06
High pressure real gas effects for helium
and nitrogen
LEWIS-10819 B69-10669 06
Natural gas flow through critical nozzles
LEWIS-11031 B69-10712 02

ISCERATES

Storage-stable foamable polyurethane is
activated by heat
LANGLEY-187 B66-10111 03
Process produces chlorinated aromatic
isocyanate in high yield
M-PS-1658 B66-10646 03
Improved primer for bonding polyurethane
adhesives to metals
M-PS-90591 B69-10540 03

ISOLATION

High-pass RF coaxial filter rejects dc and
low frequency signals
GSFC-73 B64-10173 01
Field-effect transistor replaces bulky
transformer in analog-gate circuit
GSFC-351 B65-10294 01
Transmission system isolates pressure
transducer from severe environment
MOC-239 B66-10064 01
Mechanism isolates load weighing cell during
lifting of load
MSC-297 B66-10071 05
Study of fast response thermocouple
measurement of temperatures in cryogenic
gases
M-PS-1659 B66-10661 01
Amplifier provides dual outputs from a
single source with complete isolation
MSC-10056 B67-10221 01
Remotely operated high pressure valve
protects test personnel
MSC-11010 B67-10291 05
Method of improving contact bonds in
silicon integrated circuits
M-PS-1753 B67-10335 01
Pocket-size manual tape reader device aids
computer tape checking
MSC-10056 B67-10361 01
Multiple meter monitoring circuits served
by single alarm
MSC-10884 B67-10369 01
Conceptual monorthogonal gyro configuration
for guidance and navigation
MSC-11363 B67-10433 01
Biological isolation garment
MSC-12206 B68-10500 04
Isolated, multiple-output voltage dc-to-dc
converter
M-PS-14976 B69-10014 01
Conceptual techniques for reducing
parasitic current gain of lateral pnp
transistors
MSC-13199 B69-10244 01
Self-shielding printed circuit boards for
high frequency amplifiers and transmitters
NQ-10433 B69-10314 01

MODIFICATION TO IMPROVE SELF-ISOLATING
TRANSISTOR ARRAYS

Modification to improve self-isolating
transistor arrays
M-PS-20499 B69-10676 01

ISOLATORS

Electro pneumatic rheostat regulates high
current
ARC-44 B65-10299 01
Accumulator isolator prevents
 malfunctioning of faulty hydraulic system
M-PS-1415 B67-10528 05
Analog buffer isolates high impedance
source from low impedance load
M-PS-14881 B67-10544 01
Solid state single-ended switching
dc-to-dc converter
M-PS-13598 B67-10558 01
Improved traveling wave maser amplifier
NFO-10548 B69-10424 01

ISOPROPYL ALCOHOL

This transparent films formed from powdered
glass
GSFC-352 B65-10217 03

ISOTROPIC PRESSURE

Isostatic compression process converts
polyaromatics into structural material
JPL-892 B67-10168 03
Porous mandrels provide uniform
deformation in hydrostatic powder
metallurgy
M-PS-1972 B67-10209 03

ISOTHERMAL FLOW

Study of thermal effects on
nickel-cadmium batteries
GSFC-10003 B67-10614 01
Improved calorimeter provides accurate
thermal measurements of space batteries
GSFC-10003A B67-10615 01

ISOTHERMAL PROCESSES

Superconductivity in zirconium-rhodium
alloys
ARG-10223 B69-10010 03
Prediction of thermal radiation from a
rocket*^ exhaust plume
M-PS-20414 B69-10371 02

ISOTHERMIS

Computer program calculates steady-state
temperature distribution within plane or
axisymmetric solids
MSC-10049 B67-10224 06
Real fluid properties of normal and
parahydrogen
LEWIS-10858 B68-10361 06
Isothermal drop calorimeter provides
measurements for alpha active, pyrophoric
materials
ABG-10186 B69-10002 02

ISOPHOBIC

Calculation of resonance neutron absorption
in two region problems /the GARGOL code/
MSC-10045 B67-10223 06
Computer program calculates gamma ray
source strengths of materials exposed to
neutron fluxes
MSC-10143 B67-10665 06
Portable, high intensity isotopic neutron
source provides increased experimental
accuracy
ARG-90250 B68-10243 02

Isotopically pure magnesium isotope-24 is
prepared from magnesium-24 oxide
Ion-retarding lens improves the abundance sensitivity of tandem mass spectrometers

Substitution of stable isotopes in Chlorella

Measurement of gas flow at extremely low pressures

Handbook explaining the fundamentals of nuclear and atomic physics

ISOTOPIC LABELING
Experiments shed new light on nickel-fluorine reactions

Isotopic Turbulence
Experimental design for research on shock-turbulence interaction

ISOTROPY
Structure of the isotropic transport operators in three independent space variables

ITERATION
Computer modification reduces time of performing iterative division

Computer program for network synthesis by frequency response fit

ITERATIVE SOLUTION
Computer program reduces calculation time of normal response functions

Computer subroutine ISUDS accurately solves large system of simultaneous linear algebraic equations

Computer program VARI-CUUR 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations

Computer program provides steady state analysis for liquid propellant propulsion systems

Computer program analyzes generalized environmental control and life support systems

Computer program MCAP-TGSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid

Computer program MCAP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solid

Study of optimum discrete estimators in measurement analysis

J-2 ENGINE
Solid state annunciator facilitates complex system troubleshooting

Computer optimization program finds values for several independent variables that minimize a dependent variable

Dynamically stable check valve concept for wide flow range

Jackets
Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket

Electrical cabling withstands severe environmental conditions

Technique cuts time and cost of bending jacketed piping

Inexpensive cryogenic insulation replaces vacuum jacketed line

Consolidation and fabrication techniques for vanadium-20 w/o titanium

Automatic calorimetry system monitors RF power

Heat-shrinkable jacket holds fluid in contact with tensile test specimen

A new method for fabrication of flexible vacuum purge jackets

JACKETS (LIFTS)
Heavy duty precision leveling jacks expedite setup time on horizontal boring mill

Combination double door high-vacuum valve provides access to vacuum chamber

Jet Aircraft
Nickel base alloy with improved stress rupture properties

Jet Amplifiers
Binary fluid amplifier solves stability and load problems
Jet Control

Jet Engine Fuels
Centrifugal device separates liquid from gas
NESC-282 B65-10394 05
Ru-in with chemical additive protects gear surface
N-PS-548 B66-10069 05
Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LEWIS-263 B66-10104 03
Properties of air and combustion products of fuels with air
NESC-11030 B69-10711 03

Jet Engine
Perforations in jet engine supersonic inlet increase shock stability
NESC-8 B66-10530 05
Pre-weld heat treatment improves welds in Rene 81
N-PS-18174 B66-10205 03
New rapid-curing, stable polyamide polymers with high-temperature strength and thermal stability
LEWIS-10576 B69-10118 03
Improved design of item in high speed rotating machinery
N-PS-18441 B69-10373 05

Jet Exhaust
Jet engine powers large, high-temperature wind tunnel
N-PS-13544 B67-10621 02

Jet Flow
Binary fluid amplifier solves stability and load problems
EBC-15 B66-10177 01

Jet Mixing Flow
Computer program calculates peripheral water injection cooling of axisymmetric subsonic diffuser
NESC-10541 B67-10543 06

Jigs
Jig and fixture aid fabrication of tungsten rivets
LEWIS-185 B65-10101 05
Peel resistance of adhesive bonds accurately measured
GSFC-320 B65-10173 03
Spiral heater coils hand-formed with fixture
LEWIS-208 B65-10192 05
Assembly jig assures reliable solar cell modules
GSFC-255 B66-10040 05
Tool provides constant purge during tube welding
N-PS-547 B66-10093 05
Depth indicator and stop aid machining to precise tolerances
N-PS-553 B66-10149 05
Jig protects transistors from heat while tinning leads
NESC-515 B66-10240 05
Heat treatment stabilizes welded aluminum jigs and tool structures
NESC-800 B66-10458 03

Joining
Captive nut fastener securely joins brittle materials

Subject Index

99-0008 B65-10245 05
Packaging of electronic modules
JPL-801 B66-10664 01
Method of improving contact bonds in silicon integrated circuits
N-PS-1753 B67-10335 01
Standards for compatibility of printed circuit and component lead materials
N-PS-14531 B68-10310 01
Tube welding and brazing
N-PS-20346 B69-10085 05
Tool repairs tube components in situ
NESC-15346 B69-10379 05
Magnetomechanical forming for precision sizing and joining of large-diameter tubes
N-PS-20481 B69-10422 05

Joints (Junctions)
Modular chassis simplifies packaging and interconnecting of circuit boards
JPL-236A B63-10174 01
Lightweight universal joint transmits both torque and thrust
JPL-375 B63-10236 05
Special pliers connect hose containing liquid under pressure
JPL-TT-1003 B63-10291 05
New method used to fabricate lightweight heat exchanger for rocket motor
LEWIS-43 B63-10346 02
Stainless-steel elbows formed by spin forging
N-PS-122 B63-10590 05
Circuit reliability boosted by soldering pins of disconnect plugs to sockets
JPL-447 B64-10002 01
Flexible fastener allows thermal expansion
LEWIS-4C B64-10165 05
Viscous-pendulum damper suppresses structural vibrations
LANGLBY-45 B64-10272 05

Knob linkage permits one-hand control of several operations
NESC-30 B65-10022 05
Titanium treatment improves brazed joints
NESC-127 B65-10153 05
Splice plate design assures structural separation by mild explosive
NESC-137 B65-10166 05
Ball and socket joints provide accurate biaxial gimbal
JPL-658 B65-10205 05
Thoriated nickel bonded by solid-state diffusion method
LANGLBY-116 B65-10220 03
Thermocouple-to-instrumentation connector features quick assembly
80-0022 B65-10246 05
Universal bellows joint restraint permits angular and offset movement
W00-102 B65-10371 05
Photosensors used to maintain welding electrode-to-joint alignment
NESC-243 B65-10401 05
Flexible coiled spline securely joins mating cylinders
W00-270 B66-10172 05
<table>
<thead>
<tr>
<th><strong>SUBJECT INDEX</strong></th>
<th><strong>JUNCTION DIODES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount enables precision adjustment of optical-instrumentation mirror BSC-184</td>
<td>Conceptual apparatus for detecting leaks of nonconductive liquids B68-10303 01</td>
</tr>
<tr>
<td>Pressure seal ring may be effective over wide temperature range M-PS-486</td>
<td>Determining gas leakage from bubble formations M-PS-10841</td>
</tr>
<tr>
<td>External linkage tie permits reduction in ducting system flange thickness M-PS-823</td>
<td>Hand-tightened, high-pressure seal M-PS-10841</td>
</tr>
<tr>
<td>Spherical pipe joint delivers loads equally to mating flange M-PS-807</td>
<td>Tube joint leak repair coupling M-15022</td>
</tr>
<tr>
<td>Polaroid film helps locate objects in inaccessible areas quickly M-960</td>
<td>Teflon-packed flexible joint LEWIS-90225</td>
</tr>
<tr>
<td>Spherical joint connects axially misaligned flanges M-PS-2238</td>
<td>Materials data handbook, aluminum alloy 6061 M-PS-20381</td>
</tr>
<tr>
<td>Brake joint quality tested electromagnetically M-PS-12795</td>
<td>Tool simplifies machining of pipe ends for precision welding KSC-10361</td>
</tr>
<tr>
<td>Low-energy gamma ray inspection of braze aluminum joints N-SC-1189</td>
<td>Segmented SiGe-PbTe couples GSPC-10746</td>
</tr>
<tr>
<td>Reparable, high-density microelectronic module provides effective heat sink M-PS-13075</td>
<td>Finite element analysis of compressible solids with nonlinear material properties I-PS-10342</td>
</tr>
<tr>
<td>Resilient bearing supports are gas controlled LEWIS-10109</td>
<td>Thermal Network Analyzer Program NUC-10540</td>
</tr>
<tr>
<td>Heavy-gage bonded honeycomb sandwich as primary load-bearing structure M-PS-12060</td>
<td>Quick-release hook-and-loop fastener M-10950</td>
</tr>
<tr>
<td>Technique eliminates high voltage arcing at electrode-insulator contact area LEWIS-10133</td>
<td><strong>JOURNAL BEARINGS</strong></td>
</tr>
<tr>
<td>aluminum joints N-SC-1189</td>
<td>Diameter shows depletion of lubricant in journal bearings LEWIS-37</td>
</tr>
<tr>
<td>Aluminum and stainless steel tubes joined by simple ring and welding process M-PS-13120</td>
<td>Slit feeds reduce unbalanced torques in gas-lubricated bearings JPL-264</td>
</tr>
<tr>
<td>Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel NUC-10068</td>
<td>A conceptual design for squeeze film bearings M-PS-573</td>
</tr>
<tr>
<td>Self-aligning rod prevents eccentric loading of tensile specimens NUC-10525</td>
<td>Resilient bearing supports are gas controlled LEWIS-10109</td>
</tr>
<tr>
<td>Development of helical seal for high temperature /2000 degrees F/ application M-PS-13304</td>
<td>Shallow grooves in journal improve air bearing performance LEWIS-10396</td>
</tr>
<tr>
<td>Flare angles measured with ball gage M-PS-1490</td>
<td>Low cost techniques for fabricating lobed bearings LEWIS-10296</td>
</tr>
<tr>
<td>Heat-shrink plastic tubing seals joints in glass tubing LEWIS-10329</td>
<td>Journal gas bearing for curved surfaces M-PS-20423</td>
</tr>
<tr>
<td>Method for reinforcing tubing joints N-SC-14018</td>
<td>Study of high temperature bearing materials LEWIS-10870</td>
</tr>
<tr>
<td>Asbestos and Inconel combined to form hot-gas seal M-PS-14004</td>
<td>Hermetically sealed pump LEWIS-10837</td>
</tr>
<tr>
<td>Tube swaging device uses explosive force LANGLEY-10092</td>
<td>JP-4 JET FUEL</td>
</tr>
<tr>
<td>Logarithmic amplifier uses field effect transistors JPL-509</td>
<td>Test instrumentation evaluates electrostatic hazards in fluid system M-PS-2277</td>
</tr>
<tr>
<td><strong>JUNCTION DIODES</strong></td>
<td><strong>JUNCTION DIODES</strong></td>
</tr>
<tr>
<td>Logarithmic amplifier uses field effect transistors JPL-509</td>
<td>Logarithmic amplifier uses field effect transistors JPL-509</td>
</tr>
</tbody>
</table>

I-353
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient millimeter wave 1140 GHz diode for barometric power generation</td>
</tr>
<tr>
<td>Development of reliability prediction technique for semiconductor diodes</td>
</tr>
<tr>
<td>Reduced junction lead inductance ballasts high-frequency transistors</td>
</tr>
<tr>
<td>Improved chopper circuit uses parallel transistors</td>
</tr>
<tr>
<td>Instrument sequentially samples ac signals from several accelerometers</td>
</tr>
<tr>
<td>Modification to improve self-isolating transistor arrays</td>
</tr>
<tr>
<td>Lateral PNP bipolar transistor with adding field diffusion</td>
</tr>
<tr>
<td>New method used to fabricate gallium arsenide photovoltaic device</td>
</tr>
<tr>
<td>Multiple temperatures sampled using only one reference junction</td>
</tr>
<tr>
<td>Thermoelectric metal comparator determines composition of alloys and metals</td>
</tr>
<tr>
<td>New technique for optimal smoothing of data</td>
</tr>
<tr>
<td>Fortran 4 program for two-impulse rendezvous analysis</td>
</tr>
<tr>
<td>Well noisel kernel analysis program</td>
</tr>
<tr>
<td>Protective coating withstands high temperature in oxidizing atmosphere</td>
</tr>
<tr>
<td>Run-in with chemical additive protects gear surface</td>
</tr>
<tr>
<td>Thermoplastic rubber like material produced at low cost</td>
</tr>
<tr>
<td>Mulling pyrometer uses Kerr cell shutter for fast responses</td>
</tr>
<tr>
<td>Synthesis of electro optic modulators for amplitude modulation of light</td>
</tr>
<tr>
<td>Two-color holography</td>
</tr>
<tr>
<td>Simplified technique demonstrates magnetic domain switching</td>
</tr>
<tr>
<td>Optically exciting a magnetic memory - A feasibility study</td>
</tr>
<tr>
<td>Sprayable fire resistant coating enables strain measurements on large surfaces</td>
</tr>
<tr>
<td>Depressing of titanium to minimize stress corrosion</td>
</tr>
<tr>
<td>Photoactive filler minimizes internal stresses in epoxy resins</td>
</tr>
<tr>
<td>Welded repairs of punctured thin walled aluminum pressure vessels</td>
</tr>
<tr>
<td>Keyed plugs and sockets prevent improper connections</td>
</tr>
<tr>
<td>Polarizing keys prevent mismatch of connector plugs and receptacles</td>
</tr>
<tr>
<td>Large volume continuous counterflow dialyzer has high efficiency</td>
</tr>
<tr>
<td>Tester for study of rolling element bearings</td>
</tr>
<tr>
<td>Study made of large amplitude fuel sloshing</td>
</tr>
<tr>
<td>Propagation of density disturbances in air-water flow</td>
</tr>
<tr>
<td>Kinetic energy absorber employs frictional force between mating cylinders</td>
</tr>
<tr>
<td>Shock absorber operates over wide range</td>
</tr>
<tr>
<td>Magnetohydrodynamic generators using two-phase liquid metal flows</td>
</tr>
<tr>
<td>Studies of cycles for liquid metal magnetohydrodynamic generation of power</td>
</tr>
<tr>
<td>Storage of electric and magnetic energy</td>
</tr>
</tbody>
</table>
LABORATORY EQUIPMENT

KNUDSEN FLOW
Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique ARG-277 B67-10324 03

KNUDSEN FLOORS
Metallic diffusion measured by a modified Knudsen technique KQ-10145 B69-10309 03

KOVAR (TRADEMARK)
Multichip packaging with thermal insulation N-PS-14076 B68-10119 02

Indium adhesion provides quantitative measure of surface cleanliness SAN-10024 B68-10342 01

KRYPTON
Electroless discharge lamp is easily started, has high stability WGO-030 B66-10015 01

KRYPTON-55
Radioactive method enables determination of surface areas rapidly and accurately BO-0088 B66-10710 03

LABORATORIES

Experiments to investigate particulate materials in reduced gravity fields N-PS-13306 B67-10394 02

Computer program conducts facilities utilization and occupancy survey NPO-10326 B67-10476 06

Chemistry laboratory safety manual available SAN-10030 B68-10419 03

Rotary-knife stripper facilitates removal of X-ray film from pack N-PS-14837 B68-10509 05

LABCON - Laboratory Job Control program N-PS-18141 B69-10106 06

An improved atomic hydrogen frequency and time standard GSPC-10706 869-10341 02

LABORATORY EQUIPMENT

Mouthpiece adapter for pipettes protects mouth from harmful liquids LANSLEY-87 B65-10043 03

Double gloves reduce contamination of dry box atmosphere LEWIS-211 B65-10117 03

Multiple test tubes stirred mechanically ARG-42 B65-10120 01

Flowmeter measures low gas-flow rates M-PS-215 B66-10036 01

Apparatus enables accurate determination of alkali oxides in alkali metals LEWIS-256 B66-10296 03

Apparatus enables automatic microanalysis of body fluids JPL-962 B66-10515 04

Automated microsyringe is highly accurate and reliable NPO-10142 B67-10203 01

Thermodynamic properties of saturated liquid parahydrogen charted for important temperature range NRC-10018 B67-10346 03

Color-television medical microscopy
Product identification techniques used as training aids for analytical chemists
SAN-10025 B66-10373 03

Heat-load simulator for heat sink design
MSC-15170 B66-10510 02

Dispensing graduate for butadiene
NFO-10070 B66-10524 03

Mass culture of photobacteria to obtain luciferase
GSFC-10563 B66-10294 04

Novel multipurpose timer for laboratories
ARG-10417 B66-10410 01

Life detection
NFO-10510 B66-10475 04

Labyrinth-type valve seat increases valve life by decreasing fluid velocity
I-FS-192 B67-10067 05

Modification increases light output of injection-luminescent diodes
I-FS-192 B67-1006 01

Inexpensive infrared source improvised from flashlight
I-FS-494 B67-10096 02

Coating permits use of strain gage in water and liquid hydrogen
I-FS-594 B66-10192 01

Lactic acid
Separation of the rare earths by anion-exchange in the presence of lactic acid
ARG-10436 B69-10377 03

Ladders
Adjustable, self-locking ladder includes optional work platform
I-FS-1922 B67-10067 05

Lamb waves
Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique
ARG-203 B67-10295 02

Lamb waves increase sensitivity in nondestructive testing
ARG-10009 B67-10605 02

Labyrinth boundary layer
Thin-film gage measures low heat-transfer rates
LANGLEY 205 B66-10180 01

Labyrinth flow
Concept for passive system to control gas flow independently of temperature
I-FS-962 B66-10343 05

High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation
LEWIS-310 B66-10394 01

Improved atmospheric particle analyzer
BEC-33 B67-10231 01

Computer program calculates velocities and streamlines in turbo machines
LEWIS-10252 B66-10097 06

Prediction of friction coefficients for gases
LEWIS-10774 B69-10112 02

Microbiological aspects of sterilization development laboratories
NFO-11197 B69-10593 04

Flow properties of suspensions rich in solids
ARG-10841 B69-10622 02

Flexible curtain shields equipment from intense heat fluxes
I-FS-46 B65-10044 03

Peel resistance of adhesive bonds accurately measured
GSFC-320 B65-10173 03

Device detects unbonded areas in plastic laminates
WOO-206 B65-10380 01

Drill bit design assures clean holes in laminated materials
WOO-098 B65-10386 05

Polymer film exhibits thermal and radiation stability
LANGLEY-100 B66-19043 03

Coating permits use of strain gage in water and liquid hydrogen
I-FS-594 B66-10192 01

Silazane polymers show promise for high-temperature application
I-FS-866 B66-10194 03

Self-contained clothing system provides protection against hazardous environments
I-FS-536 B66-10201 05

Inexpensive insulation is effective for cryogenic transfer lines
MSC-618 B66-10348 02

Aluminum core structures brazed without use of flux
I-FS-659 B66-10360 05

Impact and puncture resistant material protects parts from damage
I-FS-747 B66-10375 05

Composite gaskets are compatible with liquid oxygen, resist compression set
I-FS-455 B66-10395 03

Multilayer refractory nozzles produced by plasma-spray process
WOO-318 B66-10611 05

Dispersion of borax in plastic is excellent fire-retardant heat insulator
ARG-5 B67-10016 03

Thin film process forms effective electrical contacts on semiconductor crystals
I-FS-2343 B67-10182 01

Oxide film on metal substrate reduced to form metal-oxide-metal layer structure
ARG-48 B67-10187 03

Liquid crystals detect voids in fiber glass laminates
LEWIS-10104 B67-10286 03

Repairable, high-density microelectronic module provides effective heat sink
I-FS-13075 B67-10356 01

Polarized light reveals stress in machined laminated plastics
LEWIS-10018 B67-10383 03

Adhesives for laminating polyimide insulated flat conductor cable
I-FS-13892 B67-10429 03

Warpage eliminated in copper-clad microwave circuit laminates
I-FS-13992 B67-10454 03
Panelized high performance multilayer insulation
M-FS-14023  B66-10031  03

Molding a high-density laminate
LANGLEY-10251  B68-10092  03

Laminated sheet composites reinforced with modular filament sheet
M-FS-14575  B66-10146  03

Multilayer plated wire shows promise as memory device
MSC-11587  B69-10205  01

Improved process for epitaxial deposition of silicon on prediffused substrates
M-FS-14910  B66-10390  03

Conditioning flat conductors for flat conductor cable production
M-FS-14914  B69-10429  01

Diffusion bond method of joining steel and a TFE-bronze composite
M-FS-20482  B69-10237  03

Multilayer infrared beamsplitter film system
XGS-11036  B69-10260  02

A method for observing gas evolution during plastic laminate cure
MSC-15592  B69-10530  03

LAND
Land landing couch dynamics computer program
MSC-1210  B67-10233  06

LANDING AIDS
Break-up of metal tube makes one-time shock absorber, bars rebound
LANGLEY-1A  B63-10304  05

Land landing couch dynamics computer program
MSC-1210  B67-10233  06

LANDING GEAR
Kinetic-energy absorber employs frictional force between mating cylinders
LNWIS-75  B63-10442  05

LANGUAGE PROGRAMMING
FORTAN program flow chart is automatically produced
M-FS-369  B66-10062  01

Assembly processor program converts symbolic programming language to machine language
M-FS-13262  B67-10493  06

JFLIP-JPL FORTAN language with interval pre-processor
NPO-10635  B69-10187  06

Determination of quadric equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas
M-FS-15043  B69-10435  06

Automatic computation of data-set definitions
ARG-10475  B69-10608  06

COGENT programming manual
ARG-10463  B69-10656  06

LANTHANUM COMPOUNDS
Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods
ARG-10065  B69-10425  03

LAP JOINTS
Lightweight door seal cryogenic container against diaphragm type loading
M-FS-476  B65-10402  05

Solar cell submodule design facilitates assembly of lightweight arrays
JFL-720  B66-10231  02

Differential expansion provides pressure for diffusion bonding of large diameter rings
M-FS-588  B66-10269  05

Mechanical properties of a lap joint under uniform clamping pressure
M-FS-14538  B69-10141  05

Tool repairs tube components in situ
MSC-15348  B69-10379  05

LAPLACE EQUATION
Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MSC-989  B66-10619  01

LAPLACE TRANSFORMATION
Computer determines high-frequency phase stability
GSFC-173  B63-10555  01

Polynomial manipulator AF-168
MSC-1231  B67-10103  01

General frequency response program calculates frequency response of system, open at any specified element
M-FS-12817  B67-10521  06

Symbolic reduction of block diagrams using FORTRAN
LEWIS-10409  B68-10423  06

One-dimensional Coulomb-damped wave motion in prismatic bar
N-FS-14815  B66-10568  02

Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature change
ARG-10274  B69-10047  02

Aerodynamic forces of fluttering cylindrical and/or planar structures
M-FS-20497  B69-10781  02

LARGE SCALE INTEGRATION
Literal readout of identification signals in Morse code
LANGLEY-10222  B69-10479  01

LASER MODES
Neon isotopes cancel errors in gas laser
N-FS-1476  B66-10583  02

Absolute frequency stabilization of laser oscillator against laser amplifier
N-FS-2559  B67-10255  01

LASER OUTPUTS
Design concepts using ring lasers for frequency stabilization
N-FS-2448  B67-10255  01

Absolute frequency stabilization of laser oscillator against laser amplifier
N-FS-2559  B67-10255  01

Laser system generates single-frequency light
N-FS-2556  B67-10288  02

Wideband, high efficiency optical modulator requires less than 10 watts drive power
N-FS-12733  B67-10289  01

Nonreciprocals gain control for ring laser
N-FS-14041  B69-10653  02

Feasibility study of wireless power transmission systems
N-FS-14051  B69-10309  01

X-357
LASERS

Laser-Doppler gas-velocity instrument
I-PS-20039 B68-10349 02

Digital laser-beam deflection sensor
I-PS-14785 B68-10525 01

Optical frequency waveguide and ion transmission system
HQ-10541 B69-10746 01

LASEs
Modification increases light output of injection-luminescent diodes
I-PS-192 B65-10006 01

Laser beam transmits electric power
GSFC-293 B65-10158 01

Interferometer combines laser light source and digital counting system
MSC-151 B65-10161 01

Communication system uses modulated laser beam
GSFC-377 B65-10333 01

Laser measuring system accurately locates point coordinates on photograph
AEG-74 B66-10560 02

Optical superheterodyne receiver uses laser for local oscillator
I-PS-1605 B66-10584 01

Concept for using laser beams to measure electron density in plasmas
I-PS-965 B66-10645 01

Accuracy of laser measurements improved by pulse autocorrelator electronic system
MSC-1033 B67-10338 01

Proposed method of rotary dynamic balancing by laser
I-PS-12422 B67-10452 02

Laser communication system is insensitive to atmospherically induced noise
GSFC-10396 B67-10587 01

Development of Curie point switching for thin films, random access, memory device
NPO-10402 B67-10633 02

Flow tube used to cool solar-pumped laser
MSC-11026 B68-10010 02

Electronic gating circuit and ultraviolet laser excitation permit improved dosimeter sensitivity
AEG-10109 B68-10077 02

Feasibility study of wireless power transmission systems
I-PS-14691 B68-10309 01

Improved electro-optical tracking system
I-PS-14791 B68-10311 01

Rapid-response, light-exposure control system
NPO-10238 B68-10502 01

Digital laser-beam deflection sensor
I-PS-14785 B68-10525 01

Optically induced free carrier light modulator
GSFC-10216 B69-10114 01

Welding, brazing, and soldering handbook
I-PS-20504 B69-10264 05

Laser action from a terbium beta-ketoenolate at room temperature
GSFC-10593 B69-10324 02

Laser interferometer micrometer system
I-PS-14747 B69-10633 02

SUBJECT INDEX

Electrolytic separation of crystals of transition-metal oxides
AEG-10506 B69-10642 03

Fine-line sensitivity for holographic interferograms
HQ-10348 B69-10663 02

Long range holographic contour mapping concept
HQ-10350 B69-10700 02

Latches
Magnetic latches provide positive overpressure control
NU-0057 B66-10279 05

Latching mechanism operates in limited access area
MSC-230 B66-10338 05

Electrically controlled optical latch and switch requires less current
JPL-SC-111 B66-10414 01

Work platform is supported by self-locking blades
I-PS-1229 B67-10180 05

Combined actuator and latch for cartridge powered actuator
MSC-11242 B67-10488 05

Toggle operated double latch
MSC-11377 B68-10117 05

Boyd bolt, a positive-latch, simple-release fastener
MSC-13061 B68-10512 05

Astronaut's tool for withdrawing/replaceing computer cards
I-PS-12422 B67-10183 05

Electrothermal linear actuator
NPO-10637 B69-10296 05

Lethal control
Conceptual techniques for reducing parasitic current gain of lateral pnp transistors
NPO-13199 B69-10244 01

Lethal stability
Sleeve and cutter simplify disconnecting welded joint in tubing
JPL-384 B63-10240 05

Lateral ring metal elastic wheel absorbs shock loading
I-PS-1132 B66-10663 05

Lather
Refractory thermal insulation for smooth metal surfaces
I-PS-160 B64-10099 03

Submicron holes in thin films increase sampling range of mass spectrometers
JPL-SC-097 B66-10380 03

Method accurately measures mean particle diameters of monodisperse polystyrene latexes
AEG-207 B67-10054 02

Lathes
Lathe converted for grinding aspheric surfaces
GSFC-115 B63-10556 05

Collar positions strip stock used to form coil on mandrel
JPL-198 B65-10130 05

Metal bellows custom-fabricated from tubing
LEWIS-192 B65-10150 05

Lathe attachment used to machine elliptical cones
I-358
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>LEAD ALLOYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC-100 B65-10168 05</td>
<td>N-PS-15028 B69-10041 06</td>
</tr>
<tr>
<td>Spiral heater coils hand-formed with fixture LEWIS-208 B65-10192 05</td>
<td>Programmed schedule holds for improving launch vehicle holds N-PS-14502 B69-10602 05</td>
</tr>
<tr>
<td>Self-aligning fixture used in lathe chuck jaw refacing FRC-21 B65-10198 05</td>
<td>LAUNCHERS Device disconnects several couplings simultaneously JPL-226 B65-10163 05</td>
</tr>
<tr>
<td>Lathe chuck key incorporates safety feature MSC-506 B66-10243 05</td>
<td>LAUNCHING Controlled release device prevents damage from dynamic stresses KSC-66-14 B66-10628 05</td>
</tr>
<tr>
<td>Device facilitates centering of workpieces in lathe chuck N-PS-685 B66-10277 05</td>
<td>LAUNCHING SITES Modified cryogenic storage tank subsystem KSC-10380 B69-10556 02</td>
</tr>
<tr>
<td>Swiveling lathe jaw concept for holding irregular pieces N-PS-783 B66-10321 05</td>
<td>LAYERS Improved radiographic image amplifier panel N-PS-18522 B68-10363 02</td>
</tr>
<tr>
<td>Cold machining of high density tungsten and other materials ARG-10289 B69-10110 05</td>
<td>LAYOUTS Modified procedure speeds camera copy layout for offset printing GSFC-424 B65-10373 02</td>
</tr>
<tr>
<td>LATITUDE Theory of a refined earth model N-PS-14679 B66-10228 02</td>
<td>Areas of irregular, discontinuous patterns rapidly and accurately measured GSFC-10184 B67-10674 01</td>
</tr>
<tr>
<td>LATITUDE PARAMETERS Crystal structure analysis of intermetallic compounds ARG-10092 B66-10198 03</td>
<td>LC CIRCUITS High-performance RC bandpass filter is adapted to miniaturized construction ABC-60 B66-10309 01</td>
</tr>
<tr>
<td>LATITUDE VIBRATIONS Study of lattice defect vibration ARG-10224 B69-10078 02</td>
<td>Multipulse current source offers low power losses and high reliability LANDLEY-68 B67-10603 01</td>
</tr>
<tr>
<td>LATTICES Measurements of thermoelectric power in annealed and quenched gold-platinum alloys ARG-10303 B69-10206 03</td>
<td>Improved limiter for turn-on current transient GSFC-10413 B68-10384 01</td>
</tr>
<tr>
<td>LATTICES (MATHEMATICS) Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds LANGLEY-10191 B67-10666 06</td>
<td>LEACHING Porous mandrels provide uniform deformation in hydrostatic powder metallurgy N-PS-1972 B69-10209 03</td>
</tr>
<tr>
<td>LAUER METHOD Spherical model provides visual aid for cubic crystal study LEWIS-108 B65-10065 03</td>
<td>LEAD (METAL) Metals plated on fluorocarbon polymers JPL-544 B63-10612 03</td>
</tr>
<tr>
<td>LAUNCH DATES Advanced mission analysis program GSFC-10575 B69-10171 06</td>
<td>Solder flux leaves corrosion-resistant coating on metal JPL-611 B64-10206 03</td>
</tr>
<tr>
<td>LAUNCH VEHICLE CONFIGURATIONS Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles LANGLEY-10093 B67-10531 06</td>
<td>Superconductor shields test chamber from ambient magnetic fields JPL-627 B65-10297 02</td>
</tr>
<tr>
<td>LAUNCH VEHICLES Method for predicting frictional loss in metal bellows and flexible hose N-PS-883 B66-10662 05</td>
<td>Method prevents secondary radiation in radiographic inspection N-PS-13383 B67-10391 02</td>
</tr>
<tr>
<td>System automatically provides dynamic launch decision criteria N-PS-13653 B67-10363 01</td>
<td>Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel BGC-10008 B67-10539 05</td>
</tr>
<tr>
<td>Earth orbit rendezvous evaluation program N-PS-13016 B67-10407 06</td>
<td>X-ray film holder permits single continuous picture of taking joint LEWIS-10382 B66-10383 05</td>
</tr>
<tr>
<td>Fortran 4 program for two-impulse rendezvous analysis N-PS-13971 B67-10479 06</td>
<td>Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ra-226 in aquatic fauna ARG-10345 B69-10258 02</td>
</tr>
<tr>
<td>Concept to standardize space vehicle piggyback experiment modules N-PS-1697 B68-10038 05</td>
<td>Precisely repeatable rotary mechanisms KSC-10679 B69-10696 05</td>
</tr>
<tr>
<td>Assembly, checkout, and operation optimization analysis technique for complex systems N-PS-14105 B68-10222 05</td>
<td>LEAD ALLOYS Vacuum chamber is remotely sealed by eutectic metal N-0-0091 B67-10059 05</td>
</tr>
</tbody>
</table>

I-359
LEAD COMPOUNDS

Lead oxide ceramic makes excellent high-temperature lubricant
LEWIS-164 B64-10116 03

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
ARG-10220 B69-10211 02

Segmented Si-PbTe couples
GSPC-10746 B69-10233 01

Quality-weld parameters for microwelding techniques and equipment
I-PS-20884 B69-10303 05

LEAD ISOTOPES

Direct determination of lead-210 by liquid-scintillation counting
ABG-10220 B69-10611

LEAD SULFIDES

Advances in aluminum anodizing
I-PS-14600 B69-10144 05

LEAD TELLURIDES

Phonocardiograph microphone is rugged and moistureproof
ISC-212 B66-10314 04

LEAD TITANATES

Ultrasonic wrench produces leaktight connections
H-PS-12561 B67-10353 05

LEAKAGE

Vented piston seal prevents fluid leakage between two chambers
JPL-179 B63-10141 05

Device transmits rotary motion through hermetically sealed wall
JPL-303 B63-10198 05

Self sealing disconnect for tubing forms metal seal after breakaway
JPL-354 B63-10226 05

Fluid-pressure meter can be calibrated without removal from flow line
H-PS-98 B63-10502 05

Sensitive low-pressure relief valve has positive seating against leakage
WOO-041 B64-10278 05

Valve designed with elastic seat
JPL-442 B65-10040 05

Fuel cell serves as oxygen level detector
JFL-SC-072 B65-10066 01

Low-cost seal compensates for surface irregularities
WU-0016 B65-10160 05

Superconductor magnets used for stagger-tuning traveling-wave maser
GSPC-292 B65-10165 01

Diaphragm eliminates leakage in cryogenic fluid duct coupling
WOO-142 B65-10227 05

Weld leaks rapidly and safely detected
H-PS-362 B65-10265 01

Composite seal reduces alkaline battery leakage
GSPC-337 B65-10271 01

O-ring tube fittings form leakproof seal in hydraulic systems
H-PS-481 B66-10020 05

LEAD COMPOUNDS

UNITED STATES

SUBJECT INDEX

Resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05

Control system maintains selected liquid level
H-PS-470 B66-10039 01

High-pressure, low temperature electrical connector makes no-leak seal
MSC-276 B66-10079 02

Capsacitive system detects and locates fluid leaks
H-PS-478 B66-10099 01

Dispenser leak-tests and sterilizes rubber gloves
MSC-265 B66-10166 03

Wide-range instrument monitors flow rates of chemically active fluids
MSC-186 B66-10205 01

Special tool seals conductors with combination of plastic sleeves
H-PS-579 B66-10209 05

Soft-seal valve holds hazardous fluids safely
LEWIS-275 B66-10216 05

Expandable rubber plug seals openings for pressure testing
HU-0048 B66-10229 05

Brazing process using Al-Si filler alloy reliably bonds aluminum parts
GSPC-448 B66-10230 05

Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
H-PS-640 B66-10247 05

Flow ring valve is simple, quick-acting
H-PS-752 B66-10255 05

Vacuum test fixture improves leakage rate measurements
MSC-271 B66-10286 01

Flexible fastener effects airtight material closure
JPL-684 B66-10304 05

Union would facilitate joining of tubing, minimize braze contamination
MSC-777 B66-10311 05

Valve seat pores sealed with thermosetting monomer
H-PS-900 B66-10322 03

Sniffer used as portable hydrogen leak detector
H-PS-846 B66-10356 01

Diaphragm valve for corrosive and high temperature fluid flow control has unique features
LEWIS-304 B66-10365 05

Minimum permissible leakage resistance established for instrumentation systems
H-PS-848 B66-10397 01

Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket
H-PS-888 B66-10412 01

Electroplating eliminates gas leakage in brazed areas
H-PS-923 B66-10415 05

Large diameter metal ring seal prevents gas leakage at 5000 psi
H-PS-1064 B66-10422 05

Gas leak detector is simple and...
SBKST SQAEB S\METHOD

inexpensive
M-FS-1206

Silver plating technique seals leaks in thin wall tubing joints
MO-0090
B66-10703 05

Orbital tube flaring system produces tubing connectors with zero leakage
M-FS-2016
B67-10019 05

Visco seal design offers zero-leakage and wear-free characteristics
WSD-329
B67-10047 05

Portable detector set disclosures helium leak rates
M-FS-7733
B67-10065 01

Portable fixture facilitates pressure testing of instrumentation fittings
M-FS-2012
B67-10121 03

Cryogenic seal remains leaktight during thermal displacement
ABG-96
B67-10134 02

Cracks in glass electrical connector headers removed by dry blasting with fine abrasive
LEWIS-361
B67-10148 03

Fixure facilitates helium leak testing of pipe welds
M-FS-2167
B67-10178 05

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
ARG-184
B67-10202 05

Segmented, arch-bound carbon seal in pressure loaded
M-FS-12777
B67-10325 05

Ultrasownc wrench produces leaktight connections
M-FS-12561
B67-10353 05

Stabiliznng stainless steel components for cryogenic service
M-FS-13127
B67-10377 05

Aluminum and stainless steel tubes joined by simple ring and welding process
M-FS-13120
B67-10472 05

Dynamic valve seal is reliable at cryogenic temperatures
M-FS-12967
B67-10526 05

Flurocarbon seal replaces metal piston ring in low density gas environment
LEWIS-10277
B67-10591 05

Dynamic captive plastic seal
M-FS-12988
B67-10600 03

Cryogenic seal concept for static and dynamic conditions
M-FS-12866
B67-10673 05

Vent and relief valve maintains low leakage rate over broad temperature range
M-FS-12807
B66-10014 05

Locating and sealing air leaks in multiroomed buildings
NRC-10304
B68-10024 05

Device provides controlled gas leaks
MGO-10290
B68-10142 03

Tube swaging device uses explosive force
LANGley-10092
B68-10235 05

Spiral-grooved shaft seals substantially reduce leakage and wear
LEWIS-10397
B68-10270 05

Between-bearing shaft seal, a concept
M-FS-18179
B66-10286 05

Conceptual apparatus for detecting leaks of nonconductive liquids
M-FS-14713
B68-10303 01

Determining gas leakage from bubble formations
M-FS-18414
B68-10393 05

Nondestructive testing of brazed rocket engine components
M-FS-18191
B68-10394 03

Tube joint leak repair coupling
NESC-15022
B68-10540 05

Reliable method for testing gross leaks in semiconductor component packages
NESC-10150
B68-10562 01

Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control
IMR-09704
B69-10016 05

Diffusion of trace gases for leak detection - A study
M-FS-20254
B69-10067 03

Leakage tester for flat conductor cable connector
M-FS-20427
B69-10284 05

Sealing a rubber bladder between two sections of an accumulator
M-FS-20403
B69-10355 05

Leakage measuring method
M-FS-14722
B69-10438 01

Piezoelectric linear actuator
NESC-13194
B69-10469 02

Flared-tube fittings with replaceable seat inserts
NESC-15372
B69-10519 05

Burst diaphragm leak detector
M-FS-14500
B69-10543 03

Integral valve provides automatic relief and remote venting
M-FS-12134
B69-10585 05

Two-functional seal for hose connection
M-FS-14062
B69-10588 05

LEAST SQUARES METHOD

Method accurately measures mean particle diameters of monodisperse polystyrene latexes
ARG-207
B67-10054 02

Solubility data are compiled for metals in liquid zinc
ARG-149
B67-10191 03

Computer program for network synthesis by frequency response fit
M-FS-12686
B67-10406 06

Numerical least-square method for resolving complex pulse height spectra
GSPC-10142
B67-10480 06

Automatic design of optical systems by computer
NESC-14695
B68-10632 06

Computer graphics data conditioning
NESC-14695
B68-10296 06

FORTBSAN optical lens design program
NESC-10603
B68-10354 06

Frequency domain analysis and synthesis of lumped parameter systems using nonlinear least squares techniques

I-361
Leaves

Protective clothing for workers with 5-kW and 20-kW short-arc lamps B69-10577 02

Comparative chromatography of chloroplast pigment ARG-10415 B69-10425 03

Study of lattice defect vibration ARG-10221 B66-10078 02

Adjustable hinge permits movement of knee in plaster cast M-FS-1756 B67-10056 04

Computer program ETC improves computation of elastic transfer matrices of Legendre polynomials P/0/ and P/1/ NUC-10070 B67-10071 06

Disk calculator indicates legible lettering size for slide projection GSFC-409 B65-10339 05

Legibility of electroluminescent instrument panels investigated MSC-494 B66-10316 02

Pressure probe compensates for dimensional tolerance variations JPL-515 B66-10599 01

System enables dimensional inspection of very large structures M-FS-2477 B67-10214 05

Optimatic system facilitates colorimetric and fluorometric measurements NPO-10233 B68-10316 01

Improved method of optical design GSPC-10743 B69-10405 02

Mirror device aligns machine surface perpendicular to sight lines W00-5 B63-10421 02

Attachment converts microscope to point source autocollimator JPL-499 B64-10124 05

Optical arrangement increases useful light output of semiconductor diodes JPL-SC-064 B65-10020 05

Wide-aperture solar energy collector is light in weight JPL-SC-055 B65-10046 02

Ball and socket joints provide accurate biaxial gimbals JPL-658 B65-10205 05

Communication system uses modulated laser beam GSPC-377 B65-10333 01

Optical output enhances flowmeter accuracy M-FS-482 B65-10395 02

Vibration tests on vidicons made by improved method JPL-SC-115 B66-10042 01

Screen of cylindrical lenses produces stereoscopic television pictures M-FS-273 B66-10086 02

New television camera eliminates vidicon tube

Leaves

Optical gyro pickoff operates at cryogenic temperatures M-FS-407 B66-10126 01

Circular, explosion-proof lamp provides uniform illumination MSC-382 B66-10156 02

Offset lenses add versatility to phototypesetting machine HQ-9 B66-10173 02

Panels illuminated by edge-lighted lens technique MSC-871 B66-10507 02

Laser Doppler flowmeter measures gas velocity MSC-1747 B66-10693 02

Electronic filter discriminates between true and false reflections HQ-55 B67-10071 02

Star/horizon simulator used to test space guidance system MSC-407 B67-10110 02

Aerial-image enables diagrams and animation to be inserted in motion pictures ISC-165 B67-10396 02

Pressure probe compensates for dimensional tolerance variations LIWIS-302 B66-10599 01

System enables dimensional inspection of very large structures M-FS-2477 B67-10214 05

Optimatic system facilitates colorimetric and fluorometric measurements NPO-10233 B68-10316 01

Improved method of optical design GSPC-10743 B69-10405 02

Mirror device aligns machine surface perpendicular to sight lines W00-5 B63-10421 02

Attachment converts microscope to point source autocollimator JPL-499 B64-10124 05

Optical arrangement increases useful light output of semiconductor diodes JPL-SC-064 B65-10020 05

Wide-aperture solar energy collector is light in weight JPL-SC-055 B65-10046 02

Ball and socket joints provide accurate biaxial gimbals JPL-658 B65-10205 05

Communication system uses modulated laser beam GSPC-377 B65-10333 01

Optical output enhances flowmeter accuracy M-FS-482 B65-10395 02

Vibration tests on vidicons made by improved method JPL-SC-115 B66-10042 01

Screen of cylindrical lenses produces stereoscopic television pictures M-FS-273 B66-10086 02

New television camera eliminates vidicon tube

Subject Index

N-FS-472 B66-10112 01

Optical gyro pickoff operates at cryogenic temperatures M-FS-407 B66-10126 01

Circular, explosion-proof lamp provides uniform illumination MSC-382 B66-10156 02

Offset lenses add versatility to phototypesetting machine HQ-9 B66-10173 02

Panels illuminated by edge-lighted lens technique MSC-871 B66-10507 02

Laser Doppler flowmeter measures gas velocity MSC-1747 B66-10693 02

Electronic filter discriminates between true and false reflections HQ-55 B67-10071 02

Star/horizon simulator used to test space guidance system MSC-407 B67-10110 02

Aerial-image enables diagrams and animation to be inserted in motion pictures ISC-165 B67-10396 02

Camera lens adapter magnifies image M-FS-11955 B67-10431 02

Ballpoint probe gives optimum results in ultrasonic testing M-FS-13590 B67-10620 01

Electron beam deflected to determine focal point location M-FS-14107 B67-10649 01

Feasibility study of wireless power transmission systems N-FS-1469 01

Color-television medical microscopy ISC-13086 B69-10314 01

Improvement in recording and reading holograms NRC-10151 B68-10347 02

Flexible high-voltage supply for experimental electron microscope ARG-10482 B69-10603 01

Ion-retarding lens improves the abundance sensitivity of tandem mass spectrometers ARG-10365 B69-10166 02

Wide-aperture solar energy collector is light in weight JPL-10455 B65-10046 02

Ball and socket joints provide accurate biaxial gimbals JPL-658 B65-10205 05

Communication system uses modulated laser beam GSPC-377 B65-10333 01

Optical output enhances flowmeter accuracy M-FS-482 B65-10395 02

Vibration tests on vidicons made by improved method JPL-SC-115 B66-10042 01

Screen of cylindrical lenses produces stereoscopic television pictures M-FS-273 B66-10086 02

New television camera eliminates vidicon tube

I-362
Effect of preparation procedures on intensity of radioautographic labeling is studied

ABG-10032 B67-10500 04

**LEVEL (HORIZONTAL)**
Instrument quickly transposes ground reference target to eye level
MSC-275 B66-10061 05
Alignment tool facilitates pin placement on irregular horizontal surfaces
LANGLEY-219 B66-10410 05

**LEVEL (QUANTITY)**
Level of super-cold liquids automatically maintained by levelometer
JPL-397 B66-10402 05

Low-cost voltage-level detector
LEWIS-10885 B69-10217 01

**LEVELING**
Sensitive level sensor made with spirit level, gives electrical output
LANGLEY-49 B65-10067 01

Rotary valve controls multiple hydraulic leveling cylinders
N-PS-361 B66-10402 05

Heavy-duty precision leveling jacks expedite setup time on horizontal boring mill
N-PS-1084 B66-10411 05

Steel test panel helps control additives in pyrophosphate copper plating
LEWIS-10101 B67-10358 05

Automatic Gaussian random-noise limiter
NFO-10169 B69-10349 01

Automatic leveling and equalizing hoist device
N-PS-16549 B69-10514 05

**LEVELS**
Solenoid permits remote control of stop watch and assures restarting
FRC-17 B63-10024 01

Fatigue tester achieves true axial motion through flex plates and bars
NU-0021 B66-10164 01

Tool facilitates installation of Harmon clamps
N-PS-2039 B67-10105 05

Single-source mechanical loading system produces biaxial stresses in cylinders
N-PS-12530 B67-10380 05

Technique for measuring magnetic tape interlayer adhesion
NFO-10011 B67-10417 03

Battery case shear
GSPC-10783 B69-10127 05

Detachable caster adapter
MSC-91215 B69-10164 05

**LEVITATION**
Levitation-melting technique for metals and alloys
ARG-10240 B69-10006 03

**LEWS BASE**
Electrolytic separation of crystals of transition-metal oxides
ARG-10506 B69-10642 03

**LIPE**
 solution of differential equations by application of transformation groups
LEWIS-10885 B69-10217 01

**LIB**
New cobalt alloys have high-temperature strength and long life in vacuum environments
LEWIS-47 B63-10351 03

Improved fluid control valve extends diaphragm life
JPL-395 B65-10147 05

Graphite element serves as radiant heat source
N-PS-105 B65-10218 01

Improved electrode paste provides reliable measurement of galvanic skin response
NCO-146 B66-10049 04

New energy storage concept uses tapes
LEWIS-239 B66-10908 02

Plasma jet electrode has longer operating life
NU-0098 B67-10024 02

Honeycomb seal backing ring increases turbopump disk life
N-PS-13303 B67-10607 05

Predicting fatigue life of metal bellows
N-PS-14096 B68-10026 05

Study of fluoride corrosion of nickel alloys
ARG-10224 B69-10048 03

High-energy, high-power, long-life battery
LEWIS-10724 B69-10131 01

Design and sparing techniques to meet specified performance life
EQ-10200 B69-10526 02

Monte Carlo simulation by computer for life-cycle costing
N-PS-10754 B69-10590 05

**LIFE DETECTORS**
Life detection
NFO-10510 B69-10475 04

Quantitative determination of flavin nucleotide using the bacterial bioluminescent reaction
GSPC-10565 B69-10715 04

**LIFE RAFTS**
New inflatable liferaft is notippable
MSC-41B B64-10001 05

Storage-stable foamy polyurethane is activated by heat
LANGLEY-187 B66-10111 03

**LIFE SPAN**
Investigation of temperature dependence of development and aging
ARG-10345 B69-10022 04

**LIFE SUPPORT SYSTEMS**
One-piece transparent shell improves design of helmet assembly
MSC-187 B66-10390 05

Computer program analyzes generalized environmental control and life support systems
MSC-1157 B67-10415 06

Concept to comfort-condition subjects wearing restrictive clothing
MSC-10964 B68-10178 02

Electrolytic silver ion cell sterilizes water supply
MSC-11827 B68-10555 01
### LIFT DEVICES

- **Miniature oxygen resuscitator**
  - KSC-10398
  - B69-10319 04
- **Rate of heat extraction controller for environmental control**
  - HQ-102310
  - B69-10516 01

### LIGHT AMPLIFIERS

- **Synthesis of electro-optic modulators for amplitude modulation of light**
  - M-FS-14268
  - B68-10275 02

### LIGHT BEAMS

- **Servo system facilitates photoelastic strain measurements on resin**
  - JPL-504
  - B68-10280 01
- **System measures angular displacement without contact**
  - LANGLEY-46
  - B65-10073 01
- **Light-sensitive potentiometer measures product of two variables**
  - GSFC-240
  - B65-10076 01
- **Photoelectric system continuously monitors liquid level**
  - M-FS-417
  - B65-10382 01
- **Device to color modulate a stationary light beam gives high intensity**
  - HQ-44
  - B66-10476 01
- **High-speed camera synchronization**
  - M-FS-18062
  - B68-10282 02
- **Modified sine bar device measures small angles with high accuracy**
  - GSFC-438
  - B66-10322 02
- **Improvement in recording and reading holograms**
  - B68-10347 02
- **Ring laser angle encoder**
  - MSC-13099
  - B69-10115 01
- **Laser interferometer micrometer system**
  - M-FS-14747
  - B65-10633 02
- **Fine-line sensitivity for holographic interferograms**
  - HQ-10348
  - B69-10663 02
- **Optical frequency waveguide and ion...**

### SUBJECT INDEX

- **and velocity in fluid streams**
  - B66-10668 01
- **Laser Doppler flowmeter measures gas velocity**
  - M-FS-1747
  - B66-10693 02
- **Design concept for improved photo-scan tube**
  - JPL-81
  - B67-10577 01
- **Simplified technique demonstrates magnetic domain switching**
  - M-FS-13153
  - B67-10342 02
- **Aerial-image enables diagrams and animation to be inserted in motion pictures**
  - ARG-165
  - B67-10398 02
- **Optical integrating sphere operates at visible and infrared wavelengths**
  - M-FS-14248
  - B68-10126 02
- **Improved gas ring laser**
  - MSC-11584
  - B68-10304 02
- **System converts optical phase changes to RF phase changes**
  - M-FS-20091
  - B68-10630 01
- **Occulting-filter method for obtaining flashing-light visibility data**
  - MSC-13097
  - B69-10107 02
- **Method for copper staining of germanium crystals**
  - ARG-10403
  - B69-10257 03
- **Concept for improved vacuum pressure measuring device**
  - M-FS-20172
  - B69-10421 02
- **System expands the electro-optic modulators for amplitude modulation of light**
  - M-FS-14268
  - B68-10275 02

---

**I-364**
**SUBJECT INDEX**

<table>
<thead>
<tr>
<th>Transmission System</th>
<th>B69-10746 01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image position sensor</td>
<td>B69-10783 02</td>
</tr>
</tbody>
</table>

**LIGHT EMISSION**

<table>
<thead>
<tr>
<th>Optical arrangement increases useful light output of semiconductor diodes</th>
<th>HQ-10541</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical new method of measuring thermal-neutron fluence</td>
<td>HQ-10086</td>
</tr>
<tr>
<td>Improved radiographic image amplifier panel</td>
<td>HQ-14522</td>
</tr>
<tr>
<td>Silicon carbide diode for increased light output</td>
<td>HQ-20063</td>
</tr>
<tr>
<td>Optical frequency waveguide and ion transmission system</td>
<td>HQ-10541</td>
</tr>
</tbody>
</table>

**LIGHT SOURCES**

<table>
<thead>
<tr>
<th>Laminates</th>
<th>B67-10286 03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser-Doppler gas-velocity instrument</td>
<td>B68-10349 02</td>
</tr>
<tr>
<td>Detection of effect of deposits on optical windows of pyrometer measurements</td>
<td>B68-10367 01</td>
</tr>
</tbody>
</table>

**LIGHT EMISSION**

<table>
<thead>
<tr>
<th>Fresnel cup reflector directs maximum energy from light source</th>
<th>JPL-10474 02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid-level meter has no moving parts</td>
<td>HQ-3</td>
</tr>
<tr>
<td>Mirror device aligns machine surface perpendicular to sight lines</td>
<td>WO-5</td>
</tr>
<tr>
<td>Variable light source with a million-to-one intensity ratio</td>
<td>JPL-400-008</td>
</tr>
<tr>
<td>Low-cost tape system measures velocity of acceleration</td>
<td>GSPC-85</td>
</tr>
<tr>
<td>Camera shutter is actuated by electric signal</td>
<td>B63-10512 01</td>
</tr>
<tr>
<td>Analog device simulates physiological waveforms</td>
<td>GSPC-51</td>
</tr>
<tr>
<td>Attachment converts microscope to point source autocollimator</td>
<td>JPL-499</td>
</tr>
<tr>
<td>Compact cartridge drives coded tape at constant readout speed</td>
<td>JPL-472</td>
</tr>
<tr>
<td>Modification increases light output of injection-luminescent diodes</td>
<td>HQ-192</td>
</tr>
<tr>
<td>Sensitive level sensor made with spirit level, gives electrical output</td>
<td>B65-10006 01</td>
</tr>
<tr>
<td>Simple optical system used to align spectograph</td>
<td>LAMIGRY-92</td>
</tr>
<tr>
<td>Instrument calibrates low gas-rate flowmeters</td>
<td>MSC-134</td>
</tr>
<tr>
<td>Interferometer combines laser light source and digital counting system</td>
<td>MSC-151</td>
</tr>
<tr>
<td>Brushless dc motor uses electron beam switching tube as commutator</td>
<td>B65-10237 01</td>
</tr>
<tr>
<td>Photoresistance analog multiplier has wide range</td>
<td>GSPC-345</td>
</tr>
<tr>
<td>Photoelectric system continuously monitors liquid level</td>
<td>B65-10382 01</td>
</tr>
<tr>
<td>Optical output enhances flowmeter accuracy</td>
<td>B65-10382 01</td>
</tr>
<tr>
<td>Photosensors used to maintain welding electrode-to-joint alignment</td>
<td>MSC-243</td>
</tr>
<tr>
<td>Small, high-intensity flasher permits continuous close-in photography</td>
<td>B66-10101 03</td>
</tr>
<tr>
<td>Optical gyro pickoff operates at cryogenic temperatures</td>
<td>B66-10119 03</td>
</tr>
</tbody>
</table>

**LIGHT SOURCES**

<table>
<thead>
<tr>
<th>Advances in light-gas gun technology</th>
<th>B68-10288 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light ray modulation controls optical system alignment</td>
<td>GSPC-171</td>
</tr>
<tr>
<td>Communication system uses modulated laser beam</td>
<td>GSPC-377</td>
</tr>
<tr>
<td>Device to color modulate a stationary light beam gives high intensity</td>
<td>HQ-44</td>
</tr>
<tr>
<td>Improved design provides faster response time in photomultiplier</td>
<td>GSPC-651</td>
</tr>
<tr>
<td>Light-intensity modulator withstands high heat fluxes</td>
<td>MSC-286</td>
</tr>
<tr>
<td>Electronic filter discriminates between true and false reflections</td>
<td>HQ-55</td>
</tr>
<tr>
<td>Wideband, high efficiency optical modulator requires less than 10 watts drive power</td>
<td>HQ-15733</td>
</tr>
<tr>
<td>Optically induced free carrier light modulator</td>
<td>GSPC-10216</td>
</tr>
<tr>
<td>Light-scattering thin carbon film serves as UV bandpass filter</td>
<td>B66-100060</td>
</tr>
<tr>
<td>Solvent residue content measured by light scattering technique</td>
<td>B66-10320 01</td>
</tr>
<tr>
<td>Laser Doppler flowmeter measures gas velocity</td>
<td>B66-10697 02</td>
</tr>
<tr>
<td>Special purpose reflectometer uses modified Ulbricht sphere</td>
<td>MSC-135</td>
</tr>
<tr>
<td>Improved atmospheric particle analyzer</td>
<td>B69-10114 01</td>
</tr>
<tr>
<td>Electronic shutter gates image orthicon on and off</td>
<td>B67-10231 01</td>
</tr>
<tr>
<td>Liquid crystals detect voids in fiber glass</td>
<td>B67-10270 01</td>
</tr>
</tbody>
</table>

**LIGHT MODULATION**

<table>
<thead>
<tr>
<th>B65-10211 02</th>
</tr>
</thead>
<tbody>
<tr>
<td>B66-10476 01</td>
</tr>
<tr>
<td>B66-10526 01</td>
</tr>
<tr>
<td>B66-10532 02</td>
</tr>
<tr>
<td>B67-10071 02</td>
</tr>
<tr>
<td>B67-10289 01</td>
</tr>
<tr>
<td>B66-10114 01</td>
</tr>
<tr>
<td>B66-100060 02</td>
</tr>
<tr>
<td>B66-10320 01</td>
</tr>
<tr>
<td>B66-10693 02</td>
</tr>
<tr>
<td>B67-10109 02</td>
</tr>
<tr>
<td>B67-10231 01</td>
</tr>
<tr>
<td>B67-10270 01</td>
</tr>
</tbody>
</table>
Direction indicator system does not require complicated optics
W00-305  B66-10047  01
Electrically controlled optical latch and switch requires less current
JPL-SC-111  B66-10414  01
Uniform reflective films deposited on large surfaces
GSPC-507  B66-10483  02
Photocell shadowing technique improves light source detection
JPL-809  B66-10564  01
Use of color-coded sleeve shutters accelerates oscillograph channel selection
ESC-10092  B67-10382  01
Camera lens adapter magnifies image
H-FS-11955  B67-10431  02
Infrared viewing permits human iris response studies
ESC-10003  B66-10206  04
Color-televised medical microscopy
ESC-13086  B66-10314  01
Gimbal angle sensor
GSPC-10305  B66-10315  01
Rapid-response, light-exposure control system
KPO-10238  B66-10502  01
Occulting-filter method for obtaining flashing-light visibility data
MSC-13097  B69-10107  02
Fluorescent photography of spray droplets using a laser light source
LEWIS-10777  B69-10122  02
Surface irregularities detected by flare inspection instrument
H-FS-20187  B69-10152  01
Coordination chemistry in fused-salt solutions
ARG-10469  B69-10423  03
Circuit board hole coordinate locator concept
H-FS-14737  B69-10539  01
Long range holographic contour mapping concept
HQ-10350  B69-10700  02
A simple electrometer for measuring small photoelectric currents
GSPC-10603  B69-10734  01
LIGHT SPEED
Frequency offset in linear Pk/CW transponder eliminates clutter
H-FS-249  B65-10146  01
LIGHT TRANSMISSION
Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
MSC-11010  B67-10252  04
Self-balancing line-reversal pyrometer automatically measures gas temperatures
LEWIS-348  B67-10260  01
Portable spectrometer monitors inert gas shield in welding process
H-FS-12144  B67-10326  02
Computer program for optical systems ray tracing
FRC-10017  B67-10549  06
Technique developed for measuring transmittance of optical birefringent networks
H-FS-14267  B66-10260  02
Method of making comical fiber optical components
XHP-09745  B69-10020  02
LIGHTING EQUIPMENT
Panels illuminated by edge-lighted lens technique
MSC-871  B66-10507  02
Surface irregularities detected by flare inspection instrument
H-FS-20157  B69-10152  01
A prototype high power portable lamp
H-FS-20229  B69-10189  02
LIMITER AMPLIFIERS
PCB magnetic tape system efficiently records and reproduces data
GSPC-375  B65-10311  01
LIMITER CIRCUITS
Variable frequency magnetic multivibrator generates stable square-wave output
GSPC-AR-21  B65-10124  01
High-speed square-wave current limiter operates efficiently
JPL-SC-073  B66-10233  01
Electrically controlled optical latch and switch requires less current
JPL-SC-111  B66-10814  01
Linear signal noise smasher accurately determines and controls S/N ratio
JPL-SC-152  B66-10433  01
Limit circuit prevents overdriving of operational amplifier
MSC-10082  B69-10343  01
Current-limiting voltage regulator
MSC-11824  B68-10305  01
Improved limiter for turn-on current transient
GSPC-10413  B68-10384  01
Millivolt signal limiter
LEWIS-90297  B69-10015  01
Circuitry selectively limits data storage in general purpose computer
GSPC-10605  B69-10121  01
FCR bit detection with correction for intersymbol interference
GSPC-10155  B69-10153  01
Automatic Gaussian random-noise limiter
HFO-10169  B69-10349  01
LIMITS (MATHEMATICS)
Computer program determines exact two-sided tolerance limits for normal distributions
H-FS-18045  B66-10508  06
Maximum RMS error comparison of several redundancy techniques
H-FS-15075  B69-10297  01
LINE CURRENT
Tracer of electrical conduit or pipes
MSC-15223  B66-10347  01
LINE SHAPE
Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart
JPL-805  B66-10386  01
LINE SPECTRA
Electrodeless discharge lamp is easily

X-366
Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index

Study of yttrium iron garnet rods reveals new magnetostatic echo mode

Subject Index
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>LIQUID FLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact actuator converts rotary to linear motion</td>
<td>B66-10265 05</td>
</tr>
<tr>
<td>External linkage tie permits reduction in ducting system flange thickness</td>
<td>B66-10326 05</td>
</tr>
<tr>
<td>Concealed hinge permits flush mounting of doors and hatches</td>
<td>B66-10336 03</td>
</tr>
<tr>
<td>Flow-test device fits into restricted access passages</td>
<td>B67-10074 01</td>
</tr>
<tr>
<td>Lock-disconnect mechanism gives positive release to joined bodies</td>
<td>B67-10123 05</td>
</tr>
<tr>
<td>Web belt load measuring instrument has excellent stability</td>
<td>B67-10242 01</td>
</tr>
<tr>
<td>Metal tube reducer is inexpensive and simple to operate</td>
<td>B67-10401 05</td>
</tr>
<tr>
<td>Toggle operated double latch</td>
<td>B68-10117 05</td>
</tr>
<tr>
<td>Journal gas bearing for curved surfaces</td>
<td>B69-10182 05</td>
</tr>
<tr>
<td>Air-cushion lift pad</td>
<td>B69-10448 05</td>
</tr>
<tr>
<td>LIPOPROTEINS</td>
<td>Study of behavior of sterols at interfaces</td>
</tr>
<tr>
<td>LIQUEFACTION</td>
<td>Automatic thermal switch accelerates cooling-down of cryogenic system</td>
</tr>
<tr>
<td>Improved cryogenic refrigeration system</td>
<td>B65-10068 01</td>
</tr>
<tr>
<td>LIQUID GASES</td>
<td>Effect of interparticle forces on the fluidization of fine particles</td>
</tr>
<tr>
<td>LIQUID AIR</td>
<td>Self-contained clothing system provides protection against hazardous environments</td>
</tr>
<tr>
<td>LIQUID AMMONIA</td>
<td>Production of solvated electrons</td>
</tr>
<tr>
<td>LIQUID COOLING</td>
<td>Probe measures characteristics of hot gas stream</td>
</tr>
<tr>
<td>Mount makes liquid nitrogen-cooled gamma ray detector portable</td>
<td>B66-10103 00</td>
</tr>
<tr>
<td>Differential expansion provides pressure for diffusion bonding of large diameter rings</td>
<td>B66-10269 05</td>
</tr>
<tr>
<td>Welds chilled by liquid coolant manifold</td>
<td>B66-10354 05</td>
</tr>
<tr>
<td>New class of compounds have very low vapor pressures</td>
<td>ARG-115</td>
</tr>
<tr>
<td>Quartz crystals detect gas contaminants during vacuum chamber evacuation</td>
<td>B67-10164</td>
</tr>
<tr>
<td>Computer program calculates peripheral water injection cooling of exhauster</td>
<td>B67-10205 01</td>
</tr>
<tr>
<td>subsonic diffuser</td>
<td>B67-10583 06</td>
</tr>
<tr>
<td>Highly stable microwave delay line</td>
<td>B67-10642 01</td>
</tr>
<tr>
<td>Two-fluid, impinging-sheet injector</td>
<td>B68-10338 05</td>
</tr>
<tr>
<td>LIQUID CRYSTALS</td>
<td>Liquid crystals detect voids in fiber glass laminates</td>
</tr>
<tr>
<td>Production of crystalline polymers via liquid crystal monomers</td>
<td>B69-10744 03</td>
</tr>
<tr>
<td>LIQUID FILLED Shells</td>
<td>Handbook for design of containers of fluids and gases for spacecraft</td>
</tr>
<tr>
<td>LIQUID FLOW</td>
<td>Special pliers connect hose containing liquid under pressure</td>
</tr>
<tr>
<td>Spiraled channels improve heat transfer between fluids</td>
<td>B65-10291 02</td>
</tr>
<tr>
<td>Volumetric system calibrates meters for large flow rates</td>
<td>WGO-130</td>
</tr>
<tr>
<td>Optical output enhances flowmeter accuracy</td>
<td>B67-10332 05</td>
</tr>
<tr>
<td>Segmented ball valve is easy to open and close</td>
<td>WGO-240</td>
</tr>
<tr>
<td>Soft-seal valve holds hazardous liquids safely</td>
<td>LEWIS-275</td>
</tr>
<tr>
<td>Flow ring valve is simple, quick-acting</td>
<td>B66-10255 05</td>
</tr>
<tr>
<td>O-rings with mylar back-up provide high-pressure cryogenic seal</td>
<td>B66-10278 05</td>
</tr>
<tr>
<td>Vacuum test fixture improves leakage rate measurements</td>
<td>B66-10286 01</td>
</tr>
<tr>
<td>Fiber length and orientation prevent migration in fluid filters</td>
<td>B66-10319 05</td>
</tr>
<tr>
<td>High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation</td>
<td>B66-10394 01</td>
</tr>
<tr>
<td>Labyrinth-type valve seat increases valve life by decreasing fluid velocity</td>
<td>B66-10424 05</td>
</tr>
<tr>
<td>Miniature valve accurately controls small volume fluid flow</td>
<td>ARG-66</td>
</tr>
<tr>
<td>Computer program performs flow analysis through turbines</td>
<td>LEWIS-236</td>
</tr>
<tr>
<td>Rotational fluid coupling eliminates hose entanglements</td>
<td>B66-10496 01</td>
</tr>
<tr>
<td>Positive displacement cylinder measures corrosive liquid volume</td>
<td>B66-10558 05</td>
</tr>
<tr>
<td>Visco seal design offers zero-leakage and wear-free characteristics</td>
<td>WGO-389</td>
</tr>
<tr>
<td></td>
<td>B67-10047 05</td>
</tr>
<tr>
<td>SUBJECT INDEX</td>
<td>LIQUID-GAS MIXTURES</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Superconductive thin film makes convenient liquid helium level sensor</td>
<td>Liquid hydrogen densitometer utilizes open-ended microwave cavity</td>
</tr>
<tr>
<td>B68-10341 01</td>
<td>LEWIS-390</td>
</tr>
<tr>
<td>Improved liquid-level sensor for cryogenics</td>
<td>Self-sealing closure enables access to several fluid containers</td>
</tr>
<tr>
<td>B69-10210 02</td>
<td>NPO-10123</td>
</tr>
<tr>
<td>Low-cost insulation system for cryostats eliminates need for a vacuum</td>
<td>Computer program predicts thermal and flow transients experienced in a reactor loss-</td>
</tr>
<tr>
<td>B63-10365 03</td>
<td>of-flow accident</td>
</tr>
<tr>
<td>Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems</td>
<td>Circuit automatically calibrates flowmeter against liquid-level gage reference</td>
</tr>
<tr>
<td>B63-10368 05</td>
<td>LEWIS-10376</td>
</tr>
<tr>
<td>Low-cost seal compensates for surface irregularities</td>
<td>Performance of turbine-type flowmeters in liquid hydrogen</td>
</tr>
<tr>
<td>B65-10160 01</td>
<td>LEWIS-10137</td>
</tr>
<tr>
<td>Control system maintains selected liquid level</td>
<td>Flow liner extends operating life of high-anguilation bellows</td>
</tr>
<tr>
<td>B66-10039 01</td>
<td>M-P5-12023</td>
</tr>
<tr>
<td>Complementary system vaporizes subcooled liquid, improves transformer efficiency</td>
<td>Improved calorimeter provides accurate thermal measurements of space batteries</td>
</tr>
<tr>
<td>B66-10045 02</td>
<td>SSCC-100031</td>
</tr>
<tr>
<td>Compound improves thermal interface between thermocouple and sensed surface</td>
<td>Conceptual apparatus for detecting leaks of nonconductive liquids</td>
</tr>
<tr>
<td>B66-10028 02</td>
<td>M-P5-14713</td>
</tr>
<tr>
<td>Insulation for cryogenic tanks has reduced thickness and weight</td>
<td>Sensorial-diaphragm cavitating valve designed for bipropellant flow control</td>
</tr>
<tr>
<td>B66-10183 02</td>
<td>XNP-09704</td>
</tr>
<tr>
<td>Improved adhesive for cryogenic applications cures at room temperature</td>
<td>A laboratory method for precisely determining the micro-volume-magnitudes of liquid</td>
</tr>
<tr>
<td>B66-10514 05</td>
<td>efflux</td>
</tr>
<tr>
<td>Coating permits use of strain gage in water and liquid hydrogen</td>
<td>M-P5-10052</td>
</tr>
<tr>
<td>B66-10192 01</td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td>Leak locator for vacuum jacketed pipelines eliminates need for removal of outer</td>
<td>M-P5-10662</td>
</tr>
<tr>
<td>jacket</td>
<td>M-P5-10332</td>
</tr>
<tr>
<td>In-tank shutoff valve is provided with maximum blast protection</td>
<td>Flow properties of suspensions rich in solids</td>
</tr>
<tr>
<td>B66-10041 02</td>
<td>ARG-10481</td>
</tr>
<tr>
<td>Mixer conditions temperature of liquified gas streams</td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td>B66-10514 05</td>
<td>M-P5-1784</td>
</tr>
<tr>
<td>Liquid hydrogen densitometer utilizes open-ended microwave cavity</td>
<td>Mixers</td>
</tr>
<tr>
<td>B67-10115 01</td>
<td>M-P5-10052</td>
</tr>
<tr>
<td>Thermodynamic properties of saturated liquid parahydrogen charted for</td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td>important temperature range</td>
<td>M-P5-10662</td>
</tr>
<tr>
<td>B67-10346 03</td>
<td>Flow properties of suspensions rich in solids</td>
</tr>
<tr>
<td>Soft metal plating enables hard metal seal to operate successfully in low</td>
<td>ARG-10481</td>
</tr>
<tr>
<td>temperature, high pressure environment</td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td>B67-10350 03</td>
<td>M-P5-1784</td>
</tr>
<tr>
<td>Performance of turbine-type flowmeters in liquid hydrogen</td>
<td>Mixers</td>
</tr>
<tr>
<td>B67-10506 01</td>
<td>M-P5-10052</td>
</tr>
<tr>
<td>Development of detonation reaction engine</td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td>B67-10652 01</td>
<td>M-P5-1784</td>
</tr>
<tr>
<td>Simple test for physical stability of cryogenic tank insulation</td>
<td>Mixers</td>
</tr>
<tr>
<td>B68-10048 03</td>
<td>M-P5-12547</td>
</tr>
<tr>
<td>Device damps fluid pressure oscillations in vent valve</td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td>B68-10078 05</td>
<td>M-P5-13200</td>
</tr>
<tr>
<td>High-pressure gas facilitates calibration of turbine flowmeters for liquid</td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td>B68-10145 01</td>
<td>M-P5-10052</td>
</tr>
<tr>
<td>Hydrogen safety manual</td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td></td>
<td>M-P5-1784</td>
</tr>
<tr>
<td></td>
<td>Restricted-flow junction between liquids</td>
</tr>
<tr>
<td></td>
<td>M-P5-10052</td>
</tr>
<tr>
<td></td>
<td>Restricted-flow junction between liquids</td>
</tr>
</tbody>
</table>
Test instrumentation evaluates electrostatic hazards in fluid system

Electronic circuit provides automatic level control for liquid nitrogen traps

Cryogenic liquid level measuring probe

Superconductive thin film makes convenient liquid helium level sensor

Improved liquid-level sensor for cryogenics

LIQUID LEVELS

Improved liquid-level sensor for cryogenics

Method for predicting pump cavitation performance

Modified cryogenic storage tank subsystem

Two-functional seal for hose connection

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys

LIQUID INJECTION

Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application

Elimination of rocket engine asymmetric loads during tests at sea level

A method of determining combustion gas flow

LIQUID LASERS

Liquid laser cavities

LIQUID METALS

Double gloves reduce contamination of dry box atmosphere

Fluid damping reduces bellows seal fatigue failures

Inductive system detects level of conducting fluids

Rubber and alumina gaskets retain vacuum seal in high temperature EMF cell

Flowmeter measures flow rates of high temperature fluids

Crucible cast from beryllium oxide and refractory cement in impervious to flux and molten metal

Use of steel and tantalum apparatus for molten Cd-Zn alloys

Two techniques enable sampling of filtered and unfiltered molten metals

Solubility data are compiled for metals in liquid zinc

Substituting gold for silver improves electrical connections

Design for high-temperature /1600 deg F/ liquid metal pressure transducer

Calibration technique for electromagnetic flowmeters

Concept to convert electrical power

Levitation-melting technique for metals

Magnetohydrodynamic generators using two-phase liquid-metal flows

Studies of cycles for liquid-metal magnetohydrodynamic generation of power

Induction probe determines levels of liquid metals

Analysis of cell performance and thermal regeneration of a lithium-tin cell having
LIQUID NITROGEN

an immobilized fused-salt electrolyte
ARG-10453 B69-10627 03

Self-discharge in bimetallic cells containing alkali metal
ARG-10347 B69-10631 01

LIQUID NITROGEN

Cryogenic filter method produces super-pure helium and helium isotopes
JPL-374 B63-10235 03

Level of super-cold liquids automatically maintained by levelometer
JPL-397 B63-10250 01

Helium tube separates nitrogen gas from liquid nitrogen
JPL-398 B63-10251 05

Cryopumping of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogen
LEWIS-15 B63-10340 05

Low-cost insulation system for cryostats eliminates need for a vacuum
LEWIS-64 B63-10365 03

Refractory ceramic has wide usage, low fabrication cost
M-FS-67 B63-10461 03

Insulation accelerates rate of cooling with cryogenic fluid
MSC-161 B65-10240 02

Complementary system vaporizes subcooled liquid, improves transformer efficiency
M-FS-550 B66-10045 02

Mount makes liquid nitrogen-cooled gamma ray detector portable
LEWIS-259 B66-10103 01

Bismuth alloy potting seals aluminum connector in cryogenic application
WGO-260 B66-10138 03

Cryogenic liquid transfer system reduces residual boiloff
LEWIS-274 B66-10157 02

Differential expansion provides pressure for diffusion bonding of large diameter rings
M-FS-598 B66-10269 05

Closed loop operation eliminates need for auxiliary gas in high pressure pumping station
M-FS-893 B66-10408 05

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum
ARG-109 B66-10499 02

Cold trap increases sensitivity of gas chromatography
M-FS-1617 B66-10517 03

Technique for stripping Teflon insulated wire
M-FS-1774 B67-10048 05

Purification train produces ultrapure hydrogen gas
M-FS-1913 B67-10078 03

Inexpensive cryogenic insulation replaces vacuum jacketed line
NDC-10061 B67-10264 02

Study made of dielectric properties of promising materials for cryogenic capacitors
M-FS-13620 B67-10366 03

Concept for cryogenic liquid reclamation system
NPO-10322 B67-10420 02

Infrared radiometer
M-FS-13373 B67-10422 01

Technique eliminates high voltage arcing at electrode-insulator contact area
LEWIS-10133 B67-10470 01

Self-aligning rod prevents eccentric loading of tensile specimens
NDC-10525 B67-10594 05

Polystyrene cryostat facilitates testing tensile specimens under liquid nitrogen
NDC-10522 B67-10613 02

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures
NDC-10521 B67-10617 02

Tensile testing grips are easily assembled under liquid nitrogen
NDC-10524 B67-10628 05

Electronic circuit provides automatic level control for liquid nitrogen traps
KSC-10127 B68-10061 01

Viscosity and density of methanol/water mixtures at low temperatures
M-FS-10991 B68-10274 03

Dual-purpose chamber-cooling system
NPO-10567 B68-10506 02

Levitation-melting technique for metals and alloys
ARG-10240 B69-10066 03

Teflon-packed flexible joint
LEWIS-90252 B69-10049 03

Direct measurement of carbon-14 in carbon dioxide by liquid scintillation counting
ARG-10237 B69-10092 03

Bismuth alloy potting seals aluminum connector in cryogenic application
WGO-260 B66-10138 03

Improved liquid-level sensor for cryogenics
ARG-10162 B69-10210 02

Four-bar linkage for thermal compensation in test mounts for structures
NPO-11059 B69-10298 05

Direct in-vial collection for liquid-scintillation assay of carbon-14 and tritium
ARG-10245 B69-10412 03

Thermal calibration target
XGS-11144 B69-10419 01

Cryogenic fluid flow instabilities in heat exchangers
N-FS-20438 B69-10541 02

Burst diaphragm leak detector
N-FS-15000 B69-10543 03

Control for maintaining constant level of a cryogenic liquid
NPO-11177 B69-10573 05

LIQUID OXIDIZERS

Wide-range instrument monitors flow rates of chemically active fluids
MSC-196 B66-10205 01

Two-fluid, impinging-sheet injector
NPO-10547 B68-10338 05

LIQUID OXYGEN

Crack detection method is safe in presence of liquid oxygen
M-FS-236 B65-10107 03

Protective coating withstands high temperature in oxidizing atmosphere
M-FS-529 B66-10048 03
### Subject Index

**Liquid-Vapor Interfaces**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Reference</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultraviolet photographic pyrometer used in rocket exhaust analysis</td>
<td>N-FS-499</td>
<td>B66-10095 02</td>
</tr>
<tr>
<td>Surfactant for dye-penetrant inspection is insensitive to liquid oxygen</td>
<td>I-FS-475</td>
<td>B66-10131 03</td>
</tr>
<tr>
<td>Freon provides heat transfer for solid C02 calibration standard</td>
<td>M-FS-644</td>
<td>B66-10257 02</td>
</tr>
<tr>
<td>Composite gaskets are compatible with liquid oxygen, resist compression set</td>
<td>M-FS-455</td>
<td>B66-10395 03</td>
</tr>
<tr>
<td>In-tank shutoff valve is provided with maximum blast protection</td>
<td>M-FS-1529</td>
<td>B66-10514 05</td>
</tr>
<tr>
<td>Synthesis of various highly halogenated monomers and polymers</td>
<td>M-FS-2143</td>
<td>B67-10100 03</td>
</tr>
<tr>
<td>Inexpensive cryogenic insulation replaces vacuum jacketed line</td>
<td>NUC-10061</td>
<td>B67-10264 02</td>
</tr>
<tr>
<td>Liquid oxygen dicting cleaned by fallag filla method</td>
<td>M-FS-11816</td>
<td>B67-10299 03</td>
</tr>
<tr>
<td>Flow liner extends operating life of high-anguation bellows</td>
<td>M-FS-12023</td>
<td>B67-10512 05</td>
</tr>
<tr>
<td>Copper and nickel adherently electroplated on titanium alloy</td>
<td>M-FS-13952</td>
<td>B67-10532 03</td>
</tr>
<tr>
<td>Development of detonation reaction engine</td>
<td>M-FS-14620</td>
<td>B67-10652 01</td>
</tr>
<tr>
<td>Device damp fluid pressure oscillations in vent valve</td>
<td>M-FS-13290</td>
<td>B68-10078 05</td>
</tr>
<tr>
<td>Burst diaphragm leak detector</td>
<td>M-FS-14500</td>
<td>B69-10543 03</td>
</tr>
<tr>
<td>Liquid oxygen-compatible insulation system</td>
<td>M-FS-16113</td>
<td>B69-10599 03</td>
</tr>
</tbody>
</table>

**Liquid Phases**

- Coaxial capacitor used to determine fluid density
  - Lewis-10622
  - Reference: B65-10296 02

**Combustion chamber inlet manifold separates vapor from liquid**

- M-FS-531
  - Reference: B66-10052 05

**Thermodynamic properties related to expansion of two-component gas**

- MSC-1133
  - Reference: B67-10112 03

**Gas chromatograph injection port protective device**

- M-FS-10585
  - Reference: B69-10788 03

**Liquid Potassium**

- Spiral-grooved shaft seals substantially reduce leakage and wear
  - Lewis-10397
  - Reference: B68-10270 05

**Liquid-rocket engines**

- Electroplating eliminates gas leakage in brazed areas
  - M-FS-923
  - Reference: B66-10415 05

- Monitoring circuit accurately measures movement of solenoid valve
  - M-FS-1829
  - Reference: B66-10568 01

- Nondestructive testing of brazed rocket engine components

**Liquid Rocket Propellants**

- Machine tests crease durability of sheet materials
  - JPL-604
  - Reference: B64-10178 05

- Addition of solid oxidizer increases liquid fuel specific impulse
  - JPL-861
  - Reference: B67-10058 03

- Flexible ring baffles for damping liquid slosh
  - Langley-90194
  - Reference: B68-10064 05

**Hydrogen safety manual**

- Lewis-10487
  - Reference: B68-10323 01

- Semi-toroidal-diaphragm cavitating valve
donatated for bipropellant flow control
  - XRF-09704
  - Reference: B69-10016 05

- Two-axis winch installer for heavy ducts in confined space
  - M-FS-14255
  - Reference: B69-10062 05

- Two-step rocket engine bipropellant valve concept
  - MSC-10951
  - Reference: B69-10280 05

- Computer simulation of high-frequency combustion instability and its suppression
  - NQ-10397
  - Reference: B69-10368 06

- A biaxial weld strength prediction method
  - N-FS-20019
  - Reference: B69-10471 05

**Liquid Sloshing**

- Study of large amplitude fuel sloshing
  - N-FS-12386
  - Reference: B67-10439 03

- Flexible ring baffles for damping liquid slosh
  - Langley-90194
  - Reference: B68-10064 05

- Improved technique for digital simulation of bending and slosh phenomena
  - N-FS-14708
  - Reference: B68-10570 02

**Liquid Sodium**

- Fluoride coatings make effective lubricants in molten sodium environment
  - Lewis-229
  - Reference: B66-10005 03

- Oxide film on metal substrate reduced to form metal-oxide-metal layer structure
  - ARG-48
  - Reference: B67-10187 03

- Spiral-grooved shaft seals substantially reduce leakage and wear
  - Lewis-10397
  - Reference: B68-10270 05

**Liquid-Solid Interfaces**

- Computer program Macl-Poss calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid
  - NUC-10042
  - Reference: B67-10456 06

**Liquid-Vapor Equilibrium**

- Closed fluid system without moving parts controls temperature
  - Lewis-222
  - Reference: B65-10331 02

- Real fluid properties of normal and parahydrogen
  - Lewis-10458
  - Reference: B68-10361 06

- Improved liquid-level sensor for cryogenics
  - ARG-10162
  - Reference: B69-10210 02

**Liquid-Vapor Interfaces**

- Design concept for pressure switch calibrator
  - HQ-36
  - Reference: B66-10598 01

- Large-amplitude inviscid fluid motion in an accelerating container

I-373
LIQUIDS

Dynamics of moving bubbles in single and binary component systems
E-FS-14845 B68-10339 02

LIQUIDS

Automated microsyringe is highly accurate and reliable
NPO-10142 B67-10203 01

Liquid microfluid chamber and microsyringe designs allow more efficient micromanipulations
ARG-251 B67-10305 04

Device enables calibration of microphones at high sound pressure levels
E-RS-11980 B67-10336 01

Vibration damping composition has flush-away feature
E-RS-597 B67-10432 03

Miniature paint-spray gun for recessed areas
MSC-13060 B68-10387 05

Dispensing graduate for butadiene
NPO-10070 B68-10524 03

Instruction manuals for liquid penetrant nondestructive testing
I-FS-14010 B69-10278 05

Leakage tester for flat conductor cable connector
E-RS-20427 B69-10284 05

Laser action from a terbium beta-ketoenate at room temperature
GSFC-10593 B69-10324 02

A method for using surface tension to determine the size of holes in hardware
MSC-15194 B69-10595 03

Direct determination of lead-210 by liquid-scintillation counting
ARG-10462 B69-10611 03

Dynamic calibration of turbine flowmeters
LEWIS-11014 B69-10764 01

LISTS

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning
NOC-10073 B67-10348 06

LITERATURE

Principles of optical-data processing techniques
GSFC-10271 B68-10069 01

LITHIUM

Simplified method introduces drift fields into cells
GSFC-572 B67-10102 03

Process controls introduction of selected impurities into semiconductor wafers
GSFC-523 B67-10303 01

One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780 B68-10376 06

Lithium-tellurium bimetallic cell has increased voltage
ARG-10141 B68-10400 01

High resolution Ge/Li/ spectrometer reduces rate-dependent distortions at high counting rates
ARG-10144 B68-10420 01

Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectroscopy
ARG-10190 B69-10005 02

High-energy, high-power, long-life battery
LEWIS-10724 B69-10131 01

Technical report on galvanic cells with fused-salt electrolytes
ARG-10297 B69-10155 01

Neutron therapy of cancer
ARG-10310 B69-10203 04

Multichannel analyzers at high rates of input
ARG-10355 B69-10214 02

Development of structural test articles from magnesium-lithium and beryllium
E-RS-14859 B69-10417 03

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
ARG-10452 B69-10613 01

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte
ARG-10453 B69-10627 03

Adding calcium improves lithium ferrite core
ERC-10036 B69-10686 06

Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors
ARG-10362 B69-10767 02

LITHIUM ALLOYS

Lightweight magnesium-lithium alloys show promise
E-RS-17 B63-10389 03

Adherent protective coatings plated on magnesium-lithium alloy
E-RS-365 B65-10294 03

Coating protects magnesium-lithium alloys against corrosion
E-RS-2846 B67-10149 03

Magnesium-lithium alloys developed for low temperature use
E-RS-1541 B67-10365 03

LITHIUM ALUMINUM HYDRIDES

Mixed ether bath for electrodeposition of aluminum
LANGLEY-10200 B69-10737 03

LITHIUM COMPOUNDS

Screening technique makes reliable bond at room temperature
E-RS-227 B65-10004 03

Uranyl phthalocyanines show promise in the treatment of brain tumors
ARG-100 B67-10188 04

Self-discharge in bimetallic cells containing alkali metal
ARG-10347 B69-10631 01

LITHIUM FLUORIDES

Cesium iodide crystals fused to vacuum tube faceplates
GSFC-67 B63-10476 03

Fluoride coatings make effective lubricants in molten sodium environment
LEWIS-229 B66-10005 03

Thermal neutron image intensifier tube provides brightly visible radiographic pattern
ARG-120 B67-10296 02

I-374
**LITHIUM HYDROGENS**
Iron serves as diffusion barrier in thermally regenerative galvanic cell
ABG-29 B67-10189
Vanadium diaphragm electrode serves as hydrogen diffuser in lithium hydride cell
ABG-10048 B67-10499

**LITHIUM SULFATES**
Trace levels of metallic corrosion in water determined by emission spectrography
ISC-1193

**LOAD DISTRIBUTION (FORCES)**
Equations provide tabular information on effects of uniform and variable loads on thin, flat, circular plates
ABG-151
Spherical pipe joint delivers loads equally to mating flange
N-FS-807
Elimination of rocket engine asymmetric loads during tests at sea level
M-PS-1730
Development of helical seal for high temperature /2000 degrees F/ application
M-PS-13304
Shock-absorbing caster wheel is simple and compact
SAM-10019
Modified multihopp lifting surface loading program
LANGLET-10375
Mechanical properties of a lap joint under uniform clamping pressure
M-PS-14538
Automatic leveling and equalizing hoist device
M-PS-16549

**LOAD TESTING MACHINES**
Apparatus permits flexure testing of specimens at cryogenic temperatures
M-PS-257
Friction loading device enables accurate testing of brittle materials
NU-0051
Device measures reaction engine thrust vector deviations
JPL-SC-163
Web belt load measuring instrument has excellent stability
M-PS-D21

**LOADS (FORCES)**
Structure
M-PS-14972 B68-10353
Calibrated water tank facilitates proof-loading of cranes and derricks
M-PS-15059 B69-10109
Optimum structural design based on reliability and proof-load testing
NPO-11228 B69-10723

**LOADING**
PFC thermistor protects multiloaded power supplies
GSFC-236
Experiments with ceramic coatings
M-PS-18150 B69-10355

**LOADING OPERATIONS**
Rapid billet loader aids extrusion of refractory metals
LEWIS-50
Self-balancing beam permits safe, easy load handling under overhang
M-PS-84
Speed-sensing device aids crane operators
US-4
Compressed gas system operates semitrailer brakes during winching operation
JPL-0036
Universal transloader moves delicate equipment without stress
MSC-654
Self-actuating grapple automatically engages and releases loads from overhead cranes
NPO-81
Carriage system remotely moves drawer over extended distance
NU-0092
Hydrostatic force used to handle oversized, heavy objects
HQ-90

**LOADING RATE**
Shock absorber operates over wide range
MSC-168
Cut-through tester accurately measures insulation failure rates
M-PS-12506 B67-10354
Single-source mechanical loading system produces biaxial stresses in cylinders
M-PS-12530 B67-10380

**LOADS (FORCES)**
Elastic orifice automatically regulates gas bearings
JPL-135
Self-balancing beam permits safe, easy load handling under overhang
M-PS-84
Circuit controls transients in SCR inverters
GSFC-120
Buckle joins web straps quickly, adjusts easily
LANGLET-21
Ring counter may be advanced or retarded by command signal
GSFC-101
Threading hook facilitates safe recovery of heavy loads
MSC-46
Shock absorber protects motive components
LOCKING

against overloads
Woo-092 B65-10008 05

Circuit improvement produces monostable
multivibrator with load-carrying capability
GSPC-341 B65-10011 01

Fluid pressure used to test turbopump bearings
NU-0001 B65-10024 03

Leaf-spring suspension provides accurate
parallel displacements
JPL-480 B65-10104 05

Variable load automatically tests dc power
supplies
GSPC-291 B65-10105 01

Unijunction frequency divider is free of
backward loading
JPL-W00-010 B65-10112 01

Lightweight door seals cryogenic container
against diaphragm type loading
M-F5-476 B65-10402 05

Run-in with chemical additive protects gear
surface
M-F5-548 B66-10069 05

Mechanism isolates load-weighing cell during
lifting of load
MSC-297 B66-10071 05

Calculations enable optimum design of
magnetic brake
LEWIS-251 B66-10073 05

Plugged hollow shaft makes fatigue-resistant
shear pin
LANGLEY-195 B66-10077 05

Computer program simplifies selection of
structural steel columns
NU-0044 B66-10097 01

Mechanism continuously measures static and
dynamic cable loads
MSC-217 B66-10107 05

Binary fluid amplifier solves stability and
load problems
BCC-15 B66-10177 01

Circuit increases capability of hysteresis
synchronous motor
MSC-1080 B67-10008 01

Web belt load measuring instrument has
excellent stability
MSC-921 B67-10242 01

Rectilinear display gives acceleration load
factor and velocity information
MSC-1045 B67-10248 01

Improved computer program for elastic
analysis of highly redundant structural
configurations
M-F5-13087 B67-10330 06

Heavy-gage bonded honeycomb sandwich as
primary load-bearing structure
M-F5-12060 B67-10427 05

Pump simulator provides variable
pressure-flow characteristics
LEWIS-10122 B67-10453 05

Computer program performs rectangular
fitting stress analysis
M-F5-13010 B67-10520 06

Computer program provides improved
longitudinal response analysis for
axisymmetric launch vehicles
LANGLEY-10093 B67-10531 06

Electronic load for testing power

GENERATING DEVICES

Experiments with ceramic coatings
M-FS-18150 B68-10355 03

Improved limiter for turn-on current
transient
GSPC-10413 B68-10384 01

Internal velocity factors
NUC-15002 B68-10403 06

Mass loading effects on vibrated ring and
shell structures
M-F5-14975 B68-10532 03

Computer program analyzes whirl critical
speeds and bearing loads for shafts coupled
by nonlinear springs to machine housing
NUC-10308 B69-10034 06

General series solution technique for
bending of irregular laterally loaded
flat plates
NUC-10170 B69-10035 06

Determination of permissible applied load
stress in structural elements
M-F5-16556 B69-10823 02

LOCKING

Simple mechanism combines positive locking and
quick-release features
Woo-4 B63-10420 05

Instrument adjustment knob locks to prevent
accidental maladjustment
M-F5-190 B64-10249 05

Screw locking cups quickly and neatly crimped
NU-0009 B65-10094 05

Coiled spring makes self-locking device for
threaded fasteners
MSC-149 B65-10135 05

Solar cell submodule design facilitates
assembly of lightweight arrays
JPL-728 B66-10231 02

Flexible drive allows blind machining and
welding in hard-to-reach areas
MSC-524 B66-10428 05

Adjustable, self-locking ladder includes
optional work platform
M-F5-1922 B67-10067 05

Safety yoke would protect construction
workers from falling
MSC-10075 B67-10445 05

Megatron tuner has locking feature
XNP-09771 B69-10119 05

Improved design of item in high speed
rotating machinery
M-F5-18441 B69-10373 05

LOCKS (FASTENERS)

Simple key locks turbine rotor blades
Woo-103 B66-10023 05

Key-locked guard prevents accidental switch
actuation
MSC-419 B66-10235 05

Latching mechanism operates in limited access
area
MSC-230 B66-10338 05

Lock-disconnect mechanism gives positive
release to joined bodies
M-F5-2147 B67-10123 05

Work platform is supported by self-locking
blades
M-F5-2297 B67-10180 05

I-376
Line adapter provides quick disconnect under moderate side loading

Reconnect mechanism

Boydbolt, a positive-latch, simple-release fastener

Astronaut's tool for withdrawing/replacing computer cards

Piezoelectric lock mechanism resists lockpicking

Countersunk headscrew retainer

Removal of retaining washers of the waffle-spring type

LOG PERIODIC ANTENNAS

Antenna configurations provide polarization diversity

LOGARITHMIC RECEIVERS

Transistor circuit increases range of logarithmic current amplifier

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel

LOGARITHMS

Logarithmic amplifier uses field effect transistors

Simple scale interpolator facilitates reading of graphs

Stress calculator speedily converts strain data

Solubility data are compiled for metals in liquid zinc

SiC/Si diode trigger circuit provides automatic range switching for log amplifier

General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions

Study of corrosion of 1100 aluminum

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor

Accurate nine-decade temperature-compensated logarithmic amplifier

LOGIC

Parallel-to-serial biphase-data converter

Fluidic-thermochronic display device

LOGIC CIRCUITS

Frequency-shift-keyer circuit improves PCM

conversion for radio transmission

Computer circuit will fit on single silicon chip

Ring counter may be advanced or retarded by command signal

Novel circuit combines pulse stretcher with NOR gate

Pneumotachometer counts respiration rate of human subject

Logic redundancy improves digital system reliability

System selects framing rate for spectrophotograph camera

Logic circuit exhibits optimum performance

Delayed ripple counter simplifies square-root computation

Simple circuit performs binary addition and subtraction

Queuing register uses fluid logic elements

New television camera eliminates vidicon tube

Simulifed circuit corrects faults in parallel binary information channels

Binary sequence detector uses minimum number of decision elements

Exclusive-or logic circuit has useful properties

Single channel pulse-height analyzer operates in subnanosecond range

Logic system aids in evaluation of project readiness

Instrument automatically selects peak acceleration signal from several accelerometers

Bipolar current driver for memory circuits

Digital system provides superregulation of nanosecond amplifier-discriminator circuit

Nixie tube display unit employs time-shared logic

Apparatus enables automatic microanalysis of body fluids

One-count memory circuit prevents machine mode interaction
Fluid logic control circuit operates nutator actuator motor

Logic circuitry used to automatically test shielded cables

Hybrid solid state switch replaces motor-driven power switch

Computer program simulates physical systems by solving the simultaneous differential equations describing the systems

Solid state circuit averages multiple signals and rejects those varying significantly from the average

Current steering commutator offers versatility

Logic realization of simple majority voting connectives

Logic circuit detects both present and missing negative pulses in superimposed wave trains

Self-correcting, synchronizing ring counter using integrated circuit devices

Digital filter suppresses effects of nonstatistical noise bursts on multichannel scaler digital averaging systems

Sinusoidal angle sensor

Closed circuit TV system automatically guides welding arc

Short circuit protection for a power distribution system

Isolated, multiple-output voltage dc-to-dc converter

Simple tunnel diode circuit for accurate zero crossing timing

Integrated circuit with multiple collector current source

Self-starting circuit for switching regulators

Miniaturization of magnetic logic circuitry

Pneumatic analog-to-pulse frequency converter

Visual task analysis /VISTA/

Special purpose computer provides programmable digital filter for sampled-data control systems

Technique for improving solid state mosaic images

Pulse-code-modulation baseline correction for low signal-to-noise ratios

Delayed ripple counter simplifies square-root computation

Review of research and development in fluid logic elements

Exact minimal-state system reliability analysis

Programmed schedule holds for improving launch vehicle holds

Digital logic elements provide additional functions from analog input

Circuit maintains digital decision threshold at preset level

Frequency discriminator with binary output eliminates tuned circuits

Binary counter accumulates time by complementary preset

Queueing register uses fluid logic elements

Simplified circuit corrects faults in parallel binary information channels

Binary sequence detector uses minimum number of decision elements

Technique for improving solid state mosaic images

Design and sparing techniques to meet specified performance life

Closed circuit TV system automatically guides welding arc

Visual task analysis /VISTA/

Self-starting circuit for switching regulators

Miniaturization of magnetic logic circuitry

Pneumatic analog-to-pulse frequency converter

Visual task analysis /VISTA/

Special purpose computer provides programmable digital filter for sampled-data control systems

Technique for improving solid state mosaic images

Pulse-code-modulation baseline correction for low signal-to-noise ratios

Delayed ripple counter simplifies square-root computation

Review of research and development in fluid logic elements

Exact minimal-state system reliability analysis

Programmed schedule holds for improving launch vehicle holds

Digital logic elements provide additional functions from analog input

Circuit maintains digital decision threshold at preset level

Frequency discriminator with binary output eliminates tuned circuits

Binary counter accumulates time by complementary preset

Queueing register uses fluid logic elements

Simplified circuit corrects faults in parallel binary information channels

Binary sequence detector uses minimum number of decision elements

Technique for improving solid state mosaic images

Design and sparing techniques to meet specified performance life

Closed circuit TV system automatically guides welding arc

Visual task analysis /VISTA/

Self-starting circuit for switching regulators

Miniaturization of magnetic logic circuitry

Pneumatic analog-to-pulse frequency converter

Visual task analysis /VISTA/

Special purpose computer provides programmable digital filter for sampled-data control systems

Technique for improving solid state mosaic images

Pulse-code-modulation baseline correction for low signal-to-noise ratios

Delayed ripple counter simplifies square-root computation

Review of research and development in fluid logic elements

Exact minimal-state system reliability analysis

Programmed schedule holds for improving launch vehicle holds

Digital logic elements provide additional functions from analog input

Circuit maintains digital decision threshold at preset level

Frequency discriminator with binary output eliminates tuned circuits

Binary counter accumulates time by complementary preset

Queueing register uses fluid logic elements

Simplified circuit corrects faults in parallel binary information channels

Binary sequence detector uses minimum number of decision elements

Technique for improving solid state mosaic images

Design and sparing techniques to meet specified performance life

Closed circuit TV system automatically guides welding arc

Visual task analysis /VISTA/

Self-starting circuit for switching regulators

Miniaturization of magnetic logic circuitry

Pneumatic analog-to-pulse frequency converter

Visual task analysis /VISTA/

Special purpose computer provides programmable digital filter for sampled-data control systems

Technique for improving solid state mosaic images
SUBJECT INDEX

Pocket-sized tone-modulated FM transmitter
MPO-11160 B69-10725 01

LOOPS
Variable frequency magnetic multivibrator generates stable square-wave output
GSFC-AP-21 B65-10124 01
Sensitive electrometer features digital output
GSFC-200 B65-10206 01
Simple BCD circuit accurately counts to 24
GSFC-317 B65-10225 01
Field effect transistor presents high input impedance in ac amplifier
JPL-500 B65-10232 01
Electronic phase-locked-loop speed control system is stable
JPL-SC-084 B66-10232 01
An investigation of phase-lock loop swept-frequency synchronization
M-FS-656 B66-10423 01
System precisely controls oscillation of vibrating mass
M-FS-1075 B67-10276 01
Torque meter aids study of hysteresis motor rings
M-FS-12219 B67-10412 01
Circuit measures hysteresis loop areas at 30 Hz
M-FS-13069 B67-10519 01
General frequency response program calculates frequency response of system, open at any specified element
M-FS-12817 B67-10521 06
Improved phase locked loop receiver
GSFC-09561 B68-10008 01
Phase-lock loop frequency control and the dropout problem
M-FS-13948 B68-10130 01
Performance statistics of the FORTRAN 4 library for the IBM system 360
ARG-10299 B69-10157 06
Reducing quantizer deadband with a range switching digital filter
M-FS-20419 B69-10259 01
Sweep frequency detector
MPO-10669 B69-10289 01
New passive telemetry system
HQ-10214 B69-10312 01
Simple, accurate automatic frequency control circuit
KSC-10393 B69-10323 01
A method for reducing sampling jitter in digital control systems
MPO-11068 B69-10338 01
Wide-band doublor and sine wave quadrature generator
MPO-11133 B69-10383 01

LOSSES
Correction for losses in optical birefringent networks, a concept
M-FS-20088 B68-10571 02
Reidentifying hardware after loss of serial number
M-FS-18133 B69-10059 05

LOUDNOISE
Electronic dummy for acoustical testing

LOW FREQUENCIES

LOVE
Magnetic latches provide positive overpressure control
NU-0057 B66-10279 01

LOW CONCENTRATIONS
Apparatus automatically measures solute residue content of volatile solvents
SAM-10032 B69-10292 03

LOW COST
Low-cost insulation system for cryostats eliminates need for vacuum
LWID-36 B63-10365 03
Connector for vacuum-jacketed lines cuts tuning system cost
LEWIS-66 B63-10367 05
Portable display paneling has wide use, easy take down and assembly
ARC-17 B63-10435 05
Refractory ceramic has wide usage, low fabrication cost
M-FS-67 B63-10481 03
Fine-particle filter prevents damage to vacuum pumps
LEWIS-106 B63-10489 05
Low-cost tape system measures velocity of acceleration
GSFC-85 B63-10512 01
Metal-bending brake facilitates lightweight, close-tolerance fabrication
ARC-29 B64-10069 05
Welding procedures improves quality of welds, offers other advantages
M-FS-32 B64-10309 01
Illuminated display panel is easily changed
M-SC-108 B65-10003 05
Regenerative fuel cell combines high efficiency with low cost
W0-090 B65-10363 01
Theroplastic rubberlike material produced at low cost
JPL-793 B66-10453 03
Multichannel pulse height analyzer is inexpensive, features low power requirements
HQR-10020 B67-10258 01

LOW DENSITY MATERIALS
Organic reactants rapidly produce plastic foam
LANCASTY-37 B65-10288 03
LOW PASS FILTERS

Lor pass filters

Unmanned seismometer levels self, corrects drift errors
GSFC-100 B63-10551 01

Computer determines high-frequency phase stability
GSFC-113 B63-10555 01

Voltage variable oscillator has high phase stability
LANGLEY-123 B65-10204 01

Hybrid computer technique yields random signal probability distributions
ABC-34 B65-10208 01

PCM magnetic tape system efficiently records and reproduces data
GSFC-375 B65-10311 01

Noncontacting vibration transducer has constant sensitivity
LANGLEY-99 B65-10392 01

Compact microwave mixer has high conversion efficiency
GSFC-197 B66-10625 01

Polarimeter provides transient response in nanosecond range
JPL-890 B67-10021 02

Circuit multiplies pulse width modulation, exhibits linear transfer function
HQ-56 B67-10055 01

TV synchronization system features stability and noise immunity
JPL-915 B67-10118 01

Stable ac phase and amplitude comparator
N-PS-13086 B67-10559 01

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems
W50-340 B67-10552 01

Design of dissipative linear phase filters
N-PS-16938 B68-10572 01

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
ARG-10220 B69-10090 01

A method for reducing sampling jitter in digital control systems
NPO-11088 B69-10338 01

Phase-locked-loop phase modulator with high modulation index, low distortion
MSC-12247 B69-10816 05

Data processing method for a weak, moving telemetry signal
NPO-11003 B69-10639 01

Low pressure

Cryogenic filter method produces super-pure helium and helium isotopes
JPL-374 B63-10235 03

Sensitive low-pressure relief valve has positive seating against leakage
W00-004 B64-10278 05

Transducer measures force in vacuum environment
LEWIS-218 B66-10161 01

Magnetic latches provide positive overpressure control
NU-0057 B66-10279 05

Low rate flow switch can be used for gas or liquid
JPL-067 B66-10696 01

Subject Index

Cryogenic seal remains leaktight during thermal displacement
ARG-96 B67-10134 02

Aspirator increases relief valve poppet stroke
EQ-77 B67-10154 05

New class of compounds have very low vapor pressures
ARG-115 B67-10184 03

Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi
MSC-10067 B67-10263 01

Experiments to investigate particulate materials in reduced gravity fields
N-PS-13008 B67-10394 02

Absolute low-pressure calibration system
N-PS-13085 B68-10160 02

Performance of low-pressure thermionic converters is evaluated
ARG-10276 B69-10090 01

Concept for improved vacuum pressure measuring device
N-PS-20172 B69-10421 02

Measurement of gas flow at extremely low pressures
MSC-13261 B69-10522 03

Fluid sample collection and storage device
MSC-10962 B69-10816 05

Low resistance

This film process forms effective electrical contacts on semiconductor crystals
N-PS-2394 B67-10142 01

Low speed

Dry film lubricant is effective at extreme loads
N-PS-628 B66-10256 03

Low temperature

High-pressure, low temperature electrical connector makes no-leak seal
MSC-276 B66-10079 02

Cryostat modified to aid rotating beam fatigue test
N-PS-435 B66-10083 03

Storage-stable foamy polyurethane is activated by heat
LANGLEY-187 B66-10111 03

Compound improves thermal interface between thermocouple and sensed surface
NU-0028 B66-10121 02

Mylar thin films are superconductive in strong magnetic fields at low temperatures
JPL-9C-174 B66-10122 02

Optical gyro pickoff operates at cryogenic temperatures
N-PS-407 B66-10128 01

Cryogenic liquid transfer system reduces residual bolloff
LEWIS-274 B66-10157 02

Improved adhesive for cryogenic applications cures at room temperature
W00-132 B66-10185 03

Freon provides heat transfer for solid CO2 calibration standard
N-PS-664 B66-10257 02

O-rings with mylar back-up provide high-pressure cryogenic seal
N-PS-603 B66-10278 05

I-380
Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures M-FS-800 B66-10325 02
Composite gaskets are compatible with liquid oxygen, resist compression set M-FS-455 B66-10395 03
Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables NO-0083 B66-10704 05
Improved cryogenic refrigeration system JPL-731 B67-10128 02
Study of yttrium iron garnet rods reveals new magnetostatic echo mode NRC-37 B67-10153 01
Heat treatment study of aluminum casting alloy M-FS-2397 B67-10159 03
Study made of Raney nickel technology M-FS-205a B67-10208 03
High-strength tungsten alloy with improved ductility LEWTS-10257 B67-10340 03
Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment NBC-10083 B67-10350 03
Magnesium-lithium alloys developed for low temperature use M-FS-1541 B67-10365 03
Study made of dielectric properties of promising materials for cryogenic capacitors M-FS-13620 B67-10366 03
Lamp enables measurement of oxygen concentration in presence of water vapor MSC-10043 B67-10387 01
Dynamic valve seal is reliable at cryogenic temperatures M-FS-12967 B67-10526 05
Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel NUC-10008 B67-10539 05
Development of dual solid cryogens for high reliability refrigeration system GSPC-10188 B67-10644 02
Cryogenic seal concept for static and dynamic conditions M-FS-12964 B67-10673 05
Fire retardant foams developed to suppress fuel fires ARC-10098 B68-10358 03
Fiber glass prevents cracking of polyurethane foam insulation on cryogenic vessels M-FS-20058 B68-10406 02
Materials data handbook, aluminum alloy 6061 M-FS-20361 B69-10065 03
Adhesive for cryogenic temperature applications LEWTS-10264 B69-10074 03
Manual of typical low temperature mechanical properties of several materials M-FS-18331 B69-10179 03
Method for copper staining of germanium crystals

H-M-10403 B69-10257 03
Thermal conductivity probe M-FS-20566 B69-10780 03

LOW TEMPERATURE BRAZING
Coating method enables low-temperature brazing of stainless steel NO-0030 B65-10250 03
Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics SAE-10012 B68-10204 03

LOW TEMPERATURE ENVIRONMENTS
Gallium useful bearing lubricant in high-vacuum environment LEWTS-12 B63-10337 03
Fluoride coatings make effective lubricants in molten sodium environment LEWTS-229 B66-10005 03
Self-contained clothing system provides protection against hazardous environments M-FS-536 B66-10201 05
Fluid damping reduces bellows seal fatigue failures M-BS-565 B66-10249 05
Resistance thermometer has linear resistance-temperature coefficient at low temperatures WO0-190 B66-10612 01
New weldable high strength aluminum alloy developed for cryogenic service M-FS-737 B66-10613 05
Cold solid propellant motor has stop-restart capability JPL-836 B66-10673 03
Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures NUC-10094 B67-10349 03
Superconducting switch permits measurement of small voltages at cryogenic temperatures ARG-90260 B68-10007 01
Electrochemical cell has internal resistive heater element GSFC-10358 B68-10325 01

LOW TEMPERATURE PHYSICS
Development of low temperature battery LEWTS-10326 B67-10546 01
Synthesis of pure aromatic glycicyl esters for use as adhesives M-FS-12705 B67-10647 03

LOW TEMPERATURE TESTS
Cryogenic fatigue data developed for Inconel 718 M-FS-702 B67-10049 03
Dual-purpose chamber-cooling system NPO-10467 B68-10506 02
Tensile and fatigue properties of Inconel 718 at cryogenic temperatures M-FS-18192 B69-10068 03
Self-lubricating gear M-FS-14971 B69-10408 05

LOW VOLTAGE
Circuit protects regulated power supply against overload current GSPC-453 B66-10292 01
Wideband, high efficiency optical modulator requires less than 10 watts drive power M-FS-12733 B67-10289 01
Thermionic diode switching has high temperature application  

Solid state high-voltage pulser operates with low supply voltage  

Millivolt signal limiter  

LUBRICANT TESTS  
Polybifluoride disulfide mixtures make effective high-vacuum lubricants  

Electron bombardment improves vacuum chamber efficiency  

Machine tests slow-speed sliding friction in high vacuum  

High-temperature bearing lubricants  

LUBRICANTS  
Gallium useful bearing lubricant in high-vacuum environment  

Polybifluoride disulfide mixtures make effective high-vacuum lubricants  

Burnishing technique improves lubrication of threaded fasteners  

Run-in with chemical additive protects gear surface  

Gallium alloy films investigated for use as boundary lubricants  

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals  

Film coating permits low-force scribing  

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment  

Valve effectively controls amount of contaminant in flow stream  

Development of technology for hot-drape forming of large torus sections  

Improved sample capsule for determination of oxygen in hemolyzed blood  

Electromechanical rotary actuator operates over wide temperature range  

Tools made of ice facilitate forming of soft, sticky materials  

Diffusion bond method of joining steel and a TPE-bronze composite  

Remote balance weighs accurately under high radiation  

A new solid lubricant  

LUBRICATING OILS  
Ohmmeter senses depletion of lubricant in journal bearings  

Unique gear design provides self-lubrication  

Radioactive tracer system detects oil contaminants in fluid lines  

Solid state high-voltage pulses operates with low supply voltage  

Design concept to decrease relative speed of ball bearings  

High-temperature bearing lubricants  

Dynamic-reservoir lubricating device  

Radioactive tracer system detects oil contaminants in fluid lines  

LUBRICATION SYSTEMS  
Miniature bearings lubricated by sonic dispersion method  

Squeeze-film gas bearing technology  

Dynamic-reservoir lubricating device  

Nozzles for size reclassification of microfog particles  

Self-lubricating gear  

LOGS  
Improved solderless connector is easily disconnected  

T-handle wrench has torque-limiting action  

Calibrated water tank facilitates proof-
loading of cranes and derricks  I-FS-15059 B69-10109 05
Adjustable wrench for electronic connectors  B69-10184 05
An improved method for electrical cable terminations  B69-10327 01

Simple circuit continuously monitors thermocouple sensor  B63-10567 01
Attachment converts microscope to point source autocollimator  B64-10124 05
Electronic device simulates respiration rate and depth  B64-10255 01
Electrodeless discharge lamp is easily started, has high stability  B66-10015 01
Lamp automatically switches to new filament on burnout  B66-10046 01
Thin carbon film serves as UV bandpass filter  B66-10060 02
Circular, explosion-proof lamp provides uniform illumination  B66-10156 02
Two-light circuit continuously monitors ac ground, phase, and neutral wires  B66-10163 01
Multicolor stroboscope pinpoints resonances in vibrating components  B66-10223 01
High-speed furnace uses infrared radiation for controlled brazing  B66-10268 02
A radiometer-pyrometer  B66-10606 01
Self-balancing line-reversal pyrometer automatically measures gas temperatures  B67-10268 01
Lamp enables measurement of oxygen concentration in presence of water vapor  B67-10387 01
Proposed method of rotary dynamic balancing by laser  B67-10452 02
Low cost SCR lamp driver indicates contents of digital computer registers  B67-10656 01
Superconductive thin film makes convenient liquid helium level sensor  B68-10341 01
Flow angle sensor and readout system  B69-10050 01
Automatic frequency control of voltage-controlled oscillators  B69-10569 01

Modification increases light output of injection-luminescent diodes  B65-10006 01
Luminescent screen composition for cathode ray tubes  B68-10056 01

Preparation of silver-activated zinc sulfide thin films  B68-10271 03
Rocket sonde measurements of ozone in the upper atmosphere  B69-10077 02
Mass culture of photobacteria to obtain luciferase  B69-10294 04

Rapid-response, light-exposure control system  B69-10238 01
Occulting-filter method for obtaining flashing-light visibility data  B69-10107 02

Solar-angle sensor has no moving parts  B63-10260 02
Variable light source with a million-to-one intensity ratio  B63-10424 03
System selects framing rate for spectrograph camera  B65-10086 01
High-intensity flashing beacon powered by mercury cells  B65-10361 01
Optical output enhances flowmeter accuracy  B65-10395 02
Small, high-intensity flasher permits continuous close-in photography  B66-10119 03
Apparatus presents visual display of semiconductor surface characteristics  B66-10200 01
Point-source light sensor circuit is insensitive to background light  B66-10502 01
Light-intensity modulator withstands high heat fluxes  B66-10532 02
Photocell shadowing technique improves light source detector  B66-10564 01
Cleanroom air sampler counts, categorizes, and records particle data  B67-10076 01
Self-balancing line-reversal pyrometer automatically measures gas temperatures  B67-10268 01
Nonreciprocal gain control for ring laser  B67-10653 02
Improvement in recording and reading holograms  B68-10347 02
Laser-Doppler gas-velocity instrument  B68-10349 01
Automatic solar lamp intensity control system  B68-10399 01
Fluorescent photography of spray droplets using a laser light source  B69-10177 02
Improved method of fabricating planar gallium arsenide diodes  B69-10271 01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LUNAR SPACECRAFT</strong></td>
</tr>
<tr>
<td>Three-axis attitude and direction reference instrument has only one moving part</td>
</tr>
<tr>
<td>Computer program determines thermal environment and temperature history of lunar orbiting space vehicles</td>
</tr>
<tr>
<td>Earth orbit rendezvous evaluation program</td>
</tr>
<tr>
<td><strong>LUNAR TOPOGRAPHY</strong></td>
</tr>
<tr>
<td>Development of lunar drill to take core samples to 100-foot depths</td>
</tr>
<tr>
<td>Combination ranging system and mapping radar</td>
</tr>
<tr>
<td>Stereo TV enhancement study</td>
</tr>
<tr>
<td><strong>LUNGS</strong></td>
</tr>
<tr>
<td>Device induces lungs to maintain known constant pressure</td>
</tr>
<tr>
<td>Study of radiation effects on mammalian cells in vitro</td>
</tr>
<tr>
<td><strong>LYSOZYME</strong></td>
</tr>
<tr>
<td>Microorganisms detected by enzyme-catalyzed reaction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MACH NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venturi meter with separable diffuser</td>
</tr>
<tr>
<td>Flow direction measurement with fixed probes</td>
</tr>
<tr>
<td><strong>MACHINE ORIENTED LANGUAGES</strong></td>
</tr>
<tr>
<td>FORTRAN program flow chart is automatically produced</td>
</tr>
<tr>
<td>Automated drafting system uses computer techniques</td>
</tr>
<tr>
<td>Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks</td>
</tr>
<tr>
<td>Assembly processor program converts symbolic programming language to machine language</td>
</tr>
<tr>
<td>HITCUL - Newton-Raphson calculus of variation with automatic transversalities</td>
</tr>
<tr>
<td>JFLIP-JEL FORTRAN language with interval pre-processor</td>
</tr>
<tr>
<td><strong>MACHINE TOOLS</strong></td>
</tr>
<tr>
<td>Setting of angles on machine tools speeded by magnetic protractor</td>
</tr>
<tr>
<td>Lathe converted for grinding aspheric surfaces</td>
</tr>
<tr>
<td>Metal bellows custom-fabricated from tubing</td>
</tr>
<tr>
<td>Modified power tool rapidly drives series torque bolts</td>
</tr>
</tbody>
</table>

| I-384 |
T-handle wrench has torque-limiting action
MSC-280 B66-10065 05

Threaded pilot insures cutting tool alignment
M-PS-527 B66-10074 05

Pipe cutting tool is useful in limited space
MSC-36 B66-10102 05

Portable power tool machines weld joints in field
M-PS-258 B66-10145 05

Depth indicator and stop aid machining to precise tolerances
M-PS-553 B66-10149 05

High vacuum
I-PS-1234 1

Threaded pilot insures cutting tool alignment
M-PS-36 B66-10074 05

Portable power tool machines weld joints in field
M-PS-258 B66-10145 05

Depth indicator and stop aid machining to precise tolerances
M-PS-553 B66-10149 05

Flexible drive allows blind machining and welding in hard-to-reach areas
MSC-524 B66-10420 05

Study made of acoustical monitoring for mechanical checkout
M-PS-13372 B67-10430 02

Variable-speed, portable routing skate
M-PS-13722 B67-10525 05

Thread cutting with 3-axis N/C milling machine
LANGLEY-10017 B68-10055 06

Numerical Control Machine Data Manual
M-PS-14342 B68-10080 05

Contact-spring forming machine for flat conductor cable receptacles
M-PS-20126 B68-10550 05

J-beveling of pipe ends with a hand-held tool
KSC-10356 B69-10229 05

Multi-purpose tool mitten
HQ-10047 B69-10483 05

A rotating, noncapillary heat pipe
LEWIS-10298 B69-10684 05

MACHINING

Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns
JM-7 B63-10008 05

Micromachining produces optical apertures to micron dimensions
GSFC-206 B64-10211 05

Integral ribs formed in metal panels by cold-press extrusion
M-PS-230 B65-10141 05

Lathe attachment used to machine elliptical cones
MSC-100 B65-10168 05

Epoxy-resin patterns speed shell-molding of aluminum parts
M-PS-303 B65-10177 05

Calibrated clamp facilitates pressure application
M-PS-298 B66-10059 05

Modified soldering iron speeds cutting of synthetic materials
M-PS-725 B66-10246 05

Mill profiler machines soft materials accurately
M-PS-692 B66-10254 05

Fixed vacuum plate clamps styrofoam for machining
M-PS-683 B66-10283 05

Swiveling lathe jaw concept for holding irregular pieces
M-PS-783 B66-10321 05

Thermal stress-relief treatments for 2219 aluminum alloy are evaluated
M-PS-1213 B66-10448 03

Large seals fabricated from small segments reduce procurement lead time
M-PS-1117 B66-10464 05

Internal machining accomplished at constant radii
M-PS-1573 B66-10546 05

Process sequence produces strong, lightweight reflectors of excellent quality
LEWIS-331 B67-10010 05

Stabilizing stainless steel components for cryogenic service
M-PS-13127 B67-10377 05

Machining heavy plastic sections
M-PS-12720 B67-10381 03

X-Handle wrench has torque-limiting action
MSC-280 B66-10065 05

Threaded pilot insures cutting tool alignment
M-PS-527 B66-10074 05

Pipe cutting tool is useful in limited space
MSC-36 B66-10102 05

Portable power tool machines weld joints in field
M-PS-258 B66-10145 05

Depth indicator and stop aid machining to precise tolerances
M-PS-553 B66-10149 05

High vacuum
I-PS-1234 1

Threaded pilot insures cutting tool alignment
M-PS-36 B66-10074 05

Portable power tool machines weld joints in field
M-PS-258 B66-10145 05

Depth indicator and stop aid machining to precise tolerances
M-PS-553 B66-10149 05

Flexible drive allows blind machining and welding in hard-to-reach areas
MSC-524 B66-10420 05

Study made of acoustical monitoring for mechanical checkout
M-PS-13372 B67-10430 02

Variable-speed, portable routing skate
M-PS-13722 B67-10525 05

Thread cutting with 3-axis N/C milling machine
LANGLEY-10017 B68-10055 06

Numerical Control Machine Data Manual
M-PS-14342 B68-10080 05

Contact-spring forming machine for flat conductor cable receptacles
M-PS-20126 B68-10550 05

J-beveling of pipe ends with a hand-held tool
KSC-10356 B69-10229 05

Multi-purpose tool mitten
HQ-10047 B69-10483 05

A rotating, noncapillary heat pipe
LEWIS-10298 B69-10684 05

MACHINING

Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns
JM-7 B63-10008 05

Micromachining produces optical apertures to micron dimensions
GSFC-206 B64-10211 05

Integral ribs formed in metal panels by cold-press extrusion
M-PS-230 B65-10141 05

Lathe attachment used to machine elliptical cones
MSC-100 B65-10168 05

Epoxy-resin patterns speed shell-molding of aluminum parts
M-PS-303 B65-10177 05

Calibrated clamp facilitates pressure application
M-PS-298 B66-10059 05

Modified soldering iron speeds cutting of synthetic materials
M-PS-725 B66-10246 05

Mill profiler machines soft materials accurately
M-PS-692 B66-10254 05

Fixed vacuum plate clamps styrofoam for machining
M-PS-683 B66-10283 05

Swiveling lathe jaw concept for holding irregular pieces
M-PS-783 B66-10321 05

Thermal stress-relief treatments for 2219 aluminum alloy are evaluated
M-PS-1213 B66-10448 03

Large seals fabricated from small segments reduce procurement lead time
M-PS-1117 B66-10464 05

Internal machining accomplished at constant radii
M-PS-1573 B66-10546 05

Process sequence produces strong, lightweight reflectors of excellent quality
LEWIS-331 B67-10010 05

Stabilizing stainless steel components for cryogenic service
M-PS-13127 B67-10377 05

Machining heavy plastic sections
M-PS-12720 B67-10381 03
Standard surface grinder for precision machining of thin-wall tubing
ARG-10014 B67-10400 05

Ultrasonics used to measure residual stress
I-FS-12449 B67-10428 02

Proposed method of rotary dynamic balancing by laser
I-PS-12422 B67-10452 02

Manual of industrial diamonds plus dressing and grinding criteria for machining superalloys
I-PS-14562 B68-10239 05

Spiral-grooved shaft seals substantially reduce leakage and wear
LEWIS-10397 B68-10270 05

Machining technique prevents undercutting in tensile specimens
LANGLEY-10281 B68-10352 05

Method for removing surface-damaged layers from nickel alloys
I-PS-18151 B68-10522 03

Method for controlling density and permeability of sintered powdered metals
LEWIS-10393 B68-10528 03

Cold machining of high density tungsten and other materials
ARG-10289 B69-10110 05

Tool simplifies machining of pipe ends for precision welding
KSC-10361 B69-10281 05

Spiral-flow apparatus for measuring permeation of solids by gases
I-PS-16517 B69-10357 03

Freon, T-Bl cutting fluid
ISC-11486 01

Method for controlling density and permeability of sintered powdered metals
LEWIS-263 B66-10104 03

Cold machining of high density tungsten and other materials
ARG-10289 B69-10110 05

Tool simplifies machining of pipe ends for precision welding
KSC-10361 B69-10281 05

Spiral-flow apparatus for measuring permeation of solids by gases
I-PS-16517 B69-10357 03

Freon, T-Bl cutting fluid
ISC-11486 01

MAGAZINES (SUPPLY CHAMBERS)

Versatile impact hand tool
M-PS-20140 B68-10371 05

NEXUS (SUPPLY CHAMBERS)

A concept for magazine Bimat processor
KSC-06786 B69-10275 02

MAGNESIUM

New method forms bond line free of voids
LANGLEY-20 B63-10558 05

Lightweight aluminum casting alloy is useful at cryogenic temperatures
I-PS-267 B65-10092 03

Refactory oxides evaluated for high-temperature use
LANGLEY-121 B65-10167 03

Improved wire memory matrix uses very little power
JPL-5C-167 B65-10359 01

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LEWIS-263 B66-10104 03

Aluminum core structures brazed without use of flux
I-PS-659 B66-10360 05

Use of steel and tantalum apparatus for molten Cd-Mg-Zn alloys
ARG-199 B66-10594 03

Primary cell uses neither liquid nor fused electrolytes
NPO-10001 B67-10275 01

Magnesium-zinc reduction is effective in preparation of metals
ARG-10050 B67-10579 03

Fogging technique used to coat magnesium with plastic
LEWIS-10346 B67-10584 05

Laminated sheet composites reinforced with modular filament sheet
I-PS-14575 B68-10146 03

Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide
ARG-10154 B68-10293 02

Preparation of thorium magnesium-zinc reduction
ARG-10245 B69-10079 03

Development of structural test articles from magnesium-lithium and beryllium
I-PS-14955 B69-10417 03

MAGNESIUM ALLOYS

Lightweight magnesium-lithium alloys show promise
I-PS-17 B63-10389 05

Adherent protective coatings plated on magnesium-lithium alloy
I-PS-365 B65-10294 03

Coating protects magnesium-lithium alloys against corrosion
I-PS-2446 B67-10149 03

Magnesium-lithium alloys developed for low temperature use
I-PS-1541 B67-10365 03

Weld microfissuring in Inconel 718 minimized by minor elements
I-PS-1815 B67-10251 03

Battery-package design provides for cell cooling and constraint
KSC-11639 B68-10398 05

Device for obtaining separation of oxygen
LANGLEY-11007 B69-10477 01

Shaker slip-plate adapter
I-PS-14063 B69-10785 05

MAGNESIUM CELLS

Development of low temperature battery
LEWIS-10326 B67-10546 01

MAGNESIUM COMPOUNDS

Screening technique makes reliable bond at room temperature
I-PS-227 B65-10004 03

Chromium oxide coatings improve thermal emissivity of alumina
WOO-263 B66-10227 03

New class of compounds have very low vapor pressures
ARG-115 B67-10184 03

MAGNESIUM FLUORIDES

Uniform reflective films deposited on large surfaces
GSFC-507 B66-10403 02

Preparation of thorium magnesium-zinc reduction
ARG-10245 B69-10079 03

MAGNESIUM OXIDES

Ceramic materials purified by experimental method
LEWIS-225 B65-10270 03

Fibers of newly developed refractory ceramics produced by improved process
WOO-169 B66-10196 03

Ductile mandrel and parting compound facilitate tube drawing
I-386
### MAGNETIC COILS

<table>
<thead>
<tr>
<th>Subject</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area</td>
<td>NRC-10007 B67-10538 01</td>
</tr>
<tr>
<td>Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide</td>
<td>ARG-1054 B68-10293 02</td>
</tr>
<tr>
<td>Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons</td>
<td>ARG-10220 B69-10211 02</td>
</tr>
</tbody>
</table>

### MAGNETIC AMPLIFIERS

<table>
<thead>
<tr>
<th>Subject</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>High power dc/dc and dc/ac electrical power conversion techniques developed</td>
<td>NPS-12327 B67-10390 01</td>
</tr>
<tr>
<td>Method for reducing snap in magnetic amplifiers</td>
<td>LEWIS-10386 B68-10388 01</td>
</tr>
<tr>
<td>Magnetically coupled emission regulator</td>
<td>GSFC-10056 B69-10213 01</td>
</tr>
</tbody>
</table>

### MAGNETIC CHARGE DENSITY

<table>
<thead>
<tr>
<th>Subject</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supercold technique duplicates magnetic field in second superconductor</td>
<td>JPL-376 B63-10237 05</td>
</tr>
</tbody>
</table>

### MAGNETIC CIRCUITS

<table>
<thead>
<tr>
<th>Subject</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable frequency transistor inverters use multiple core transformers</td>
<td>GSFC-183 B65-10119 01</td>
</tr>
<tr>
<td>Variable frequency magnetic multivibrator generates stable square-wave output</td>
<td>GSFC-AR-21 B65-10124 01</td>
</tr>
<tr>
<td>Magnetic-shift-register circuit controls step motor operation</td>
<td>GSFC-340 B65-10226 01</td>
</tr>
<tr>
<td>Magnetically operated limit switch has improved reliability, minimizes arcing</td>
<td>NRC-422 B66-10270 01</td>
</tr>
<tr>
<td>Residual magnetism holds solenoid armature in desired position</td>
<td>LEWIS-343 B67-10038 01</td>
</tr>
<tr>
<td>Push-magnet delay eliminated by modification of circuit</td>
<td>ARG-10333 B69-10946 01</td>
</tr>
</tbody>
</table>

### MAGNETIC COILS

<table>
<thead>
<tr>
<th>Subject</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit switches latching relay in response to signals of different polarity</td>
<td>WOO-055 B63-10508 01</td>
</tr>
<tr>
<td>Unmanned seismometer levels self, corrects drift errors</td>
<td>GSFC-100 B63-10551 01</td>
</tr>
<tr>
<td>Apparatus measures very small thrusts</td>
<td>WOO-048 B64-10284 05</td>
</tr>
<tr>
<td>Magnetic field test coils are temperature compensated</td>
<td>GSFC-294 B65-10081 02</td>
</tr>
<tr>
<td>Electron-beam deflection controlled by digital signals</td>
<td>GSFC-385 B65-10282 02</td>
</tr>
<tr>
<td>Magnetometer measures orthogonal components of magnetic fields</td>
<td>GSFC-395 B65-10315 01</td>
</tr>
<tr>
<td>Electromagnetic hammer removes weld distortions from aluminum tanks</td>
<td>M-PS-287 B65-10342 05</td>
</tr>
<tr>
<td>Calculations enable optimum design of magnetic brake</td>
<td>LEWIS-251 B66-10073 05</td>
</tr>
<tr>
<td>Magneto motive force for precision sizing and joining of large-diameter tubes</td>
<td>M-P-20481 B69-10422 05</td>
</tr>
<tr>
<td>Report on a cryogenic gyroscope</td>
<td>SFQ-11200 B69-10504 02</td>
</tr>
</tbody>
</table>

### MAGNETIC CONTROL

<table>
<thead>
<tr>
<th>Subject</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic field readily controlled in zero gravity environment</td>
<td>LEWIS-126 B65-10335 03</td>
</tr>
<tr>
<td>Modified fuel cell pressure gage eliminates measurement errors</td>
<td>ARC-62 B66-10481 01</td>
</tr>
<tr>
<td>Cold solid propellant motor has stop-restart capability</td>
<td>JPL-836 B66-10673 03</td>
</tr>
<tr>
<td>Magnetically controlled torque wrench prevents overtorquing</td>
<td>SAN-10002 B68-10209 05</td>
</tr>
</tbody>
</table>

### MAGNETIC CORES

<table>
<thead>
<tr>
<th>Subject</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfluxor circuit amplifies sensing current for computer memories</td>
<td>JPL-406 B63-10255 01</td>
</tr>
<tr>
<td>New sintering process adjusts magnetic value of ferrite cores</td>
<td>GSFC-129 B63-10606 01</td>
</tr>
<tr>
<td>Blocking oscillator uses low triggering voltage</td>
<td>BSC-58 B64-10017 01</td>
</tr>
<tr>
<td>Circuit detects errors in address currents for magnetic core arrays</td>
<td>M-P-234 B65-10047 01</td>
</tr>
<tr>
<td>Improved magnetometer uses toroidal gating coil</td>
<td>GSFC-289 B65-10103 01</td>
</tr>
<tr>
<td>Variable frequency transistor inverters use multiple core transformers</td>
<td>GSFC-183 B65-10119 01</td>
</tr>
<tr>
<td>Variable frequency magnetic multivibrator generates stable square-wave output</td>
<td>GSFC-AR-21 B65-10124 01</td>
</tr>
<tr>
<td>Analog-to-digital converter has increased reliability and reduced power consumption</td>
<td>GSFC-286 B65-10194 01</td>
</tr>
<tr>
<td>Magnetic-shift-register circuit controls step motor operation</td>
<td>GSFC-340 B65-10226 01</td>
</tr>
<tr>
<td>Inductor flyback characteristic gives voltage regulator fast response</td>
<td>GSFC-361 B65-10257 01</td>
</tr>
<tr>
<td>Efficient dc to dc converter eliminates large stray magnetic fields</td>
<td>GSFC-463 B66-10376 01</td>
</tr>
<tr>
<td>Cage of 6.5 per cent Si-Fe sheet is chemically reduced</td>
<td>KSC-537 B66-10454 03</td>
</tr>
<tr>
<td>Digital system detects binary code patterns containing errors</td>
<td>GSFC-581 B66-10516 01</td>
</tr>
</tbody>
</table>

High transients suppressed in electromagnetic
IAGHETIC DISTURBANCES SUBJECT INDEX

High permeability semiconductors permit close-tolerance soldering GSPC-319 865-10134 05
Density trace made with computer printout GSPC-322 865-10200 01
Ion pump provides increased vacuum pumping speed NEQ-13 865-10239 02
Superconductor shields test chamber from ambient magnetic fields JPL-627 865-10297 02
Magnetometer measures orthogonal components of magnetic fields GSPC-395 865-10315 01
Magnetic fluid readily controlled in zero gravity environment LEWIS-103-126 865-10335 03
Electromagnetic hammer removes weld distortions from aluminum tanks M-FS-267 865-10342 05
Portable self-powered device detects internal flaws in tabular structures NU-0019 866-10028 01
Cold cathode ionization gage has rigid metal housing GSPC-445 866-10041 01
Thermal motor positions magnetometer sensors ARC-51 866-10078 05
Rod and dish cathode improves penning-type vacuum gage GSPC-447 866-10082 01
Highly sensitive solids mass spectrometer uses inert-gas ion source ERC-11 866-10114 02
Niobium thin films are superconductive in strong magnetic fields at low temperatures JPL-SC-174 866-10122 02
Variable-capacitance tachometer eliminates troublesome magnetic fields GSPC-435 866-10126 01
Electron beam welding of copper-Monel facilitated by circular magnetic shields M-FS-569 866-10215 05
Magnetically operated limit switch has improved reliability, minimizes arcing MSC-422 866-10270 01
High-performance RC bandpass filter is adapted to miniaturized construction ARC-60 866-10309 01
Brushless dc motor has high efficiency, long life GSPC-181 866-10355 01
Efficient dc to dc converter eliminates large stray magnetic fields GSPC-863 866-10376 01
Thermionic scanner pinpoints work function of emitter surfaces JPL-5C-177 866-10444 01
Solenoid magnetic fields calculated from superposed semi-infinite solenoids LEWIS-184 866-10490 01
Experimental investigation of megawatt dc arc heating of nitrogen LEWIS-313 866-10508 02
Improved design provides faster response time in photomultiplier GSPC-451 866-10526 01

MAGNETIC DISTURBANCES

Variable reluctance switch avoids contact corrosion and contact bounce MSC-1178 865-10137 01
Multiplexing control device enables handling of wide variations in sampling rates M-FS-1877 866-10150 01
Computer memory access technique NPO-10201 866-10585 01
Multiple current source offers low power losses and high reliability LANGLET-68 866-10603 01
Method for reducing snap in magnetic amplifiers LEWIS-10388 866-10388 01
Analysis of magnetically-controlled processes in pulse-modulation systems GSPC-10241 866-10070 01
Linear voltage-to-frequency converter GSPC-10546 866-10220 01
Channel-wall limitations in the magnetohydrodynamic induction generator ARC-10128 866-10255 02
An unconventional magnetically-coupled multivibrator HQ-10226 866-10480 01
Low input voltage converter/regulator minimizes external disturbances GSPC-527 866-10689 01
Simplified technique demonstrates magnetic domain switching M-FS-13153 866-10342 02
Simplified, reliable circuit sorts binary numbers in order of magnitude NPO-10112 866-10503 01
Supercold technique duplicates magnetic field in second superconductor JPL-376 866-10237 05
Shaped superconductor cylinder retains intense magnetic field JPL-381 866-10238 01
Apparatus alters position of objects to facilitate demagnetization GSPC-234 866-10277 05
Fine-mesh screen made by simplified method WCO-104 866-10282 03
Apparatus measures very small thrusts WCO-048 866-10284 05
Ionization vacuum gage starts quickly, is unaffected by spurious currents JPL-304 866-10036 02
Pulsed plasma accelerator operates repetitively without complex controls LANGLET-48 866-10062 01
Magnetic field test coils are temperature compensated GSPC-294 866-10081 02
Improved magnetometer uses toroidal gating coil GSPC-249 866-10103 01
Magnetic field controls carbon arc test flask MSC-139 866-10100 01

MAGNETIC DOMAINS

Simplified technique demonstrates magnetic domain switching M-FS-13153 866-10342 02

MAGNETIC DRUMS

Simplified technique demonstrates magnetic domain switching M-FS-13153 866-10342 02

MAGNETIC FIELDS

Supercold technique duplicates magnetic field in second superconductor JPL-376 866-10237 05
Shaped superconductor cylinder retains intense magnetic field JPL-381 866-10238 01
Apparatus alters position of objects to facilitate demagnetization GSPC-234 866-10277 05
Fine-mesh screen made by simplified method WCO-104 866-10282 03
Apparatus measures very small thrusts WCO-048 866-10284 05
Ionization vacuum gage starts quickly, is unaffected by spurious currents JPL-304 866-10036 02
Pulsed plasma accelerator operates repetitively without complex controls LANGLET-48 866-10062 01
Magnetic field test coils are temperature compensated GSPC-294 866-10081 02
Improved magnetometer uses toroidal gating coil GSPC-249 866-10103 01
Magnetic field controls carbon arc test flask MSC-139 866-10100 01

I-388
High-reluctance rotor rings improve homopolar generator performance
ARG-104

A continuously operating source of vacuum ultraviolet below 500 angstroms
GSPC-545

Simple technique determines ac properties of hard superconductive materials
I-FS-1818

Low input voltage converter/ regulator minimizes external disturbances
GSPC-527

High-energy-rate magnetohydraulic metal forming system
I-FS-2142

Study of yttrium iron garnet rods reveals new magnetostatic echo mode
EBC-37

An improved nuclear magnetic resonance spectrometer
JPL-762

Torque meter aids study of hysteresis in soft superconductive materials
NPO-10402

Development of Curie point switching for thin film, random access, memory devices
I-PS-20417

Optically induced free carrier light modulator
GSPC-10216

Experimental prediction of performance by superconducting cables
ARG-10215

Channel-wall limitations in the magnetohydrodynamic induction generator
ARG-10128

Induction probe determines levels of liquid metals
ARG-10346

Piezoelectric lock mechanism resists lockpicking
SAM-10037

Electrothermal linear actuator
WPO-10637

Magnetic forming of resistive materials
I-FS-20417

Method for determining properties of microinstabilities of a magnetized plasma
HQ-10447

Preparation of superconducting thin films of transition-metal interstitial compounds
HQ-10445

Magnetic field mapper
LEWIS-10792

Storage of electric and magnetic energy in passive nonreciprocal networks
ARG-10360

Cryogenic flux-concentrator
ARG-10494

Monopole mass spectrometer with improved sensitivity and reduced background
HQ-10476

Production of crystalline polymers via liquid crystal monomers
HQ-10238

Liquid-metal-piston MHD generator

I-389
MAGNETIC MEASUREMENT

Thermal motor positions magnetometer sensors
ABC-51 B66-10078 05

Calibration of a resistance thermometer
don to 0.04 degrees K
ABG-10318 B69-10149 01

MAGNETIC ROBOTS

Magnetometer measures orthogonal components
of magnetic fields
GSFC-395 B65-10315 01

Neutron diffractometer allows both magnetic
and crystallographic analyses
ABG-191 B67-10131 02

MAGNETIC PENETRABILITY

Noncontacting transducer measures shaft torque
M-FS-474
Rod and dish cathode improves penning-type
vacuum gage
GSFC-447 B66-10082 01

Electron beam welding of copper-nickel
facilitated by circular magnetic shields
M-FS-569 B66-10215 05

Process yield Co-Fe alloys with superior
high temperature magnetic properties
LWIS-333 B66-10535 03

Solenoideal valve design has one moving part
NFO-10039 B67-10219 05

MAGNETIC PROPERTIES

Rotor position sensor switches currents in
brushless dc motors
GSFC-315 B65-10151 01

Hollow spherical rotors fabricated by
electroplating
JPL-50-117

Thin-film ferrites vapor deposited by one-step
process in vacuum
MSC-259 B66-10398 03

Process yield Co-Fe alloys with superior
high temperature magnetic properties
LWIS-333 B66-10535 03

Miniaturization of magnetic logic circuitry
LANGLEY-10037 06

MAGNETIC PUMPING

Rotating magnetic poles used to pump mercury
LWIS-276 B66-10434 05

MAGNETIC RECORDING

Circuit converts AC signals to FM for
magnetic recording
GSFC-227 B65-10001 01

Hybrid computer technique yields random
signal probability distributions
ARC-34 B65-10208 01

PCN magnetic tape system efficiently records
and reproduces data
GSFC-375 B65-10311 01

An improved magnetic tape recorder
GSFC-08259 B67-10646 01

Degas in rolling element bearings may be
detected early
BG-10031 B67-10658 01

Scan rate converter for tape recording and
playback of TV pictures
NFO-10166 B67-10676 01

Harmonic distortion analyzer speeds setup of
magnetic tape recorders
GSFC-10198 B68-10254 01

Method of reducing time base error in

IAGNETIC RECORDER

Circuit converts AC signals to FM for
magnetic recording
GSFC-227 B65-10001 01

MAGNETIC RESONANCE

Magnetometer measures orthogonal components
of magnetic fields
GSFC-395 B65-10315 01

Coordination chemistry in fused-salt
solutions
ABG-10469 B69-10423 03

MAGNETIC SHIELDING

Electron beam welding of copper-nickel
facilitated by circular magnetic shields
M-FS-569 B66-10215 05

Improved ferrous shielding for flat cables
M-FS-14524 B69-10401 01

MAGNETIC SIGNALS

Magnetometer measures orthogonal components
of magnetic fields
GSFC-395 B65-10315 01

A theoretical study of radar backscatter
from distributed targets with emphasis on
polarization dependence
M-FS-13775 B69-10560 02

MAGNETIC STORAGE

Transfluxor circuit amplifies sensing current
for computer memories
JPL-406 B63-10255 01

Density trace made with computer printout
GSFC-322 B65-10200 01

Multipulse current source offers low power
losses and high reliability
LANGLEY-68 B67-10603 01

Optically exciting a magnetic memory - A
feasibility study
M-FS-14054 B69-10060 02

MAGNETIC TAPES

Small digital recording head has parallel bit
channels, minimizes cross talk
JPL-0029 B63-10284 01

Low-cost tape system measures velocity of
acceleration
GSFC-85 B63-10512 01

Compact cartridge drives coded tape at
constant readout speed
JPL-872 B64-10222 01

Security warning system monitors up to
fifteen remote areas simultaneously
ESC-66-39 B66-10546 01

Digital computer processing of X-ray photos
JPL-792 B67-10005 04

Data retrieval system provides unlimited
hardware design information
MSC-1164 B67-10170 01

Structural Analysis and Matrix
Interpretive System /SMIS/
NFO-10130 B67-10171 01

Computer program samples digital data for
CRT display
ESC-999 B67-10249 01

Transient Analysis Generator /TAG/
simulates behavior of large class of
electrical networks
NFO-10031 B67-10319 06

Saturn S-2 Automatic Software System
/SSB/ S-FS-1741 B67-10405 06

Computer program generates averaged value
data tapes

I-390
SUBJECT INDEX

M-PS-12728 B67-10411 06
Technique for measuring magnetic tape interlayer adhesion NPO-10011 B67-10417 03
Device measures static friction of magnetic tape GSFC-10360 B67-10586 03
Conceptual serve technique for controlling tape drive M-PS-12955 B67-10595 01
X-Y plotter adapter developed for SDS-930 computer NPO-10011 B68-10417 03
Analysis of flutter in tape transport systems M-PS-11970 B68-10027 01
Computer magnetic tape rehabilitation study GSFC-10283 B68-10355 05
Magnetic tape transport controlled by rotating transducer heads GSFC-463 B68-10079 01
Fully automatic telemetry data processor GSFC-10576 B68-10336 01
A request-oriented information selection program LEWIS-10255 B68-10451 06
Long-term data storage and retrieval system, a concept M-PS-14789 B68-10505 01
Weight Control System M-PS-15028 B69-10041 06
Dewpoint temperature inversions analyzed ARG-10316 B69-10057 02
Electronic visualization of gas bearing behavior LEWIS-10711 B69-10073 01
Microscopes and computers combined for analysis of chromosomes ARG-10256 B69-10088 04
Structural Analysis and Matrix Interpretive System /SAMIS/ NPO-10839 B69-10093 01
On-line computer system for use with low-energy nuclear physics experiments is reported ARG-10257 B69-10094 01
ABTRAN on-site tracking prediction program NPO-10836 B69-10103 06
SPAN - Terminal sterilization process analysis program NPO-10804 B69-10104 06
VICAR-DIGITAL image processing system NPO-10770 B69-10139 06
Data processing method for a weak, moving telemetry signal NPO-11003 B69-10639 01
Biomedical bulk data processing program PBC-10015 B69-10720 06
Solar activity history model M-PS-20529 B69-10776 01

MAGNETIC VARIATIONS
Study of yttrium iron garnet rods reveals new magnetostatic echo mode ERE-37 B67-10153 01

MAGNETIZATION
Study reveals effect of aluminum on saturation moment of Fe-Mn alloys ARG-90259 B68-10172 03

MAGNETOHYDRODYNAMIC FLOW
Study of convective magnetohydrodynamic channel flow ARG-10102 B68-10181 02

MAGNETOHYDRODYNAMIC GENERATORS
Segmented electrode increases operating pressure of MHD accelerator LANGLEY-95 B65-10356 02
Magnetohydrodynamic generators using two-phase liquid-metal flows ARG-10168 B69-10162 01
Channel-wall limitations in the magnetohydrodynamic induction generator ARG-10126 B69-10255 02
Liquid-metal-piston MHD generator ARG-10500 B69-10771 02

MAGNETOHYDRODYNAMICS
Wire winding increases lifetime of oxide coated cathodes LEWIS-154 B65-10032 03
Studies of cycles for liquid-metal magnetohydrodynamic generation of power ARG-10256 B69-10194 02

MAGNETOMETERS
Improved magnetometer uses toroidal gating coil GSFC-249 B65-10103 01
Electromechanical flowmeter accurately monitors fluid flow GSFC-357 B65-10273 01
Magnetometer measures orthogonal components of magnetic fields GSFC-395 B65-10315 01
Thermal motor positions magnetometer sensors ARC-51 B66-10078 05
A polar graphic method for determining the attitude of rocket vehicles GSFC-10860 B69-10591 02

MAGNETORESISTIVITY
Magnetoresistors monitors relay performance M-PS-1754 B66-10650 01

MAGNETOSTATIC FIELDS
Study of yttrium iron garnet rods reveals new magnetostatic echo mode ERE-37 B67-10153 01

MAGNETOSTRICTION
A conceptual design for squeeze film bearings M-PS-573 B67-10153 01
Ultrasonic temperature measuring device LEWIS-10446 B66-10319 01

MAGNETORONS
Ion pump provides increased vacuum pumping speed NPO-13 B65-10239 02
Magneton tuner has locking feature XWP-09771 B69-10119 05

MAGNETS
Stepping switch with simple actuator provides many contacts in small space JPL-122 B63-10118 01
Ball bearing used in design of rugged flowmeter LEWIS-159 B68-10170 05
Spring loaded beaded cable makes efficient...
Magnification

<table>
<thead>
<tr>
<th>Wire puller</th>
<th>B66-10031 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnets position X-ray film for weld inspection</td>
<td>B65-10110 05</td>
</tr>
<tr>
<td>Multiple test chamber exposes materials to various environments</td>
<td>B65-10268 01</td>
</tr>
<tr>
<td>Modified procedure speeds camera copy layout for offset printing</td>
<td>B65-10373 02</td>
</tr>
<tr>
<td>Bench vise adapter grips tubing securely and safely</td>
<td>B66-10056 05</td>
</tr>
<tr>
<td>Switching mechanism senses angular acceleration</td>
<td>B66-10158 01</td>
</tr>
<tr>
<td>Magnetic latches provide positive overpressure control</td>
<td>B66-10279 05</td>
</tr>
<tr>
<td>Rectilinear accelerometer possesses self-calibration feature</td>
<td>B66-10452 01</td>
</tr>
<tr>
<td>Low rate flow switch can be used for gas or liquid</td>
<td>B66-10696 01</td>
</tr>
<tr>
<td>Compressible sleeve provides automatic centering for grinding or turning of cylinders</td>
<td>B66-10318 05</td>
</tr>
<tr>
<td>An improved atomic hydrogen frequency and time standard</td>
<td>B66-10341 02</td>
</tr>
<tr>
<td>Novel multipurpose timer for laboratories</td>
<td>B66-10410 01</td>
</tr>
</tbody>
</table>

Magnification

| New electron microscope employs new video display technique | B67-10312 03 |
| Camera lens adapter magnifies image | B67-10431 02 |
| Color-television medical microscopy | B68-10314 01 |
| Tape reading fixture | B69-10008 05 |
| Fractography can be used to analyze failure modes in polytetrafluoroethylene | B69-10066 03 |
| MAGNYT - Program for calculating velocities in magnified region of turbomachines | B69-10132 06 |
| A magnifying scratch-gage force transducer | B69-10212 01 |
| Surface profilometer for examining grain-boundary grooves | B69-10345 05 |
| Photomicroscopy | B69-10736 01 |

Magnitude

| Fortran 4 program for two-impulse rendezvous analysis | B67-10479 06 |
| A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux | B69-10295 05 |

Maintainability

| Solenoid valve design has one moving part | B67-10219 05 |
| Maintainability methodology and maintenance analyses | B68-10075 05 |
| Monte Carlo simulation by computer for life-cycle costing | B69-10590 05 |
| Microelectronic device data handbook | B69-10687 01 |

Maintenance

<p>| Use of tear ring permits repair of sealed module circuitry | B65-10014 05 |
| Magnetic field controls carbon arc tail flame | B68-10074 01 |
| Inert gas spraying device aids in repair of hazardous systems | B68-10115 05 |
| Economical and maintenance-free gas system operates railroad switches | B66-10124 05 |
| Mounting facilitates removal and installation of flange-detector rods | B66-10150 05 |
| Interior servicing platform simplifies maintenance of storage tanks | B66-10425 05 |
| Solid state annunciator facilitates complex system troubleshooting | B66-10505 01 |
| Abraded cadmium-plated cable connectors repaired by conversion coating | B67-10014 03 |
| Tester automatically checks paper tape punch and reader after maintenance | B67-10267 01 |
| Portable machine welding head automatically controls arc | B67-10272 05 |
| Accusulator isolator prevents malfunction of faulty hydraulic system | B68-10528 05 |
| Maintainability methodology and maintenance analyses | B68-10075 05 |
| Tube joint leak repair coupling | B68-10540 05 |
| Welded repairs of punctured thin-walled aluminum pressure vessels | B69-10051 05 |
| Two-axis winch installer for heavy ducts in confined space | B69-10062 05 |
| Tube welding and brazing | B69-10085 05 |
| Repair of honeycomb panels with welded breakaway studs | B69-10261 05 |
| Repair of weld defects in thin-walled stainless steel tubes | B69-10305 05 |
| Flexible rivet-set | B69-10459 05 |
| Improved system for documenting measurement | B69-10587 05 |</p>
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Handrels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>B69-10513 01</td>
</tr>
<tr>
<td>Design and sparing techniques to meet specified performance life</td>
<td>B69-10528 02</td>
</tr>
<tr>
<td>Liquid oxygen-compatible insulation system</td>
<td>B69-10599 03</td>
</tr>
<tr>
<td>Programmed schedule holds for improving launch vehicle holds</td>
<td>B69-10602 03</td>
</tr>
<tr>
<td>Majority Carriers</td>
<td></td>
</tr>
<tr>
<td>Field effect transistor presents high input impedance in ac amplifier</td>
<td>B65-10232 01</td>
</tr>
<tr>
<td>Logic realization of simple majority voting connectives</td>
<td>B67-10511 06</td>
</tr>
<tr>
<td>Malfunctions</td>
<td></td>
</tr>
<tr>
<td>Polarizing keys prevent mismatch of connector plugs and receptacles</td>
<td>B66-10251 01</td>
</tr>
<tr>
<td>Numerical data frame readout system used in testing telemetry systems</td>
<td>B67-10175 01</td>
</tr>
<tr>
<td>Solenoid valve design has one moving part</td>
<td>B67-10219 05</td>
</tr>
<tr>
<td>Study made of acoustical monitoring for mechanical checkout</td>
<td>B67-10430 02</td>
</tr>
<tr>
<td>Accumulator isolator prevents malfunctioning of faulty hydraulic system</td>
<td>B67-10528 05</td>
</tr>
<tr>
<td>An electronic circuit for sensing malfunctions in test instrumentation</td>
<td>B69-10392 01</td>
</tr>
<tr>
<td>Reliability</td>
<td></td>
</tr>
<tr>
<td>Improved cure method for single component silicone rubber</td>
<td>B69-10749 03</td>
</tr>
<tr>
<td>RAMS</td>
<td></td>
</tr>
<tr>
<td>Compound equation developed for postnatal growth of birds and mammals</td>
<td>B66-10427 04</td>
</tr>
<tr>
<td>RAM Machine Systems</td>
<td></td>
</tr>
<tr>
<td>Review of biological mechanisms for application to instrument design</td>
<td>B67-10663 04</td>
</tr>
<tr>
<td>Management</td>
<td></td>
</tr>
<tr>
<td>A simplified PERT system</td>
<td>B67-10241 05</td>
</tr>
<tr>
<td>System automatically provides dynamic launch decision criteria</td>
<td>B67-10363 01</td>
</tr>
<tr>
<td>LARCON - Laboratory Job Control program</td>
<td>B69-10106 06</td>
</tr>
<tr>
<td>Management Planning</td>
<td></td>
</tr>
<tr>
<td>GRENEX a new management training concept</td>
<td>B67-10092 01</td>
</tr>
<tr>
<td>Vis-a-Plan /visualize a plan/ management technique provides performance-time scale</td>
<td>B67-10240 06</td>
</tr>
<tr>
<td>KOPE /Kalender Oriented Program Efforts/ provides data for management decisions</td>
<td>B67-10478 06</td>
</tr>
<tr>
<td>Probabilistic approach to long range planning of manpower</td>
<td></td>
</tr>
<tr>
<td>Handrels</td>
<td></td>
</tr>
<tr>
<td>Computerized Schedule Effectiveness Technique /PERT/ determines present and future schedule position</td>
<td>B67-10522 06</td>
</tr>
<tr>
<td>An overview of electromagnetic interference problems in spacecraft</td>
<td>B69-10362 01</td>
</tr>
<tr>
<td>Vacuum forming of thermoplastic sheet results</td>
<td></td>
</tr>
<tr>
<td>Stainless-steel elbows formed by spin forging</td>
<td>B67-10590 05</td>
</tr>
<tr>
<td>Fiber glass parts cured during filament winding eliminates oven, saves time</td>
<td>B65-10088 03</td>
</tr>
<tr>
<td>Collar positions strip stock used to form coil on mandrel</td>
<td>B65-10130 05</td>
</tr>
<tr>
<td>Metal bellows custom-fabricated from tubing</td>
<td>B65-10150 05</td>
</tr>
<tr>
<td>Spiral heater coils hand-formed with fixture</td>
<td>B65-10192 05</td>
</tr>
<tr>
<td>Boron carbide whiskers produced by vapor deposition</td>
<td>B65-10243 05</td>
</tr>
<tr>
<td>Sheet metal strip unrolls to form circular boom</td>
<td>B65-10261 03</td>
</tr>
<tr>
<td>Rotating mandrel speeds assembly of plastic inflatable</td>
<td>B66-10137 05</td>
</tr>
<tr>
<td>Portable power tools machines weld joints in field</td>
<td>B66-10145 05</td>
</tr>
<tr>
<td>Hand tool permits shrink sizing of assembled tubing</td>
<td>B66-10239 05</td>
</tr>
<tr>
<td>Differential expansion provides pressure for diffusion bonding of large diameter rings</td>
<td>B66-10269 05</td>
</tr>
<tr>
<td>High pressure tube coupling requires no threads or flares</td>
<td>B66-10285 05</td>
</tr>
<tr>
<td>Special mandrel permits uniform welding of out-of-round tubing</td>
<td>B66-10323 05</td>
</tr>
<tr>
<td>Ductile mandrel and parting compound facilitate tube drawing</td>
<td>B66-10571 05</td>
</tr>
<tr>
<td>Multilayer refractory nozzles produced by plasma-spray process</td>
<td>B66-10611 05</td>
</tr>
<tr>
<td>Flow-test device fits into restricted access passages</td>
<td>B67-10074 01</td>
</tr>
<tr>
<td>Porous mandrels provide uniform deformation in hydrostatic powder metallurgy</td>
<td>B67-10209 03</td>
</tr>
<tr>
<td>Extrusion of small-diameter, thin-wall tungsten tubing</td>
<td>B67-10355 05</td>
</tr>
<tr>
<td>Metal tube reducer is inexpensive and simple to operate</td>
<td>B67-10401 05</td>
</tr>
</tbody>
</table>
Aluminum and stainless steel tubes joined by simple ring and welding process
M-PS-13120 B67-10472 05

Compressible sleeve provides automatic centering for grinding or turning of cylinders
SAM-10021 B68-10318 05

Repair of weld defects in thin-walled stainless steel tubes
M-PS-16293 B69-10305 05

Magneto motive forking for precision sizing and joining of large-diameter tubes
M-PS-20461 B69-10422 05

MANNED SPACE FLIGHT
Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
M-PS-12916 B67-10307 06

Estimating reliability by application of matrix representation
HQ-10246 B69-10793 02

MANNED SPACECRAFT
A prototype high power portable lamp
M-PS-20225 B69-10189 02

MANIPULATORS
Simple mechanism combines positive locking and quick-release features
Woo-4 B63-10420 05

Remotely operated clamping tool has positive grip
NU-0020 B65-10254 05

Flag-in connector socket accepts coaxial cable end
ABS-9 B66-10478 01

Polynomal manipulator AP-168
BSC-1231 B67-10103 01

Improved head-controlled TV system produces high-quality remote image
ABS-128 B67-10317 01

Welding torch and wire feed manipulator
M-PS-13102 B67-10385 05

Portable, high intensity isotopic neutron source provides increased experimental accuracy
ABS-90250 B68-10243 02

Improved electromechanical master-slave manipulator
ABS-10027 B68-10372 05

Abrasion and resistant discharge valve developed
ABS-10219 B69-10044 05

Astronaut's tool for withdrawing/replacing computer cards
M-PS-20453 B69-10183 05

MANGANESE Weldable aluminum alloy has improved mechanical properties
M-PS-295 B66-10445 03

New weldable high strength aluminum alloy developed for cryogenic service
M-PS-737 B66-10613 05

Sodium perenate permits rapid oxidation of manganese for easy spectrophotometric determination
ABG-262 B67-10421 03

Development of Curie point switching for thin film, random access, memory device
NFO-10402 B67-10633 02

Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics
SAM-10012 B68-10204 03

Silicon carbide diode for increased light output
M-PS-20063 B69-10096 01

MANGANESE ALLOYS
Weld microfinsuring in Inconel 718 minimized by minor elements
M-PS-18186 B68-10251 03

MANGANESE IONS Primary radical yields in pulse irradiated alkaline aqueous solution
ABG-10322 B69-10167 02

MANGANESE ISOTOPES
Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ABG-90261 B69-10621 01

MANGANIN (TRADEMARK) Improved variable-reluctance transducer measures transient pressures
LANGLEY-10 B63-10321 01

MANTLEFLDS Heated die facilitates tungsten forming
LEWIS-25A B66-10047 05

Combustion chamber inlet manifold separates vapor from liquid
M-PS-531 B66-10052 05

Inflatable holding fixture permits X-rays to be taken of inner weld areas
M-PS-856 B66-10327 03

Welds chilled by liquid coolant manifold
M-PS-679 B66-10354 05

Brasing retort manifold design concept may minimize air contamination and enhance uniform gas flow
M-PS-707 B66-10371 05

Elimination of rocket engine asymmetric loads during tests at sea level
M-PS-1730 B66-10674 05

Journal gas bearing for curved surfaces
M-PS-20423 B69-10182 05

MANNED SPACE FLIGHT
Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
M-PS-12916 B67-10307 06

Estimating reliability by application of matrix representation
HQ-10246 B69-10793 02

MANNED SPACECRAFT
A prototype high power portable lamp
M-PS-20225 B69-10189 02

MANIPULATORS
Simple mechanism combines positive locking and quick-release features
Woo-4 B63-10420 05

Remotely operated clamping tool has positive grip
NU-0020 B65-10254 05

Flag-in connector socket accepts coaxial cable end
ABS-9 B66-10478 01

Polynomal manipulator AP-168
BSC-1231 B67-10103 01

Improved head-controlled TV system produces high-quality remote image
ABS-128 B67-10317 01

Welding torch and wire feed manipulator
M-PS-13102 B67-10385 05

Portable, high intensity isotopic neutron source provides increased experimental accuracy
ABS-90250 B68-10243 02

Improved electromechanical master-slave manipulator
ABS-10027 B68-10372 05

Abrasion and resistant discharge valve developed
ABS-10219 B69-10044 05

Astronaut's tool for withdrawing/replacing computer cards
M-PS-20453 B69-10183 05

MANGANESE Weldable aluminum alloy has improved mechanical properties
M-PS-295 B66-10445 03

New weldable high strength aluminum alloy developed for cryogenic service
M-PS-737 B66-10613 05

Sodium perenate permits rapid oxidation of manganese for easy spectrophotometric determination
ABG-262 B67-10421 03

Development of Curie point switching for thin film, random access, memory device
NFO-10402 B67-10633 02

Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics
SAM-10012 B68-10204 03

Silicon carbide diode for increased light output
M-PS-20063 B69-10096 01

MANGANESE ALLOYS
Weld microfinsuring in Inconel 718 minimized by minor elements
M-PS-18186 B68-10251 03

MANGANESE IONS Primary radical yields in pulse irradiated alkaline aqueous solution
ABG-10322 B69-10167 02

MANGANESE ISOTOPES
Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ABG-90261 B69-10621 01

MANGANIN (TRADEMARK) Improved variable-reluctance transducer measures transient pressures
LANGLEY-10 B63-10321 01

MANTLEFLDS Heated die facilitates tungsten forming
LEWIS-25A B66-10047 05

Combustion chamber inlet manifold separates vapor from liquid
M-PS-531 B66-10052 05

Inflatable holding fixture permits X-rays to be taken of inner weld areas
M-PS-856 B66-10327 03

Welds chilled by liquid coolant manifold
M-PS-679 B66-10354 05

Brasing retort manifold design concept may minimize air contamination and enhance uniform gas flow
M-PS-707 B66-10371 05

Elimination of rocket engine asymmetric loads during tests at sea level
M-PS-1730 B66-10674 05

Journal gas bearing for curved surfaces
M-PS-20423 B69-10182 05

MANIPULATORS
Simple mechanism combines positive locking and quick-release features
Woo-4 B63-10420 05

Remotely operated clamping tool has positive grip
NU-0020 B65-10254 05

Flag-in connector socket accepts coaxial cable end
ABS-9 B66-10478 01

Polynomal manipulator AP-168
BSC-1231 B67-10103 01

Improved head-controlled TV system produces high-quality remote image
ABS-128 B67-10317 01

Welding torch and wire feed manipulator
M-PS-13102 B67-10385 05

Portable, high intensity isotopic neutron source provides increased experimental accuracy
ABS-90250 B68-10243 02

Improved electromechanical master-slave manipulator
ABS-10027 B68-10372 05

Abrasion and resistant discharge valve developed
ABS-10219 B69-10044 05

Astronaut's tool for withdrawing/replacing computer cards
M-PS-20453 B69-10183 05

MANNED SPACE FLIGHT
Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
M-PS-12916 B67-10307 06

Estimating reliability by application of matrix representation
HQ-10246 B69-10793 02

MANNED SPACECRAFT
A prototype high power portable lamp
M-PS-20225 B69-10189 02

MANIPULATORS
Multiple port pressure scanner valve features greater accuracy, quicker data
JPL-555 B64-10031 05

Device induces lungs to maintain known constant pressure
MSC-50 B64-10108 04

Fluid-pressure measurement apparatus uses short-length manometer tubes
LEWIS-28 B65-10027 05

Probe measures characteristics of hot gas stream
M-PS-240 B65-10133 02

Sizing enables McLeod gauge to measure in ultrahigh vacuum range
GSPC-440 B65-10329 01

Microorganisms detected by enzyme-catalyzed reaction
JPL-782 B66-10117 04

...
Ultraminiature manometer-tipped cardiac catheter
ARC-10054 B67-10669 01

Conceptual dead weight device to provide pressure calibration
M-PS-14672 B68-10264 01

Leakage tester for flat conductor cable connector
M-PS-20427 B69-10284 05

Elimination of dissolved gases in hypergolic engine propellants
M-PS-16179 B69-10692 03

MANNPOWER
Probabilistic approach to long range planning of manpower
MSC-11524 B67-10510 06

Computerized Schedule Effectiveness Technique (S.E.T.) determines present and future schedule position
M-PS-15012 B67-10522 06

MANUAL CONTROL
Heavy-duty staple resower operated by hand
JUL-PS-1004 B63-10292 05

Rapid billet loader aids extrusion of refractory metals
LEWIS-50 B63-10354 05

Variable load automatically tests dc power supplies
GSFC-294 B65-10105 01

Hand tool facilitates extraction of circuit modules
LANGLEY-38 B65-10231 05

Manual-feed adapter permits microfilming of continuous oscillograph output
NU-0029 B65-10249 01

Back mount device quickly inserts or extracts chassis units
MSC-244 B65-10385 05

Fingertip current control facilitates use of arc welding gun
MSC-299 B66-10092 05

Soldering tool heats workpieces and applies solder in one operation
LEWIS-247 B66-10115 05

Hand drill adapter limits holes to desired depth
MSC-346 B66-10123 05

Safety switch permits emergency bridge crane shutdown
M-PS-549 B66-10168 05

Tool enables proper mating of accelerometer and cable connector
M-PS-611 B66-10208 05

Hand tool permits shrink sizing of assembled tubing
MSC-504 B66-10239 05

Lathe chuck key incorporates safety feature
MSC-506 B66-10243 05

Modified soldering iron speeds cutting of synthetic materials
M-PS-725 B66-10246 05

Ultrasound hand tool allows convenient scanning of spot welds
M-PS-539 B66-10289 02

Latching mechanism operates in limited access area
MSC-230 B66-10338 05

Tool forms right angles in component leads
M-PS-722 B66-10346 05

Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379 01

Special tool kit aids heavily garmented workers
MSC-163 B66-10403 05

Rigid-body motion extracted from total motion of a flexible body
ARC-63 B67-10081 05

Tool facilitates installation of Marmon clamps
M-PS-2039 B67-10105 05

Tester automatically checks insulation of individual conductors in multiple-strand cables
MSC-10068 B67-10260 01

Pocket-size manual tape reader device aids computer tape checking
KSC-10058 B67-10361 01

Multiple meter monitoring circuits served by single alarm
MSC-10984 B67-10369 01

Eccentric drive mechanism is adjustable during operation
M-PS-2576 B67-10373 05

Use of color-coded sleeve shutters accelerates oscillograph channel selection
KSC-10092 B67-10382 01

Continuous wave detector has wide frequency range
M-PS-1049 B67-10386 01

Automatic telemetry checkout system
M-PS-12580 B67-10402 01

Versatile impact hand tool
M-PS-20140 B68-10371 05

Gun facilitates adhesive bonding of studs to surfaces
M-PS-20299 B69-10009 05

Two-axis winch installer for heavy ducts in confined space
M-PS-14254 B69-10062 05

J-beveling of pipe ends with a hand-held tool
KSC-10356 B69-10229 05

Foot-operated cell-counter
ARG-10315 B69-10351 01

Improved perceptual-motor performance measurement system
H-PS-10123 B69-10385 01

MANUALS
Workmanship standards for fusion welding
NUC-10050 B67-10200 05

Handbooks describe eddy current techniques used in nondestructive testing of metal parts and components
M-PS-13172 B67-10374 03

Static structural analysis of shell-type structures
MSC-11555 B68-10066 03

Numerical Control Machine Data Manual
M-PS-14342 B68-10080 05

Manual of industrial diamonds plus dressing and grinding criteria for machining superalloys
M-PS-14582 B68-10239 05
Hydrogen safety manual
LEWIS-10487 B68-10323 01

Training manuals for nondestructive testing using magnetic particles
I-FS-20187 B68-10391 03

Chemistry laboratory safety manual available
SAN-10030 B68-10419 03

Training manual on optical alignment instruments
I-FS-20292 B68-10574 02

Manual of typical low temperature mechanical properties of several materials
I-FS-18331 B69-10179 03

Sterilization training manual
I-FS-20437 B69-10277 04

Instruction manuals for liquid penetrant nondestructive testing
I-FS-14010 B69-10278 05

COBRA II programming manual
ARG-10463 867-10282 06

Bicroelectronic device data handbook
ERC-10322 B69-10687 01

Bellows design features low spring rate and long life
MSC-521 B68-10190 05

Vis-A-Plan /visualize a plan/ management technique provides performance-time scale
ESC-10073 B67-10260 06

Materials data handbook, Inconel alloy 718
I-FS-2348 B67-10282 03

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning
NWC-10073 B67-10348 06

Effect of surface irregularities on bellows fatigue life
I-FS-14914 B68-10229 05

An investigation of particle mixing in a gas-fluidized bed
ARG-10182 B68-10407 05

Conditioning flat conductors for flat conductor cable production
I-FS-14914 B68-10429 01

Low cost techniques for fabricating loped bearings
LEWIS-10296 B68-10441 05

Environmental test planning, selection and standardization aids available
SAN-10028 B68-10445 06

Rocket engine analog simulation
I-FS-16511 B68-10511 01

Integrated metal transistor leads
GSFC-90536 B68-10518 01

Vertical boring mill capacity is increased
I-FS-16196 B68-10530 05

FFS-fluorocarbon liners for flexible hoses
I-FS-16480 B68-10288 05

Possible correlation between work-hardening and fatigue-failure
ARG-10371 B69-1044 03

A new method for fabrication of flexible vacuum purge jackets
I-FS-12646 B69-10564 03

Sealed container sampling device
GSFC-10690 B69-10682 03

Photoelectric scanner makes detailed work function maps of metal surface
JPL-SC-176 B66-10440 01

Optical automatic gain channel
I-FS-1550 B66-10599 02

Moveable RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127 B67-10362 01

Surface temperature mapping with infrared photographic pyrometry
LEWIS-10763 B69-10113 01

Combination ranging system and mapping radar
NPO-11001 B69-10325 01

Magnetic field mapper
LEWIS-10762 B69-10476 01

Long range holographic contour mapping concept
HQ-10350 B69-10700 02

Visual task analysis /VISTA/
I-FS-14716 B69-10394 06

Concentrations of the naturally occurring radionucleides Pb-210, Po-210, and Ra-226 in aquatic fauna
ARG-10345 B69-10258 02

An overview of electromagnetic interference problems in spacecraft
NPO-11170 B69-10362 01

Solid state detectors monitor relay contacts
JPL-785 B66-10396 01

Sea dye marker provides visibility for 20 hours
MSC-714 B66-10313 03

A calibration means for spectrum analyzers
MSC-10987 B67-10254 01

Technique for strip chart recorder time notation
GSFC-473 B67-10196 01

Tritiated alumina serves as reagent for self-labeling analysis
ARG-209 B67-10315 03

Computer program utilizes FORTRAN 4 subroutines for contour plotting
NPO-10127 B67-10323 06

Effect of preparation procedures on intensity of radioautographic labeling is studied
ARG-10032 B67-10500 04

Reidentifying hardware after loss of serial number
I-FS-10133 B69-10059 05

Control jet placement on spacecraft
MSC-13365 B69-10671 01

Space trajectories program for MBH 7090
NPO-10125 B67-10172 06

Parametric up-converter increases flexibility

I-396
SUBJECT INDEX

BASS
SPECTROBETERS
of maser
KSC-67-98 867-10104 01
Highly stable microwave delay line
NPO-09828 867-10642 01

MASERS
Development of dual solid cryogens for
high reliability refrigeration system
GSFC-10188 867-10644 02
One hundred MHz voltage-controlled
oscillator
NPO-11004 869-10133 01
Sweep frequency detector
NPO-10669 869-10289 01
Automatic tuning of hydrogen masers
GSFC-10127 869-10452 01
Electrolytic separation of crystals of
transition-metal oxides
ANS-10506 869-10642 03

MASKING
Reusable neoprene jacket protects parts for
chemical etching
W00-071 865-10179 03
Optical device enables small detector to see
large field of view
W00-253 866-10263 02
Process facilitates photosensitive mask
alignment on SiC crystals
M-FS-2308 867-10184 01
Multiple-mask chemical etching
MSC-13114 869-10221 01
Improved method of fabricating planar gallium
arsenide diodes
XNP-04235 869-10271 01
Masking of aluminum surface against
anodizing
M-FS-12964 869-10335 05

MASKS
Protective clothing for workers with 5-kw
and 20-kw short-arc lamps
NPO-11155 869-10218 01

MASS
Device enables measurement of moments of
inertia about three axes
GSFC-49 865-10176 05
Quartz crystals detect gas contaminants
during vacuum chamber evacuation
NPO-10144 867-10205 01
System precisely controls oscillation of
vibrating mass
M-FS-1875 867-10276 01
Application of distorted models in
developing scaled structural models
M-FS-2540 867-10321 05
Eddy current probe measures size of cracks
in nonmetallic materials
M-FS-14059 867-10645 03
Water-glycol system volume calculation
MSC-15193 869-10563 02
Deposition monitor and control
NPO-10706 869-10722 01

MASS DISTRIBUTION
Equations provide tabular information on
effects of uniform and variable loads on
thin, flat, circular plates
ABG-151 866-10601 05
Device measures reaction engine thrust vector
deviations

MASS SPECTROMETERS
JPL-EC-163 866-10642 05
Substitution of stable isotopes in
Chlorella
ABG-10258 869-10197 04

MASS FLOW
Pump simulator provides variable
pressure-flow characteristics
LEWIS-10122 867-10453 05

MASS FLOW RATE
Instrument continuously measures density
of flowing fluids
LEWIS-309 867-10080 01
Computer program for high pressure real
gas effects
LEWIS-10820 869-10222 06

MASS RATIOS
Dust particle injector for hypervelocity
accelerators provides high charge-to-mass
ratio
GSFC-509 866-10347 01
Advances in light-gas gun technology
M-FS-14270 868-10288 05
Parameters for good welding of copper to
nickel
M-FS-20353 869-10302 05

MASS SPECTRA
Xenon fluorides show potential as
fluorinating agents
ABG-913 867-10185 03

MASS SPECTROMETERS
Ion pump provides increased vacuum pumping
speed
MEO-13 865-10239 02
Highly sensitive solids mass spectrometer
uses inert-gas ion source
ERG-11 866-10114 02
Subminiaturized gas chromatograph gives fast,
efficient analysis
JPL-735 866-10182 01
Submicron holes in thin films increase
sampling range of mass spectrometers
JPL-SC-097 866-10380 03
Leak locator for vacuum jacketed pipelines
eliminates need for removal of outer jacket
M-FS-888 866-10412 01
Fixture facilitates helium leak testing of
pipe welds
M-FS-2167 867-10178 05
Aluminum and stainless steel tubes joined
by simple ring and welding process
M-FS-13120 867-10472 05
Effects of surface preparation on quality
of aluminum alloy weldments
M-FS-13152 868-10302 03
Diffusion of trace gases for leak detection
- a study
M-FS-20254 869-10067 03
Ion-retarding lens improves the abundance
sensitivity of tandem mass spectrometers
ABG-10365 869-10166 02
Spherical ion source
MXP-08898 865-10186 01
Ion mass spectrometer for special uses
EQ-10418 865-10530 02
Miniaturized high-resolution mass/charge
spectrograph / design study /
MSC-13279 869-10554 02
MASS SPECTROSCOPY

Mass-spectrometric study of the rhenium-oxygen system
ARG-10421 B69-10645 02

Monopole mass spectrometer with improved sensitivity and reduced background
BQ-10476 B69-10666 01

MASS SPECTROSCOPY

Reliable method for testing gross leaks in semiconductor component packages
IEEE-10150 B68-10566 01

Mass spectograph analysis
ISC-13239 B69-10113 06

Qualitative and quantitative analysis of mixtures of compounds containing both hydrogen and deuterium
ARG-10312 B69-10177 04

MASS TRANSFER

Computer simulation program is adaptable to industrial processes
LEWIS-240 B66-10268 01

Characteristics of fluidized-packed beds
ARG-10049 B68-10278 03

An investigation of particle mixing in a gas-fluidized bed
ARG-10182 B68-10407 05

Mass transport mechanism in porous fuel cell electrodes
BQ-10343 B69-10135 01

MATCHING

Polarizing keys prevent mismatch of connector plugs and receptacles
MSC-443 B66-10251 01

Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379 01

Device for diode tuning in a stripline varactor harmonic multiplier
N-PS-20153 B69-10013 01

MATERIAL ABSORPTION

Bidirectional torque filter eliminates backlash
GSFC-335 B65-10148 05

Precise doping of metals by small gas flows
LEWIS-10444 B68-10526 03

Rapid and precise analysis for calcium in blood serum
ARG-10246 B69-10160 04

MATERIALS

Tube welding and brazing
N-PS-20388 B69-10085 05

Manual of typical low temperature mechanical properties of several materials
N-PS-18331 B69-10179 03

Tools made of ice facilitate forming of soft, sticky materials
KSC-10262 B69-10199 05

MATERIALS HANDLING

Self-balancing beam permits safe, easy load handling under overhang
N-PS-84 B63-10571 05

Speed-sensing device aids crane operators
WS-4 B64-10006 05

Filler device for handling hot corrosive materials
MSC-85 B66-10166 03

Dispensing system eliminates torsion in deployed hoses
MSC-80 B65-10185 05

SUBJECT INDEX

Hollow plastic hoops prevent thermocouple in storage and handling
NQ-0023 B65-10256 05

Dispenser leak-tests and sterilizes rubber gloves
MSC-285 B66-10166 03

Body-fitted harness provides safe and easy component handling
N-PS-553 B66-10202 05

Adjustable cutting guide aligns and positions stacks of material
MSC-321 B66-10210 05

Fiberglass container shells form contamination-free storage units
WQ-0275 B66-10217 05

Critical parts are stored and shipped in environmentally controlled reusable container
N-PS-703 B66-10258 05

Impact and puncture resistant material protects parts from damage
MSC-747 B66-10375 05

Universal transloader moves delicate equipment without stress
MSC-654 B66-10384 05

Carriage system remotely moves drawer over extended distance
WQ-0092 B66-10711 05

Hydrostatic force used to handle oversized, heavy objects
EQ-90 B67-10167 05

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
ARG-184 B67-10202 05

Computer magnetic tape rehabilitation study
GSFC-10283 B68-10035 05

High-temperature bearing-cage materials
LEWIS-10403 B68-10176 05

Packaging criteria for transportation and handling shock and vibration
N-PS-13007 B68-10219 05

Contamination control handbook
N-PS-20165 B68-10392 03

Inflatable bladder to facilitate handling of heavy objects - A concept
N-PS-14272 B69-10069 05

Cover protects critical electrical connectors against damage during handling
N-PS-15462 B69-10526 05

MATERIALS RECOVERY

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel
N-PS-10047 B67-10194 03

Device for obtaining separation of oxygen
LANGLEY-11007 B69-10477 01

MATERIALS SCIENCE

Development of technology for hot-drape forming of large torus sections
N-PS-12141 B67-10341 05

MATERIALS TESTS

Graphite element serves as radiant heat source
N-PS-105 B65-10218 01

Multiple test chamber exposes materials to various environments
N-PS-179 B65-10268 01

I-398
### SUBJECT INDEX

<table>
<thead>
<tr>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple technique determines ac properties of hard superconductive materials</td>
<td>N-P-1818</td>
</tr>
<tr>
<td>Cryogenic fatigue data developed for Inconel 718</td>
<td>N-FS-702</td>
</tr>
<tr>
<td>Simplified method measures changes in tensile yield strength using least number of specimens</td>
<td>NUC-10075</td>
</tr>
<tr>
<td>Study made of dielectric properties of promising materials for cryogenic capacitors</td>
<td>N-FS-13620</td>
</tr>
<tr>
<td>Material fatigue data obtained by card-programmed hydraulic loading system</td>
<td>B67-10366</td>
</tr>
<tr>
<td>Survey of fracture toughness test methods</td>
<td>LEWIS-10379</td>
</tr>
<tr>
<td>Abrasion and fracture testing in a high-pressure hydrogen environment</td>
<td>B69-10457</td>
</tr>
<tr>
<td><strong>MATHMATICAL LOGIC</strong></td>
<td></td>
</tr>
<tr>
<td>Problem of oscillating cone in supersonic flow is solved by small perturbation techniques</td>
<td>B66-10700</td>
</tr>
<tr>
<td><strong>MATHMATICAL MODELS</strong></td>
<td></td>
</tr>
<tr>
<td>New computer system simplifies programming of mathematical equations</td>
<td>N-P-669</td>
</tr>
<tr>
<td>Human transfer functions used to predict system performance parameters</td>
<td>B66-10361</td>
</tr>
<tr>
<td>Linear circuit analysis program for IBM 1620 Monitor 2, 1311/1463 data processing system /CIRCS/</td>
<td>B67-10173</td>
</tr>
<tr>
<td>A theoretical model for determining turbine flowmeter sensitivity</td>
<td>M-FS-1172</td>
</tr>
<tr>
<td>A modal combination computer program for dynamic analysis of structures</td>
<td>B67-10217</td>
</tr>
<tr>
<td>CINDA - Chrysler Improved Numerical Differencing Analyzer computer program</td>
<td>M-FS-2298</td>
</tr>
<tr>
<td>Computer program predicts thermal and flow transients experienced in a reactor loss of flow accident</td>
<td>B67-10054</td>
</tr>
<tr>
<td>Computer program performs rectangular fitting stress analysis</td>
<td>B67-10281</td>
</tr>
<tr>
<td>Analysis of dynamic systems with DAP4H computer program</td>
<td>M-FS-13999</td>
</tr>
<tr>
<td>M-ZAP and M-ZAP neutron and gamma ray albedo model scatter shield analysis program</td>
<td>NUC-10126</td>
</tr>
<tr>
<td>Propellant tank pressurization analysis program</td>
<td>B67-10626</td>
</tr>
<tr>
<td>Development of reliability prediction techniques for semiconductor diodes</td>
<td>B67-10651</td>
</tr>
<tr>
<td>Phase plane displays detect incipient failure in servo system testing</td>
<td>B67-10662</td>
</tr>
<tr>
<td>Computer program /F/1-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in an acetonic gas</td>
<td>NUC-10141</td>
</tr>
<tr>
<td>Vibration testing and dynamic studies of relays</td>
<td>N-FS-14542</td>
</tr>
<tr>
<td>Computer graphics data conditioning</td>
<td>N-FS-14695</td>
</tr>
<tr>
<td>Compound equation developed for postnatal growth of birds and mammals</td>
<td>B69-10427</td>
</tr>
<tr>
<td>Rocket engine analog simulation</td>
<td>B69-10511</td>
</tr>
<tr>
<td>Improved technique for digital simulation of bending and slope phenomena</td>
<td>M-FS-14788</td>
</tr>
<tr>
<td>Propellant tank pressurization analysis program</td>
<td>M-FS-12623</td>
</tr>
<tr>
<td>A new method for the determination of particulate contamination levels for surface cleanliness of fluid systems</td>
<td>KSC-10267</td>
</tr>
<tr>
<td>Frequency domain analysis and synthesis of lumped parameter system using nonlinear least squares techniques</td>
<td>M-FS-15033</td>
</tr>
<tr>
<td>Flow properties of suspensions in solids</td>
<td>ARG-10481</td>
</tr>
<tr>
<td>Estimating reliability by application of matrix representation</td>
<td>B69-10793</td>
</tr>
<tr>
<td><strong>MATHMATICS</strong></td>
<td></td>
</tr>
<tr>
<td>Mechanical properties of plastics predetermined by empirical method</td>
<td>ARC-20</td>
</tr>
<tr>
<td>Apparatus measures concentration of suspended droplets in gas streams</td>
<td>B66-10237</td>
</tr>
<tr>
<td>Delayed ripple counter simplifies square-root computation</td>
<td>GSFC-398</td>
</tr>
<tr>
<td>Mathematical relation predicts achievable densities of compacted particles</td>
<td>ARG-10082</td>
</tr>
<tr>
<td>Analytical drafting curves provide exact equations for plotted data</td>
<td>B67-10592</td>
</tr>
<tr>
<td>Numerical integration of ordinary differential equations of various orders</td>
<td>ARG-10247</td>
</tr>
<tr>
<td>Prediction of friction coefficients for gases</td>
<td>LEWIS-10774</td>
</tr>
<tr>
<td><strong>MATTERICS</strong></td>
<td></td>
</tr>
<tr>
<td>Pneumotachometer counts respiration rate of human subject</td>
<td>B64-10259</td>
</tr>
<tr>
<td>Computer program utilizes FORTRAN 4 subroutines for contour plotting</td>
<td>NPO-10127</td>
</tr>
<tr>
<td>One hundred angstrom niobium wire</td>
<td>B68-10279</td>
</tr>
<tr>
<td><strong>MATRICES (CIRCUITS)</strong></td>
<td><strong>SUBJECT INDEX</strong></td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Improved method of producing oxide-dispersion-strengthened alloys</td>
<td>N-PS-18022 B68-10276 02</td>
</tr>
<tr>
<td>Transistorized circuit clamps voltage with 0.1 percent error</td>
<td>Linear systems of equations solved using mathematical algorithms B68-10292 06</td>
</tr>
<tr>
<td>Improved wire memory matrix using very little power</td>
<td>Controllability of distributed-parameter systems B68-10346 02</td>
</tr>
<tr>
<td>General purpose computer program for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions</td>
<td>Structural Analysis and Matrix Interpretive System /SAMIS/ NFO-10839 B69-10093 01</td>
</tr>
<tr>
<td>Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules</td>
<td>Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices B69-10415 02</td>
</tr>
<tr>
<td>Current steering commutator offers versatility</td>
<td>Estimating reliability by application of matrix representation B69-10793 02</td>
</tr>
<tr>
<td>Heavy-gage bonded honeycomb sandwich as primary load-bearing structure</td>
<td>MATRICES METHODS Structural Analysis and Matrix Interpretive System /SAMIS/ NFO-10130 B67-10171 01</td>
</tr>
<tr>
<td>Composite solar cell matrix is reliable, lightweight and flexible</td>
<td>A modal combination computer program for dynamic analysis of structures NFO-10129 B67-10217 06</td>
</tr>
<tr>
<td>Random access-random release relay switching matrix</td>
<td>Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks NFO-10031 B67-10319 06</td>
</tr>
<tr>
<td>Short circuit protection for a power distribution system</td>
<td>Study made of ductility limitations of aluminum-silicon alloys N-PS-12524 B67-10392 03</td>
</tr>
<tr>
<td>Locating sneak paths in electrical circuits</td>
<td>Computer program provides improved longitudinal response analysis for axiymmetric launch vehicles LANGLEY-10093 B67-10531 06</td>
</tr>
<tr>
<td>Random access-random release relay switching matrix</td>
<td>Study made of mechanics of deformation and fracture of fibrous composites HQ-10035 B67-10660 03</td>
</tr>
<tr>
<td>Computer program calculates steady-state temperature distribution within plane or axisymmetric solids</td>
<td>Finite element formulation for linear thermostoelastic materials NFO-11229 B69-10660 03</td>
</tr>
<tr>
<td>Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident</td>
<td>MATTER (PHYSICS) Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons ARC-10220 B69-10211 02</td>
</tr>
<tr>
<td>Improved computer program for elastic analysis of highly redundant structural configurations</td>
<td>MATTHEW-BOLTZMANN DENSITY FUNCTION Computer program /P1-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas NUC-10141 B67-10678 06</td>
</tr>
<tr>
<td>Computer subroutine LSUDS accurately solves large system of simultaneous linear algebraic equations</td>
<td>NICER GAGES Baking enables McLeod gauge to measure in ultrahigh vacuum range GSFC-440 B65-10329 01</td>
</tr>
<tr>
<td>Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds</td>
<td>Modified McLeod gage records automatically LEWIS-290 B66-10290 02</td>
</tr>
<tr>
<td>Computer program /P1-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas</td>
<td>Modified McLeod pressure gage eliminates measurement errors ARC-62 B66-10481 01</td>
</tr>
<tr>
<td>MOP /Matrix Operation Programs system/</td>
<td>Absolute low-pressure calibration system B-PS-13085 B68-10160 02</td>
</tr>
<tr>
<td>Solution of differential equations by application of transformation groups</td>
<td>B-PS-1517 B67-10108 01</td>
</tr>
</tbody>
</table>
Performance of turbine-type flowmeters in liquid hydrogen
LEWIS-10137  B67-10506  01

FORTRAN optical lens design program
SFO-10603  B68-10354  06

Estimation of signal-to-noise ratios
KNF-05254  B69-10557  01

Wind tower influence study
N-PS-20239  B69-10653  01

MEASUREMENT AND INTEGRATION

Some numerical methods for integrating systems of first-order ordinary differential equations
ARS-10308  B69-10204  02

Integrated sequence display device
KSC-10381  B69-10316  01

MEASUREMENT

Raster linearity of video cameras calibrated with precision tester
GSFC-200  B64-10209  01

Wide-angle sensor measures radiant heat energy in corrosive atmospheres
N-PS-228  B65-10019  05

Spherical model provides visual aid for cubic crystal study
LEWIS-106  B65-10065  03

Internal cooling increases range of immersion-type temperature probe
LEWIS-171  B65-10157  02

Gage of 6.5 per cent Si-Fe sheet is chemically reduced
ISC-537  B66-10454  01

Computer program determines performance efficiency of remote measuring systems
C-PS-1137  B66-10503  01

Rocket nozzle measurements of ozone in the upper atmosphere
GSFC-10580  B69-10077  02

Direct measurement of carbon-14 in carbon dioxide by liquid scintillation counting
ARC-10237  B69-10092  03

Rapid and precise analysis for calcium in blood serum
ARC-10266  B69-10160  04

Compensation of pulse-rebalanced inertial instruments
KSC-13098  B69-10216  01

Reducing quantizer deadband with a switch digital filter
N-PS-204  B69-10259  01

Improved system for documenting measurement data
N-PS-18269  B69-10513  01

MEASURING INSTRUMENTS

Liquid-level meter has no moving parts
N-PS-3  B63-10378  03

Rapid helium-air analyzer can measure other binary gas mixtures
LANGLEY-16  B63-10557  03

Ultra-sensitive transducer advances micro-measurement range
ARC-26  B64-10004  01

Multiple port pressure scanner valve features greater accuracy, quicker data
JPL-555  B64-10031  05

Device induces lungs to maintain known constant pressure

I-401
IBASUBIU6

IBSTUBUTE COUT

SUBJET INDEX

measured

FBC-26

B65-10301 01

Improved strain-wire flowmeter has fast

response time

LEWIS-241

B65-10304 01

Electronic amper-hour integrator is accurate
to one percent

GSFC-203

B65-10308 01

Air brake-dynamometer accurately measures
torque

LEWIS-163

B65-10312 05

Magnetometer measures orthogonal components

of magnetic fields

GSFC-395

B65-10315 01

Volumetric system calibrates meters for large

flow rates

WOO-130

B65-10323 05

Direct force-measuring transducer used in

blood pressure research

ARC-53

B65-10325 01

Rough surface improves stability of air-

sounding balloons

M-PS-320

B65-10326 05

Baking enables McLeod gauge to measure in

ultrahigh vacuum range

GSFC-440

B65-10329 01

Wedge immersed thermistor bolometer measures

infrared radiation

GSFC-443

B65-10330 02

Vibrating diaphragm measures high

electrostatic field strengths

SSC-189

B65-10352 01

Three-dimensional wire-aesh capacitor system

measures fluid density

WOO-198

B65-10379 01

Photoelectric system continuously monitors

liquid level

S-PS-417

B65-10382 01

Noncontacting vibration transducer has

constant sensitivity

LANGLEY-99

B65-10392 01

Special mount improves remote transducer

accuracy

LEWIS-269

B66-10021 01

Telescoping of instrumentation tubing

eliminates swaging

S-PS-546

B66-10116 05

Improved system measures output energy of

gyroscopic devices

WOO-256

B66-10159 01

Transducer measures force in vacuum

environment

LEWIS-218

B66-10161 01

Pneumatic shutoff and time-delay valve

operates at controlled rate

S-PS-602

B66-10189 05

Device without electrical connections in

tank measures liquid level

WOO-235

B66-10198 01

Special tool seals conductors with combination

of plastic sleeves

S-PS-579

B66-10209 05

Vacuum test fixture improves leakage rate

measurements

MSC-271

B66-10286 01

Minimum permissible leakage resistance

established for instrumentation systems
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument continuously measures density of flowing fluids</td>
</tr>
<tr>
<td>Portable fixture facilitates pressure testing of instrumentation fittings</td>
</tr>
<tr>
<td>Tritiated alumina serves as reagent for self-labeling analysis</td>
</tr>
<tr>
<td>Accuracy of laser measurements improved by pulse autocorrelator electronic system</td>
</tr>
<tr>
<td>Vibration analysis utilizing Hoshbauer effect</td>
</tr>
<tr>
<td>Cut-through tester accurately measures insulation failure rates</td>
</tr>
<tr>
<td>System automatically provides dynamic launch decision criteria</td>
</tr>
<tr>
<td>Multiple meter monitoring circuits served by single alarm</td>
</tr>
<tr>
<td>Measuring coplanarity of surfaces</td>
</tr>
<tr>
<td>Machine tests low-speed sliding friction in high vacuum</td>
</tr>
<tr>
<td>Crack growth measured on flat and curved surfaces at cryogenic temperatures</td>
</tr>
<tr>
<td>Computer program generates averaged value data tapes</td>
</tr>
<tr>
<td>Infrared radiometer</td>
</tr>
<tr>
<td>Design for high-temperature /1800 deg F/ liquid metal pressure transducer LEWIS-10144</td>
</tr>
<tr>
<td>Instrument accurately measures weld angle and offset</td>
</tr>
<tr>
<td>Device measures static friction of magnetic tape</td>
</tr>
<tr>
<td>Review of biological mechanisms for application to instrument design H! 33</td>
</tr>
<tr>
<td>Digital data averager improves conventional measurement system performance</td>
</tr>
<tr>
<td>Deployable lattice column NPO-10228</td>
</tr>
<tr>
<td>Monitor senses amount of contamination deposited on surfaces GSFC-10212</td>
</tr>
<tr>
<td>System for measuring roundness and concentricity of large tanks</td>
</tr>
<tr>
<td>Ka-wave power meter mount NPO-10348</td>
</tr>
<tr>
<td>Low energy x-ray can be used to test sensitive circuits, other meters</td>
</tr>
<tr>
<td>Cryogenic liquid level measuring probe</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MEASURING INSTRUMENTS CONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARG-10138</td>
</tr>
<tr>
<td>Venturi meter with separable diffuser LEWIS-10489</td>
</tr>
<tr>
<td>High-torque power wrench, a concept M-FS-10194</td>
</tr>
<tr>
<td>Modified sine bar device measures small angles with high accuracy GSFC-1038</td>
</tr>
<tr>
<td>Automatic, nondestructive test monitors in-process weld quality NPS-10996</td>
</tr>
<tr>
<td>Superconductive thin film makes convenient liquid helium level sensor LANGLET-10299</td>
</tr>
<tr>
<td>Determining gas leakage from bubble formations M-FS-10401</td>
</tr>
<tr>
<td>Battery-package design provides for cell cooling and constraint MSC-11839</td>
</tr>
<tr>
<td>System for measuring spatial distribution of ejected droplets, a concept WFI-10195</td>
</tr>
<tr>
<td>Nosepiece respiration monitor ERC-10136</td>
</tr>
<tr>
<td>Low friction servo valve LEWIS-10574</td>
</tr>
<tr>
<td>Environmental test planning, selection and standardization aids available SAM-10028</td>
</tr>
<tr>
<td>Surface irregularities detected by flare inspection instrument M-FS-20157</td>
</tr>
<tr>
<td>Gage provides audible signal to facilitate checkout of connector pins KSC-10335</td>
</tr>
<tr>
<td>Direct reading of electrocardiograms and respiration rates KSC-10233</td>
</tr>
<tr>
<td>Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor ARG-10158</td>
</tr>
<tr>
<td>A magnifying scratch-gage force transducer LANGLET-10496</td>
</tr>
<tr>
<td>Magnetically coupled emission regulator GSFC-10056</td>
</tr>
<tr>
<td>Induction probe determines levels of liquid metals ARG-10348</td>
</tr>
<tr>
<td>Nondestructive evaluation of printed wiring boards by microresistance measurements SAM-10034</td>
</tr>
<tr>
<td>Mass culture of photobacteria to obtain luciferase GSFC-10563</td>
</tr>
<tr>
<td>Spiral-flow apparatus for measuring permeation of solids by gases M-FS-16517</td>
</tr>
<tr>
<td>Pressure transducer NPO-10853</td>
</tr>
<tr>
<td>Instrumentation for nondestructive testing of composite honeycomb materials M-FS-20405</td>
</tr>
<tr>
<td>Hydraulic calipers</td>
</tr>
</tbody>
</table>
LEAKAGE MEASURING METHOD

S-B 18052 B69-10399 05

Quick-acting clutch disengages idle drive motor

GSPC-143 B64-10006 05

MULTIPLE PORT PRESSURE SCANNER VALVE FEATURES GREATER ACCURACY, QUICKER DATA

JPL-555 B64-10028 05

Bearing transmits rotary and axial motion

LAMBEY-27 B64-10130 05

COMPACT CARTRIDGE DRIVES CODED TAPE AT CONSTANT READOUT SPEED

JPL-472 B64-10222 05

SHOCK ABSORBER PROTECTS MOTIVE COMPONENTS AGAINST OVERLOADS

WG-092 B65-10006 05

STEPPING MOTOR DRIVE CIRCUIT DESIGNED FOR LOW POWER DRAW

GSPC-198 B65-10026 05

EXTENDIBLE COLUMN CAN BE STOWED ON DRUM

JPL-686 B65-10191 05

HYDRAULIC DRIVE SYSTEM PREVENTS BACKLASH

JPL-171 B65-10351 05

RESPIRATORY TRANSFER VALVE HAS FAIL-SAFE FEATURE

ABC-1 B65-10369 05

MODIFIED POWER TOOL RAPIDLY DRIVES SERIES TORQUE BOLTS

MSC-221 B65-10551 05

PIPE CUTTING TOOL IS USEFUL IN LIMITED SPACE

MSC-36 B66-10058 05

TOURNE WRENCH ALLOWS READINGS FROM INACCESSIBLE LOCATIONS

MSC-36 B66-10102 05

EXPANDABLE RUBBER PLUG SEALS OPENINGS FOR PRESSURE TESTING

BC-0048 B66-10229 05

COMPACT ACTUATOR CONVERTS ROTARY TO LINEAR MOTION

JPL-786 B65-10265 05

REPEATEDLY CONTROLED SYSTEM COUPLES AND DECOUPLES LARGE DIAMETER PIPES

BC-0062 B66-10276 05

GEAR DRIVE AUTOMATICALLY INDEXES ROTARY TABLE

J-P-753 B66-10383 05

BRAKING MECHANISM IS SELF ACTUATING AND BIDIRECTIONAL

M-P-1299 B66-10484 05

MOTION DRIVE SYSTEM IS ACCURATELY CONTROLLED IN THE 1-MICRON RANGE

JPL-884 B66-10695 05

SIMPLE MOTOR DRIVE SYSTEM OPERATES HEAVY HINGED DOOR

NU-0093 B66-10712 05

SWING-OUT RAIL SYSTEM SEPARATES OVERHEAD CRANE RAMPS

BC-0094 B66-10713 05

AUTOMATED MICROSyringe IS HIGHLY ACCURATE AND RELIABLE

M-PS-1299 B67-10203 05

LOW SPEED, LONG TERM TRACKING ELECTRIC DRIVE SYSTEM HAS ZERO BACKLASH

M-PS-10173 B67-10220 05

ECCECTRIC DRIVE MECHANISM IS ADJUSTABLE DURING OPERATION

M-P-2576 B67-10373 05
SUBJECT INDEX

Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates NPO-10316 B67-10418 05

An improved magnetic tape recorder GSFC-08259 B67-10546 01

Improved control system power unit for large parachutes MSC-12052 B67-10677 05

Remotely operated gripper provides vertical control rod movement ARG-10160 B68-10359 05

High-torque precision stepping drive N-PS-14772 B68-10549 05

Electromechanical rotary actuator operates over wide temperature range M-FS-10402 B69-10100 05

Magnetron tuner has locking feature XNP-09771 B69-10119 05

Liquid gallium rotary electric contact LEWIS-10828 B69-10138 03

Analytical technique permits comparison of reliability of alternate mechanical designs NUC-10065 B67-10261 06

Seismic transducer measures small horizontal displacements N-PS-81 B65-10029 05

Torque wrench allows readings from inaccessible locations N-PS-598 B66-10204 05

Mechanical device accurately measures RF phase differences in VHF or UHF ranges N-PS-1738 B66-10694 05

Integrated mobility measurement and notation system MSC-726 B67-10114 04

Microdetermination of urea in urine using p-dimethylaminobenzaldehyde /PDAB/ NPO-10715 B67-10317 04

A conceptual design for squeeze film bearings N-PS-573 B66-10226 05

Vibrator elapsed time is automatically controlled N-PS-2573 B67-10284 01

Mechanical properties

Mechanical properties of plastics predetermined by empirical method ABC-29 B64-10068 03

Lightweight aluminum casting alloy is useful at cryogenic temperatures N-PS-267 B65-10092 03

Multiple test chamber exposes materials to various environments MSC-179 B65-10268 01

Design reliability goal developed from small sample N-PS-403 B66-10405 05

Weldable aluminum alloy has improved mechanical properties N-PS-295 B66-10445 03

Thermal stress-relief treatments for 2219 aluminum alloy are evaluated N-PS-1213 B66-10448 03

Heat treatment stabilizes welded aluminum jigs and tool structures MSC-800 B66-10458 03

Lower-cost tungsten-rhenium alloys LEWIS-332 B66-10528 03

Tests show that aluminum welds are improved by bead removal N-PS-1817 B67-10023 05

Materials data handbooks prepared for aluminum alloys 2014, 2219, and 5456, and stainless steel alloy 301 M-PS-1959 B67-10089 03

Pipe joints reinforced in place with fitted aluminum sleeves MSC-1109 B67-10271 05

Materials data handbook, Inconel alloy 718 N-PS-2398 B67-10282 03

Study made of dielectric properties of promising materials for cryogenic capacitors N-PS-13620 B67-10366 03

Mechanical properties of wire insulation automatically determined M-PS-10903 B67-10370 01

Single-source mechanical loading system produces biaxial stresses in cylinders N-PS-12530 B67-10380 05

Study made of ductility limitations of aluminum-silicon alloys N-PS-12524 B67-10392 03

Experiments to investigate particulate materials in reduced gravity fields N-PS-13306 B67-10394 02

Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board N-PS-13663 B67-10426 01

Study made of acoustical monitoring for mechanical checkout N-PS-13372 B67-10430 02

Study made of pneumatic high pressure piping materials /10,000 psi/ MSC-10133 B67-10837 03

Study made of procedures for externally loading and corrosion testing stress corrosion specimens N-PS-12064 B67-10851 03

Technique eliminates high voltage arcing at electrode-insulator contact area LEWIS-10133 B67-10870 01

Study of stress corrosion in aluminum alloys N-PS-13906 B67-10533 03

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes NUC-10183 B67-10665 06

Study of mechanical properties of uranium compounds ABC-10074 B68-10197 03

Ignition of binary alloys of uranium ABC-10057 B68-10280 01

Fiber glass reinforced structural materials for aerospace application N-PS-14806 B68-10360 03

Tungsten fiber-reinforced nickel superalloy LEWIS-10428 B68-10369 03

Nickel-base superalloys excellent LEWIS-10428 B68-10369 03

I-405
**MECHANICAL SHOCK**

Properties promote its service to 2200 degrees F

LEWIS-10355 B68-10380 03

Weld joint strength and mechanical properties in 2219-281 aluminum alloy
LEWIS-10479 B68-10561 03

Beryllium fastener technology

N-PS-20306 B69-10019 05

Materials data handbook, aluminum alloy

6061 N-PS-20381 B69-10065 03

Mixing weld gases offers advantages

N-PS-10413 B69-10145 05

Shell design computer program

LEWIS-10734 B69-10175 06

Coatings decrease metal fatigue failure

ARC-10015 B69-10176 03

Manual of typical low temperature mechanical properties of several materials

N-PS-18331 B69-10179 03

Remote balance weighs accurately amid high radiation

ARC-10387 B69-10242 05

Study of high temperature bearing materials

LEWIS-10829 B69-10252 03

On the bound of first excursion probability

NPO-11158 B69-10334 06

A biaxial weld strength prediction method

N-PS-20019 B69-10471 05

A new method for producing optical mirrors

HQ-10227 B69-10529 02

Improved method of producing oxide-dispersion-strengthened alloys

HQ-10461 B69-10536 03

Retention of ductility in high-strength steels

ARC-10497 B69-10616 03

**MECHANICAL SHOCK**

Tensile-strength apparatus applies high strain-rate loading with minimum shock

JPL-28 B66-10063 05

Mechanism isolates load weighing cell during lifting of load

MSC-297 B66-10071 05

Shock-operated valve would automatically protect fluid systems

N-PS-801 B66-10335 03

Reliable, self-calibrating vibration transducer

LANCLET-69 B68-10124 01

Development of improved potting and conformal coating compounds

N-PS-20219 B69-10559 03

**MECHANIC**

Simple mechanisms combine positive locking and quick-release features

NPO-4 B63-10420 05

**MECHANIZATION**

Multiple test tubes stirred mechanically

ARC-42 B65-10120 01

Automatic telemetry checkout system

N-PS-12580 B67-10402 01

Mechanized X-ray inspection system for large tanks

N-PS-12867 B67-10564 02

**SUBJECT INDEX**

Development of mechanized ultrasonic scanning system

N-PS-13636 B68-10004 05

Tool repairs tube components in situ

MSC-15348 B69-10379 05

**MEDICAL ELECTRONICS**

Phonocardiograph system monitors heart sounds

MSC-185 B66-10154 04

Electrocardiograph transmitted by RF and telephone links in emergency situations

FPC-10031 B68-10233 01

Direct reading of electrocardiogram and respiration rates

KSC-10233 B68-10188 04

**MEDICAL EQUIPMENT**

Digital cardiometer computes and displays heartbeat rate

N-PS-703 B69-10258 01

Tiny biomedical amplifier combines high performance, low power drain

ARC-41 B65-10203 01

Fiberglass container shells form contamination-free storage units

W00-275 B66-10217 05

Critical parts are stored and shipped in environmentally controlled reusable container

N-PS-703 B66-10258 05

Large diameter metal ring seal prevents gas leakage at 5000 psi

N-PS-1066 B66-10422 05

Orthopedic stretcher with average-sized person can pass through 18-inch opening

N-PS-811 B66-10573 05

Modified algometer provides accurate depth measurements

N-PS-616 B68-10647 04

Adjustable hinge permits movement of knee in plaster cast

N-PS-1756 B67-10056 04

Static electricity of polymers reduced by treatment with iodine

NPO-10062 B67-10132 03

Self-sealing closure enables access to several fluid containers

NPO-10123 B67-10207 04

Ultrasmall smanometer-tipped cardiac catheter

ARC-10054 B67-10669 01

Automated patient monitoring system

N-PS-14552 B68-10131 01

Instrumentation for bone density measurement

N-11388 B69-10140 01

Cardiac R-wave detector

LEWIS-10394 B68-10144 01

New electrical plethysmograph monitors cardiac output

MSC-11447 B68-10220 01

Color-television medical microscopy

MSC-13086 B68-10314 01

Selective vignetting of Type 1 X-ray telescopes

GSFC-10682 B69-10075 02

Miniature oxygen resuscitator

KSC-10398 B69-10319 04

Use of medical and dental X-ray equipment for nondestructive testing
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>MCB-13389</th>
<th>B69-10553 01</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEDICAL SCIENCE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical new method of measuring thermal-neutron fluence</td>
<td>MSC-10086</td>
<td>B67-10352 02</td>
</tr>
<tr>
<td>Effect of preparation procedures on intensity of radioautographic labeling is studied</td>
<td>ARG-10032</td>
<td>B67-10500 04</td>
</tr>
<tr>
<td>Precision trimmer aids in preparing biomedical specimen blocks for ultrathin sectioning</td>
<td>ARG-242</td>
<td>B67-10541 05</td>
</tr>
<tr>
<td>Review of physics, instrumentation and dosimetry of radioactive isotopes</td>
<td>ARG-10037</td>
<td>B67-10640 02</td>
</tr>
<tr>
<td>Carcin offers advantages as implant material in human body</td>
<td>ARG-10490</td>
<td>B69-10477 01</td>
</tr>
<tr>
<td>Microscopic backward-dvole pressure sensor features stability and low power consumption</td>
<td>ERC-10229</td>
<td>B69-10690 01</td>
</tr>
<tr>
<td><strong>MELTING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removable preheater elements improve oxide induction furnace</td>
<td>JPL-288</td>
<td>B63-10193 01</td>
</tr>
<tr>
<td>Integral coolant channels supply made by melt-out method</td>
<td>N-FS-91</td>
<td>B63-10497 05</td>
</tr>
<tr>
<td>Hot-air soldering technique prevents overheating of electrical components</td>
<td>GSFC-91</td>
<td>B63-10536 01</td>
</tr>
<tr>
<td>Levitation-melting technique for metals and alloys</td>
<td>ARG-10240</td>
<td>B69-10006 03</td>
</tr>
<tr>
<td>Nondestructive testing of welds on thin-walled tubing</td>
<td>N-FS-18144</td>
<td>B69-10402 01</td>
</tr>
<tr>
<td>Device for reflowing electrodeposited solder on terminals</td>
<td>N-FS-13621</td>
<td>B69-10670 01</td>
</tr>
<tr>
<td><strong>MELTING POINTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal cooling increases range of immersion-type temperature probe</td>
<td>LEWIS-171</td>
<td>B65-10157 02</td>
</tr>
<tr>
<td>Niobium-uranium alloys with voids of predetermined size and total volume</td>
<td>ARG-10490</td>
<td>B69-10641 03</td>
</tr>
<tr>
<td>Electrolytic separation of crystals of transition-metal oxides</td>
<td>ARG-10506</td>
<td>B69-10642 03</td>
</tr>
<tr>
<td>Mass-spectrometric study of the rhenium-oxygen system</td>
<td>ARG-10421</td>
<td>B69-10645 02</td>
</tr>
<tr>
<td><strong>MEMBRANES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire bundle forced into grids with minute interstices</td>
<td>WOO-089</td>
<td>B65-10372 03</td>
</tr>
<tr>
<td>Reaction heat used in static water removal from fuel cells</td>
<td>N-FS-532</td>
<td>B66-10013 01</td>
</tr>
<tr>
<td>Study of behavior of sterols at interfaces</td>
<td>ARG-10085</td>
<td>B66-10281 03</td>
</tr>
<tr>
<td>Improved inorganic ion exchange membranes</td>
<td>LEWIS-10737</td>
<td>B69-10451 03</td>
</tr>
<tr>
<td>A method for using surface tension to determine the size of holes in hardware</td>
<td>MSC-15194</td>
<td>B69-10595 03</td>
</tr>
<tr>
<td><strong>MEMBRANES (METAL)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apparatus measures swelling of membranes in electrochemical cells</td>
<td>GSFC-280</td>
<td>B65-10087 01</td>
</tr>
<tr>
<td>Electrically heated diaphragm eliminates use of pyrotechnics</td>
<td>MSC-2841</td>
<td>B65-10406 01</td>
</tr>
<tr>
<td>Improved electrode paste provides reliable measurement of galvanic skin response</td>
<td>MSC-156</td>
<td>B66-10049 04</td>
</tr>
<tr>
<td>Ultrasonic cleaning restores depth-type filters</td>
<td>N-FS-540</td>
<td>B66-10298 03</td>
</tr>
<tr>
<td>Design concept for pressure switch calibrator</td>
<td>HQ-36</td>
<td>B66-10598 01</td>
</tr>
<tr>
<td>Cone and column solar energy concentrator</td>
<td>LANGLEY-210</td>
<td>B67-10517 01</td>
</tr>
<tr>
<td>Device for obtaining separation of oxygen</td>
<td>LANGLEY-11007</td>
<td>B69-10477 01</td>
</tr>
<tr>
<td>Ionomene membrane battery separator</td>
<td>NFO-11091</td>
<td>B69-10501 03</td>
</tr>
<tr>
<td><strong>MEMORY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Random access-random release relay switching matrix</td>
<td>N-FS-1259C</td>
<td>B68-10301 01</td>
</tr>
<tr>
<td>Piezoelectric lock mechanism resists lockpicking</td>
<td>SAN-10037</td>
<td>B69-10281 01</td>
</tr>
<tr>
<td><strong>METAL SCI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electromechanical flowmeter accurately monitors fluid flow</td>
<td>GSFC-357</td>
<td>B65-10273 01</td>
</tr>
<tr>
<td><strong>MERCURY (METAL)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid switch is remotely operated by low dc voltage</td>
<td>GSFC-119</td>
<td>B63-10599 01</td>
</tr>
<tr>
<td>Subminiature biotelemetry unit permits remote physiological investigations</td>
<td>ARC-39</td>
<td>B64-10171 01</td>
</tr>
<tr>
<td>Metal parts hydroized by explosive force</td>
<td>N-FS-289</td>
<td>B65-10170 05</td>
</tr>
<tr>
<td>Removable neoprene jacket protects parts for chemical milling</td>
<td>WOO-071</td>
<td>B65-10179 03</td>
</tr>
<tr>
<td>Oil-damped mercury pool makes precise optical alignment tool</td>
<td>GSFC-353</td>
<td>B65-10253 02</td>
</tr>
<tr>
<td>Electropneumatic rheostat regulates high current</td>
<td>ARC-48</td>
<td>B65-10299 01</td>
</tr>
<tr>
<td>Baking enables McLeod gage to measure in ultrahigh vacuum range</td>
<td>GSFC-440</td>
<td>B65-10329 01</td>
</tr>
<tr>
<td>Flowmeter measures low gas-flow rates</td>
<td>N-FS-215</td>
<td>B66-10036 01</td>
</tr>
<tr>
<td>Rotating magnetic poles used to pump mercury</td>
<td>LEWIS-276</td>
<td>B66-10434 05</td>
</tr>
<tr>
<td>Modified McLeod pressure gage eliminates measurement errors</td>
<td>ARC-62</td>
<td>B66-10481 01</td>
</tr>
<tr>
<td>Device accurately measures and records low gas-flow rates</td>
<td>N-FS-1077</td>
<td>B66-10569 01</td>
</tr>
<tr>
<td>Improved compression molding process</td>
<td>LANGLEY-15027</td>
<td>B67-10302 03</td>
</tr>
</tbody>
</table>
Cut-through tester accurately measures insulation failure rates

Improved sample capsule for determination of oxygen in hemolyzed blood

Low energy ohmmeter can be used to test sensitive circuits, other meters

Random access-random release relay switching matrix

Liquid-metal heat transfer in a co-current-flow, double-pipe heat exchanger is investigated

Liquid gallium rotary electric contact

A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux

Pocket-sized tone-modulated FM transmitter

Mercury Analogs

Apparatus enables accurate determination of alkali oxides in alkali metals

Mercury ABS

Emission tester for high-power vacuum tubes

Mercury Compounds

Multiple port pressure scanner valve features greater accuracy, quicker data

Development of low temperature battery

Mercury Lamps

High-intensity flashing beacon powered by mercury cells

Mercury Vapor

Igniting system for mercury lamps protects transistorized sustaining supply

Neutrodial Flow

Computer program performs flow analysis through turbines

Mesh

Fine-mesh screen made by simplified method

Combustion chamber struts can be effectively transpiration cooled

Mounting method improves electrical and vibrational characteristics of screen electrodes

Adding calcium improves lithium ferrite core

Mercury Analogs

Apparatus enables accurate determination of alkali oxides in alkali metals

Mercury ABS

Emission tester for high-power vacuum tubes

Mercury Compounds

Multiple port pressure scanner valve features greater accuracy, quicker data

Development of low temperature battery

Mercury Lamps

High-intensity flashing beacon powered by mercury cells

Mercury Vapor

Igniting system for mercury lamps protects transistorized sustaining supply

Neutrodial Flow

Computer program performs flow analysis through turbines

Mesh

Fine-mesh screen made by simplified method

Combustion chamber struts can be effectively transpiration cooled

Mounting method improves electrical and vibrational characteristics of screen electrodes

Adding calcium improves lithium ferrite core

Neurosphere

Rocket sonde measurements of ozone in the upper atmosphere

Metabolic Waste

Improved mouse cage provides versatility and ease in handling laboratory mice

Metabolism

Plant respirometer enables high resolution of oxygen consumption rates

Study made of relationship between growth and metabolism

Study of behavior of sterols at interfaces

Investigation of temperature dependence of development and aging

Qualitative and quantitative analysis of mixtures of compounds containing both hydrogen and deuterium

Life detection

Quantitative determination of flavin nucleotide using the bacterial bioluminescent reaction

Metal Bonding

Electronic modules easily separated from heat sink

Refractory metals welded or brazed with tungsten inert gas equipment

Brazing method produces solid-solution bond between refractory metals

Assembly jig assures reliable solar cell modules

Correlation established between heat transfer and ultrasonic transmission properties of copper braise bonds

Method of improving contact bonds in silicon integrated circuits

Integrated Metal Transistor Leads

Study of high temperature bearing materials

Explosive bonding of metal-matrix composites

Metal Coatings

Nickel/tin coating protects threaded fasteners in corrosive environment

FTFE-aluminum films serve as neutral density filters

Jig protects transistors from heat while tinning leads

Composites of porous metal and solid lubricants increase bearing life

Subject Index
Study to minimize hydrogen embrittlement of ultrahigh-strength steels
M-PS-2455 B67-10141 03

Sensing disks for slug-type calorimeters have higher temperature stability
M-PS-1867 B67-10161 01

Iron serves as diffusion harrier in thermally regenerative galvanic cell
ARG-29 B67-10189 03

Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment
UUC-10083 B67-10350 03

Metal flame spray coating protects electrical cables in extreme environment
UUC-10077 B67-10351 03

Electron beam selectively seals porous metal filters
LEWIS-10162 B68-10331 05

Investigation of spacecraft coatings
M-PS-20458 B69-10181 06

Sprayed shielding of plastic-encapsulated electronic modules
M-PS-13570 B69-10189 03

Metal COMBUSTION
Rapid-response, light-exposure control system
NPO-10238 B68-10502 01

Metal COMPOUNDS
Trace levels of metallic corrosion in water determined by emission spectrography
MSC-1193 B66-10701 03

Refractory-metal compound impregnation of polytetrafluoroethylene
LEWIS-10733 B69-10072 03

Production of metals and compounds by radiation chemistry
LEWIS-10231 B69-10123 03

Metal CUTTING
Threaded pilot insures cutting tool alignment
M-PS-527 B66-10074 05

Pipe cutting tool is useful in limited space
MSC-36 B66-10102 05

Portable power tool machines weld joints in field
M-PS-258 B66-10145 05

Adjustable knife cuts honeycomb material to specified depth
MSC-475 B66-10237 05

Hollow needle used to cut metal honeycomb structures
MSC-486 B66-10244 05

Vibrator improves spark erosion cutting process
BG-0071 B66-10333 01

Study made of explosive cutting in simulated space environments
M-PS-1397 B67-10040 01

Variable-speed, portable routing skate
M-PS-13772 B67-10525 05

Cold machining of high density tungsten and other materials
ARG-10289 B69-10110 05

J-beveling of pipe ends with a hand-held tool
KSC-10356 B69-10229 05

Metal FATIGUE
Study to minimize hydrogen embrittlement of ultrahigh-strength steels
M-PS-2455 B67-10141 03

Predicting fatigue life of metal bellows
M-PS-18096 B66-10026 05

Effect of surface irregularities on bellows fatigue life
M-PS-18480 B68-10229 05

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures
M-PS-16192 B69-10068 03

Coatings decrease metal fatigue failure
ARC-10015 B69-10176 03

Metal Files
High permeability semiconductors permit close-tolerance soldering
GSFC-319 B65-10134 05

PTFE-aluminum films serve as neutral density filters
LANGLEY-189 B66-10017 02

Insulation for cryogenic tanks has reduced thickness and weight
M-PS-326 B66-10183 02

Aluminum core structures brazed without use of flux
M-PS-659 B66-10360 05

Self-supported aluminum thin films produced by vacuum deposition process
ARC-58 B66-10387 03

Nonelectrolytic tantalum capacitors developed
M-PS-1546 B66-10552 01

Mechanism facilitates coating of inner surfaces of metal cylinders
GSFC-515 B66-10698 05

Oxide film on metal substrate reduced to form metal-oxide-metal layer structure
ARG-48 B67-10187 03

Ultraminiature manometer-tipped cardiac catheter
ARC-10054 B67-10669 01
SUBJECT INDEX

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor ARG-10158 B69-10191 01

Improved vacuum deposition apparatus NPO-11005 B69-10365 02

Design of multilayer insulation systems ARC-10166 B69-10615 05

METAL FOILS

Ceramic-coated boat is chemically inert, provides good heat transfer LANGLEY-90 B65-10063 05

Weld leaks rapidly and safely detected N-PS-362 B65-10265 01

Superconductor shields test chamber from ambient magnetic fields JPL-627 B65-10297 02

Copper foil provides uniform heat sink path MSC-262 B66-10004 02

Spray-on technique simplifies fabrication of complex thermal insulation blanket M-PS-497 B66-10053 03

Reflective insulator layers separated by bonded silica beads MSC-215 B66-10070 03

Specimen holder design improves accuracy of X-ray powder analysis JPL-SC-165 B66-10075 02

Mounting improves heat-sink contact with beryllia washer MSC-194 B66-10144 01

Thin-film gage measures low heat-transfer rates LANGLEY 205 B66-10180 01

Standards for electron probe microanalysis of silicates prepared by convenient method GSFC-469 B66-10234 03

Large capacitor performs as a distributed parameter pulse line LWIS-176 B66-10291 01

Aluminum core structures brazed without use of flux M-PS-659 B66-10360 05

Impact and puncture resistant material protects parts from damage MSC-747 B66-10375 05

Non-electrolytic tantalum capacitors developed N-PS-1546 B66-10552 01

An improved soft X-ray photoionization detector GSFC-540 B67-10072 02

Fast-acting calorimeter measures heat output of plasma gun accelerator LWIS-386 B67-10192 01

Inexpensive cryogenic insulation replaces vacuum jacketed line NUC-10061 B67-10264 02

Study made of dielectric properties of promising materials for cryogenic capacitors M-PS-13620 B67-10366 03

Foil radiometer accessory improves measurements M-PS-12684 B67-10448 01

Improved cavity-type absolute total-radiation radiometer JPL-607 B67-10557 01

Neutron detector simultaneously measures fluence and dose equivalent ARG-10071 B67-10597 02

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons ARG-10220 B69-10211 02

Design of a strain-gage probe ARG-10336 B69-10343 05

Foil bearing support for high-speed rotor HQ-10315 B69-10661 05

METAL HYDRIDES

Effects of hydrogen on metals M-PS-20364 B66-10138 03

Improved vacuum deposition apparatus NPO-11009 B69-10365 05

Design of multilayer insulation systems ARC-10166 B69-10615 05

METAL JOINTS

High pressure tube coupling requires no threads or flares MSC-600 B66-10285 05

Brazing process provides high-strength bond between aluminum and stainless steel M-PS-803 B66-10352 05

Thin plastic sheet eliminates need for expensive plating M-PS-1896 B66-10681 03

Braze joint quality tested electromagnetically M-PS-12795 B67-10333 01

Tube-to-header joint for bimetallic construction LWIS-10262 B67-10464 05

Study made of transfer of heat energy through metal joints in vacuum environment M-PS-12534 B67-10465 02

Nondestructive testing of welds on thin-walled tubing M-PS-18144 B67-10402 01

Use of medical and dental x-ray equipment for nondestructive testing MSC-13859 B69-10553 01

METAL-REACTOR BONDING

Self sealing disconnector for tubing forms metal seal after breakaway JPL-354 B69-10226 05

Stringent cleaning technique assures reliable epoxy bond GSFC-161 B64-10142 03

New alloy brazes titanium to stainless steel MSC-102 B65-10060 05

Stringent cleaning technique assures reliable epoxy bond GSFC-161 B64-10142 03

New alloy brazes titanium to stainless steel MSC-102 B65-10060 05

I-410
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>METAL PLATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compound improves thermal interface between thermocouple and sensed surface B66-10121</td>
<td>02</td>
</tr>
<tr>
<td>Brazing process provides high-strength bond between aluminum and stainless steel M-P3-803</td>
<td>05</td>
</tr>
<tr>
<td>Aluminum core structures brazed without use of flux M-P3-659</td>
<td>05</td>
</tr>
<tr>
<td>Silver plating ensures reliable diffusion bonding of dissimilar metals M-P3-1975</td>
<td>03</td>
</tr>
<tr>
<td>Welding, bonding, and sealing of refractory metals by vapor deposition LEWIS-123</td>
<td>03</td>
</tr>
<tr>
<td>Materials data handbook, Inconel alloy 718 M-P3-2348</td>
<td>03</td>
</tr>
<tr>
<td>Mechanical shielding reduces weld surface cracking in 6061 T6 aluminum M-S1-11494</td>
<td>05</td>
</tr>
<tr>
<td>Welding, brazing, and soldering handbook M-P3-20504</td>
<td>05</td>
</tr>
<tr>
<td>Sealing a rubber bladder between two sections of an accumulator M-P3-20463</td>
<td>05</td>
</tr>
<tr>
<td>Rhodium-plated barrier against high-temperature fusion bonding M-P3-92155</td>
<td>05</td>
</tr>
<tr>
<td>Metallurgical Semiconductors</td>
<td>01</td>
</tr>
<tr>
<td>Field-effect transistor replaces bulky transformer in analog-gate circuit GSFC-351</td>
<td>01</td>
</tr>
<tr>
<td>MOSFET analog memory circuit achieves long duration signal storage M-P3-080</td>
<td>01</td>
</tr>
<tr>
<td>Solid state phase detector replaces bulky transformer circuit M-NSC-11007</td>
<td>01</td>
</tr>
<tr>
<td>MOSFET improves performance of power supply regulator GSFC-10022</td>
<td>01</td>
</tr>
<tr>
<td>Two-way digital driver/receiver uses one set of lines BBC-10055</td>
<td>01</td>
</tr>
<tr>
<td>Integrated metal transistor leads GSFC-90536</td>
<td>01</td>
</tr>
<tr>
<td>Linear voltage-to-frequency converter GSFC-10586</td>
<td>01</td>
</tr>
<tr>
<td>Radiation tolerant silicon nitride insulated gate field effect transistors GSFC-10581</td>
<td>01</td>
</tr>
<tr>
<td>Dielectric materials for use in thin-film capacitors M-P3-20471</td>
<td>01</td>
</tr>
<tr>
<td>Accurate nine-decade temperature-compensated logarithmic amplifier ABG-10480</td>
<td>01</td>
</tr>
<tr>
<td>Metal Oxides</td>
<td>03</td>
</tr>
<tr>
<td>Wire winding increases lifetime of oxide coated cathodes LEWIS-154</td>
<td>03</td>
</tr>
<tr>
<td>Recommended values of the thermophysical properties of eight alloys, their major constituents and oxides NU-0095</td>
<td>03</td>
</tr>
<tr>
<td>Magnesium-zinc reduction is effective in preparation of metals</td>
<td>03</td>
</tr>
</tbody>
</table>

I-411
Eighth-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine

High-speed furnace uses infrared radiation for controlled brazing
SUBJECT INDEX

H-FS-716 B66-10334 01
Gage of 6.5 per cent Si-Fe sheet is chemically reduced MSC-537 B66-10454 03

Prefaced stiffeners used to fabricate structural components for pressurized tanks H-FS-1796 B66-10688 05

Silver plating ensures reliable diffusion bonding of dissimilar metals H-FS-1975 B67-10124 03

Coating protects magnesium-lithium alloys against corrosion H-FS-2446 B67-10149 03

Welding of AlMg350 and AlMg355 steel H-FS-2314 B67-10292 05

Development of technology for hot-drape forming of large torus sections H-FS-12141 B67-10341 05

Reparable, high-density microelectronic module provides effective heat sink H-FS-13075 B67-10436 03

Fuel cell life improved by metallic sinter activation after electrode assembly welding H-FS-10965 B67-10436 03

Aluminum and stainless steel tubes joined by single ring and welding process H-FS-13120 B67-10472 05

Weld joint strength and mechanical properties in 2219-T81 aluminum alloy LEWIS-10479 B68-10032 05

Thermal radiation shields for piping in vacuum environments LEWIS-10899 B69-10187 05

Technique for anchoring fasteners to honeycomb panels LEWIS-10888 B69-10187 05

Explosive bonding of metal-matrix composites H-FS-20657 B69-10004 05

METAL SHEELS
Analysis of filament reinforced metal-shell pressure vessels LEWIS-10352 B69-10005 06

Magnetostatic foring for precision sizing and joining of large-diameter tubes H-FS-20481 B69-10262 06

METAL SPINNING
Stainless-steel elbows formed by spin forging H-FS-122 B69-10005 06

METAL STRIPS
Metal strip forms 21 foot boom, rolls up for compact storage GSFC-151 B69-10005 05

Mounting for diodes provides efficient heat sink H-FS-197 B69-10187 01

Simple control device senses solar position JPL-638 B69-10187 01

Compact retractor protects cabling loops H-FS-561 B69-10187 05

Sheet metal strip unrolls to form circular boom GSFC-423 B69-10187 05

New television camera eliminates vidicon tube H-FS-472 B69-10187 05

Diffusion bonding makes strong seal at flanged connector H-FS-637 B69-10187 05

Calibrating ultrasonic test equipment for checking thin metal strip stock NSC-10069 B67-10250 05

Machine tests slow-speed sliding friction in high vacuum H-FS-12341 B67-10379 05

Composite solar cell matrix is reliable, lightweight and flexible NPS-10821 B67-10503 05

Development of helical seal for high temperature /2000 degrees F/ application M-FS-13304 B67-10655 05

Inspection criteria ensure quality control of parallel gap soldering M-FS-16330 B68-10257 05

Helical tape forming device GSFC-10830 B69-10187 05

Load integral with the internal interconnection that penetrate the molded wall of a package LANGLEY-10228 B69-10436 05

Heat-shrinkable jacket holds fluid in contact with tensile test specimen MSC-13195 B69-10495 05

METAL SURFACES
Gate value with ceramic-coated base operates at high temperatures ARC-23 B63-10562 03

Refractory thermal insulation for smooth metal surfaces M-FS-160 B64-10099 03

Elastomers bonded to metal surfaces seal electrochemical cells GSFC-168 B64-10113 03

Solder flux leaves corrosion-resistant coating on metal JPL-611 JPL-611 B64-10206 05

Fluoride coatings make effective lubricants in molten sodium environment LEWIS-229 B66-10005 03

Etching process mills PH 14-8 Mo alloy steel to precise tolerances MSC-270 B66-10110 03

Surfactant for dye-penetrant inspection is insensitive to liquid oxygen H-FS-475 B66-10131 03

Nylon bit removes cork insulation without damage to substrate MSC-381 B66-10152 05

Device spot-laps spheres to very close tolerances JPL-SC-176 B66-10152 05

Rubber-coated bellows improves vibration damping in vacuum lines LEWIS-273 B66-10175 05

Portable sandblaster cleans small areas NSC-523 B66-10242 05

Brass alloys used as temperature indicators NUC-0063 B66-10274 01

Photoelectric scanner makes detailed work function maps of metal surfaces JPL-SC-176 B66-10440 01

Adhesive for polymer film cures at room temperature, has high initial tack
**IBTAL VAPORS**

**Technique for measuring absorptance and emittance by using cyclic incident radiation**

LEWIS-321  B66-10630  02

**Intergranular metal phase increases thermal shock resistance of ceramic coating**

M-FS-1862  B66-10651  03

**Radioactive method enables determination of surface areas rapidly and accurately**

NU-0086  B66-10710  03

**Surface-crack detection by microwave methods**

ARC-10009  B67-10482  01

**Ronchi test applied to measurement of surface roughness**

I-FS-12583  B67-10636  02

**Effects of surface preparation on quality of aluminum alloy weldments**

M-FS-13152  B68-10302  03

**Detecting hydrogen-containing contaminants on metal surfaces**

M-FS-20456  B69-10192  03

**Masking of aluminum surface against annealing**

M-FS-12864  B69-10335  05

**Magnetic forming of resistive materials**

M-FS-20417  B69-10397  03

**Improved primer for bonding polyurethane adhesives to metals**

M-FS-90591  B69-10540  03

**Study made of resistance of stainless steels to zinc-vapor corrosion**

ARG-10055  B67-10582  03

**Miniaturized King furnace permits absorption spectroscopy of small samples**

ARG-10177  B68-10418  02

**Die and telescoping punch form convolutions in thin diaphragm**

JPL-SC-135  B65-10393  05

**Coiled sheet metal strip opens into tubular configuration**

GSFC-425  B66-10014  05

**Explosive force of primacord grid forms large sheet metal parts**

M-FS-316  B66-10047  05

**Heated die facilitates tungsten forming**

LEWIS-25A  B66-10014  05

**Bench vice adapter grips tubing securely and safely**

MSC-279  B66-10056  05

**Telescoping of instrumentation tubing eliminates swaging**

M-FS-346  B66-10116  05

**Split glass tube assures quality in electron beam brazing**

M-FS-564  B66-10151  05

**Device spot-laps spheres to very close tolerances**

JPL-SC-119  B66-10175  05

**Pressure vessels fabricated with high-strength wire and electroformed nickel**

M-FS-580  B66-10218  05

**Hand tool permits shrink sizing of assembled tubing**

M-FS-504  B66-10239  05

**Electrical upsetting of metal sheet forms weld edge**

M-FS-720  B66-10248  05

**Radial coolant channels fabricated by simplified method**

NU-0070  B66-10267  05

**High-speed furnace uses infrared radiation for controlled brazing**

NU-0097  B66-10268  02

**Large diameter metal ring seal prevents gas leakage at 5000 psi**

M-FS-1064  B66-10422  05

**Metal tube can be folded for compact stowage, is self-erecting**

LEWIS-268  B66-10450  05

**High-energy-rate magnetohydraulic metal forming system**

M-FS-246  B67-10126  02

**Degressing of titanium to minimize stress corrosion**

LEWIS-382  B67-10147  03

**Coating protects magnesium-lithium alloys against corrosion**

M-FS-2446  B67-10149  03

**Precision metal molding**

I-414

---

**SUBJECT INDEX**

**Metal vapors**

- M-FS-938  B66-10487  03
- Technique for measuring absorptance and emittance by using cyclic incident radiation
  LEWIS-321  B66-10630  02
- Intergranular metal phase increases thermal shock resistance of ceramic coating
  M-FS-1862  B66-10651  03
- Radioactive method enables determination of surface areas rapidly and accurately
  NU-0086  B66-10710  03
- Surface-crack detection by microwave methods
  ARC-10009  B67-10482  01
- Ronchi test applied to measurement of surface roughness
  I-FS-12583  B67-10636  02
- Effects of surface preparation on quality of aluminum alloy weldments
  M-FS-13152  B68-10302  03
- Detecting hydrogen-containing contaminants on metal surfaces
  M-FS-20456  B69-10192  03
- Masking of aluminum surface against annealing
  M-FS-12864  B69-10335  05
- Magnetic forming of resistive materials
  M-FS-20417  B69-10397  03
- Improved primer for bonding polyurethane adhesives to metals
  M-FS-90591  B69-10540  03

**Metal vapors**

- Study made of resistance of stainless steels to zinc-vapor corrosion
  ARC-10055  B67-10582  03
- Miniaturized King furnace permits absorption spectroscopy of small samples
  ARG-10177  B68-10418  02

**Metal working**

- Guide for extrusion dies eliminates straightening operation
  LEWIS-152  B64-10014  05
- Metal bending brake facilitates lightweight, close-tolerance fabrication
  ARC-29  B64-10069  05
- Jig and fixture aid fabrication of tungsten rivets
  LEWIS-185  B65-10101  05
- Collar positions strip stock used to form collared mandrel
  JPL-198  B65-10130  05
- Integral ribs formed in metal panels by cold-press extrusion
  M-FS-230  B65-10141  05
- Lathe attachment used to machine elliptical cones
  MSC-100  B65-10168  05
- Metal parts hydrosized by explosive force
  M-FS-289  B65-10170  05
- Reusable neoprene jacket protects parts for chemical milling
  WO-071  B65-10179  03
- Fiber glass dies speed forming of large metal sheets
  M-FS-214  B65-10210  05
- Electromagnetic hammer removes weld distortions from aluminum tanks
  M-FS-267  B65-10342  05

---

**Metal working**

- Die and telescoping punch form convolutions in thin diaphragm
  JPL-SC-135  B65-10393  05
- Coiled sheet metal strip opens into tubular configuration
  GSFC-425  B66-10009  03
- Explosive force of primacord grid forms large sheet metal parts
  M-FS-316  B66-10014  05
- Heated die facilitates tungsten forming
  LEWIS-25A  B66-10047  05
- Bench vice adapter grips tubing securely and safely
  MSC-279  B66-10056  05
- Telescoping of instrumentation tubing eliminates swaging
  M-FS-346  B66-10116  05
- Split glass tube assures quality in electron beam brazing
  M-FS-564  B66-10151  05
- Device spot-laps spheres to very close tolerances
  JPL-SC-119  B66-10175  05
- Pressure vessels fabricated with high-strength wire and electroformed nickel
  M-FS-580  B66-10218  05
- Hand tool permits shrink sizing of assembled tubing
  M-FS-504  B66-10239  05
- Electrical upsetting of metal sheet forms weld edge
  M-FS-720  B66-10248  05
- Radial coolant channels fabricated by simplified method
  NU-0070  B66-10267  05
- High-speed furnace uses infrared radiation for controlled brazing
  NU-0097  B66-10268  02
- Large diameter metal ring seal prevents gas leakage at 5000 psi
  M-FS-1064  B66-10422  05
- Metal tube can be folded for compact stowage, is self-erecting
  LEWIS-268  B66-10450  05
- High-energy-rate magnetohydraulic metal forming system
  M-FS-246  B67-10126  02
- Degressing of titanium to minimize stress corrosion
  LEWIS-382  B67-10147  03
- Coating protects magnesium-lithium alloys against corrosion
  M-FS-2446  B67-10149  03
- Precision metal molding
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>METALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-FS-13305</td>
<td>B67-10423 05</td>
</tr>
<tr>
<td>Copper and nickel adherently electroplated on titanium alloy</td>
<td>E-FS-13952</td>
</tr>
<tr>
<td>Magnetic forming studies</td>
<td>E-FS-14217</td>
</tr>
<tr>
<td>Improved table for cutting and welding</td>
<td>MSC-15537</td>
</tr>
<tr>
<td>Spiral-flow apparatus for measuring permeation of solids by gases</td>
<td>E-FS-16517</td>
</tr>
<tr>
<td>Possible correlation between work-hardening and fatigue failure</td>
<td>ARG-10371</td>
</tr>
<tr>
<td>Magnetic forming for precision sizing and joining of large-diameter tubes</td>
<td>E-FS-20481</td>
</tr>
<tr>
<td>A method for precision anodize stripping</td>
<td>MSC-15040</td>
</tr>
<tr>
<td>METALLIZING</td>
<td></td>
</tr>
<tr>
<td>Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics</td>
<td>SAM-0012</td>
</tr>
<tr>
<td>TFE-fluorocarbon liners for flexible hoses</td>
<td>E-FS-16480</td>
</tr>
<tr>
<td>METALLOGRAPHY</td>
<td></td>
</tr>
<tr>
<td>Diffusion technique stabilizes resistor values</td>
<td>MSC-205</td>
</tr>
<tr>
<td>Inspection of fine wires simplified by capillary tube wire holder</td>
<td>MSC-350</td>
</tr>
<tr>
<td>Materials data handbook, aluminum alloy 7075</td>
<td>E-FS-2349</td>
</tr>
<tr>
<td>Chemical milling solution reveals stress corrosion cracks in titanium alloy</td>
<td>LANGLEY-10077</td>
</tr>
<tr>
<td>Multi-feed cone for Cassegrainian antenna</td>
<td>ARG-10025</td>
</tr>
<tr>
<td>Superconductivity in zirconium-rhodium alloys</td>
<td>ARG-10223</td>
</tr>
<tr>
<td>Nondestructive evaluation of printed wiring boards by microresistance measurements</td>
<td>SAM-10034</td>
</tr>
<tr>
<td>Basal-plane metallography of deformed pyrolytic carbon</td>
<td>BPE-11196</td>
</tr>
<tr>
<td>Automatic sample rotator for metallographic polishing</td>
<td>BPO-11015</td>
</tr>
<tr>
<td>Titanium-uranium alloys with voids of predetermined size and total volume</td>
<td>ARG-10490</td>
</tr>
<tr>
<td>METALLURGY</td>
<td></td>
</tr>
<tr>
<td>Rotating filters permit wide range of optical pyrometry</td>
<td>LANGLEY-33</td>
</tr>
<tr>
<td>Rotating holder permits accurate grinding of metallurgical microsamples</td>
<td>LEWIS-131</td>
</tr>
<tr>
<td>Simple, nondestructive test identifies metals</td>
<td>MSC-525</td>
</tr>
<tr>
<td>Materials data handbook, Inconel alloy 718</td>
<td>E-FS-2348</td>
</tr>
<tr>
<td>An investigation of particle mixing in a gas-fluidized bed</td>
<td>ARG-10182</td>
</tr>
<tr>
<td>Materials data handbook, aluminum alloy 6061</td>
<td>EF-20381</td>
</tr>
<tr>
<td>Torsion system for creep testing with multiple stress reversals</td>
<td>HQ-10039</td>
</tr>
<tr>
<td>Measurements of thermoelectric power in annealed and quenched gold-platinum alloys</td>
<td>ARG-10303</td>
</tr>
<tr>
<td>Surface profilometer for examining grain-boundary grooves</td>
<td>ARG-10290</td>
</tr>
<tr>
<td>Possible correlation between work-hardening and fatigue failure</td>
<td>ARG-10371</td>
</tr>
<tr>
<td>Magnetic forming for precision sizing and joining of large-diameter tubes</td>
<td>E-FS-20481</td>
</tr>
<tr>
<td>Improved table for cutting and welding</td>
<td>MSC-15040</td>
</tr>
<tr>
<td>METALLURGY</td>
<td></td>
</tr>
<tr>
<td>High purity electroforming yields superior metal models</td>
<td>ARC-6</td>
</tr>
<tr>
<td>Packless valve with all-metal seal handles wide temperature, pressure range</td>
<td>JPL-361</td>
</tr>
<tr>
<td>Rapid billet loader aids extrusion of refractory metals</td>
<td>LEWIS-50</td>
</tr>
<tr>
<td>Tool facilitates sealing of metal fill tubes</td>
<td>MSC-24</td>
</tr>
<tr>
<td>Insulated weld tooling permits uniform, high quality weld</td>
<td>MSC-42</td>
</tr>
<tr>
<td>Improved conductive paste secures biomedical electrodes</td>
<td>MSC-107</td>
</tr>
<tr>
<td>Valve designed with elastic seat</td>
<td>JPL-442</td>
</tr>
<tr>
<td>Metal sheet improves thermocouple using graphite in one leg</td>
<td>NU-0011</td>
</tr>
<tr>
<td>Transducer senses displacements of panels subjected to vibration</td>
<td>ABC-37</td>
</tr>
<tr>
<td>Titanium treatment improves brazed joints</td>
<td>MSC-127</td>
</tr>
<tr>
<td>Refractory metals welded or brazed with tungsten inert gas equipment</td>
<td>LEWIS-219</td>
</tr>
<tr>
<td>Simple, nondestructive test identifies metals</td>
<td>MSC-525</td>
</tr>
<tr>
<td>Cork is used to make tooling patterns and molds</td>
<td>MSC-425</td>
</tr>
<tr>
<td>Heat treatment of metal parts facilitated by sand embedment</td>
<td>E-FS-1543</td>
</tr>
<tr>
<td>Lateral ring metal elastic wheel absorbs shock loading</td>
<td></td>
</tr>
</tbody>
</table>
Thermoelectric metal comparator determines composition of alloys and metals

Solubility data are compiled for metals in liquid zinc

X-ray source uses interchangeable target anodes to vary X-ray wavelength

Radiation counting technique allows density measurement of metals in high-pressure/high-temperature environment

Handbooks describe eddy current techniques used in nondestructive testing of metal parts and components

Ultrasonics used to measure residual stress

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures

Detection and location of metallic objects imbedded in nonmetallic structures

Resistivity measurements of neutron-irradiated pure metals and Al-Zn alloys

Nondestructive method for measuring residual stresses in metals, a concept

Electromotive series established for metals used in aerospace technology

Levitation-melting technique for metals and alloys

Fractography can be used to analyze failure modes in polytetrafluoroethylene

Calibration of a resistance thermometer down to 0.04 degrees K

Remote balance weighs accurately high radiation

Metallic diffusion measured by a modified Knudsen technique

Generation of sonic power during welding

Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces

Pulsed high-voltage dc RF sputtering

Microprobe investigation of brittle segregates in aluminum MIG and TIG welds

Rectangular-bore, high-gain laser plasma tube

Microprobe investigation of brittle segregates in aluminum MIG and TIG welds

Rectangular-bore, high-gain laser plasma tube
SUBJECT INDEX

METHODOLOGY

Handbooks describe eddy current techniques used in nondestructive testing of metal parts and components
H-FS-13172 B67-10374 03

Tube welding and brazing
H-FS-20348 B69-10085 05

Conceptual techniques for reducing parasitic current gain of lateral pnp transistors
H-FS-13199 B69-10244 01

NITROGEN ALCOHOLS

Corrosion of aluminum alloys by chlorinated hydrocarbon/methanol mixtures
H-FS-11345 B67-10842 03

Viscosity and density of methanol/water mixtures at low temperatures
H-FS-14991 B68-10274 03

Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods
ARG-10065 B68-10425 03

Coolants with selective optical filtering characteristics for ruby laser applications
H-FS-20180 B68-10508 02

Separation of the rare earths by anion-exchange in the presence of lactic acid
ARG-10436 B69-10377 03

METHYL COMPOUNDS

Stringent cleaning technique assures reliable epoxy bond
GSFC-161 B64-10142 03

Fabrication method produces high-grade alumina crucibles
H-FS-216 B65-10078 05

Flexible protective coatings made from silicon-nitrogen materials
H-FS-528 B66-10027 03

Sea dye marker provides visibility for 20 hours
MSC-714 B66-10313 03

High-energy, high-power, long-life battery
LBWIS-10724 B69-10131 01

Microdetermination of urea in urine using p-dimethylaminobenzaldehyde (PDAB)
NPO-10715 B69-10317 04

Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers
MSC-15641 B69-10552 03

METHYLACRYLATE

Thermocouple-flexible cable connector insulator is highly reliable
H-00062 B66-10709 01

Adhesives for laminating polyamide insulated flat conductor cable
H-FS-12066 B67-10429 03

MICA

Electro-optic modulator for infrared laser using gallium arsenide crystal
GSFC-10686 B68-10255 02

Device for diode tuning in a stripline varactor harmonic multiplier
H-FS-20153 B69-10013 01

MICROCAPS

Welding torch and wire feed manipulator
H-FS-13102 B67-10385 05

Standard surface grinder for precision machining of thin-wall tubing

MICRONS

Improved mouse cage provides versatility and ease in handling laboratory mice
H-FS-12250 B69-10124 04

MICROELECTRON INTERFEROMETERS

System enables more complete calibrations of dynamic-pressure transducers
H-FS-2063 B67-10099 01

System converts optical phase changes to RF phase changes
H-FS-20091 B68-10430 01

Fine-line sensitivity for holographic interferograms
H-Q-10348 B69-10663 02

MICROANALYSIS

Corrosion of metal samples rapidly measured
H-00041 B66-10140 03

Standards for electron probe microanalysis of silicates prepared by convenient method
GSFC-869 B66-10234 03

Apparatus enables automatic microanalysis of body fluids
JPL-962 B66-10515 04

Automated microsyringe is highly accurate and reliable
NPO-10142 B67-10203 01

Microprobe investigation of brittle segregates in aluminum HIG and TIG welds
H-FS-14720 B69-10330 03

Imaging slitless spectrometer for X-ray astronomy
H-FS-14309 B68-10546 02

Microdetermination of urea in urine using p-dimethylaminobenzaldehyde (PDAB)
NPO-10715 B69-10317 04

MICROBIOLOGICAL

Evaporant feed device facilitates flash vapor deposition process in vacuum
NPO-10232 B67-10130 03

Tool samples subsurface soil free of surface contaminants
MSC-10988 B67-10473 05

Continuous microbial cultures maintained by electronically-controlled device
ARG-177 B67-10556 04

A microalgal technique for the culture of mammalian cells
LANGLEY-10407 B68-10554 04

Microscope device for cell cultures on thermoplastic substrates
LANGLEY-10495 B69-10236 04

Technique for highly efficient recovery of microbiological contaminants
MSC-13250 B69-10273 04

Sterilization training manual
H-FS-20437 B69-10277 04

Sampling and handling of desert soils
NPO-11171 B69-10304 04

Life detection
NPO-10510 B69-10475 04

Microbiological aspects of sterilization development laboratories
NPO-11197 B69-10593 04
at room temperature

GSPC-10593

B69-10324

02

Logic circuit exhibits optimum performance

LANGLY-129

B65-10193

01

Field-effect transistor replaces bulky transformer in analog-gate circuit

GSPC-351

B65-10284

01

Rugged microelectronic module package supports circuitry on heat sink

MSC-81A

B66-10285

01

Miniature electrometer preamplifier effectively compensates for input capacitance

ARC-69

B66-10549

01

Thin film process forms effective electrical contacts on semiconductor crystals

J-PS-2343

B67-10142

01

Primary cell uses neither liquid nor fused electrolytes

MFO-10061

B67-10275

01

Reparable, high-density microelectronic module provides effective heat sink

J-PS-13075

B67-10356

01

Ultraminiature television camera

J-PS-11967

B67-10469

01

Logic realization of simple majority voting connectives

JPL-727

B67-10511

06

Temperature-stabilized, triggerable microelectronic astable multivibrator starts reliably

MSC-1173

B67-10628

01

Development of reliability prediction technique for semiconductor diodes

GSPC-10231

B67-10651

06

Piggy-back mounting would increase microcircuit packaging density

MSC-12059

B68-10114

01

High dielectric thick films for screened circuit capacitors

LANGLY-10294

B68-10542

01

Microelectronic oscillator, 2

GSPC-10387

B69-10063

01

Microelectronic oscillator

GSPC-10375

B69-10064

01

Technique for abrasive cutting of thick-film conductors for hybrid circuits

MSC-13242

B69-10235

03

Leads integral with the internal interconnection that penetrate the molded wall of a package

LANGLY-10228

B69-10436

01

Improved method of dicing integrated circuit wafers into chips

EBC-10138

B69-10441

01

Microelectronic device data handbook

EBC-10322

B69-10687

01

Lateral PNP bipolar transistor with aiding field diffusions

MSC-13072

B69-10741

01

Library of documents compressed into lap-held display kit

MSC-125

B65-10030

01

Manual-feed adapter permits microfilming of continuous oscillograph output

MICROFILMS

SUBJECT INDEX

NU-0029

B65-10249

01

Opaque microfiche masthead permits easy reading

H-7-7

B65-10306

01

Planetary camera control improves microfiche production

H-7-1

B65-10313

01

Long-term data storage and retrieval system, a concept

J-PS-14789

B68-10505

01

Semiautomatic inspection of microfilm records

J-PS-20240

B69-10301

02

Microelectronics

Micromachining produces optical apertures to micro dimensions

GSPC-205

B64-10211

05

Micromanipulation tool is easily adapted to many uses

JPL-129

B67-10004

05

Liquid microscopy chamber and microsyringe designs allow more efficient micromanipulations

ARC-251

B67-10305

04

Measuring thermal expansion of multiple specimens at high temperature

MSC-10153

B68-10122

05

Microelectronics

Improved sensor counts micrometeoroid penetrations

LWIS-76

B63-10443

01

Ultra-sensitive transducer advances micro-measurement range

ARC-26

B64-10004

01

Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio

GSPC-509

B66-10347

01

Advances in light-gas gun technology

J-PS-14270

B68-10288

05

Technique for pinpointing submicron particles in the electron microprobe

H-10043

B69-10465

01

Micrometers

Apparatus measures swelling of membranes in electrochemical cells

GSPC-200

B65-10087

01

Modified algesimeter provides accurate depth measurements

MSC-616

B66-10647

04

Automated microsyringe is highly accurate and reliable

MFO-10142

B67-10203

01

Liquid microscopy chamber and microsyringe designs allow more efficient micromanipulations

ARC-251

B67-10505

04

Welding torch and wire feed manipulator

J-PS-13102

B67-10385

05

Method for X-ray study under extreme temperature and pressure conditions

MSC-11232

B67-10474

02

Precision trimmer aids in preparing biomedical specimen blocks for ultrathin sectioning

ARC-242

B67-10541

05

Surface profilometer for examining grain-boundary grooves

I-418
Subject Index

**ARG-10290**  B69-10345  05  
Calibration standard for dynamic evaluation of a profile-plotter

M-PS-16476   B69-10458  05  
Laser interferometer micrometer system

M-PS-14747  B69-10633  02

**MICROINSTRUMENTATION**

Microinstruments thermocouple monitors own installation

M-PS-1111   B66-10463  05

Rolmote - A new mechanical design concept

SAN-10001   B67-10611  05

Gyrator-type circuits replace ungrounded inductors

IAC-10608  B69-10084  01

Inspection criteria ensure quality control of parallel gap soldering

M-PS-14530  B69-10257  05

Standards for compatibility of printed circuit and component lead materials

M-PS-14531  B69-10310  01

**MICROINSTRUMENTED ELECTRONIC DEVICES**

High permeability semiconductors persist close-tolerance soldering

GSFC-319  B65-10134  05

Frequency discriminator with binary output eliminates tuned circuits

M-PS-376  B69-10349  01

Ulra miniature television camera

M-NS-11967  B67-10469  01

New microelectronic power amplifier

M-PS-13621  B68-10073  01

Microelectronic oscillator

GSFC-10375  B66-10064  01

**MICROORGANISMS**

Cytology is advanced by studying effects of deuterium environment

ARG-205  B67-10304  04

Vacuum probe sampler removes micron-sized particles from surfaces

SAN-10003  B69-10231  04

Electrolytic silver ion cell sterilizes water supply

MSC-11827  B69-10555  01

SPAN C - Terminal sterilization process analysis program

NPO-10805  B69-10039  06

SPAN - Terminal sterilization process analysis program

NPO-10804  B69-10104  06

Automated microorganism Sample Collection Module

SQ-10421  B69-10223  04

Development and test of flexible film coupon strips for use as a sampling technique

M-PS-20448  B69-10339  03

**MICROPARTICLES**

Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio

GSFC-509  B66-10347  01

Submicron holes in thin films increase sampling range of mass spectrometers

JPL-SC-097  B69-10300  03

Vacuum probe sampler removes micron-sized particles from surfaces

SPAN C - Terminal sterilization process analysis program

NPO-10805  B69-10039  06

SPAN - Terminal sterilization process analysis program

NPO-10804  B69-10104  06

Automated microorganism Sample Collection Module

SQ-10421  B69-10223  04

Development and test of flexible film coupon strips for use as a sampling technique

M-PS-20448  B69-10339  03

**MICROPHOTOGRAPHS**

Titanium treatment improves brazed joints

MSC-127  B65-10153  05

Fradography can be used to analyze failure modes in polytetrafluoroethylene

M-PS-20294  B69-10066  03

Photoelectrochemistry

M-PS-14556  B69-10736  01

**MICROSOFT**

Improved anode design for metal-oxygen fuel cells

LEWIS-10871  B69-10318  01

**MICROSCOPES**

Attachment converts microscope to point source autocollimator

JPL-499  B64-10124  05

Micromachining produces optical apertures to micron dimensions

GSFC-206  B64-10211  05

Simplified technique demonstrates magnetic domain switching

M-PS-13153  B67-10342  02

Preparing rock powder specimens of controlled size distribution

NPO-10007  B68-10297  05

Semiautomatic inspection of microfilm records

M-PS-20240  B69-10301  02

Foot operated cell-counter

ARG-10315  B69-10351  01

I-419
A method for observing gas evolution during plastic laminate cure

**SUBJECT INDEX**

JPL-946 B67-10174 05

Feasibility study of wireless power transmission systems

N-PS-14691 B67-10309 01

A thirty-six element array antenna system

N-PS-20435 B67-10390 01

Energy-storage of a prescribed impedance

AUG-10428 B67-10431 02

**MICROSCOPY**

A method for observing gas evolution during plastic laminate cure

NDC-15592 B69-10530 03

Automatic sample rotator for metallographic polishing

NPO-11015 B67-10596 03

Discrimination of fish oil and mineral oil slicks on sea water

BG-10412 B69-10673 01

**MICROSCOPY**

Method accurately measures mean particle diameters of monodisperse polystyrene latexes

ARG-207 B67-10054 02

Liquid microscopy chamber and microsyringe designs allow more efficient micromanipulations

ARG-251 B67-10305 04

Electronic test instrument generates extremely small current signals

ARG-276 B67-10551 05

Precision trimmer aids in preparing biomedical specimen blocks for ultrathin sectioning

ARG-242 B67-10541 01

Color-televised medical microscopy

MSC-13086 B67-10314 01

A rapid stress-corrosion test for aluminum alloys

N-PS-20175 B67-10536 03

Selective vignetting of Type 1 X-ray telescopes

GSPC-10682 B69-10075 02

**MICROSTRUCTURE**

Study made of ductility limitations of aluminum-silicon alloys

N-PS-12524 B67-10392 03

Pre-weld heat treatment improves welds in Rene 41

N-PS-18174 B67-10285 03

Grain-boundary migration in KCl bicrystals

ARG-10455 B67-10551 03

Grain growth inhibitor for porous tungsten materials

LEWIS-10535 B67-10527 03

Sintering characteristics and properties of PuS and PuF are determined

ARG-10228 B67-10058 03

PRACTOGRAPHY can be used to analyze failure modes in polytetrafluoroethylene

N-PS-20294 B69-10066 03

**MICROWAVE AMPLIFIERS**

Parametric up-converter increases flexibility of maser

KSC-67-98 B67-10104 01

Power consumption in acoustic amplifiers under conditions of maximum stable gain

GSPC-10667 B67-10327 01

Sweep frequency detector

NPO-10669 B67-10289 01

**MICROWAVE ANTENNAS**

Plug for microwave antenna subreflector cuts ground noise

JPL-362 B63-10229 01

Omicron technique measures plasma characteristics

LANGLEY-134 B65-10122 02

Scanning means for Cassegrainian antenna

I-420
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MICROWAVE RESONANCE</strong></td>
</tr>
<tr>
<td>Study of yttrium iron garnet rods reveals new magnetostatic echo node ERC-37</td>
</tr>
<tr>
<td>Improved atomic resonance gas cell for use in frequency standards MSC-11666</td>
</tr>
<tr>
<td><strong>MICROWAVE SWITCHING</strong></td>
</tr>
<tr>
<td>Double-throw microwave device switches two lines quickly JPL-410</td>
</tr>
<tr>
<td><strong>MICROWAVE TRANSMISSION</strong></td>
</tr>
<tr>
<td>Traveling-wave tube circuit simplifies microwave relay GSFC-299</td>
</tr>
<tr>
<td>Composite filter steepens rejection slopes in microwave application GSFC-860</td>
</tr>
<tr>
<td>Feasibility study of wireless power transmission systems N-PS-14691</td>
</tr>
<tr>
<td>High-power microwave power divider concept NPO-11031</td>
</tr>
<tr>
<td><strong>MICROWAVES</strong></td>
</tr>
<tr>
<td>Compact microwave mixer has high conversion efficiency GSFC-197</td>
</tr>
<tr>
<td>Dielectric prisms would improve performance of quasi-optical microwave components ERC-10011</td>
</tr>
<tr>
<td>Improved traveling wave maser amplifier NPO-10546</td>
</tr>
<tr>
<td>Feasibility study of wireless power transmission systems N-PS-14691</td>
</tr>
<tr>
<td>Electrolytic separation of crystals of transition-metal oxides ARG-10506</td>
</tr>
<tr>
<td>A sterilizable high-impact antenna NPO-10234</td>
</tr>
<tr>
<td><strong>MICROFICHE</strong></td>
</tr>
<tr>
<td>Micromachine operations program NPO-10735</td>
</tr>
<tr>
<td><strong>MIGRATION</strong></td>
</tr>
<tr>
<td>Fiber length and orientation prevent migration in fluid filters N-PS-581</td>
</tr>
<tr>
<td>Substituting gold for silver improves electrical connections N-PS-2390</td>
</tr>
<tr>
<td>Experiments shed new light on nickel-fluorine reactions ARG-10008</td>
</tr>
<tr>
<td>Imprinting of confining sites for cell cultures on thermoplastic substrates LANGLEY-10495</td>
</tr>
<tr>
<td><strong>MILITARY VEHICLES</strong></td>
</tr>
<tr>
<td>Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes ARG-10452</td>
</tr>
<tr>
<td><strong>MILK</strong></td>
</tr>
<tr>
<td>Iodine exchange measures iodine-131 concentration in aqueous samples ARG-208</td>
</tr>
<tr>
<td><strong>MILLIMETER WAVES</strong></td>
</tr>
<tr>
<td>Microwave technique measures plasma characteristics LANGLEY-134</td>
</tr>
</tbody>
</table>

**MILLING MACHINES**

- Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths GSFC-422  |
- Efficient millimeter wave 1140 GHz diode for harmonic power generation HQ-61  |
- Ka-band power meter mount NPO-10348  |
- Millimeter-wave atmospheric loss prediction method NPO-11054  |

**MILLING**

- Heavy duty precision leveling jacks expedite setup time on horizontal boring mill NPO-10348  |

**MILLING (MACHINING)**

- Electroless nickel resist used in alkali etching of aluminum GSFC-284  |
- Electron beam seals outer surfaces of porous bodies M-PS-562  |
- Threaded pilot insures cutting tool alignment N-PS-527  |

**SELECTED REFERENCES**

- Depth indicator and stop aid machining to precise tolerances N-PS-553  |
- Electrical upsetting of metal sheet forms weld edge N-PS-720  |
- Tool separates sleeve-type unions without heat N-PS-97  |

**SURFACE TECHNOLOGY**

- Process sequence produces strong, lightweight reflectors of excellent quality LWIS-331  |
- Continuous internal channels formed in aluminum fusion welds N-PS-2399  |

**TEXTILES**

- Acid spray technique mills aluminum alloy materials without immersion N-PS-12500  |

**THERMAL PROPERTIES**

- High temperature alloy LWIS-10377  |
- Preparing rock powder specimens of controlled size distribution NPO-10097  |

**TOOLING**

- Machining technique prevents undercutting in tensile specimens LANGLEY-10281  |
- Vertical boring mill capacity increased N-PS-16196  |

**WATER RESOURCES**

- Feasibility study of wireless power transmission systems NPO-11031  |
- High temperature alloy NPO-10735  |

**WELDING**

- Thread cutting with 3-axis N/C milling machine LANGLEY-10017  |

**WIRELESS COMMUNICATIONS**

- Mill profiler machines soft materials accurately N-PS-692  |
- Versatile machine mills, saws light materials N-PS-827  |

**WIRELESS TRANSMISSION**

- Computer used to program numerically controlled milling machine N-PS-10008  |
- Fast method for obtaining scale dimensions on tape-controlled milling machine MSC-11609  |

**X-RAY ORDINATE**

- Thread cutting with 3-axis N/C milling machine LANGLEY-10017  |

---

*T-821*
MILLIVOLTMETERS

Compound taper milling machine
MSC-1517A

Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-10495

Vibration damper for Miles vertical boring mill
MSC-15529

MILLIVOLTMETERS

Ionene membrane battery separator
NPO-11099

MINERAL OILS

Run-in with chemical additive protects gear surface
M-FS-548

High-temperature bearing lubricants
LEWIS-10408

MINERALOGY

Preparing rock powder specimens of controlled size distribution
NPO-10007

Surface profilometer for examining grain-boundary grooves
ARC-10290

MINERALS

Electronic circuitry used to automate paper chromatography
JPL-840

MINIATURE ELECTRONIC EQUIPMENT

Miniature bioelectric device accurately measures and telemeters temperature
ARC-52

High-performance RC bandpass filter is adapted to miniaturized construction
ARC-60

MINES (EXCAVATIONS)

Improved atmospheric particle analyzer
ARC-33

MINING

Magnetic core valve gives rapid action
LEWIS-10135

SUBJECT INDEX

Ultraminiature manometer-tipped cardiac catheter
ARC-10054

Silica strain sensors enable pressure measurement at cryogenic temperatures
M-FS-14703

Miniaturized high-resolution mass/charge spectrophotograph /design study/
MSC-13279

MILLIVOLTMETERS

Welded pressure transducer made as small as 1/8th-inch in diameter
ARC-11

MINERAL OILS

Metal diaphragms used to calibrate miniature transducers
M-FS-207

MINERALOGY

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401

MINERALS

Pocket-sized tone-modulated FM transmitter
NPO-11180

MINING

Miniatnure backward-diode pressure sensor features stability and low power consumption
ARC-10229

MINIATURE ELECTRONIC EQUIPMENT

Pocket-sized tone-modulated FM transmitter
NPO-11180

MINECRAFT

MINECRAFT

MINES (EXCAVATIONS)

Personal communication system combines high performance with miniaturization
MSC-720

MINING

Subminiature deflection circuit operates integrated sweep circuits in TV camera
MSC-1263

SUBJECT INDEX

MINERALS

Reparable, high-density microelectronic module provides effective heat sink
M-FS-13075

MINING

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135

MINERALS

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135

SUBJECT INDEX

Ultraminiature manometer-tipped cardiac catheter
ARC-10054

Silica strain sensors enable pressure measurement at cryogenic temperatures
M-FS-14703

MINERAL OILS

Miniaturized high-resolution mass/charge spectrophotograph /design study/
MSC-13279

MINERAL OILS

Welded pressure transducer made as small as 1/8th-inch in diameter
ARC-11

MINERALOGY

Metal diaphragms used to calibrate miniature transducers
M-FS-207

MINERALS

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401

MINIATURE ELECTRONIC EQUIPMENT

Pocket-sized tone-modulated FM transmitter
NPO-11180

MINING

Miniatnure backward-diode pressure sensor features stability and low power consumption
ARC-10229

MINERAL OILS

Metal diaphragms used to calibrate miniature transducers
M-FS-207

MINERALOGY

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401

MINERALS

Pocket-sized tone-modulated FM transmitter
NPO-11180

MINING

Subminiature deflection circuit operates integrated sweep circuits in TV camera
MSC-1263

SUBJECT INDEX

MINERALS

Reparable, high-density microelectronic module provides effective heat sink
M-FS-13075

MINING

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135

MINERALS

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135

SUBJECT INDEX

Ultraminiature manometer-tipped cardiac catheter
ARC-10054

Silica strain sensors enable pressure measurement at cryogenic temperatures
M-FS-14703

MINERAL OILS

Miniaturized high-resolution mass/charge spectrophotograph /design study/
MSC-13279

MINERAL OILS

Welded pressure transducer made as small as 1/8th-inch in diameter
ARC-11

MINERALOGY

Metal diaphragms used to calibrate miniature transducers
M-FS-207

MINERALS

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401

MINIATURE ELECTRONIC EQUIPMENT

Pocket-sized tone-modulated FM transmitter
NPO-11180

MINING

Miniatnure backward-diode pressure sensor features stability and low power consumption
ARC-10229

MINERAL OILS

Metal diaphragms used to calibrate miniature transducers
M-FS-207

MINERALOGY

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401

MINERALS

Pocket-sized tone-modulated FM transmitter
NPO-11180

MINING

Subminiature deflection circuit operates integrated sweep circuits in TV camera
MSC-1263

SUBJECT INDEX

MINERALS

Reparable, high-density microelectronic module provides effective heat sink
M-FS-13075

MINING

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135

MINERALS

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135

SUBJECT INDEX
SUBJECT INDEX

Variable-transparency wall regulates temperatures of structures  
LANGLEY-25  B63-10528  03

Simple optical system used to align spectrophotograph  
LANGLEY-92  B65-10071  02

System measures angular displacement without contact  
LANGLEY-46  B65-10073  01

Light-sensitive potentiometer measures product of two variables  
GSFC-240  B65-10076  01

Interferometer combines laser light source and digital counting system  
MSC-151  B65-10161  01

Ball and socket joints provide accurate biaxial gimbals  
JPL-658  B65-10205  05

Light ray modulation controls optical system alignment  
GSFC-171  B65-10211  02

Instrument accurately measures extremely low air densities  
M-PS-193  B65-10221  01

Unique construction makes interferometer insensitive to mechanical stresses  
JPL-725  B65-10295  02

Beam splitter used in dual filming technique  
M-PS-501  B65-10072  02

Ultraviolet photographic pyrometer used in rocket exhaust analysis  
M-PS-499  B65-10095  02

Optical gyro pickoff operates at cryogenic temperatures  
M-PS-407  B65-10128  01

 Sextant measures spacecraft altitude without gravitational reference  
MSC-200  B66-10143  02

Mount enables precision adjustment of optical-instrumentation mirror  
MSC-184  B66-10199  02

Instrumant transmits vanishing point to illustration point  
MSC-267A  B66-10324  01

Device to color modulate a stationary light beam gives high intensity  
HQ-44  B66-10476  01

Laser measuring system accurately locates point coordinates on photograph  
ABS-74  B66-10560  02

Optical superheterodyne receiver uses laser for local oscillator  
M-PS-1605  B66-10584  01

Precision CW laser automatic tracking system investigated  
M-PS-1606  B66-10629  01

Three-axis attitude and direction reference instrument has only one moving part  
M-PS-1819  B66-10644  01

Laser Doppler flowmeter measures gas velocity  
M-PS-1747  B66-10693  02

Special purpose reflectometer uses modified ulbricht sphere  
MSC-1135  B67-10109  02

Star/horizon simulator used to test space guidance system  
MSC-407  B67-10110  02

Design concept for improved photo-scan tube  
JPL-918  B67-10157  01

New electron microscope employs new video display technique  
ARGU-158  B67-10312  03

Measuring coplanarity of surfaces  
MSC-12044  B67-10371  02

Torque meter aids study of hysteresis motor rings  
M-PS-12219  B67-10412  01

Infrared radiometer  
M-PS-13373  B67-10422  01

Ellipsoidal-mirror reflectometer accurately measures infrared reflectance of materials  
GSFC-566  B67-10444  01

Gimballed-mirror scanning system capable of spiral pattern  
GSFC-10170  B67-10509  02

Telescope mount with azimuth-only primary  
NPO-10468  B67-10671  02

Improved gas ring laser  
MSC-11584  B68-10304  01

Color-television medical microscopy  
MSC-13086  B68-10314  01

Modified sine bar device measures small angles with high accuracy  
GSFC-438  B68-10322  02

UV detector monitors organic contamination of optical surfaces  
M-PS-20246  B68-10413  01

Active frequency control system for argon F2 laser  
M-PS-14988  B68-10099  02

Improved combustion chamber optical probe  
MSC-10953  B69-10142  02

Liquid laser cavities  
GSFC-10592  B69-10236  01

Oculometer for remote tracking of eye movement  
EBC-10114  B69-10444  02

A new method for producing optical mirrors  
HQ-10227  B69-10529  02

Discrimination of fish oil and mineral oil slicks on sea water  
HQ-10412  B69-10673  01

Deposition monitor and control  
NPO-10706  B69-10722  01

MISSILE CONTROL
Study made of application of stereoscopic display system to analog computer simulation  
M-PS-1263  B66-10590  01

MISSILES
Separation simulator  
ECS-67-15  B69-10315  01

MISSION PLANNING
Advanced mission analysis programs  
GSFC-10575  B69-10171  06

Estimating reliability by application of matrix representation  
HQ-10246  B69-10793  02

MIST
Nozzles for size reclassification of microfog particles  
LEWIS-10705  B69-10076  05


MITOSIS

Study of radiation effects on mammalian cells in vitro
ARG-10191  B68-10298  02

MITOSIS

Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application
LANGLEY-6A  B63-10318  03

Plastic plus stainless-steel fibers make resilient, impermeable material
WOO-246  B65-10374  03

Two-fluid, impinging-sheet injector
WPO-10547  B68-10338  05

An investigation of particle mixing in a gas-fluidized bed
ARG-10182  B68-10407

Diffusion of trace gases for leak detection - A study
E-FS-20254  B66-10067  03

Preparation of thorium magnesium-zinc reduction
ARG-10285  B69-10079  03

Single-element coaxial injector for rocket fuel
WPO-11095  B69-10547

MITOSIS

Added diodes increase output of balanced mixer circuit
GSFC-354  B65-10276  01

Single-sideband modulator accurately reproduces phase information in 2-Mc signals
E-FS-664  B66-10437  01

Compact microwave mixer has high conversion efficiency
GSFC-197  B66-10625  01

Electronic frequency discriminator
E-FS-2634  B67-10151  01

Voltage regulator/amplifier is self-regulated
ARG-1240  B67-10156  01

ELECTRODICS

New computer system simplifies programming of mathematical equations
E-FS-441  B66-10361  01

On-line computer system for use with low-energy nuclear physics experiments is reported
ARG-10257  B69-10094  01

MOBILITY

Special tool kit aids heavily garmented workers
MSC-163  B66-10403  05

Integrated mobility measurement and notation system
MSC-726  B67-10114  04

Improved head-controlled TV system produces high-quality remote image
ARG-128  B67-10317  01

Movable RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127  B67-10362  01

Improved electromechanical master-slave manipulator
ARG-10027  B69-10372  05

Detachable caster adapter
MSC-91215  B69-10164  05

MODE RESPONSE

A modal combination computer program for analyzing dynamic behavior of structures
UPO-10129  B67-10217  06

Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLEY-10093  B67-10531  06

Computer program determines vibration in three-dimensional space of hydraulic lines excited by forced displacements
E-FS-12226  B68-10159  06

Analysis of space vehicle structures using the transfer-function concept
WPO-11162  B69-10337  06

MODE TRANSFORMERS

Improved gas ring laser
MSC-11584  B68-10304  02

MODELS

High purity electroforming yields superior metal models
ARC-6  B63-10007  05

Pressure transducer 3/8-inch in size can be faired into surface
WOO-065  B64-10021  05

System automatically provides dynamic launch decision criteria
E-FS-13063  B67-10363  01

Probabilistic approach to long range planning of manpower
MSC-11524  B67-10510  06

Development of lunar drill to take core samples to 100-foot depths
E-FS-13015  B67-10529  05

Shell design computer program
LEWIS-10734  B69-10175  06

Technique for assessing potential fire hazards
HQ-10279  B69-10287  03

Surface-renewal models for heat-transfer between walls and fluidized beds
ARG-10372  B69-10772  02

MODERATORS

Neutron detector simultaneously measures fluence and dose equivalent
ARG-10071  B67-10597  02

MODES

Quick-acting clutch disengages idle drive motor
GSFC-143  B64-10028  05

Thermionic diode switching has high temperature application
WPO-10404  B67-10672  01

Detection of molecular infrared spectra
HQ-10377  B69-10172  02

Identification and evaluation of linear damping models in beam vibrations
ARG-10275  B69-10196  03

MODULATION

Nulling pyrometer uses Kerr cell shutter for fast responses
NU-0010  B65-10050  01

Frequency offset in linear FM/CW transponder eliminates clutter
E-FS-249  B65-10146  01

Instrument accurately measures extremely low air densities
E-FS-193  B65-10221  01

An improved method for testing performance of vidicons during vibration
MODULES

Study made of application of stereoscopic display system to analog computer simulation
GSPC-10216 B69-10144 01

Amplifier provides dual outputs from a single source with complete isolation
NUC-10056 B67-10221 01

Interference effects eliminated in random oriented space station antenna system
ASC-11004 B67-10435 01

High-power microwave power divider concept
HRO-11031 B69-10290 01

Estimation of signal-to-noise ratios
XRF-05254 B69-10557 01

Pocket-sized tone-modulated FM transmitter
HRO-11180 B69-10725 01

Frequency-shift-keyer circuit improves communication system uses modulated laser beam
GSPC-377 B65-10333 01

High-gain amplifier has excellent stability and low power consumption
GSPC-272 B65-10138 01

Phase shift frequency synthesizer is efficient, small in size
H-PS-250 B65-10169 01

Added diodes increase output of balanced mixer circuit
GSPC-354 B65-10276 01

Communication system uses modulated laser beam
GSPC-377 B65-10333 01

Linear signal noise numerator accurately determines and controls S/N ratio
JPL-SC-152 B66-10433 01

Single-sideband modulator accurately reproduces phase information in 2-Mc signals
M-PS-664 B66-10437 01

Device to color modulate a stationary light beam gives high intensity
HQ-64 B66-10476 01

Polarimeter provides transient response in nanosecond range
JPL-880 B67-10021 02

Double emitter suppressed carrier modulator uses commercially available components
M-PS-2494 B67-10101 01

Laboratory pulse modulator uses minority carrier storage diodes
M-PS-2442 B67-10226 01

Solid state phase detector replaces bulky transformer circuit
ASC-11004 B67-10253 01

Interference effects eliminated in random oriented space station antenna system
ASC-11004 B67-10435 01

Lasers communication system is insensitive to atmospherically induced noise
GSPC-10396 B67-10587 01

Electro-optic modulator for infrared laser using gallium arsenide crystal
GSPC-10686 B66-10255 02

Analysis of magnetically-controlled processes in pulse-modulation systems
GSPC-10241 B69-10070 01

Optically induced free carrier light
MOISTURE METERS
Detection of entrapped moisture in honeycomb sandwich structures
HSC-1103 B67-10116 01

MOISTURE DETECTORS
Plastic plus stainless-steel fibers make resilient, impermeable material
WOO-246 B65-10374 03

MOISTURE DETECTION
Spray-on technique simplifies fabrication of complex thermal insulation blanket
H-FS-497 B66-10053 03

BIODEGRADABLE MATERIALS
Cork is used to make tooling patterns and molds
HSC-625 B66-10328 01

BIODEGRADABLE MATERIALS
Thermoplastic rubberlike material produced at low cost
HSC-425 B66-10328 01

BIODEGRADABLE MATERIALS
Improved compression molding process
LANGLEY-10027 B67-10302 03

BIODEGRADABLE MATERIALS
Modular packaging technique for combining integrated circuits and discrete components
GSFC-10369 B69-10453 03

MOISTURE METERS
A method for observing gas evolution during plastic laminate cure
HSC-15592 B69-10530 03

MOISTURE METERS
Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns
ABC-7 B63-10008 05

MOISTURE METERS
Improved silylbenzyl disulfide-silver metal brushes have extended life
H-FS-66 B63-10479 03

MOISTURE METERS
Refractory ceramic has wide usage, low fabrication cost
H-FS-67 B63-10481 03

MOISTURE METERS
Plastic molds reduce cost of encapsulating electric cable connectors
H-FS-69 B63-10568 05

MOISTURE METERS
Molded elastomer provides compact ferrite-core holder, simplifies assembly
JPL-584 B64-10084 05

MOISTURE METERS
Plastic films for reflective surfaces reproduced from masters
GSFC-188 B64-10084 05

MOISTURE METERS
Pressure molding of powdered materials improved by rubber mold insert
WOO-100 B64-10151 03

MOISTURE METERS
Epoxy-resin patterns speed shell-molding of aluminum parts
H-FS-303 B65-10177 05

MOISTURE METERS
Spray-on technique simplifies fabrication of complex thermal insulation blanket
H-FS-497 B66-10053 03

MOISTURE METERS
Split glass tube assures quality in electron beam brazing
H-FS-564 B66-10151 05

MOISTURE METERS
Cork is used to make tooling patterns and molds
HSC-625 B66-10328 01

MOISTURE METERS
Strippable grid facilitates removal of grid-surfaced conical workpiece from die
H-FS-716 B66-10334 01

MOISTURE METERS
Plug replaces weld filler as seal in complex casting
NU-0049 B66-10489 05

MOISTURE METERS
Isostatic compression process converts polyacrylamides into structural material
JPL-892 B67-10168 03

SUBJECT INDEX

Plastic preforms facilitate fabrication of welded cordwood electronic modules
LEWIS-90339 B68-10063 01

Improved molding process ensures plastic parts of higher tensile strength
LANGLEY-10033 B68-10132 05

Standards for compatibility of printed circuit and component lead materials
D-FS-14531 B68-10310 01

Compressible sleeve provides automatic centering for grinding or turning of cylinders
SAN-10021 B68-10318 05

Tools made of ice facilitate forming of soft, sticky materials
HSC-10262 B69-10199 05

Photomicroscopy
H-FS-14556 B69-10736 01

MOLECULAR CHAINS
New class of thermosetting plastics has improved strength, thermal and chemical stability
LEWIS-10108 B67-10197 03

MOLECULAR CHAINS
Production of crystalline polymers via liquid crystal monomers
HQ-10235 B69-10744 03

MOLECULAR COLLISIONS
Quantum mechanical calculations of reactive scattering cross sections in biomolecular encounters
H-FS-13594 B67-10527 03

MOLECULAR DIFFUSION
Large volume continuous countercurrent dialyzer has high efficiency
EQ-10055 B67-10395 04

MOLECULAR FLOW
Test device prevents molecular bounce-back
GSFC-82 B63-10546 03

MOLECULAR INTERACTIONS
Molecular radiation - Its application in physical measurements and analyses
H-FS-14616 B69-10562 02

MOLECULAR SPECTRA
Detection of molecular infrared spectra
HQ-10377 B69-10717 02

MOLECULAR SPECTROSCOPY
Submicron holes in thin films increase sampling range of mass spectrometers
JPL-EC-097 B66-10380 03

MOLECULAR STRUCTURE
The thermodynamic properties of the wustite phase are studied
ARG-10200 B68-10408 03

MOLECULAR STRUCTURE
The preparation, identification and properties of chlorophyll derivatives
ARG-10205 B68-10409 03

MOLECULAR STRUCTURE
Recent development in organic scintillators
ARG-10344 B69-10198 03

MOLECULAR WEIGHT
Irradiation improves properties of an aromatic polymer
LANGLEY-115 B65-10164 03

MOLECULAR WEIGHT
Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol
H-FS-14962 B69-10636 03

MOLECULAR WEIGHT
Large volume continuous countercurrent dialyzer has high efficiency
EQ-10055 B67-10395 04

I-826
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>BIBLIOGRAPHIC INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>IONOLYBDBNUI SALT ELECTROLYTES</td>
<td></td>
</tr>
<tr>
<td>Hydrated multivalent cations are new class of</td>
<td>Lewis-73</td>
</tr>
<tr>
<td>molten salt mixtures</td>
<td>B67-10033 01</td>
</tr>
<tr>
<td>Lithium-tellurium bismetallic cell has</td>
<td></td>
</tr>
<tr>
<td>increased voltage</td>
<td>ARG-10141</td>
</tr>
<tr>
<td>IONOLYBDBNUI SALT NUCLER REACTORS</td>
<td></td>
</tr>
<tr>
<td>Induction probe determines levels of</td>
<td></td>
</tr>
<tr>
<td>liquid metals</td>
<td>ARG-10348</td>
</tr>
<tr>
<td>IONOLYBDBNUI</td>
<td></td>
</tr>
<tr>
<td>New apparatus increases ion beam power density</td>
<td>Lewis-73</td>
</tr>
<tr>
<td></td>
<td>B67-10035 05</td>
</tr>
<tr>
<td>Titanium diaphragms make excellent aspltron</td>
<td></td>
</tr>
<tr>
<td>cathode support</td>
<td>GSPC-394</td>
</tr>
<tr>
<td>Silver plating ensures reliable diffusion</td>
<td></td>
</tr>
<tr>
<td>bonding of dielctrical metals</td>
<td>M-Ps-1975</td>
</tr>
<tr>
<td>Welding, bonding, and sealing of refractory</td>
<td></td>
</tr>
<tr>
<td>metals by vapor deposition</td>
<td>Lewis-123</td>
</tr>
<tr>
<td>Extrusion of small-diameter, thin-wall</td>
<td></td>
</tr>
<tr>
<td>tungsten tubing</td>
<td>B67-10032 03</td>
</tr>
<tr>
<td>Movable EF probe eliminates need for</td>
<td></td>
</tr>
<tr>
<td>calibration in plasma accelerator</td>
<td>Lewis-10127</td>
</tr>
<tr>
<td>Reaction of steed with polybdenium is studied</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ARG-295</td>
</tr>
<tr>
<td>Lightweight heater generates high temperatures</td>
<td></td>
</tr>
<tr>
<td>from low current</td>
<td>B67-10023 01</td>
</tr>
<tr>
<td>Graphite cloth facilitates vacuum</td>
<td></td>
</tr>
<tr>
<td>evaporation of silicon monoxide</td>
<td>M-Ps-19764</td>
</tr>
<tr>
<td>Nickel base alloy with improved stress</td>
<td></td>
</tr>
<tr>
<td>rupture properties</td>
<td>Lewis-10253</td>
</tr>
<tr>
<td>Study of high temperature bearing materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lewis-10252 03</td>
</tr>
<tr>
<td>High strength, superplastic superalloy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lewis-10005</td>
</tr>
<tr>
<td>BAZING ALLOYS</td>
<td></td>
</tr>
<tr>
<td>Brazing method produces solid-solution bond</td>
<td></td>
</tr>
<tr>
<td>between refractory metals</td>
<td>Lewis-212</td>
</tr>
<tr>
<td>Etching process mill Fe 14-8 Mo alloy steel</td>
<td></td>
</tr>
<tr>
<td>to precise tolerances</td>
<td>B60-10020 02</td>
</tr>
<tr>
<td>Nickel-base superalloys developed for high-</td>
<td></td>
</tr>
<tr>
<td>temperature applications</td>
<td>Lewis-226</td>
</tr>
<tr>
<td>Single-crystal semiconductor films grown on</td>
<td></td>
</tr>
<tr>
<td>foreign substrates</td>
<td>WOO-076</td>
</tr>
<tr>
<td>Bearing alloys with hexagonal crystal</td>
<td></td>
</tr>
<tr>
<td>structures provide improved friction and wear</td>
<td></td>
</tr>
<tr>
<td>characteristics</td>
<td>Lewis-320</td>
</tr>
<tr>
<td>High temperature alloy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lewis-10237</td>
</tr>
<tr>
<td>BOLYBDBNUI COMPOUNDS</td>
<td></td>
</tr>
<tr>
<td>White primer permits a corrosion-resistant</td>
<td></td>
</tr>
<tr>
<td>coating of minimum weight</td>
<td>H-Ps-304</td>
</tr>
<tr>
<td>Refractory-metal compound impregnation of</td>
<td></td>
</tr>
<tr>
<td>polystyrene-coated ethylene</td>
<td>Lewis-10733</td>
</tr>
<tr>
<td>BOLYBDBNUI DISULFIDES</td>
<td></td>
</tr>
<tr>
<td>Polybdenum disulfide mixtures make effective</td>
<td></td>
</tr>
<tr>
<td>high-vacuum lubricants</td>
<td>M-Ps-54</td>
</tr>
<tr>
<td>Improved polybdenum disulfide-silver motor</td>
<td></td>
</tr>
<tr>
<td>brushes have extended life</td>
<td>M-Ps-68</td>
</tr>
<tr>
<td>Lightweight hinged ballas restraint has</td>
<td></td>
</tr>
<tr>
<td>high load capacity</td>
<td>WOO-151</td>
</tr>
<tr>
<td>Polytetrafluoroethylene lubricates ball</td>
<td></td>
</tr>
<tr>
<td>bearings in vacuum environment</td>
<td>M-Ps-379</td>
</tr>
<tr>
<td>Dry film lubricant is effective at extreme</td>
<td></td>
</tr>
<tr>
<td>loads</td>
<td>B66-10025 03</td>
</tr>
<tr>
<td>Improved rolling element bearings provide</td>
<td></td>
</tr>
<tr>
<td>low torque and small temperature rise in</td>
<td></td>
</tr>
<tr>
<td>ultrahigh vacuum environment</td>
<td>Lewis-359</td>
</tr>
<tr>
<td>Machine tests slow-speed sliding friction</td>
<td></td>
</tr>
<tr>
<td>in high vacuum</td>
<td>B67-10034 05</td>
</tr>
<tr>
<td>One hundred anetronum niobium wire</td>
<td></td>
</tr>
<tr>
<td>Lewis-10120</td>
<td>B66-10279 03</td>
</tr>
<tr>
<td>Application of the solid lubricant</td>
<td></td>
</tr>
<tr>
<td>polybdenum disulfide by sputtering</td>
<td>Lewis-10544</td>
</tr>
<tr>
<td>A new solid lubricant</td>
<td></td>
</tr>
<tr>
<td>Lewis-10812</td>
<td>B65-10250 03</td>
</tr>
<tr>
<td>MOMENTS</td>
<td></td>
</tr>
<tr>
<td>Equations provide tabular information on</td>
<td></td>
</tr>
<tr>
<td>effects of uniform and variable loads on</td>
<td></td>
</tr>
<tr>
<td>thin, flat, circular plates</td>
<td>ARG-151</td>
</tr>
<tr>
<td>Study made of large amplitude fuel sloshing</td>
<td></td>
</tr>
<tr>
<td>M-Ps-12381</td>
<td>B67-10043 03</td>
</tr>
<tr>
<td>Computer program analyzes and designs</td>
<td></td>
</tr>
<tr>
<td>supersonic wing-body combinations</td>
<td>ARC-10141</td>
</tr>
<tr>
<td>A new solid lubricant</td>
<td></td>
</tr>
<tr>
<td>Lewis-10805</td>
<td>B69-10293 03</td>
</tr>
<tr>
<td>BOLYBDBNUI</td>
<td></td>
</tr>
<tr>
<td>Device enables measurement of moments of</td>
<td></td>
</tr>
<tr>
<td>inertia about three axes</td>
<td>GSPC-49</td>
</tr>
<tr>
<td>Switching mechanism senses angular acceleration</td>
<td></td>
</tr>
<tr>
<td>GSPC-462</td>
<td>B66-10158 01</td>
</tr>
<tr>
<td>Instrument calculates moments of inertia of</td>
<td></td>
</tr>
<tr>
<td>complex plane figures</td>
<td>Msc-628</td>
</tr>
<tr>
<td>Automatic system determines moments of</td>
<td></td>
</tr>
<tr>
<td>inertia of asymmetrical objects</td>
<td>B67-10037 01</td>
</tr>
<tr>
<td>BOLYBDBNUI</td>
<td></td>
</tr>
<tr>
<td>Ultra-sensitive transducer advances</td>
<td></td>
</tr>
<tr>
<td>micro-measurement range</td>
<td>ArC-26</td>
</tr>
<tr>
<td>Computer program MIND provides for steady</td>
<td></td>
</tr>
<tr>
<td>state thermal and flow analysis of multiple</td>
<td></td>
</tr>
<tr>
<td>parallel channels in heat generating solid</td>
<td>Mcc-10043</td>
</tr>
<tr>
<td>Axysymetric two-phase perfect gas</td>
<td></td>
</tr>
<tr>
<td>performance program</td>
<td>Msc-11774</td>
</tr>
<tr>
<td>A magnifying scratch-gage force transducer</td>
<td></td>
</tr>
</tbody>
</table>
Simple circuit provides reliable multiple signal average and reject capability

Monoatomic gases
Study to minimize hydrogen embrittlement of ultrahigh-strength steels

Electron beam welding of copper-Monel facilitated by circular magnetic shields

Capacitive system detects and locates fluid leaks

Two-light circuit continuously monitors ac ground, phase, and neutral wires

Solid state thermostat has integral probe and circuitry

Fuel cell serves as oxygen level detector

Auxiliary circuit enables automatic monitoring of BEGs

Electromechanical flowmeter accurately monitors fluid flow

Rugged pressed disc electrode has low contact potential

Photoelectric system continuously monitors liquid level

Radioactive tracer system detects oil contaminants in fluid lines

Capacitive system detects and locates fluid leaks

Mechanical continuously measures static and dynamic cable loads

Phonocardiograph system monitors heart sounds

Electropneumatic transducer automatically limits motor current

Two-light circuit continuously monitors ac ground, phase, and neutral wires

Solid state thermostat has integral probe and circuitry

Simple circuit provides reliable multiple signal average and reject capability

Phonocardiograph microphone is rugged and moistureproof

Sniffer used as portable hydrogen leak detector

System monitors discrete computer inputs

Solid state detectors monitor relay contacts

Plant respirometer enables high resolution of oxygen consumption rates

Optical monitor panel provides flexible test panel configurations

Security warning system monitors up to fifteen remote areas simultaneously

Resistor monitors transfer of liquid helium

Magnetoresistor monitors relay performance

Gas leak detector is simple and inexpensive

Low rate flow switch can be used for gas or liquid

Monitoring system determines amplitude and time of vibration channel peaks

Monitor assures availability and quality of communication channels

Test instrumentation evaluates electrostatic hazards in fluid system

Means for improving apparent resolution of television

Closed circuit TV system monitors welding operations

A phonocardiogram simulator

IR vidicon scanner monitors many test points

Improved head-controlled TV system produces high-quality remote image

Portable spectrometer monitors inert gas shield in welding process

Multiple meter monitoring circuits served by single alarm

Continuous wave detector has wide frequency range

Study made of acoustical monitoring for mechanical checkout
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>MONOMERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material fatigue data obtained by card-programmed hydraulic loading system</td>
<td>B67-10430 02</td>
</tr>
<tr>
<td>Automatic transducer switching provides accurate wide range measurement of pressure differential</td>
<td>B67-10540 01</td>
</tr>
<tr>
<td>Instrumentation monitors transported material through variety of parameters M-PS-12938</td>
<td>B67-10585 01</td>
</tr>
<tr>
<td>Multiplex television transmission system MSC-11959</td>
<td>B67-10576 01</td>
</tr>
<tr>
<td>Automatic design of optical systems by digital computer</td>
<td>B67-10632 06</td>
</tr>
<tr>
<td>Gage monitors quality of cross-wire resistance welds</td>
<td>B68-10002 01</td>
</tr>
<tr>
<td>Monitor senses amount of contamination deposited on surfaces GSPC-10212</td>
<td>B68-10089 01</td>
</tr>
<tr>
<td>Automated patient monitoring system M-PS-14552</td>
<td>B68-10131 01</td>
</tr>
<tr>
<td>Deflection circuit monitors force on object under water NUC-10147</td>
<td>B68-10147 01</td>
</tr>
<tr>
<td>Silicon solar cell monitors high temperature furnace operation NUC-10363</td>
<td>B68-10148 01</td>
</tr>
<tr>
<td>New electrical plethysmograph monitors cardiac output MSC-11447</td>
<td>B68-10220 01</td>
</tr>
<tr>
<td>Vacuum probe sampler removes micron-sized particles from surfaces SAN-10003</td>
<td>B68-10231 04</td>
</tr>
<tr>
<td>Recharge unit provides for optimum recharging of battery cells GSPC-10668</td>
<td>B68-10273 01</td>
</tr>
<tr>
<td>Automatic, nondestructive test monitors in-process weld quality M-PS-14996</td>
<td>B68-10333 01</td>
</tr>
<tr>
<td>Automatic system nondestructively monitors and records fatigue crack growth LANGLEY-10091</td>
<td>B68-10379 01</td>
</tr>
<tr>
<td>Compact monitoring and control console for pressurized gas bottles M-PS-14874</td>
<td>B68-10401 05</td>
</tr>
<tr>
<td>Nosepiece respiration monitor MSC-11536</td>
<td>B68-10438 01</td>
</tr>
<tr>
<td>Past framing cameras provide high-speed multi-channel data recording ARG-10252</td>
<td>B69-10102 02</td>
</tr>
<tr>
<td>Low-cost voltage-level detector LEWIS-10885</td>
<td>B69-10217 01</td>
</tr>
<tr>
<td>Time-shared Cathode Ray Tube MSC-12238</td>
<td>B69-10243 06</td>
</tr>
<tr>
<td>Continuous analysis of nitrogen dioxide in gas streams of plants ARG-10356</td>
<td>B69-10254 03</td>
</tr>
<tr>
<td>Automatic bird watcher ARG-10342</td>
<td>B69-10286 02</td>
</tr>
<tr>
<td>New passive telemetry system HQ-10214</td>
<td>B69-10312 01</td>
</tr>
<tr>
<td>An infrared television system for hydrogen flame detection KSC-10368</td>
<td>B69-10354 01</td>
</tr>
<tr>
<td>An electronic circuit for sensing malfunctions in test instrumentation KSC-10209</td>
<td>B69-10392 01</td>
</tr>
<tr>
<td>Adjustable thermal <strong>tree</strong> MSC-15556</td>
<td>B69-10484 01</td>
</tr>
<tr>
<td>Rate of heat extraction controller for environmental control HQ-10310</td>
<td>B69-10516 01</td>
</tr>
<tr>
<td>Estimation of signal-to-noise ratios IBM-05254</td>
<td>B69-10557 01</td>
</tr>
<tr>
<td>IBM-1620 monitor 2-D disk-storage subroutines ARG-10376</td>
<td>B69-10618 01</td>
</tr>
<tr>
<td>Versatile telemonitoring system ARG-10339</td>
<td>B69-10655 01</td>
</tr>
<tr>
<td>Deposition monitor and control NPS-10706</td>
<td>B69-10722 01</td>
</tr>
<tr>
<td>System converts slow-scan to standard fast-scan TV signals GSPC-90534</td>
<td>B69-10748 01</td>
</tr>
</tbody>
</table>

**KEYS**
- Test monkeys anesthetized by routine procedure HQ-19 B65-10332 04
- Monochromatic Radiation Computer programs simplify optical system analysis GSPC-306 B65-10093 01
- Unique construction makes interferometer insensitive to mechanical stresses JPL-725 B65-10295 02
- Instrument performs nondestructive chemical analysis, data can be telemetered JPL-SC-078 B65-10317 01
- Fresnel diffraction plates are simple and inexpensive M-PS-12731 B67-10297 02
- Measuring coplanarity of surfaces MSC-12048 B67-10371 02
- Ellipsoidal-mirror reflectometer accurately measures infrared reflectance of materials GSPC-566 B67-10444 01
- Proposed method of rotary dynamic balancing by laser NPS-12422 B67-10452 02
- Monochromatization Use of photographs speeds inspection of printed-circuit boards MSC-72 B69-10118 01
- Neutron diffractometer allows both magnetic and crystallographic analyses ARG-191 B67-10131 02
- Monochromators Fluorescent photography of spray droplets using a laser light source LEWIS-10777 B69-10122 02
- Monocques Structures Computer program for determination of natural frequencies of closed spherical sandwich shells MSC-1246 B67-10279 06
- Monomers Valve seat pores sealed with thermosetting monomer M-PS-900 B66-10322 03

Arylenesiloxane copolymers
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems</td>
</tr>
<tr>
<td>Advanced mission analysis programs</td>
</tr>
<tr>
<td>Monte Carlo simulation by computer for life-cycle costing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monopole mass spectrometer with improved sensitivity and reduced background</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenna configurations provide polarization diversity</td>
</tr>
<tr>
<td>Antenna simulator permits preinstallation system checkout</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLE ANTENNAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit improvement produces monostable multivibrator with load-carrying capability</td>
</tr>
<tr>
<td>Brushless dc motor uses electron beam switching tube as commutator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLE ANTENNAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complementary monostable circuits achieve low power drain and high reliability</td>
</tr>
<tr>
<td>Automatic patient respiration failure detection system with wireless transmission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer program calculates monotonic maximum likelihood estimates using method of reversals</td>
</tr>
<tr>
<td>Computer program uses Monte Carlo techniques for statistical system performance analysis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep gamma ray penetration in thick shields</td>
</tr>
<tr>
<td>Performance analysis of electrical circuits</td>
</tr>
<tr>
<td>Monte Carlo direct view factor and generalized radiative heat transfer programs</td>
</tr>
<tr>
<td>The response of monoenergetic gamma rays in finite media are investigated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photographic method measures particle size and velocity in fluid stream</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means for improving apparent resolution of television</td>
</tr>
<tr>
<td>Aerial-image enables diagrams and animation to be inserted in motion pictures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NONOPOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-balancing beam permits safe, easy load handling under overhang</td>
</tr>
<tr>
<td>Quick-acting clutch disengages idle drive motor</td>
</tr>
</tbody>
</table>
SUBJECT INDEX

GSFC-143 B64-10028 05
Fluid pressure used to test turbopump bearings NUC-0001 B65-10024 03
Fuel and oxidizer valve assembly employs single solenoid actuator MSC-1046 B66-10648 05
Standard surface grinder for precision machining of thin-wall tubing ARG-1046 B67-10400 05
Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates NPO-10316 B67-10418 05
Concept for cryogenic liquid reclamation system BPO-10322 B67-10420 02
Conceptual hermetically sealed elbow actuators H-FS-14710 B68-10330 05
Flow angle sensor and readout system LEWIS-90298 B69-10050 01
Helical tape forming device GSFC-10830 B69-10137 05
Preferred-orientation analysis of polycrystalline materials BPO-10604 B69-10336 02
Stress-testing of the throat of a rocket's nozzle NPO-10311 B69-10358 05
Automatic leveling and equalizing hoist device H-FS-16549 B69-10514 05
Improved camera for better X-ray powder photographs H-Q-10429 B69-10537 01
MOUNTING
Modular chassis simplifies packaging and interconnecting of circuit boards JPL-236A B63-10174 01
Lightweight universal joint transmits both torque and thrust JPL-375 B63-10236 05
Break-up of metal tube makes one-time shock absorber, bars rebound LANGLEY-1A B63-10304 05
Apparatus alters position of objects to facilitate demagnetization GSFC-234 B64-10277 05
Mounting for diodes provides efficient heat sink H-FS-197 B64-10283 01
Improved holder protects crystal during high acceleration and impact JPL-463 B65-10037 05
Thermistor connector assembly increases accuracy of measurements LANGLEY-62 B65-10045 01
Adhesive-backed terminal board eliminates mounting screws MSC-173 B65-10396 01
Piggy-back mounting would increase microcircuit packaging density MSC-12059 B66-10118 01
Global angle sensor GSFC-10305 B66-10315 01
Gun facilitates adhesive bonding of studs

MULTIPATH TRANSMISSION

to surfaces H-FS-20299 B69-10009 05
Mounting method improves electrical and vibrational characteristics of screen electrodes H-FS-20169 B69-10097 01
Technique for anchoring fasteners to honeycomb panels LEWIS-10888 B69-10265 03
Remote control thermal actuator LEWIS-10873 B69-10307 01
Precision mounting for instrument optical elements provided by polyimide bonding H-FS-20293 B69-10310 05
Shock-absorbent mountings for bearings BPO-10626 B69-10331 05
Investigation of the development of cracks in solder joints H-FS-20444 B69-10807 01

MOUSE
Mousepiece adapter for pipettes protects mouth from harmful liquids LANGLEY-47 B65-10043 03
Experimental study and evaluation of radioprotective drugs ARG-10196 B68-10320 04

MOLOVING TARGET INDICATORS
An investigation of phase-lock loop swept-frequency synchronization ARG-856 B66-10823 01

MULTILAYERS
Improved thermal insulation materials made of foamed refractory oxides H-FS-735 B66-10288 03

MULTICANAL COMMUNICATION
Multichannel implantable telemetry system ARC-10083 B68-10065 01
Diversity RF receiving system with improved phase-lock characteristics IGS-01222 B68-10068 01
Past framing cameras provide high-speed multi-channel data recording ARG-10252 B69-10102 02
Direct determination of lead-210 by liquid-scintillation counting ARG-10462 B69-10611 03
Versatile telemonitoring system ARG-10339 B69-10655 01

MULTILAYER INSULATION
Reflective insulator layers separated by bonded silica beads MSC-215 B66-10070 03
Inexpensive cryogenic insulation replaces vacuum jacketed line NUC-10061 B67-10264 02
Development of dual solid cryogens for high reliability refrigeration system GSFC-10186 B67-10644 02
Design of multilayer insulation systems ARC-10166 B69-10615 05

MULTIPATH TRANSMISSION
Improved VHF direction finding system H-FS-20443 B69-10378 01
MULTIPHASE FLOW

Signal generator converts direct current to multiphase supplies
MSC-11043 B67-10368 01
Flowmeter determines mix ratio for viscous adhesives
N-PS-2308 B67-10378 01

MULTIPLEXING

Microphone multiplex system provides multiple outlets from single source
GSFC-426 B66-10308 01
Security warning system monitors up to fifteen remote areas simultaneously
KSC-66-39 B66-10548 01
Multiplexer uses insulated gate-field effect transistors
N-PS-13096 B67-10396 01
Seismographic recording of large rocket engine operation
N-PS-20545 B69-10756 01

MULTIPLEXER

Binary system generates sidereal rate from standard solar rate
GSFC-190 B64-10200 01
Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
MSC-781 B66-10429 01
Stress calculator speedily converts strain data
N-PS-2021 B67-10182 03
Improved electromechanical master-slave manipulator
ARS-10027 B68-10372 05
Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices
ARS-10445 B69-10415 02

MULTIPLEXERS

Computer determines high-frequency phase stability
GSFC-113 B63-10555 01
Precision gage measures ultrahigh vacuum levels
GSFC-114 B63-10597 01
Digital cardiometer computes and displays heartbeat rate
MSC-93 B64-10258 01
Variable load automatically tests dc power supplies
GSFC-291 B65-10165 01
Photoresistance analog multiplier has wide range
GSFC-360 B65-10287 01
Circuit multiplies pulse width modulation, exhibits linear transfer function
EQ-56 B67-10055 01
Improved d& voltage multiplier
N-PS-14042 B68-10074 01
Conceptual hermetically sealed elbow actuator
N-PS-14710 B68-10300 05
System measures arc energy dissipated in relay contact cycling
N-PS-14541 B68-10312 01
System measures response time of photomultiplier tubes
LEWIS-10437 B68-10382 01

SUBJECT INDEX

A 35 GHz solid state transmitter/driver
H-PS-20152 B68-10545 01
Device for diode tuning in a stripline varactor harmonic multiplier
N-PS-20153 B69-10013 01
Automatic calorimetry system monitors RF power
N-PS-11033 B69-10384 01

MULTIPOL

An improved atomic hydrogen frequency and time standard
GSFC-10706 B69-10341 02
Multi-stage rocket vehicles
Shock and vibration response of multistage structure
N-PS-18972 B68-10353 05

MULTIVIBRATORS

Temperature-sensitive network drives astable multivibrator
GSFC-137 B63-10609 01
Inexpensive, stable circuit measures heart rate
MSC-95 B65-10010 01
Stepping motor drive circuit designed for low power drain
GSFC-198 B65-10026 01
Simulator produces physiological waveforms
MSC-94 B65-10091 01
Variable frequency transistor inverters use multiple core transformers
GSFC-183 B65-10119 01
Variable frequency magnetic multivibrator generates stable square-wave output
GSFC-20-21 B65-10124 01
Auxiliary circuit enables automatic monitoring of EEG's
MSC-106 B65-10142 01
Digital-output cardiometer measures rapid changes in heartbeat rate
MSC-133 B65-10143 01
Solid-state switching used to speed up capacitive integrator
LANGLEY-104 B65-10159 01
PCB magnetic tape system efficiently records and reproduces data
GSFC-375 B65-10311 01
Frequency divider is free of spurious outputs
GSFC-308 B65-10334 05
Frequency discriminator with binary output eliminates tuned circuits
N-PS-376 B65-10349 01
Circuit exhibits power efficiency greater than 75 percent
MSC-254 B66-10034 01
Miniature bioelectric device accurately measures and telemeters temperature
ARC-52 B66-10057 01
Electronic phase-locked-loop speed control system is stable
JPL-SC-084 B68-10232 01
Electronic circuit delivers pulse of high internal stability
MSC-673 B66-10501 01
Prerecautator feedback circuit utilizes Light Actuated Switch
N-PS-1180 B66-10542 01
Security warning system monitors up to...
fifteen remote areas simultaneously
KSC-66-39 B66-10548 01

Miniature telemetry system accurately
measures pressure
ARC-74 B66-10624 01

Automatic system determines moments
of inertia of asymmetrical objects
M-PS-1769 B66-10636 01

Laboratory pulse modulator uses minority
carrier storage diodes
M-PS-2442 B67-10226 01

Glow discharge density sensor probe life is
extended
M-PS-1707 B67-10229 01

A phonocardiogram simulator
KSC-67-94 B67-10239 01

An efficient, temperature-compensated
subcarrier oscillator
JPL-SC-091 B67-10251 01

A calibration means for spectrum analyzers
MSC-10987 B67-10254 01

Signal generator converts direct current
to multiphase supplies
MSC-11043 B67-10368 01

Circuit automatically calibrates flowmeter
against liquid-level gage reference
M-PS-2198 B67-10376 01

Blood pressure reprogramming adapter
assists signal recording
MSC-265 B67-10475 01

Temperature-stabilized, triggerable
microelectronic astable multivibrator
starts reliably
MSC-1173 B67-10624 01

One-shot pulse shaper circuit
XGS-11379 B68-10012 01

Schmitt trigger multivibrator
MSC-10955 B69-10143 01

Linear voltage-to-frequency converter
GSPC-10546 B69-10220 01

Foot-operated cell-counter
ARG-10315 B69-10351 01

An unconventional magnetically-coupled
multivibrator
HQ-10226 B69-10480 01

Constant-frequency, variable-duty-cycle
multivibrator
XGS-10033 B69-10512 01

MUSCLES
Automated urinalysis technique determines
concentration of creatine and creatinine by
colorimetry
ARG-10149 B67-10245 04

MUTATIONS
Investigation of temperature dependence of
development and aging.
ARG-10145 B69-10022 04

NYLON (TRADEMARK)
Insulation for cryogenic tanks has reduced
thickness and weight
M-PS-326 B66-10183 02

O-rings with mylar back-up provide high-
pressure cryogenic seal
M-PS-603 B66-10278 05

Leak locator for vacuum-jacketed pipelines
eliminates need for removal of outer jacket
M-PS-688 B66-10412 01

Nylon film eliminates silk screening of
equipment panels
MSC-798 B66-10555 05

Aluminized thin-window proportional-counter
tube is stronger, more responsive in long
wavelength region
JPL-689 B67-10015 01

Inexpensive cryogenic insulation replaces
vacuum-jacketed line
NUC-10061 B67-10264 02

N-P-N JUNCTIONS
Two-stage emitter follower is temperature
stabilized
MSC-20 B63-10493 01

High efficient square-wave oscillator
operator at high power levels
GSPC-112 B63-10554 01

Transistor voltage comparator performs own
sensing
GSPC-228 B65-10028 01

Synchronized pulse generator needs no external
power
GSPC-274 B65-10072 01

Low-power ring counter drives high-level
loads
GSPC-431 B66-10106 01

Electrically controlled optical latch and
switch requires less current
JPL-SC-111 B66-10414 01

Semiconductors can be tested without
removing them from circuitry
M-PS-1163 B66-10447 01

Equivalent circuit for a field effect
transistor established for computer
simulation
M-PS-1752 B66-10690 01

N-TYPE SEMICONDUCTORS
Radiation used to temperature compensate
semiconductor strain gages
LANGLEY-207 B66-10186 02

Solar cell submodule design facilitates
assembly of lightweight arrays
JPL-728 B66-10231 02

Simplified method introduces drift fields
into cells
GSPC-572 B67-10102 03

Thin film process forms effective electrical
contacts on semiconductor crystals
M-PS-2343 B67-10142 01

Process facilitates photosist mask
alignment on SiC crystals
M-PS-2394 B67-10144 01

Efficient millimeter wave 1140 GHz diode
for harmonic power generation
HQ-61 B67-10166 01

Silicon carbide diode for increased light
output
M-PS-20063 B67-10096 01

NYPHULANE
Technique for ultrasonic cleaning with
volatile solvents eliminates need for
hoods or condensers
MSC-15611 B69-10552 03
BAVIGATION

Conceptual nonorthogonal gyro configuration for guidance and navigation
MSC-11363 B67-10433 01

BAVIGATION AIDS

Improved magnetometer uses toroidal gating coil
GSPC-249 B65-10103 01

GMS/local-time conversion chart
GSPC-10521 B67-10548 01

Ring laser angle encoder
MSC-13099 B69-10115 01

A polar graphic method for determining the attitude of rocket vehicles
GSPC-10860 869-10597 01

Automatic star-horizon angle measurement system
MSC-11565 B69-10597 01

BAVIGATION INSTRUMENTS

Optical automatic gain channel
I-PS-12518 B66-10657 01

Developmental instrument supplies accurate attitude and attitude-rate data
HQ-57 B66-10607 01

Three-axis attitude and direction reference instrument has only one moving part
M-PS-1819 B66-10644 01

Hermetically sealed vibration damper
MSC-10559 B69-10634 05

NEAR INFRARED RADIATION

Solid-state laser transmitter is amplitude modulated
MSC-12 I-PS-12538 01

NEEDLES

Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle
JPL-545 B63-10517 05

Hollow needle used to cut metal honeycomb structures
MSC-486 B66-10244 05

Modified algosimeter provides accurate depth measurements
MSC-616 B66-10647 04

Self-sealing closure enables access to several fluid containers
NPO-10123 B67-10207 04

Device enables calibration of microphones at high sound pressure levels
M-PS-11980 B67-10336 01

Sealed container sampling device
GSPC-10650 B69-10682 03

NEGATIVE CONDUCTANCE

Logic circuit detects both present and missing negative pulses in superimposed wave trains
M-PS-12518 B67-10565 01

NEGATIVE FEEDBACK

Electrometer preamplifier has drift correction feedback
JPL-SC-074 B65-10267 01

Frequency discriminator with binary output eliminates tuned circuits
M-PS-376 B65-10349 01

Feedback loop compensates for rectifier nonlinearity
M-PS-384 B66-10382 01

Negative feedback system reduces pump oscillations

Subject Index

M-PS-1852 B67-10064 05

Integrator can easily be set and reset with an electronic switch
ARC-10002 B67-10135 01

Positive and negative output circuits
LEWIS-10715 B69-10151 01

Current-switching technique for analog pulse circuits
ARC-10479 B69-10484 01

NEGATIVE RESISTANCE CIRCUITS

Miniature backward-diode pressure sensor features stability and low power consumption
ERC-10229 B69-10650 01

NEODIUM ALLOYS

Simple technique determines ac properties of hard superconductive materials
M-PS-1818 B66-10657 02

NEON

Laser Doppler flowmeter measures gas velocity
MSC-1747 B66-10693 02

Fresnel diffraction plates are simple and inexpensive
M-PS-12731 B67-10297 02

Rectangular-bore, high-gain laser plasma tube
HQ-10234 B69-10193 02

High-temperature, gas-filled ceramic rectifiers, thyratrons, and voltage-reference tubes
LEWIS-90271 B69-10376 01

Two-color holography
HQ-10349 B69-10662 02

NEON isotopes cancel errors in gas laser
MSC-1747 B66-10583 02

NEOPLASMS

Neutron therapy of cancer
ARS-10310 B69-10203 04

NEPHELOMETERS

Improved atmospheric particle analyzer
ERC-33 B67-10231 01

NEPTUNIUM

Study of actinide chemistry in saturated potassium fluoride solution
ARS-10204 B69-10004 03

NETS

Explosive force of primacord grid forms large sheet metal parts
M-PS-316 B66-10014 05

NETWORK ANALYSIS

Zener diode function generator requires no external reference voltage
JPL-0031 B65-10013 01

Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MSC-989 B66-10619 01

Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks
NPO-10031 B67-10319 06

GERT EXCLUSIVE-OR combining paths and loops of electrical networks
ERC-10206 B68-10435 06

Performance analysis of electrical circuits /PARK/
M-PS-15001 B68-10448 06
**SUBJECT INDEX**

**GERT** simulation program for GERT network analysis
ERC-10209 B66-10457 06

Locating **sneak paths** in electrical circuitry
ERC-10209 B66-10565 01

Visual task analysis /VISTA/
ERC-10209 B66-10394 06

Punch-magnet delay eliminated by modification of circuit
ERC-10209 B66-10416 01

 Locating **sneak paths** in electrical circuitry

**NEUTRON SYNTHESIS**

Boron trifluoride nuclear detector preamplifier uses single-cable connection
LEWIS-178 B65-10255 01

Computer program for network synthesis by frequency response fit
ERC-10209 B66-10406 06

Active rc networks of low sensitivity for integrated circuit transfer function
ERC-10209 B66-10210 01

Technique developed for measuring transmittance of optical birefringent
circuits
ERC-10209 B66-10260 02

Study of optimum discrete estimators in measurement analysis
ERC-10209 B66-10398 02

GERT EXCLUSIVE-OR combining paths and loops of electrical networks
ERC-10209 B66-10435 06

**NETWORKS**

High frequency wide-band transformer uses coax to achieve high turn ratio and flat
response
ARG-10333 B66-10600 01

Accuracy of laser measurements improved by pulse autocorrelator electronic system
MSC-10033 B66-10338 01

**NEUTRONS**

Review of research and development in fluid logic elements
ERC-10209 B66-10438 01

**NEUTRAL PARTICLES**

Primary radical yields in pulse irradiated alkaline aqueous solution
ARG-10322 B66-10167 02

**NEUTRON ABSORBERS**

Calculation of resonance neutron absorption in two-region problems /the GAROL code/
NUC-10045 B66-10223 06

Alumina-titanium hydride-boron carbide composite provides lightweight neutron
shield material
NUC-10069 B66-10265 03

Portable, high intensity isotopic neutron source provides increased experimental
accuracy
ARG-90250 B66-10243 02

**NEUTRON ACTIVATION ANALYSIS**

Nondestructive test method accurately sorts mixed bolts
ERC-10209 B66-10574 01

Neutron activation analysis traces copper artifacts to geographical point of origin
ARG-119 B66-10036 02

Status of ultrachemical analysis for semiconductor materials
ERC-10209 B66-10138 03

**WEAR STUDIES**

Wear studies made of slip rings and gas bearing components
ERC-10209 B67-10403 05

**NEUTRON ACTIVATION**

Compilation of detection sensitivities in thermal-neutron activation
ARG-10068 B67-10641 03

Detection sensitivities in 3-8 MeV neutron activation
ARG-10210 B68-10298 02

Separation of traces of metal ions from sodium matrices
ARG-10341 B69-10168 03

Zone purification of potassium chloride
ARG-10077 B69-10241 03

**NEUTRON BEAMS**

Neutron diffractometer allows both magnetic and crystallographic analyses
ERC-10069 B67-10131 02

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
NUC-10126 B67-10536 06

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass
velocity filters for neutrons
ARG-10220 B69-10211 02

**NEUTRON COUNTERS**

Boron trifluoride nuclear detector preamplifier uses single-cable connection
LEWIS-178 B65-10255 01

Detection of entrapped moisture in honeycomb sandwich structures
ECC-1103 B67-10116 01

Current pulse amplifier transmits detector signals with minimum distortion and
temperature
NUC-10055 B67-10347 01

Neutron detector simultaneously measures fluence and dose equivalent
ARG-10071 B67-10597 02

Detection sensitivities in 3-8 MeV neutron activation
ARG-10210 B68-10298 02

Improved pulse shape discriminator for fast neutron-gamma ray detection system
ARG-10515 B69-10461 01

Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ARG-10261 B69-10621 01

**NEUTRON CROSS SECTIONS**

GARRET program
NUC-10243 B69-10433 06

Molybdenum-uranium alloys with voids of predetermined size and total volume
ARG-10490 B69-10641 03

**NEUTRON DIFFRACTION**

Neutron diffractometer allows both magnetic and crystallographic analyses
ERC-10069 B67-10131 02

**NEUTRON DISTRIBUTION**

Synthesis of calculational methods for design and analysis of radiation shields for
nuclear rocket systems
ERC-10209 B66-10447 06

**NEUTRON FLUX DENSITY**

A fast-neutron spectrometer of advanced design
ERC-10209 B66-10555 01

**NEUTRON IRRADIATION**

Alpha particle backscattering measurements
used for chemical analysis of surfaces
ARG-116 B67-10186 03

Radiation counting technique allows density measurement of metals in high-pressure/ high-temperature environment
ARG-124 B67-10316 02

Neutron irradiation of Au-241 effectively produces curium
ARG-10030 B67-10501 03

SOD-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield
WUC-10142 B67-10537 06

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes
WUC-10143 B67-10665 06

Procedure developed for reporting fast-neutron exposure
ARG-10035 B68-10190 02

Resistivity measurements of neutron-irradiated pure metals and Al-Zn alloys
ARG-10108 B68-10200 03

Neutron therapy of cancer
ARG-10310 B69-10203 04

NEUTRON PHYSICS
Multichannel pulse height analyzer is inexpensive, features low power requirements
BNW-10020 B67-10258 01

Practical new method of measuring thermal-neutron fluence
WUC-10066 B67-10352 02

NEUTRON SCATTERING
Computer program VARI-QUIR 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations
NWC-10052 B67-10345 06

Computer program /P1-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas
WUC-10141 B67-10678 06

Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide
ARG-10154 B68-10293 02

Computer program calculates the effective temperature for a crystalline solid /DETS/
WUC-10161 B69-10036 06

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
ARG-10220 B69-10211 02

NEUTRON SOURCES
Detection of entrapped moisture in honeycomb sandwich structures
MSC-1103 B67-10116 01

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
ARG-184 B67-10202 05

Portable, high intensity isotopic neutron source provides increased experimental accuracy
ARG-90250 B68-10243 02

Dual-mode operation of a neutron source, a concept
EQ-10106 B69-10240 02

Manganese-56 coincidence-counting facility precisely measures neutron-source strength

NEUTRON PHYSICS
SPECTRA
Low scatter lightweight fission spectrometer constructed for biological research
ARG-10039 B68-10174 02

Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectroscopy
ARG-10190 B69-10005 02

NEUTRON SPECTROMETERS
A fast-neutron spectrometer of advanced design
M-FS-1664 B66-10555 01

Four pi-recell proportional counter used as neutron spectrometer
ARG-10101 B68-10326 02

NEUTRENS
Status of ultrachemical analysis for semiconductors
M-FS-2254 B67-10138 03

Uranyl phthalocyanines show promise in the treatment of brain tumors
ARG-100 B67-10188 04

Training course for radiation safety technicians
ARG-216 B67-10477 02

Neutron therapy of cancer
ARG-10310 B68-10230 04

NEWTON-RAPSHON METHOD
Computer program reduces calculation time of normal response functions
M-FS-1517 B67-10108 01

Computer program for mass optional solutions of some endpoint trajectory problems
M-FS-12976 B67-10310 06

Computer program for network synthesis by frequency response fit
M-FS-12686 B67-10406 06

Computer program provides steady state analysis for liquid propellant propulsion systems
MSC-10064 B67-10414 06

Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
LANGLEY-10090 B67-10509 06

Computer program offers new method for constructing periodic orbits in nonlinear dynamical systems
M-FS-14654 B68-10217 06

HICOF - Newton-Raphson calculus of variation with automatic transversalities
M-FS-14456 B68-10232 06

Buckling of Shells of Revolution /BOSOR/ with various wall constructions
LANGLEY-10441 B69-10300 06

NEWTON THEORY
Real fluid properties of normal and parahydrogen
LEWIS-10458 B68-10361 06

NICHEROME (TRADEMARK)
Heater decomposes oil backstreaming from high-vacuum pumps
GSPC-356 B65-10224 02

Viscosity and density of methanol/water mixtures at low temperatures
M-FS-14991 B68-10274 03

Induction probe determines levels of liquid metals

I-436
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>NICKEL ALLOYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARG-10348</td>
<td>B69-10256 03</td>
</tr>
<tr>
<td>B69-10256</td>
<td>B69-10780 03</td>
</tr>
<tr>
<td>BICKEL ALLOYS</td>
<td></td>
</tr>
<tr>
<td>NICKEL</td>
<td></td>
</tr>
<tr>
<td>ellipsoidal optical reflectors reproduced by electroforming</td>
<td>GSPC-92</td>
</tr>
<tr>
<td>Forming blocks speed production of strain gage grids</td>
<td>LEWIS-182</td>
</tr>
<tr>
<td>Efficient thin film heating element takes minimum space</td>
<td>GSPC-209</td>
</tr>
<tr>
<td>Thermoelectric elements diffusion-bonded to tungsten electrodes</td>
<td>GSPC-346</td>
</tr>
<tr>
<td>Regenerative fuel cell combines high efficiency with low cost</td>
<td>M-FS-20566</td>
</tr>
<tr>
<td>Brazing method produces solid-solution bond between refractory metals</td>
<td>LEWIS-212</td>
</tr>
<tr>
<td>Tungsten wire and tubing joined by nickel brazing</td>
<td>M-FS-394</td>
</tr>
<tr>
<td>Pressure vessels fabricated with high-strength wire and electroformed nickel</td>
<td>M-FS-580</td>
</tr>
<tr>
<td>Submicron metal powders produced by ball milling with grinding aids</td>
<td>LEWIS-188</td>
</tr>
<tr>
<td>Metal Oxide Silicon /MOS/ transistors protected from destructive damage by wire</td>
<td>M-FS-65</td>
</tr>
<tr>
<td>Xenon forms stable compound with fluorine</td>
<td>M-FS-4</td>
</tr>
<tr>
<td>Silver-base ternary alloy proves superior for slip ring lead wires</td>
<td>M-FS-1540</td>
</tr>
<tr>
<td>Quality control criteria for acceptance testing of cross-wire welds</td>
<td>M-FS-627</td>
</tr>
<tr>
<td>Composites of porous metal and solid lubricants increase bearing life</td>
<td>LEWIS-307</td>
</tr>
<tr>
<td>Aluminized thin-window proportional-counter tube is stronger, more responsive in long wavelength region</td>
<td>JPL-565</td>
</tr>
<tr>
<td>Simple pump maintains liquid helium level in cryostat</td>
<td>M-FS-1763</td>
</tr>
<tr>
<td>Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam</td>
<td>M-FS-226</td>
</tr>
<tr>
<td>Evaluation of high temperature stranded hookup wire</td>
<td>M-FS-2478</td>
</tr>
<tr>
<td>Study made of Hastelloy nickel technology</td>
<td>M-FS-2054</td>
</tr>
<tr>
<td>Fuel cell life improved by metallic sister activation after electrode assembly welding</td>
<td>M-FC-10965</td>
</tr>
<tr>
<td>Study of crevice-galvanic corrosion of aluminum</td>
<td>NICKEL ALLOYS</td>
</tr>
<tr>
<td>Nickel base alloy with improved stress rupture properties</td>
<td>LEWIS-10283</td>
</tr>
<tr>
<td>Study of fluoride corrosion of nickel alloys</td>
<td>ARG-10224</td>
</tr>
<tr>
<td>Base transport mechanisms in porous fuel cell electrodes</td>
<td>NC-10343</td>
</tr>
<tr>
<td>Aggregation of metallochlorophyll - Examination by spectroscopy</td>
<td>ARG-10273</td>
</tr>
<tr>
<td>Reduction by monovalent zinc, cadmium, and nickel cations</td>
<td>ARG-10328</td>
</tr>
<tr>
<td>Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid</td>
<td>GSPC-10764</td>
</tr>
<tr>
<td>Parameters for good welding of copper to nickel</td>
<td>K-FS-20535</td>
</tr>
<tr>
<td>Quality-weld parameters for microwelding techniques and equipment</td>
<td>K-FS-2084</td>
</tr>
<tr>
<td>Improved high-temperature-strength nickel-base superalloy</td>
<td>LEWIS-10874</td>
</tr>
</tbody>
</table>

**NICKEL ALLOYS**

- Improved variable-reluctance transducer measures transient pressures
  - Largeley-10 | B63-10321 01
- Forging blocks speed production of strain gage grids
  - LEWIS-182 | B65-10009 05
- Solid-film lubricant is effective at high temperatures in vacuum
  - LEWIS-228 | B66-10087 03
- Cryogenic trap valve has no moving parts
  - K-FS-487 | B66-10136 05
- Nickel-base superalloys developed for high-temperature applications
  - LEWIS-226 | B66-10222 03
- Large seals fabricated from small segments reduce procurement lead time
  - K-FS-1117 | B66-10464 05
- Study made of corrosion resistance of stainless steel and nickel alloys in nuclear reactor superheaters
  - ARG-230 | B67-10051 03
- Erosion joint quality tested electromagnetically
  - K-FS-12795 | B67-10333 01
- Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures
  - MFC-10084 | B67-10349 03
- Study made of procedures for externally loading and corrosion testing stress corrosion specimens
  - K-FS-12064 | B67-10451 03
- Copper and nickel adherently electroplated on titanium alloy
  - K-FS-19552 | B67-10532 03
- High strength nickel-base alloy with improved oxidation resistance up to 2200 degrees F
  - LEWIS-10115 | B68-10094 03

I-437
Study reveals effect of aluminum on saturation moment of Fe-Wi alloys

Weld microfissuring in Inconel 718 minimized by minor elements

Inspection criteria ensure quality control of parallel gap soldering

Pre-weld heat treatment improves welds in Rene 41

Ultrasonic temperature measuring device

Weld microfissuring in Inconel 718 minimized by minor elements

Inspection criteria ensure quality control of parallel gap soldering

Pre-weld heat treatment improves welds in Rene 41

Ultrasonic temperature measuring device

Nickel-base superalloy's excellent properties promote its service to 2200 degrees F

Method for removing surface-damaged layers from nickel alloys

Evaluation of lubricants for ball bearings at high temperatures

Study of fluoride corrosion of nickel alloys

Hot-cracking studies of Inconel 718 weld-heat-affected zones

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures

High strength, superplastic superalloy

Device for obtaining separation of oxygen

Nickel Cadmium Batteries

Dysonium compound improves nickel-cadmium cell

Hermetically sealed cells protected from internal gas pressure

Battery charge regulator is coulometer controlled

Study of thermal effects on nickel-cadmium batteries

Charge control of nickel-cadmium batteries by coulometer and third electrode method

Battery case shear

Balloon batteries, charged and heated by solar energy

Application of cryptanalytic techniques to the analysis of NiCd space batteries

Nickel Coatings

Electroless nickel resist used in alkaline etching of aluminum

Nickel Compounds

Dysonium compound improves nickel-cadmium cell

Thoriated nickel bonded by solid-state diffusion method

Application of the solid lubricant polyethylene disulfide by sputtering

High temperature coatings for gas bearings

Nickel Fluids

Experiments shed new light on nickel-fluorine reactions

Nickel Oxides

Thermoelectric cell and sealing technique

Cobalt improves nickel hydroxide electrodes for batteries

Nickel Plate

Electroless nickel resist used in alkaline etching of aluminum

Modular thermoelectric cell is easily packaged in various arrays

Titanium diaphragm makes excellent amplitron cathode support

Nickel solution prepared for precision electroforming

Plated nickel wire mesh makes superior catalyst bed

Nickel/tin coating protects threaded fasteners in corrosive environment

Copper wire plated with nickel and silver resists corrosion

Electrical cabling withstands severe environmental conditions

Rotating magnetic poles used to pump mercury

Electroless nickel plating on stainless steels and aluminum

Nondestructive test method accurately sorts mixed bolts

Helical recorder

Improved nickel plating of Inconel X-750

Nickel Steels

Diaphragm eliminates leakage in cryogenic fluid duct coupling

Nickel-Cadmium Rocket Vehicle

Rocket sonde measurements of ozone in the upper atmosphere
Subj Index

Niobates
- Improved process for making thin-film sodium niobate capacitors MSC-11231 B68-10163 01

Niobium
- Niobium thin films are superconductive in strong magnetic fields at low temperatures JPL-SC-174 B66-10122 02
- Simple pump maintains liquid helium level in cryostat M-PS-1763 B67-10039 05
- Tube-to-header joint for bimetallic construction LWIS-10282 B67-10040 05
- One hundred angstrom niobium wire LWIS-10128 B68-10279 03

Superconductive thin film makes convenient liquid helium level sensor LANGLEY-10289 B68-10341 01

Nickel-base superalloys excellent properties promote its service to 2200 degrees F LWIS-10355 B68-10380 03

High-emittance coatings on metal substrates LWIS-10325 B67-10381 03

Inverted grounding technique for electron beam heating LWIS-10263 B68-10411 01

Study of high temperature bearing materials LWIS-10629 B69-10252 03

High strength, superplastic superalloy LWIS-10005 B69-10293 03

Report on a cryogenic gyroscope WHO-1200 B69-10504 02

Niobium alloys
- Protected, high-temperature connecting cable LWIS-10149 B67-10461 01
- Application of the solid lubricant polyethylene disulfide by sputtering LWIS-10544 B68-10340 03
- Improved high-temperature silicide coatings LWIS-10817 B69-10266 03

Niobium-uranium alloys with voids of predetermined size and total volume ARG-10490 B69-10641 03

Niobium compounds
- Environmental study of miniature slip rings M-PS-2443 B67-10210 05
- Preparation of superconducting thin films of transition-metal interstitial compounds HQ-10445 B69-10470 01

Nitrates
- Didymium compound improves nickel-cadmium cell GSFC-295 B65-10083 03
- Crack detection method is safe in presence of liquid oxygen M-PS-236 B65-10107 03
- Chromium oxide coatings improve thermal emissivity of alumina WOO-263 B66-10227 03
- Special treatment reduces helium permeation of glass in vacuum systems HQ-25 B66-10327 02
- Coating protects magnesium-lithium alloys against corrosion M-PS-2446 B67-10149 03

Cobalt improves nickel hydroxide electrodes for batteries LEWIS-10760 B69-10220 01

Nitric acid
- Method of welding joint in closed vessel improves quality of seam JPL-170 B63-10139 05
- Modification increases light output of injection-luminescent diodes M-PS-192 B65-10006 01
- Galvanic corrosion reduced in aluminium fabrications M-PS-272 B65-10140 03
- Nonhazardous acid etches weld samples M-PS-975 B66-10378 05
- Gage of 6.5 per cent Si-Fe sheet is chemically reduced M-SC-537 B66-10454 03
- Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals ARG-54 B67-10471 05
- Sodium permanganate permits rapid oxidation of manganese for easy spectrophotometric determination ARG-262 B67-10421 03

Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods ARG-10065 B68-10425 03

Continuous analysis of nitrogen dioxide in gas streams of plants ARG-10356 B69-10254 03

Improved nickel plating of Inconel X-750 M-PS-18604 B69-10463 05

A method for precision anodize stripping MSC-15040 B69-10581 03

Nitrides
- Preparation of superconducting thin films of transition-metal interstitial compounds Hq-10445 B69-10470 01

Nitrides
- Coating permits use of strain gage in water and liquid hydrogen M-PS-594 B66-10192 01
- Gas chromatographic column enables analysis of propellant hydrazines MSC-1161 B66-10566 03

Nitrogen
- Helium tube separates nitrogen gas from liquid nitrogen JPL-398 B63-10251 05
- New method forms bond line free of voids LANGLEY-20 B63-10558 05

Compressed gas system operates semitrailer brakes during winching operation JPL-0036 B64-10306 05

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures MSC-118 B64-10319 03

Apparatus facilitates pressure-testing of metal tubing LWIS-174 B65-10131 05

Instrument accurately measures extremely low air densities M-PS-193 B65-10221 01

Ceramic materials purified by experimental method LWIS-225 B65-10270 03

I-439
Tensile-strength apparatus applies high strain-rate loading with minimum shock
JPL-28  B66-10063  05

Economical and maintenance-free gas system operates railroad switches
HD-0025  B66-10074  05

Sniffer used as portable hydrogen leak detector
E-PS-846  B66-10356  01

Leak locator for vacuum-jacketed pipelines eliminates need for removal of outer jacket
E-PS-980  B66-10412  01

Large diameter metal ring seal prevents gas leakage at 5000 psi
E-PS-1064  B66-10422  05

Automatic cryogenic liquid level controller is safe for use near combustible substances
LEWIS-195  B66-10482  01

Experimental investigation of megawatt dc arc heating of nitrogen
LEWIS-315  B66-10508  02

Process produces chlorinated aromatic isocyanate in high yield
E-PS-1656  B66-10646  03

Vacuum chamber is remotely sealed by eutectic metal
Nd-0091  B67-10059  05

Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer
MSC-924  B67-10083  03

Liquid oxygen distillation cleaned by falling film method
E-PS-11816  B67-10299  03

Cytology is advanced by studying effects of deuterium environment
ABG-205  B67-10304  04

Precision capacitor has improved temperature and operational stability
ABG-189  B67-10313  01

Single-source mechanical loading system produces biaxial stresses in cylinders
E-PS-12530  B67-10380  05

Temperature-sensed cryogenic bleed maintains liquid state in transfer line
E-PS-12681  B67-10424  01

Study made of pneumatic high pressure piping materials /10,000 psi/
KSC-10133  B67-10437  03

Fluid properties handbook
E-PS-13462  B67-10440  03

Foil radiometer accessory improves measurements
E-PS-12684  B67-10448  01

Environmental control system for cryogenic testing of tensile specimens
NDC-10523  B67-10618  02

Fire extinguisher control system provides reliable cold weather operation
E-PS-13031  B67-10622  05

Air sampler collects and protects minute particles
EG-10037  B67-10661  01

High-pressure gas facilitates calibration of turbine flowmeters for liquid hydrazine
LEWIS-10402  B67-10415  01

Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics
SAS-10012  B68-10204  03

High-voltage pulse generator developed for wide-gap spark chambers
ARG-10136  B66-10283  01

Cryogenic liquid level measuring probe
ARG-10136  B66-10291  01

One-diagonal reacting gas nonequilibrium performance programs
MSC-11777  B66-10375  06

One-diagonal two-phase reacting gas nonequilibrium performance program
MSC-11780  B66-10376  06

Axisymmetric reacting gas nonequilibrium performance program
MSC-11781  B66-10377  06

Titanium-nitrogen reaction investigated for application to gettering systems
ARG-10208  B68-10414  03

Two systems developed for purifying inert atmospheres
ARG-10234  B66-10426  03

Prediction of friction coefficients for gases
LEWIS-10774  B66-10112  02

Plasma-heating by induction
LEWIS-10528  B66-10182  05

Computer program for high pressure real gas effects
LEWIS-10820  B66-10222  06

Method for copper staining of germanium crystals
ARG-10403  B69-10257  03

Laser action from a terbium beta-ketoenolate at room temperature
GSFC-10593  B69-10324  02

Precision capacitor has improved temperature and operational stability
ABG-189  B67-10313  01

Control for maintaining constant level of a cryogenic liquid
NPO-11177  B69-10573  05

High pressure real gas effects for helium and nitrogen
LEWIS-10819  B69-10669  06

Vacuum gage calibration system for 10 to the minus 8th power to 10 torr
LEWIS-11032  B69-10713  01

Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites
ERC-10161  B69-10732  04

Pneumatic flow comparator
E-PS-18373  B69-10400  05

Control for maintaining constant level of a cryogenic liquid
NPO-11177  B69-10573  05

High pressure real gas effects for helium and nitrogen
LEWIS-10819  B69-10669  06

Vacuum gage calibration system for 10 to the minus 8th power to 10 torr
LEWIS-11032  B69-10713  01

Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites
ERC-10161  B69-10732  01

Mixed ether bath for electrodeposition of aluminum
LANGLEY-10200  B69-10737  03

Substitution of stable isotopes in Chlorella
ARG-10258  B69-10197  04

NITROGEN DIOXIDE
Nitrogen dioxide produced by self-sustained pyrolysis of nitrous oxide
LANGLEY-32  B65-10074  05

Continuous analysis of nitrogen dioxide in gas streams of plants
ARG-10356  B69-10254  03

NITROGEN ISOPODES
An improved nuclear magnetic resonance
NITROGEN POLYMERS
Flexible protective coatings made from silicon-nitrogen materials
M-FS-528 B66-10027 03
Synthesis of various highly halogenated monomers and polymers
M-FS-2143 B67-10100 03

NITROGEN TETROXIDE
Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer
MSC-924 B67-10083 03
Glass bead shot peening retards stress corrosion failure of titanium tanks
LANGLEY-319 B67-10198 05

NITROGEN OXIDES
Nitrogen dioxide produced by self-sustained pyrolysis of nitrous oxide
LANGLEY-32 B65-10074 05

NOISE (STANDING WAVES)
Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MSC-999 B66-10619 01
Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries
M-FS-1910 B67-10329 06

NOISE (SOUND)
Polymer deformation gage measures thickness change in tensile tests
JPL-745 B66-10147 01
Personal communication system combines high performance with miniaturization
MSC-720 B67-10119 01
Accuracy of laser measurements improved by pulse autocorrelation electronic system
MSC-10033 B67-10338 01
Automatic testing device facilitates noise checks and electronic calibrations
LMN20-10173 B67-10467 01

NOISE INTENSITY
Small foam polystyrene shield protects low-frequency microphones from wind noise
M-FS-123 B63-10579 01
SiC/Si diode trigger circuit provides automatic range switching for log amplifier
M-FS-1879 B67-10314 01
Survey of man-made electrical noise affecting radio broadcasting
SQ-10290 B69-10308 01

NOISE METERS
Improved S/N meter
MSC-11655 B68-10151 01

NOISE PROPAGATION
Variable word length encoder reduces TV bandwidth requirements
LANGLEY-87 B65-10345 01
Noise study of single stage compressor rotor-stator interaction
LANGLEY-137 B67-10516 02
Optimum PA pre-emphasis
KSC-10151 B69-10359 01

NOISE REDUCTION
New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation
ABC-2 B63-10003 04
Flange on microwave antenna subreflector cuts ground noise
JPL-362 B63-10229 01
Novel horn antenna reduces side lobes, improves radiation pattern
JPL-425 B63-10264 01
Small digital recording head has parallel bit channels, minimizes cross talk
JPL-0029 B63-10284 01
Field-effect transistor improves electrometer amplifier
ABC-36 B64-10143 01
Logic circuit exhibits optimum performance
LANGLEY-129 B65-10193 01
Voltage controlled oscillator is easily aligned, has low phase noise
JPL-510 B65-10223 01
Field effect transistor provides high input impedance in ac amplifier
JPL-500 B65-10232 01
An investigation of phase-lock loop swept-frequency synchronization
M-FS-656 B66-10423 01
NOSYET analog memory circuit achieves long duration signal storage
M-FS-860 B66-10603 01
Laser system generates single-frequency light
M-FS-2556 B67-10288 02
Digital filter suppresses effects of nonstationary noise bursts on multichannel scaler digital averaging system
ARG-90143 B68-10193 06
Low-loss C-band parasitic probe
KSC-09388 B69-10251 01

NOISE SPECTRA
The effect of mismatched components on microwave noise-temperature calibrations
MFO-11163 B69-10333 01
NONDESTRUCTIVE TESTS

Pulse generator permits nondestructive testing of component breakdown voltage
MSC-212 B65-10054 01

Crack detection method is safe in presence of liquid oxygen
MPS-236 B65-10107 03

Apparatus facilitates pressure-testing of metal tubing
LEWIS-3174 B65-10131 05

Force controlled solenoid drives microweld tester
W00-125 B65-10182 01

Portable self-powered device detects internal flaws in tubular structures
MS-0019 B66-10028 01

Pressure transducers dynamically tested with sinusoidal pressure generator
LEWIS-326 B66-10031 01

Surfactant for dye-penetrant inspection is insensitive to liquid oxygen
MPS-475 B66-10131 03

Fatigue cracks detected and measured without test interruption
LEWIS-266 B66-10178 02

Ultrasonic recording scanner used for nondestructive weld inspection
MPS-524 B66-10220 01

Ultrasonic hand tool allows convenient scanning of spot welds
MPS-535 B66-10289 02

Simple, nondestructive test identifies metals
MSC-525 B66-10305 03

Semi-automatic device tests components with biaxial leads
MSC-516 B66-10337 03

Nondestructive test method accurately sorts mixed bolts
MPS-1426 B66-10574 01

Portable fixture facilitates pressure testing of instrumentation fittings
MPS-2032 B67-10121 03

Calibrating ultrasonic test equipment for checking thin metal strip stock
NHC-10009 B67-10127 01

Weld procedure produces quality welds for thick sections of Hastelloy-X
NHC-1048 B67-10195 05

Electron beam welder X-rays its own welds
LEWIS-11011 B67-10216 02

Liquid crystals detect voids in fiber glass laminates
LEWIS-10104 B67-10286 03

Improved ultrasonic TF images achieved by use of Lamb-wave orientation technique
ABO-203 B67-10295 02

Thermal neutron image intensifier tube provides bright visible radiographic pattern
ABO-120 B67-10296 02

Brass joint quality tested electromagnetically
MPS-12795 B67-10333 01

Handbooks describe eddy current techniques used in nondestructive testing of metal parts and components
MPS-13172 B67-10374 03

Camera lens adapter magnifies image
MPS-11955 B67-10431 02

Surface-crack detection by microwave methods
ABC-10009 B67-10482 01

Study of stress corrosion in aluminuim alloys
MPS-13906 B67-10533 03

Mechanized X-ray inspection system for large tanks
MPS-12087 B67-10564 02

Nondestructive testing techniques used in analysis of honeycomb structure bond strength
MPS-12174 B67-10574 01

Laib waves increase sensitivity in nondestructive testing
ARG-10009 B67-10605 02

Eddy current probe measures size of cracks in nonmetallic materials
MPS-14059 B67-10645 03

DC pin-to-pin testing of integrated circuits
FSC-10284 B68-10001 01

Gage monitors quality of cross-wire resistance welds
GFSC-90545 B68-10002 01

Development of mechanized ultrasonic scanning system
MPS-13638 B68-10004 05

Evaluation of methods for nondestructive testing of brazed joints
ARG-90175 B68-10191 03

Nondestructive testing of brazed rocket engine components
MPS-18191 B68-10574 03

Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique
ARG-203 B68-10295 02

Hydrostatic testing of porous assemblies
MPS-18298 B68-10439 05

Rocket engine analog simulation 8-FS-14511 01

Thick transducers used for generating short-duration stress pulses in thin
subject index

specimens
ARG-10232 B69-10045 01
handbooks for nondestructive testing
using ultrasonics
n-ps-20409 B69-10168 03
instruction manuals for liquid penetrant
nondestructive testing
n-ps-14010 B69-10278 05
instrumentation for nondestructive testing
of composite honeycomb materials
n-ps-20405 B69-10366 03
nondestructive testing of welds on
thin-walled tubing
n-ps-18144 B69-10402 01
nondestructive determination of cohesive
strength of adhesive-bonded composites
n-ps-20397 B69-10464 03
use of medical and dental x-ray equipment
for nondestructive testing
nsc-13385 B69-10553 01
thermal conductivity probe
n-ps-20566 B69-10780 03
exploding bridgewire detonator simulator
n-ps-02191 B69-10782 01
non-electrolytes
non-electrolytic tantalum capacitors developed
n-ps-1546 B66-10552 01
nonequilibrium conditions
quantum mechanical calculations of reactive
scattering cross sections in biomolecular
encounters
n-ps-13544 B67-10527 03
ELAS - A general purpose computer program
for the equilibrium problems of linear
structures
npo-10596 B68-10187 06
one-dimensional reacting gas nonequilibrium
performance program
MSC-11777 B68-10375 06
axisymmetric reacting gas nonequilibrium
performance program
MSC-11781 B68-10377 06
nonequilibrium flow
one-dimensional two-phase reacting gas
nonequilibrium performance program
MSC-11780 B68-10376 06
non-linear equations
computer program determines chemical
composition of physical system at
equilibrium
MSC-1159 B66-10670 01
computer program determines chemical
equilibria in complex systems
LeWIs-281 B66-10671 01
equation relates flow at free jet to flow
downstream
n-ps-13769 B67-10612 06
solution of differential equations by
application of transformation groups
n-ps-14062 B68-10276 02
FORTRAN 4 program calculates velocities
and streamlines in a tandem blade
turbomachine
LEwIs-10743 B69-10219 06
buckling of shells of revolution
/B0508/ with various wall constructions
LANGLeY-10441 B69-10300 06
nonlinear feedback
nonlinear feedback reduces analog-to-digital
converter error
ARC-46 B65-10277 01
nonlinear filters
compensation of pulse-rebalanced inertial
instruments
MSC-13098 B69-10216 01
a method for reducing sampling jitter in
digital control systems
WPO-11088 B69-10338 01
nonlinear systems
phase plane displays detect incipient
failure in servos system testing
HQ-10018 B67-10662 01
computer program offers new method for
constructing periodic orbits in nonlinear
dynamical systems
n-ps-14654 B68-10217 06
mechanical properties of a lap joint under
uniform clamping pressure
n-ps-14536 B69-10141 05
non-linearity
new package for belleville spring permits
rate change, easy disassembly
JPL-392 B63-10247 05
feedback loop compensates for rectifier
nonlinearity
n-ps-384 B66-10382 01
a radiometer-pyrometer
LeWIs-284 B66-10606 01
resistance thermometer has linear
resistance-temperature coefficient at low
temperatures
W00-190 B66-10612 01
concept for using laser beams to measure
electron density in plasmas
n-ps-985 B66-10645 01
device enables calibration of microphones
at high sound pressure levels
n-ps-11980 B67-10336 06
new technique for optimal smoothing of data
MSC-11354 B68-10060 02
vibration testing and dynamic studies of
relays
n-ps-14542 B68-10268 01
low-cost, fast-response drive circuit for
electromagnetic torque motors
LeWIS-10743 B68-10386 01
computer program analyzes whirl critical
speeds and bearing loads for shafts coupled
by nonlinear springs to machine housing
nuc-10308 B69-10038 06
analysis of magnetically-controlled
processes in pulse-modulation systems
GSFC-10241 B69-10070 01
compensation of pulse-rebalanced inertial
instruments
MSC-13098 B69-10216 01
non-newtonian flow
flow properties of suspensions rich in
solids
ARG-10481 B69-10622 02
non-uniform flow
computer program NCAP provides for steady
state thermal and flow analysis of multiple
parallel channels in heat generating solid
MSC-10043 B67-10257 06
NONUNIFORM MAGNETIC FIELDS

Superconductor magnets used for stagger-tuning travelling-wave maser
GEPC-292 B65-10165 01

NONUNIFORMITY

A radiometer-pyrometer
LEWIS-284 B66-10606 01
Bimetal sensor averages temperature of nonuniform profile
LEWIS-10362 B68-10007 01

NORMAL DENSITY FUNCTIONS

Computer program determines exact two-sided tolerance limits for normal distributions
M-FS-18045 B68-10158 06
Application of a truncated normal failure distribution in reliability testing
M-FS-18328 B68-10179 02

NORMAL SHOCK WAVES

Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
LANGL-10090 B67-10509 06

NOSE CONES

Colloidal suspension simulates linear dynamic pressure profile
WOO-266 B66-10214 05
New class of thermosetting plastics has improved strength, thermal and chemical stability
LEWIS-10331 B67-10197 03
Manual of typical low temperature mechanical properties of several materials
M-FS-10331 B69-10179 03

NOTCH STRENGTH

New weldable high strength aluminum alloy developed for cryogenic service
M-FS-737 B66-10613 05
Manual of typical low temperature mechanical properties of several materials
M-FS-10331 B69-10179 03

NOTCH TESTS

Effect of surface irregularities on bellows fatigue life
M-FS-14460 B68-10229 05

NOTCHES

Apparatus of small size can be extended into long, rigid booms
JPL-305 B63-10200 05

NOZZLE DESIGN

Binary fluid amplifier solves stability and load problems
ESC-15 B66-10177 01
Instrumentation for nondestructive testing of composite honeycomb materials
M-FS-20405 B69-10366 03

NOZZLE FLOW

Flow control valve is independent of pressure drop
JPL-WOO-039 B65-10121 05
Elimination of rocket engine asymmetric loads during tests at sea level
M-FS-1730 B66-10674 05
Flow liner extends operating life of high-aspiration bellows
M-FS-12023 B67-10512 05
Axisymmetric two-phase perfect gas performance program
MSC-11774 B68-10374 06
One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780 B68-10376 06

NUCLEAR CHEMISTRY

Compilation of detection sensitivities in thermal-neutron activation
ARG-10068 B67-10641 03

NUCLEAR ENERGY

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10071 B67-10399 01
Training course for radiation safety technicians
ARG-216 B67-10477 02

NUCLEAR EXPLOSIONS

Rapid-response, light-exposure control system
BPO-10238 B68-10502 01
Hydrodynamics of a new concept of primary containment by energy absorption
ARG-10242 B69-10046 05
Transplutonium elements processed from rock debris of underground detonations
ARG-10222 B69-10054 03

NUCLEAR FUEL ELEMENTS

Glassy materials investigated for nuclear reactor applications
ARG-10075 B66-10103 03
Performance of low-pressure thermionic converters is evaluated
ARG-10276 B69-10090 01
Fast frasing ceras provide high-speed
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>multi-channel data recording</td>
</tr>
<tr>
<td>Fuel element concept for long life high power nuclear reactors</td>
</tr>
<tr>
<td>NUCLEAR FUELS</td>
</tr>
<tr>
<td>Use of steel and tantalum apparatus for molten Cd-Ag-Zn alloys</td>
</tr>
<tr>
<td>Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels</td>
</tr>
<tr>
<td>Solubility data are compiled for metals in liquid zinc</td>
</tr>
<tr>
<td>Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel</td>
</tr>
<tr>
<td>Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident</td>
</tr>
<tr>
<td>Thermal neutron image intensifier tube provides brightly visible radiographic pattern</td>
</tr>
<tr>
<td>Neutron irradiation of Am-241 effectively produces curium</td>
</tr>
<tr>
<td>Technological survey of tellurium and its compounds</td>
</tr>
<tr>
<td>Characteristics of fluidized-packed beds</td>
</tr>
<tr>
<td>Consolidation and fabrication techniques for vanadium-20 w/o titanium /TV-20/</td>
</tr>
<tr>
<td>Refractory oxide insulated thermocouple designed and analyzed for high temperature applications</td>
</tr>
<tr>
<td>Effect of interparticle forces on the fluidization of fine particles</td>
</tr>
<tr>
<td>Induction probe determines levels of liquid metals</td>
</tr>
<tr>
<td>Niobium-uranium alloys with voids of predetermined size and total volume</td>
</tr>
<tr>
<td>Gamma radiation characteristics of plutonium dioxide fuel</td>
</tr>
<tr>
<td>NUCLEAR FUSION</td>
</tr>
<tr>
<td>Method for determining properties of microinstabilities of a magnetized plasma</td>
</tr>
<tr>
<td>NUCLEAR HEAT</td>
</tr>
<tr>
<td>Servo calorimeter measures material heating rate</td>
</tr>
<tr>
<td>NUCLEAR MAGNETIC RESONANCE</td>
</tr>
<tr>
<td>Xenon fluorides show potential as fluorinating agents</td>
</tr>
<tr>
<td>An improved nuclear magnetic resonance spectrometer</td>
</tr>
<tr>
<td>NUCLEAR RADIATION</td>
</tr>
<tr>
<td>JPL-762 B67-10234 01</td>
</tr>
<tr>
<td>The preparation, identification and properties of chlorophyll derivatives</td>
</tr>
<tr>
<td>Aggregation of metallochlorophyll - Examination by spectroscopy</td>
</tr>
<tr>
<td>Qualitative and quantitative analysis of mixtures of compounds containing both hydrogen and deuterium</td>
</tr>
<tr>
<td>NUCLEAR PARTICLES</td>
</tr>
<tr>
<td>Instrument performs nondestructive chemical analysis, data can be telemetered</td>
</tr>
<tr>
<td>Single channel pulse-height analyzer operates in subnanosecond range</td>
</tr>
<tr>
<td>Improved pulse shape discriminator for fast neutron-gamma ray detection system</td>
</tr>
<tr>
<td>NUCLEAR PHYSICS</td>
</tr>
<tr>
<td>Ignition of binary alloys of uranium</td>
</tr>
<tr>
<td>On-line computer system for use with low-energy nuclear physics experiments is reported</td>
</tr>
<tr>
<td>Handbook explaining the fundamentals of nuclear and atomic physics</td>
</tr>
<tr>
<td>NUCLEAR POWER PLANTS</td>
</tr>
<tr>
<td>N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program</td>
</tr>
<tr>
<td>Fuel element concept for long life high power nuclear reactors</td>
</tr>
<tr>
<td>NUCLEAR POWER REACTORS</td>
</tr>
<tr>
<td>Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel</td>
</tr>
<tr>
<td>Computer program FPIP-REV calculates fission product inventory for U-235 fission</td>
</tr>
<tr>
<td>Neutron irradiation of Am-241 effectively produces curium</td>
</tr>
<tr>
<td>Electronic calorimetric computer</td>
</tr>
<tr>
<td>NUCLEAR POWERED SHIPS</td>
</tr>
<tr>
<td>Practical new method of measuring thermal-neutron fluence</td>
</tr>
<tr>
<td>NUCLEAR RADIATION</td>
</tr>
<tr>
<td>Servo calorimeter measures material heating rate</td>
</tr>
<tr>
<td>System transmits mechanical vibration into hazardous environment</td>
</tr>
<tr>
<td>Aluminum doping improves silicon solar cells</td>
</tr>
<tr>
<td>Mechanisms of superconductivity investigated by nuclear radiation</td>
</tr>
</tbody>
</table>
**NUCLEAR RADIATION SPECTROSCOPY**

Detection of entrapped moisture in honeycomb sandwich structures  
BUC-1103  01

Double copper sheath multiconductor instrumentation cable is durable and  
easily installed in high thermal or nuclear radiation area  
BUC-10007  01

Pneumatic analog-to-pulse frequency converter  
LEWIS-10345  B69-10276  02

Live-timer method of automatic dead-time correction for precision counting  
ARG-10478  01

Highly stable high-rate discriminator for nuclear counting  
ARG-10483  B69-10614  01

Pulse-height analyzer with digital readout  
ARG-10503  B69-10640  01

Gamma radiation characteristics of plutonium dioxide fuel  
BFO-11220  B69-10733  02

**NUCLEAR RADIATION SPECTROSCOPY**

Status of ultrachemical analysis for semiconductors  
S-FS-2254  B67-10138  03

Computer program VARI-QUIB 3 provides solution of steady-state, multigroup,  
two-dimensional neutron diffusion equations  
BUC-10052  B67-10345  06

Computer program calculates gamma ray source strengths of materials exposed to  
neutron fluxes  
BUC-10143  B67-10665  06

An economical method for the continuous production of iodine-123  
LEWIS-10518  B68-10433  03

**NUCLEAR REACTIONS**

Hydrodynamics of a new concept of primary containment by energy absorption  
ARG-10426  B69-10046  05

Laser beam transmits electric power  
GSFC-293  B65-10158  01

Study made of corrosion resistance of stainless steel and nickel alloys in nuclear reactor superheaters  
ARG-230  B67-10051  03

Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry  
ARG-210  B67-10236  03

Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident  
BUC-10054  B67-10281  06

High-strength tungsten alloy with improved ductility  
LEWIS-100257  B67-10340  03

Current pulse amplifier transmits detector signals with minimum distortion and  
attenuation  
BUC-10055  B67-10347  01

Computer program MCAP provides for steady state thermal and flow analysis of multiple  
parallel channels in heat generating solid  
BUC-10043  B67-10457  06

SOC-US computer code provides tool for design evaluation of homogeneous  
two-material nuclear shield  
1-446
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>NUMERICAL CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>in graphite</td>
<td>B68-10102 03</td>
</tr>
<tr>
<td>Electron beam recrystallization of amorphous semiconductor materials</td>
<td>B68-10556 02</td>
</tr>
<tr>
<td>NUCLEI</td>
<td></td>
</tr>
<tr>
<td>Liquid micrurgy chamber and microsyringe designs allow more efficient micromanipulations</td>
<td>B68-10305 04</td>
</tr>
<tr>
<td>Stratification of centrifuged amoeba nuclei investigated by electron microscopy</td>
<td>B68-10366 04</td>
</tr>
<tr>
<td>NUCLEI (NUCLEAR PHYSICS)</td>
<td></td>
</tr>
<tr>
<td>Your pi-recoil proportional counter used as a neutron spectrometer</td>
<td>B68-10326 02</td>
</tr>
<tr>
<td>NUCLEIC ACIDS</td>
<td></td>
</tr>
<tr>
<td>Effect of preparation procedures on intensity of radiographik labeling is studied</td>
<td>B67-10500 04</td>
</tr>
<tr>
<td>NUCLIDES</td>
<td></td>
</tr>
<tr>
<td>Calculation of resonance neutron absorption in two-region problems /the GABOL code/</td>
<td>B67-10223 06</td>
</tr>
<tr>
<td>Computer program FPIP-REV calculates fission product inventory for U-235 fission</td>
<td>B67-10450 06</td>
</tr>
<tr>
<td>Review of physics, instrumentation and dosimetry of radioactive isotopes</td>
<td>B67-10640 02</td>
</tr>
<tr>
<td>Neutron therapy of cancer</td>
<td>B67-10203 04</td>
</tr>
<tr>
<td>Automatic bird watcher</td>
<td>B67-10286 02</td>
</tr>
<tr>
<td>Gamma radiation characteristics of plutonium dioxide fuel</td>
<td>B67-10733 02</td>
</tr>
<tr>
<td>NULL ZONES</td>
<td></td>
</tr>
<tr>
<td>Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions</td>
<td>B67-10294 01</td>
</tr>
<tr>
<td>NUMBERS</td>
<td></td>
</tr>
<tr>
<td>Run numbering system for use with data recorders</td>
<td>B67-10215 01</td>
</tr>
<tr>
<td>NUMERICAL ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>Computer modification reduces time of performing iterative division</td>
<td>B65-10005 01</td>
</tr>
<tr>
<td>Calculations enable optimum design of magnetic brake</td>
<td>B66-10073 05</td>
</tr>
<tr>
<td>New computer system simplifies programming of mathematical equations</td>
<td>B66-10361 01</td>
</tr>
<tr>
<td>Minimum permissible leakage resistance established for instrumentation systems</td>
<td>B66-10397 01</td>
</tr>
<tr>
<td>New computer program solves wide variety of heat flow problems</td>
<td>B66-10404 01</td>
</tr>
<tr>
<td>An orthonormalization procedure for multivariable function approximation</td>
<td>B66-10579 01</td>
</tr>
<tr>
<td>Problem of oscillating cone in supersonic flow is solved by small perturbation techniques</td>
<td>B66-10700 02</td>
</tr>
<tr>
<td>Computer program calculates monotonic axisymmetric likelihood estimates using method of reversals</td>
<td>B67-10136 01</td>
</tr>
<tr>
<td>A power-spectral-density computer program</td>
<td>B67-10160 01</td>
</tr>
<tr>
<td>A theoretical model for determining turbine flowmeter sensitivity</td>
<td>B67-10179 01</td>
</tr>
<tr>
<td>CHRY - Chrysler Improved Numerical Differentiating Analyzer computer program</td>
<td>B67-10278 06</td>
</tr>
<tr>
<td>Computer program provides linear sampled-data analysis for high order systems</td>
<td>B67-10287 06</td>
</tr>
<tr>
<td>General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions</td>
<td>B67-10331 06</td>
</tr>
<tr>
<td>Numerical least-square method for resolving complex pulse height spectra</td>
<td>B67-10480 06</td>
</tr>
<tr>
<td>Large-amplitude inviscid fluid motion in an accelerating container</td>
<td>B68-10170 02</td>
</tr>
<tr>
<td>Computer program determines system stability /DIGSTA/</td>
<td>B68-10216 06</td>
</tr>
<tr>
<td>Monte Carlo direct view factor and generalized radiative heat transfer programs</td>
<td>B67-10038 06</td>
</tr>
<tr>
<td>Some numerical methods for integrating systems of first-order ordinary differential equations</td>
<td>B69-10204 02</td>
</tr>
<tr>
<td>Flow properties of suspensions rich in solids</td>
<td>B69-10622 02</td>
</tr>
<tr>
<td>Storage of electric and magnetic energy in passive nonreciprocal networks</td>
<td>B69-10630 01</td>
</tr>
<tr>
<td>Engineering thermal analyzer /BETA 2/</td>
<td>B69-10760 06</td>
</tr>
<tr>
<td>Numerical solutions of differential equations</td>
<td>B69-10779 02</td>
</tr>
<tr>
<td>Aerodynamic forces of fluttering cylindrical and/or planar structures</td>
<td>B69-10781 02</td>
</tr>
<tr>
<td>Trajectory optimization using regularized variables</td>
<td>B69-10810 02</td>
</tr>
<tr>
<td>Determination of permissible applied load stress in structural elements</td>
<td>B69-10823 02</td>
</tr>
<tr>
<td>NUMERICAL CONTROL</td>
<td></td>
</tr>
<tr>
<td>Ellipsoidal optical reflectors reproduced by electroforming</td>
<td>B63-10547 05</td>
</tr>
<tr>
<td>Computer used to program numerically controlled milling machine</td>
<td>B66-10541 01</td>
</tr>
<tr>
<td>Run numbering system for use with data recorders</td>
<td>B67-10584 01</td>
</tr>
</tbody>
</table>
### Numerical Integration

<table>
<thead>
<tr>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-FS-2557</td>
<td>B67-10215</td>
</tr>
<tr>
<td>Thread cutting with 3-axis N/C milling machine</td>
<td>LANGLEY-10017</td>
</tr>
<tr>
<td>Numerical Control Machine Data Manual</td>
<td>M-FS-14342</td>
</tr>
<tr>
<td>Accurate digital technique simulates flight control system</td>
<td>M-FS-14767</td>
</tr>
<tr>
<td>Determination of quadric equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas</td>
<td>M-FS-15043</td>
</tr>
<tr>
<td>Circuit board hole coordinate locator concept</td>
<td>M-FS-14737</td>
</tr>
</tbody>
</table>

### Subject Index

<table>
<thead>
<tr>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>NU-0043</td>
<td>B67-10457</td>
</tr>
<tr>
<td>Liquid-metal heat transfer in a concurrent-flow, double-pipe heat exchanger is investigated</td>
<td>ARG-10267</td>
</tr>
<tr>
<td>Fluid logic control circuit operates nutator actuator motor</td>
<td>LEWIS-294</td>
</tr>
<tr>
<td>Scanning means for Cassegrainian antenna</td>
<td>JPL-946</td>
</tr>
<tr>
<td>Experimental study and evaluation of radioprotective drugs</td>
<td>ARG-10196</td>
</tr>
<tr>
<td>Compound equation developed for postnatal growth of birds and mammals</td>
<td>ARG-10192</td>
</tr>
<tr>
<td>Improved mouse cage provides versatility and ease in handling laboratory mice</td>
<td>MSC-12250</td>
</tr>
<tr>
<td>Food products for space applications</td>
<td>MSC-11697</td>
</tr>
<tr>
<td>Life detection</td>
<td>NPO-10510</td>
</tr>
<tr>
<td>Simple mechanism combines positive locking and quick-release features</td>
<td>NCO-4</td>
</tr>
<tr>
<td>Fastener provides cooling and compensates for thermal expansion</td>
<td>NU-0003</td>
</tr>
<tr>
<td>Screw locking cups quickly and neatly cramped</td>
<td>NU-0009</td>
</tr>
<tr>
<td>Coiled spring makes self-locking device for threaded fasteners</td>
<td>MSC-149</td>
</tr>
<tr>
<td>Captive nut fastener securely joins brittle materials</td>
<td>NU-0008</td>
</tr>
<tr>
<td>Mechanism isolates load weighing cell during lifting of load</td>
<td>MSC-297</td>
</tr>
<tr>
<td>Fastener provides for bolt misalignment and quick release of flange</td>
<td>NU-0074</td>
</tr>
<tr>
<td>Pneumatic wrench retains or discharges nuts or bolts as desired</td>
<td>NU-0085</td>
</tr>
<tr>
<td>Single wrench separates nuts from free-floating bolts</td>
<td>NUC-10013</td>
</tr>
<tr>
<td>Cable clamp bolt fixture facilitates assembly in close quarters</td>
<td>KSC-67-80</td>
</tr>
<tr>
<td>Tensile testing grips ensure uniform loading of bimetal tubing specimens</td>
<td>LEWIS-10267</td>
</tr>
<tr>
<td>High-torque power wrench, a concept</td>
<td>M-FS-18194</td>
</tr>
<tr>
<td>Pressure transducer</td>
<td>NPO-10653</td>
</tr>
<tr>
<td>Precisely repeatable rotary mechanism</td>
<td>NPO-10679</td>
</tr>
</tbody>
</table>
O RING SEALS

Vented piston seal prevents fluid leakage between two chambers
JPL-179  B63-10141  05

Self sealing disconnect for tubing forms metal seal after breakaway
JPL-354  B63-10226  05

Filter for high-pressure gases has easy take-down, assembly
JPL-373  B63-10234  03

Modified RF coaxial connector ends vacuum chamber wiring problem
OSPC-150  B64-10010  01

Blade valve isolates compartment in pipe, opens to allow free flow
JPL-585  B64-10188  05

Two-part valve acts as quick coupling
JPL-478  B64-10223  05

Multiple element soft X-ray source produces wide range of radiation
GSPC-286  B65-10082  02

Low-cost tool minimizes damage to O-rings during installation
MSC-160  B65-10116  05

Fluid check valve has fail-safe feature
JPL-0049  B65-10207  05

Reinforcement core facilitates O-ring installation
Woo-228  B65-10378  05

O-ring tube fittings form leakproof seal in hydraulic systems
K-FS-401  B66-10020  05

Epoxy blanket protects milled part during explosive forming
K-FS-307  B66-10029  03

Cryogenic liquid transfer system reduces residual boiloff
LEWIS-274  B66-10157  02

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273  B66-10187  02

Pressure seal ring may be effective over wide temperature range
K-FS-486  B66-10211  05

O-rings with mylar back-up provide high-pressure cryogenic seal
K-FS-603  B66-10278  05

High pressure tube coupling requires no threads or flares
MSC-600  B66-10285  05

Bimetallic devices help maintain constant sealing force down to cryogenic temperatures
K-FS-800  B66-10325  02

Inflatable O-ring seal would ease closing of hatch cover plate
MSC-740  B66-10385  05

Large diameter metal ring seal prevents gas leakage at 5000 psi
K-FS-1068  B66-10422  05

Miniature valve accurately controls small volume fluid flow
ABG-66  B66-10473  05

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum
ABG-109  B66-10499  02

Feed-thru flange is useful in vacuum applications to cryogenic temperatures
JPL-846  B66-10615  02

Aluminized thin-window proportional-counter tube is stronger, more responsive in long wavelength region
JPL-689  B66-10015  01

Plasma jet electrode has longer operating life
K-FS-0098  B67-10024  02

Feed-through connector couples RF power into vacuum chamber
K-FS-0096  B67-10027  01

Irradiated gases transferred without contamination or dilution
LEWIS-278  B67-10044  03

Laboratory arc furnace features interchangeable hearths
ABG-125  B67-10052  05

Line adapter provides quick disconnect under moderate side loading
K-FS-2159  B67-10256  05

Improved compression molding process
LEWIS-10027  B67-10302  03

Hand-operated plug insertion valve
K-FS-12019  B67-10466  05

Dynamic valve seal is reliable at cryogenic temperatures
K-FS-12987  B67-10526  05

Lead plated aluminum ring provides static high pressure seal for large diameter O-ring tube fittings form leakproof seal in hydraulic systems
LEWIS-10068  B67-10539  05

Polyurethane cryostat facilitates testing tensile specimens under liquid nitrogen
MUC-10522  B67-10613  02

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135  B67-10623  05

Eddy current disk valve
LEWIS-10123  B67-10638  05

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10461  B68-10370  01

Insertion device for pressure testing
MSC-15185  B69-10061  03

Improved retort for cleaning metal powders with hydrogen
LEWIS-10716  B69-10468  03

OCEANOGRAPHY

Oceanborne transponder platform has good stability
K-FS-171  B65-10035  05

Extendable mast used in one shot soil penetrometer
JPL-685  B66-10146  05

New method for critical failure prediction of complex systems
K-FS-14133  B66-10252  02

Computer graphics data conditioning
K-FS-18695  B66-10296  06

Charts designate probable future oceanographic research fields
K-FS-20202  B66-10397  01

Analysis of filament reinforced metal-shell pressure vessels
LEWIS-10352  B68-10405  06

I-PS-20202  05
Dual-mode operation of a neutron source, a concept
HQ-10106 B66-10248 02

Safety switch permits emergency bridge crane shutdown
M-FS-549 B66-10168 05

Key-locked guard prevents accidental switch actuation
MSC-419 B66-10235 05

Electronic shutter gates image orthicon on and off
HQ-96 B67-10270 01

A method for reducing sampling jitter in digital control systems
NPO-11088 B69-10338 01

Rotational fluid coupling eliminates hose entanglements
MSC-312 B66-10585 05

An overview of electromagnetic interference problems in spacecraft
NPO-11170 B69-10193 01

Ohmmeter senses depletion of lubricant in journal bearings
LEWIS-37 B64-10042 01

Weld leaks rapidly and safely detected
M-FS-362 B65-10265 01

Electronic ohmmeter provides direct digital output
GSFC-363 B65-10274 01

Resistor monitors transfer of liquid helium
LANGLEY-229 B66-10580 01

Electrical continuity scanner facilitates identification of wires for soldering to connectors
MSC-626 B66-10605 01

Magnetic fluid readily controlled in zero gravity environment
OLIVINE-204 B69-10394 01

Nondestructive evaluation of printed wiring boards by microresistance measurements
SAN-10034 B69-10272 01

Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol
I-FS-14962 B69-10636 03

Device for reflowing electrodeposited solder on terminals
I-PS-1382 B69-10670 01

Discrimination of fish oil and mineral oil slicks on sea water
HQ-10412 B69-10673 01

OILS

Oil-smeared models aid wind tunnel measurements
LANGLEY-4 B63-10311 03

Fine-particle filter prevents damage to vacuum pumps
LEWIS-106 B63-10489 05

Nonresonant support facilitates vibration testing of structures
M-FS-224 B65-10039 05

Beater decomposes oil backstreaming from high-vacuum pumps
GSFC-356 B65-10224 02

Oil-damped mercury pool makes precise optical alignment tool
GSFC-353 B65-10253 02

Tensile-strength apparatus applies high strain-rate loading with minimum shock
JPL-20 B66-10063 05

Sensor detects hydrocarbon oil contaminants in fluid lines
M-FS-522 B66-10068 01

Fluid damping reduces bellows seal fatigue failures

Subject Index

M-FS-565 B66-10249 05

Vibrator improves spark erosion cutting process
HQ-0071 B66-10333 01

Valve effectively controls amount of contaminant in flow stream
M-FS-1771 B66-10663 05

Method accurately measures mean particle diameters of monodisperse polystyrene latexes
MBC-207 B67-10054 02

Accumulator isolator prevents malfunctioning of faulty hydraulic system
M-FS-1415 B67-10528 05

Conceptual apparatus for detecting leaks of nonconductive liquids
M-FS-14713 B66-10303 01

Teflon fluorocarbon liners for flexible hoses
M-FS-14850 B69-10288 05

Apparatus automatically measures soluble residue content of volatile solvents
SAN-10032 B69-10292 03

Freon, T-81 cutting fluid
MSC-11486 B69-10485 05

Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol
M-FS-10962 B66-10636 03

Device for reflowing electrodeposited solder on terminals
M-FS-10921 B69-10670 01

Discrimination of fish oil and mineral oil slicks on sea water
HQ-10412 B69-10673 01

Oleic Acid

Magnetic fluid readily controlled in zero gravity environment
LEWIS-126 B65-10335 03

Olivine

Epitaxial crystalline growth upon cold substrates
MSC-11196 B69-10494 01

One-Dimensional Antennas

Lightweight load support serves as vibration dumper
JPL-661 B65-10444 05

Omnidirectional antennas transmit and receive over large bandwidth
GSFC-436 B66-10133 01

Interference effects eliminated in random oriented space station antenna system
MSC-11004 B67-10435 01

On-Line Programming

New computer system simplifies programming of mathematical equations
M-FS-441 B66-10361 01

Computer program simulates physical systems by solving the simultaneous differential equations describing the systems
NPO-10019 B67-10193 06

Computer graphics data conditioning
M-FS-14695 B68-10296 06

Simplified system displays complex curves corresponding to input data
HQ-10073 B69-10247 01

One Dimensional Flow

One-dimensional reacting gas nonequilibrium performance program
MSC-11777 B68-10375 06
SUBJECT INDEX

OPACITY
Opaque microfiche masthead permits easy reading
HQ-7 B65-10306 01
Optically driven switch turn-off time reduced by opaque coatings
JPL-SC-107 B66-10141 01
Pyrometry handbook describes practical aspects of surface temperature measurements of opaque materials
LEWIS-349 B66-10520 01
Technique for predicting temperature distribution in gases
LEWIS-10318 B69-10329 01

OPENINGS
Expandable rubber plug seals openings for pressure testing
NU-0048 B66-10229 05
Interior servicing platform simplifies maintenance of storage tanks
M-PS-1360 B66-10425 05

OPERATING TEMPERATURE
Precision capacitor has improved temperature and operational stability
ABB-189 B67-10313 01
Transient sensor development
M-PS-13370 B67-10471 01
Liquid crystal calibrator
M-PS-14151 B66-10221 03

OPERATIONAL HAZARDS
Economical and maintenance-free gas system operates railroad switches
NU-0045 B66-10124 05
Lifting clamp positively grips structural shapes
M-PS-593 B66-10176 05

OPERATIONAL PROBLEMS
Logic system aids in evaluation of project readiness
MSC-753 B66-10457 05
Electrochemical cell has internal resistive heater element
GSFC-10358 B66-10325 01
Design and sparing techniques to meet specified performance life
HQ-10200 B68-10528 02

OPERATIONS RESEARCH
Queuing register uses fluid logic elements
M-PS-317 B66-10100 05

OPERATOR PERFORMANCE
Optical projectors simulate human eyes to establish operator’s field of view
WOO-250 B66-10011 02
Shoulder adapter steadies spot welding gun
M-PS-321 B66-10076 05
Tape reading fixture
M-PS-14146 B68-10008 05
Astronaut*s tool for withdrawing/replacing computer cards
M-PS-20453 B69-10183 05

OPERATORS (MATHEMATICS)
Structure of the isotropic transport operator in three independent space variables
ABG-10040 B69-10432 06

OPERATORS (PERSONNEL)
Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379 01

REMOTE OPERATIONS
Remotely operated high pressure valve protects test personnel
N-PS-11010 B67-10291 05

OPTICAL COMMUNICATION
Local measurements in turbulent flows through cross correlation of optical signals
M-PS-1268 B67-10030 01
Laser communication system is insensitive to atmospherically induced noise
GSFC-10396 B67-10587 01
Site survey for optimum location of Optical Communication Experimental Facility
M-PS-13155 B69-10050 06
Repetitively pulsed, wavelength-selective carbon dioxide laser
HSC-1978 B68-10564 02
Occulting-filter method for obtaining flash-lights visibility data
M-PS-13097 B69-10107 02
Multipurpose binocular scanning apparatus
NFO-11002 B66-10311 02
Method of directing a laser beam with very high accuracy
NFO-11087 B69-10508 02

OPTICAL CORRECTION PROCEDURE
Oil-damped mercury pool makes precise optical alignment tool
GSFC-353 B65-10253 02
Image position sensor
M-PS-14101 B69-10708 02

OPTICAL COUPLING
Automatic frequency control of voltage-controlled oscillators
NFO-11064 B68-10569 01

OPTICAL DENSITY
PTFE-aluminum films serve as neutral density filters
LANGLEY-189 B66-10017 02
Digital computer processing of X-ray photographs
JPL-792 B67-10005 04
Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
M-PS-11018 B67-10252 04
Sodium peroxinate permits rapid oxidation of nascent for easy spectrophotometric determination
ABB-262 B67-10421 03

VICAR-DIGITAL image processing system
NFO-11070 B69-10139 06

OPTICAL EQUIPMENT
Optics used to measure torque at high rotational speeds
LEWIS-13 B63-10338 01
Mirror device aligns machine surface perpendicular to sight lines
WOO-5 B63-10421 02
Microsachining produces optical apertures to micron dimensions
GSFC-206 B64-10211 05
Radiation-detector optical-imaging device is of simplified construction
GSFC-251 B64-10299 01
Simple optical system used to align spectrophotograph
LANGLEY-92 B65-10071 02
Computer programs simplify optical system analysis

I-451
Light ray modulation controls optical system alignment
GSPC-171  B65-10211  02

Oil-damped mercury pool makes precise optical alignment tool
GSPC-353  B65-10253  02

Multiple test chamber exposes materials to various environments
MSC-179  B65-10268  01

Interferometer construction assures parallelism of critical components
JPL-704  B65-10292  02

Unique construction makes interferometer insensitive to mechanical stresses
JPL-725  B65-10295  02

Nickel solution prepared for precision electroforming
WOO-070  B65-10303  03

Optical projectors simulate human eyes to establish operator's field of view
WOO-250  B66-10010  02

Electrodeless discharge lamp is easily started, has high stability
WOO-030  B66-10015  01

Improved carbon electrode reduces arc sputtering
MSC-219  B66-10026  01

Instrument quickly transposes ground reference target to eye level
MSC-275  B66-10061  05

Optically driven switch turn-off time reduced by opaque coatings
JEL-SC-107  B66-10141  01

Optical device enables small detector to see large field of view
WOO-253  B66-10263  02

Instrument transmits vanishing point to illustration point
MSC-267A  B66-10324  01

Electrically controlled optical latch and switch requires less current
JEL-SC-111  B66-10414  01

Optical monitor panel provides flexible test panel configurations
MSC-66-18  B66-10494  01

Simplified fixture permits precision alignment of an optical target
M-PS-1181  B66-10556  01

Sensors measure surface ablation rate of reentry vehicle heat shield
LANGLEY-287  B66-10592  01

Visual attitude orientation and alignment system
MSC-647  B67-10120  02

Portable spectrometer monitors inert gas shield in welding process
M-PS-12144  B67-10326  02

Machining heavy plastic sections
M-PS-12720  B67-10381  03

Foil radiometer accessory improves measurements
M-PS-12684  B67-10448  01

Automatic design of optical systems by digital computer
NPO-10265  B67-10632  06

Optical system facilitates inspection of printed circuit boards
GSPC-07971  B68-10021  02

Antiglare improvement for optical imaging systems
NPO-10337  B68-10090  02

Circuit enhances vertical resolution in raster scanning systems
MSC-12123  B68-10121  01

Optical integrating sphere operates at visible and infrared wavelengths
HSC-11688  B68-10245  02

Multiple test chamber exposes materials to various environments
HSC-179  B65-10268  02

Optical projectors simulate human eyes to establish operator's field of view
WOO-070  B65-10303  03

Training manual on optical alignment instruments
M-PS-20292  B66-10574  02

Method of making conical fiber optical components
XRF-09745  B69-10020  02

Improved combustion chamber optical probe
MSC-10953  B69-10142  02

Rectangular-bore, high-gain laser plasma tube
HQ-10234  B69-10193  02

Liquid laser cavities
GSPC-10592  B69-10592  02

Multipurpose binocular scanning apparatus
NPO-11002  B69-10311  02

A new method for producing optical mirrors
HQ-10227  B69-10529  02

Ultraviolet photographic pyrometer used in rocket exhaust analysis
I-PS-499  B66-10095  02

Inexpensive infrared source improvised from flashlight
NPO-11002  B69-10096  02

Proposed acousto-optic filter
HQ-10440  B69-10466  02

Visual attitude orientation and alignment system
MSC-647  B67-10120  02

Solvent residue content measured by light scattering technique
M-PS-550  B66-10320  01

Laser measuring system accurately locates point coordinates on photograph
ARG-74  B66-10560  02

Special purpose reflectometer uses modified Hilbert sphere
MSC-1135  B67-10109  02

Star/horizon simulator used to test space guidance system
MSC-407  B67-10110  02

I-452
SUBJECT INDEX

Improved atmospheric particle analyzer
ERC-33 B67-10231 01

Computer program for optical systems ray
tracing
PBC-10017 B67-10549 06

Improved optical diffractometer
MSC-12055 B68-10071 02

Ring laser angle encoder
MSC-13099 B69-10115 01

OPTICAL MEASURING INSTRUMENTS
Ellipsoidal optical reflectors reproduced by
electroforming
GSFC-92 B63-10547 05

Optical output enhances flowmeter accuracy
M-PS-482 B65-10395 02

Optical gyro pickoff operates at cryogenic
temperatures
M-PS-407 B66-10128 01

Mount enables precision adjustment of
optical-instrumentation mirror
MSC-104 B66-10199 02

Dielectrometer design permits measurement in vacuums under irradiation
M-PS-359 B66-10401 01

Direction indicator system does not require complicated optics
WOO-305 B66-10407 01

Point-source light sensor circuit is insensitive to background light
JPL-776 B66-10502 01

Optical superheterodyne receiver uses laser
for local oscillator
M-PS-1605 B66-10584 01

Optical automatic gain channel
M-PS-1550 B66-10596 02

Laser Doppler flowmeter measures gas velocity
M-PS-1747 B66-10693 02

Fatigue zones in metals identified by
polarized light photography
WOO-206 B67-10082 02

System enables dimensional inspection of very large structures
M-PS-2477 B67-10214 05

Optometric system facilitates colorimetric and fluorometric measurements
MPO-10233 B68-10316 01

Detection of effect of deposits on optical windows of pyrometer measurements
LEWIS-10866 B68-10367 01

Improved method of optical design
GSFC-10743 B69-10405 02

Airborne Fraunhofer Line Discriminator
MSC-13166 B69-10594 02

Automatic star-horizon angle measurement system
MSC-11505 B69-10597 01

OPTICAL MICROSCOPES
Color-televisioned medical microscopy
MSC-13086 B68-10314 01

OPTICAL PATHS
Photoelectric system continuously monitors liquid level
M-PS-417 B65-10382 01

OPTICAL POLARIZATION
Fatigue zones in metals identified by
polarized light photography
WOO-206 B67-10082 02

OPTICAL SCANNERS

OPTICAL PROPERTIES
Attachment converts microscope to point source
autocollimator
JPL-499 B64-10124 05

Lamp enables measurement of oxygen concentration in presence of water vapor
MSC-10483 B67-10387 01

Properties of optics at high temperature and their measurement, a study
M-PS-14696 B68-10240 02

Ultraviolet detector monitors organic contamination of optical surfaces
M-PS-20246 B68-10413 01

Correction for losses in optical birefringent networks, a concept
M-PS-20098 B68-10571 02

Selective view-glassing of Type 1 X-ray telescopes
GSFC-10682 B69-10075 02

Laser microprobe facility used in the elemental analysis of small feature of a sample
ARC-10359 B69-10165 02

OPTICAL PUMPING
Magnetometer measures orthogonal components of magnetic fields
GSFC-395 B65-10315 01

Optically exciting a magnetic memory — A feasibility study
M-PS-14854 B69-10060 02

OPTICAL PYROMETERS
Infrared shield facilitates optical pyrometer measurements
LANL-133 B65-10272 02

Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055 05

Ultraviolet photographic pyrometer used in rocket exhaust analysis
M-PS-499 B66-10095 02

High temperature thermocouple operates in reduction atmosphere
NU-0046 B66-10134 01

Pyrometry handbook describes practical aspects of surface temperature measurements of opaque materials
LEWIS-389 B66-10520 01

OPTICAL REFLECTION
Plastic films for reflective surfaces reproduced from masters
GSFC-108 B64-10151 03

Improved electro-optical tracking system
M-PS-14791 B68-10311 01

OPTICAL RESONANCE
Magnetometer measures orthogonal components of magnetic fields
GSFC-395 B65-10315 01

OPTICAL SCANNERS
 Sextant measures spacecraft altitude without gravitational reference
MSC-200 B66-10143 02

Scanning photometer system automatically determines atmospheric layer height
MSC-245 B66-10170 01

Apparatus presents visual display of semiconductor surface characteristics
JPL-665 B66-10200 01
Multicolor stroboscope pinpoints resonances in vibrating components
JPL-0033 B66-10223 01

Design concept for improved photo-scan tube
JPL-818 B67-10157 01

OPTICAL TRACKING
Precision CW laser automatic tracking system investigated
M-PS-1606 B66-10629 01

Improved electro-optical tracking system
M-PS-14791 B68-10311 01

OPTICS
Optics used to measure torque at high rotational speeds
LEWIS-13 B63-10338 01

Liquid-level meter has no moving parts
H-PS-3 B63-10378 03

Lathe converted for grinding aspheric surfaces
GSFC-115 B63-10956 05

System measures angular displacement without contact
LAMLEY-46 B65-10073 01

Photosensors used to maintain welding electrode-to-joint alignment
MSC-243 B65-10401 05

Screen of cylindrical lenses produces stereoscopic television pictures
M-PS-273 B66-10086 02

New camera tube improves ultrasonic inspection system
ARG-90237 B68-10088 01

Properties of optics at high temperature and their measurement; a study
M-PS-18696 B68-10240 02

Improved relay optical element for spectroradiometer using cryogenically cooled detector
MSC-11688 B68-10245 02

Fluorescent particles enable visualization of gas flow
M-PS-14583 B68-10259 02

FORTRAN optical lens design program
NPO-10603 B68-10354 06

UV detector monitors organic contamination of optical surfaces
M-PS-20246 B68-10413 01

Optically induced free carrier light modulator
GSFC-10216 B69-10114 01

Determination of the absolute contours of optical flats
ARG-10352 B69-10209 05

OPTIMAL CONTROL
Design techniques - Stochastic controllers
MSC-11554 B68-10234 02

OPTIMIZATION
Computer program determines inventory size
M-PS-1115 B66-10506 01

A design procedure for the weight optimization of straight finned radiators
GSFC-547 B66-10618 05

Packaging of electronic modules
JPL-801 B66-10664 01

Computer program for mass optimal solutions of some endpoint trajectory problems
M-PS-12976 B67-10310 06

Computer optimization program finds values for several independent variables that minimize a dependent variable
M-PS-13036 B67-10320 06

High-strength tungsten alloy with improved ductility
LEWIS-10257 B67-10340 03

Computer programs for antenna feed system design and analysis
NPO-10359 B67-10504 06

SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield
NOC-10142 B67-10537 06

Automatic planning concept - An analysis of optimum scheduling
M-PS-14198 B68-10127 06

Assembly, checkout, and operation optimization analysis technique for complex systems
M-PS-14105 B68-10222 05

Computer program analyzes and designs supersonic wing-body combinations
ARC-10141 B68-10335 06

Silicon strain sensors enable pressure measurement at cryogenic temperatures
M-PS-14703 B68-10262 01

New camera tube improves ultrasonic inspection system
ARG-90237 B68-10088 01

FORTRAN optical lens design program
NPO-10603 B68-10354 06

Single degree of freedom antenna pointing program /ANTENA/
ARC-10141 B68-10335 06

Computer program for parameter optimization
ARC-10168 B68-10449 06

Radial inflow turbine design charts
LEWIS-10720 B68-10567 05

Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings
M-PS-18453 B69-10178 05

OPTICAL MECHANICS
Generalized Newton-Raphson trajectory optimization-generator 1
M-PS-15024 B68-10422 06

OPTICAL RENDITIONS
Generalized Newton-Raphson trajectory optimization-generator 1
M-PS-15020 B68-10422 06

OPTICAL SPACE STATIONS
Study indicates fluid digital computation systems are feasible
M-PS-520 B67-10181 01

Feasibility study of wireless power transmission systems
M-PS-14691 B68-10309 01

OPTICS
Computer program for two-impulse rendezvous analysis
M-PS-13971 B67-10479 06

Computer program offers new method for constructing periodic orbits in nonlinear dynamical systems
M-PS-14654 B68-10217 06

I-454
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>ORTHOGONAL FUNCTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determination of quadric equation, coefficients</td>
<td>Hot-air soldering technique prevents over heating of electrical components</td>
</tr>
<tr>
<td>describing three-dimensional surfaces, their</td>
<td>GSPC-91 [B63-10536] 01</td>
</tr>
<tr>
<td>constraint and skewed planes, and view points</td>
<td>Modified gas bearing is adjustable to optimum stiffness ratio</td>
</tr>
<tr>
<td>areas M-PS-15043</td>
<td>M-PS-145 [B64-10050] 05</td>
</tr>
<tr>
<td>ORGANIC CHEMISTRY</td>
<td>Pneumatic power is transmitted through air bearing</td>
</tr>
<tr>
<td>Study made of Raney nickel technology</td>
<td>M-PS-8 [B64-10141] 05</td>
</tr>
<tr>
<td>M-PS-2054</td>
<td>slit feeds reduce unbalanced torques in gas lubricated bearings</td>
</tr>
<tr>
<td>Qualitative and quantitative analysis of mixture</td>
<td>B65-10099 [05]</td>
</tr>
<tr>
<td>s of compounds containing both hydrogen and</td>
<td>Averaging probe reduces static-pressure sensing errors</td>
</tr>
<tr>
<td>deuterium ARG-10312</td>
<td>B69-10114 [05]</td>
</tr>
<tr>
<td>Production of solvated electrons ARG-10416</td>
<td></td>
</tr>
<tr>
<td>ORGANIC COMPOUNDS</td>
<td></td>
</tr>
<tr>
<td>Solvent residue content measured by light</td>
<td></td>
</tr>
<tr>
<td>scattering technique M-PS-850</td>
<td></td>
</tr>
<tr>
<td>Primary cells utilize halogen-organic charge</td>
<td></td>
</tr>
<tr>
<td>transfer complex JPL-526</td>
<td></td>
</tr>
<tr>
<td>Nitric acid-organic mixtures surveyed for use in</td>
<td></td>
</tr>
<tr>
<td>separation by anion exchange methods ARG-10065</td>
<td></td>
</tr>
<tr>
<td>Detection of molecular infrared spectra HQ-10377</td>
<td></td>
</tr>
<tr>
<td>Recent development in organic scintillators ARG-10344</td>
<td></td>
</tr>
<tr>
<td>The Quantum, an improved quantum detector EBC-1016</td>
<td></td>
</tr>
<tr>
<td>Thermally conducting electron transfer polymers</td>
<td></td>
</tr>
<tr>
<td>GSPC-10703</td>
<td></td>
</tr>
<tr>
<td>ORGANIC MATERIALS</td>
<td></td>
</tr>
<tr>
<td>Multiple-orifice throttle valve INP-09698</td>
<td></td>
</tr>
<tr>
<td>Testing the flammability of materials exposed to</td>
<td></td>
</tr>
<tr>
<td>arcs M-PS-15225</td>
<td></td>
</tr>
<tr>
<td>ORGANIC SILICON COMPOUNDS</td>
<td></td>
</tr>
<tr>
<td>Aryleneisoloxane copolymers M-PS-1812</td>
<td></td>
</tr>
<tr>
<td>ORGANIZING</td>
<td></td>
</tr>
<tr>
<td>Computerized Schedule Effectiveness Technique</td>
<td></td>
</tr>
<tr>
<td>/SET/ determines present and future schedule</td>
<td></td>
</tr>
<tr>
<td>position M-PS-13012</td>
<td></td>
</tr>
<tr>
<td>ORGANOmetALLIC COMPOUNDS</td>
<td></td>
</tr>
<tr>
<td>New class of compounds have very low vapor</td>
<td></td>
</tr>
<tr>
<td>pressures ARG-115</td>
<td></td>
</tr>
<tr>
<td>Uranyl phthalocyanines show promise in the</td>
<td></td>
</tr>
<tr>
<td>treatment of brain tumors ARG-100</td>
<td></td>
</tr>
<tr>
<td>ORGANOmetALLIC POLYmers</td>
<td></td>
</tr>
<tr>
<td>Aryleneisoloxane copolymers M-PS-1812</td>
<td></td>
</tr>
<tr>
<td>ORIFICES</td>
<td></td>
</tr>
<tr>
<td>Elastic orifice automatically regulates gas</td>
<td></td>
</tr>
<tr>
<td>bearings JPL-135</td>
<td></td>
</tr>
<tr>
<td>Method of welding joint in closed vessel improves</td>
<td></td>
</tr>
<tr>
<td>quality of seam JPL-170</td>
<td></td>
</tr>
<tr>
<td>High-pressure regulating system prevents pressure</td>
<td></td>
</tr>
<tr>
<td>surges JPL-231</td>
<td></td>
</tr>
<tr>
<td>neutrals ARG-119</td>
<td></td>
</tr>
<tr>
<td>ORIGINS</td>
<td></td>
</tr>
<tr>
<td>Neutron activation analysis traces copper</td>
<td></td>
</tr>
<tr>
<td>artifacts to geographical point of origin ARG-119</td>
<td></td>
</tr>
<tr>
<td>ORTHOGONAL FUNCTIONS</td>
<td></td>
</tr>
<tr>
<td>Solar-angle sensor has no moving parts JPL-416</td>
<td></td>
</tr>
<tr>
<td>Ball and socket joints provide accurate bi axial</td>
<td></td>
</tr>
<tr>
<td>global JPL-658</td>
<td></td>
</tr>
<tr>
<td>Magnetometer measures orthogonal components of</td>
<td></td>
</tr>
<tr>
<td>magnetic fields GSPC-395</td>
<td></td>
</tr>
<tr>
<td>Developmental instrument supplies accurate</td>
<td></td>
</tr>
<tr>
<td>attitude and attitude-rate data HQ-57</td>
<td></td>
</tr>
<tr>
<td>Improved computer program for elastic analysis of</td>
<td></td>
</tr>
<tr>
<td>highly redundant structural configurations M-PS-13087</td>
<td></td>
</tr>
<tr>
<td>Oscilometer for remote tracking of eye movement</td>
<td></td>
</tr>
<tr>
<td>SBC-10114 [B69-10444] 02</td>
<td></td>
</tr>
</tbody>
</table>
Method reduces computer time for smoothing functions and derivatives through ninth order polynomials
BUC-10334

ORTHOGONALITY

Orthogonality makes possible fast analysis of oscillating phenomena
BUC-10334

Device reduces computer time for smoothing functions and derivatives through ninth order polynomials
BUC-10334

ORTHOGONALITY

Orthogonality makes possible fast analysis of oscillating phenomena
BUC-10334

Device reduces computer time for smoothing functions and derivatives through ninth order polynomials
BUC-10334

ORTHOGONALITY

Orthogonality makes possible fast analysis of oscillating phenomena
BUC-10334

Device reduces computer time for smoothing functions and derivatives through ninth order polynomials
BUC-10334

ORTHOGONALITY

Orthogonality makes possible fast analysis of oscillating phenomena
BUC-10334

Device reduces computer time for smoothing functions and derivatives through ninth order polynomials
BUC-10334

ORTHOGONALITY

Orthogonality makes possible fast analysis of oscillating phenomena
BUC-10334

Device reduces computer time for smoothing functions and derivatives through ninth order polynomials
BUC-10334

ORTHOGONALITY

Orthogonality makes possible fast analysis of oscillating phenomena
BUC-10334

Device reduces computer time for smoothing functions and derivatives through ninth order polynomials
BUC-10334
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>OSCILLATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>features stability and low power consumption</td>
<td>LANGLEY-123</td>
</tr>
<tr>
<td>OSCILLATORS</td>
<td>Sensitive electrometer features digital output</td>
</tr>
<tr>
<td>Increased performance reliability obtained with dual/redundant/oscillator systems</td>
<td>Oscillator circuit measures liquid level in tanks</td>
</tr>
<tr>
<td>Igniting system for mercury lamps protects transistorized sustaining supply</td>
<td>Brushless dc motor uses electron beam switching tube as commutator</td>
</tr>
<tr>
<td>Frequency-shift-keyer circuit improves SDR conversion for radio transmission</td>
<td>Inductor flyback characteristic gives voltage regulator fast response</td>
</tr>
<tr>
<td>Transistorized trigger circuit is frequency-controllable</td>
<td>Electronic chopper provides direct digital output</td>
</tr>
<tr>
<td>High efficient square-wave oscillator operator at high power levels</td>
<td>Electrostatically driven dynamic capacitor employs capacitive feedback</td>
</tr>
<tr>
<td>Computer determines high-frequency phase stability</td>
<td>Frequency correction device uses digital circuitry</td>
</tr>
<tr>
<td>Tiny sensor-transmitter can withstand extreme acceleration, gives digital output</td>
<td>Electronic asper-hour integrator is accurate to one percent</td>
</tr>
<tr>
<td>Blocking oscillator uses low triggering voltage</td>
<td>Hybrid circuit achieves pulse regeneration with low power drain</td>
</tr>
<tr>
<td>Novel circuit combines pulse stretcher with NOR gate</td>
<td>Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart</td>
</tr>
<tr>
<td>Electronic device simulates respiration rate and depth</td>
<td>Single-sideband modulator accurately reproduces phase information in 2-Mc signals</td>
</tr>
<tr>
<td>Transistorized converter provides nondissipative regulation</td>
<td>Helmet system broadcasts electroencephalograms of wearer</td>
</tr>
<tr>
<td>Voltage generator sweeps oscillator frequency linearly with time</td>
<td>Optical superheterodyne receiver uses laser for local oscillator</td>
</tr>
<tr>
<td>Circuit converts AM signals to FM for magnetic recording</td>
<td>Digital frequency counter permits readout without disturbing counting process</td>
</tr>
<tr>
<td>Metal diaphragm used to calibrate miniature transducers</td>
<td>Monitor assures availability and quality of communication channels</td>
</tr>
<tr>
<td>Feedback oscillator functions as low-level pulse stretcher</td>
<td>Fluidic oscillator used as humidity sensor</td>
</tr>
<tr>
<td>Variable frequency transistor inverters use multiple core transformers</td>
<td>Instrument continuously measures density of flowing fluids</td>
</tr>
<tr>
<td>High permeability semiconductors permit close-tolerance soldering</td>
<td>Circuit increases capability of hysteresis synchronous motor</td>
</tr>
<tr>
<td>Rotor position sensor switches current in brushless dc motors</td>
<td>Plotter design simplifies determination of image sensor transfer characteristic</td>
</tr>
<tr>
<td>Circuit reduces distortion of FM modulator</td>
<td>An efficient, temperature-compensated subcarrier oscillator</td>
</tr>
<tr>
<td>Dc to ac converter operates efficiently at low input voltages</td>
<td>A calibration means for spectrum analyzers</td>
</tr>
<tr>
<td>Analog-to-digital converter has increased reliability and reduced power consumption</td>
<td>Absolute frequency stabilization of laser oscillator against laser amplifier</td>
</tr>
<tr>
<td>Voltage variable oscillator has high phase stability</td>
<td></td>
</tr>
</tbody>
</table>
Vibration analysis utilizing Mössbauer effect
K-FS-11974 B67-10339 01

Digital-to-analog converter operates from low level inputs
JPL-907 B67-10357 01

Interference effects eliminated in random oriented space station antenna system
KSC-11004 B67-10435 01

Oscillator circuit operates as digitally controlled frequency synthesizer
GSFC-370 B67-10447 01

Digital voltage-controlled oscillator
GSFC-512 B67-10449 01

Blood pressure reprogramming adapter assists signal recording
KSC-265 B67-10475 01

Improved circuit for measuring capacitive and inductive reactances
K-FS-13063 B67-10513 01

Analog voicing detector responds to pitch
GSFC-10085 B67-10571 01

Conceptual servo technique for controlling tape drivers
K-FS-12955 B67-10595 01

New technique for determination of cross-power spectral density with damped oscillators
K-FS-14022 B67-10602 02

Concept for automatic Doppler compensation in two-way communication systems
GSFC-10213 B67-10643 01

Deep space FM system, a concept
KSC-11825 B68-10289 01

Dynamic linearity measurement technique
KSC-10186 B68-10290 01

Cryogenic liquid level measuring probe
ABG-10130 B68-10291 01

Improved gas ring laser
KSC-11584 B68-10304 02

Communication system features dual mode range acquisition plus time delay measurement
K-FS-14323 B68-10306 01

Laser-Doppler gas-velocity instrument
K-FS-20039 B68-10349 02

A 35 GHz solid state transmitter/driver
K-FS-20152 B68-10545 01

Microelectronic oscillator, 2
GSFC-10387 B69-10063 01

Microelectronic oscillator
GSFC-10375 B69-10064 01

One hundred MHz voltage-controlled oscillator
NPO-11004 B69-10133 01

Rectangular-bore, high-gain laser plasma tube
EQ-10234 B69-10193 02

Technique for tuning antenna systems producing negligible signal radiation
KSC-10060 B69-10215 01

Linear voltage-to-frequency converter
GSFC-10546 B69-10220 01

Induction probe determines levels of liquid metals

Oscilloscopes

Emission tester for high-power vacuum tubes
JPL-628 B64-10158 01

Raster linearity of video cameras calibrated with precision tester
GSFC-200 B64-10209 01

Highly sensitive solids mass spectrometer uses inert-gas ion source
EBC-11 B66-10114 02

Apparatus presents visual display of semiconductor surface characteristics
JPL-665 B66-10200 01

New computer system simplifies programming of mathematical equations
K-FS-441 B66-10361 01
Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart  
JPL-805 B66-10386 01

Photoelectric scanner makes detailed work function maps of metal surface  
JPL-SC-176 B66-10440 01

Thermionic scanner pinpoints work function of emitter surfaces  
JPL-SC-177 B66-10444 01

Semiconductors can be tested without removing them from circuitry  
M-PS-1163 B66-10447 01

Pulse technique provides more accurate checkout of exploding bridge wire device  
HQ-62 B66-10561 01

Study made of application of stereoscopic display system to analog computer simulation  
M-PS-1263 B66-10590 01

Magnetoresistor monitors relay performance  
M-PS-1754 B66-10650 01

Polarimeter provides transient response in nanosecond range  
JPL-890 B67-10021 02

Correlation established between heat transfer and ultrasonic transmission properties of copper braze bonds  
ARG-247 B67-10037 02

Recording and time expansion technique for high-speed, single-shot transient video signal  
ARC-10003 B67-10139 01

Design concept for improved photo-scan tube  
JPL-618 B67-10157 01

Numerical data frame readout system used in testing telemetry systems  
GSFC-551 B67-10175 01

Oscilloscope used as X-Y plotter or two-dimensional analyzer  
LEWIS-311 B67-10269 01

Potassium plasma cell facilitates thermionic energy conversion process  
ARG-10010 B67-10399 01

Laser communication system is insensitive to atmospherically induced noise  
GSFC-10396 B67-10587 01

Electronic skewing circuit monitors exact position of object underwater  
NRC-10146 B67-10629 01

X-Y plotter adapter developed for SDS-930 computer  
WGO-10220 B67-10654 06

Damage in rolling element bearings may be detected early  
HQ-10031 B67-10658 01

Ultrasound monitor-tipped cardiac catheter  
ARC-10054 B67-10669 01

System measures arc energy dissipated in relay contact cycling  
M-PS-14541 B68-10312 01

Nondestructive test determines overload destruction characteristics of current limiter fuses  
XGS-00656 B68-10364 01

System measures response time of photomultiplier tubes  
LEWIS-10437 B68-10382 01

Method for measuring alternator voltage transients  
LEWIS-10373 B69-10513 01

Rossbauer-effect data-collection system  
ARG-10026 B69-10027 01

Electronic visualization of gas bearing behavior  
LEWIS-10711 B69-10073 01

Concept for a multifunctional oscilloscope probe  
M-PS-16390 B69-10129 01

Determination of the absolute contours of optical flats  
ARG-10352 B69-10209 05

Simplified system displays complex curves corresponding to input data  
HQ-10073 B69-10247 01

Sweep frequency detector  
MPO-10669 B69-10289 01

Automatic Gaussian random-noise limiter  
MPO-10169 B69-10349 01

OSO
Temperature transducer has high output, is time stable  
GSFC-446 B65-10362 01

OUTGASSING
Vapor pressure measured with inflatable plastic bag  
GSFC-281 B65-10136 03

Mechanism facilitates coating of inner surfaces of metal cylinders  
GSFC-515 B66-10698 05

Bacteriostatic conformal coating for electronic components  
GSFC-10007 B67-10599 03

Liquid gallium rotary electric contact  
LEWIS-10828 B69-10138 03

Diffusion bond method of joining steel and a TPE-bronze composite  
M-PS-20482 B69-10237 03

Precision counting for instrumen optical elements provided by polyimide bonding  
M-PS-20293 B69-10310 05

OUTPUT
Double-throw microwave device switches two lines quickly  
JPL-410 B66-10528 01

Pressure transducer 3/8-inch in size can be faired into surface  
WGO-065 B64-10021 05

Digital logic elements provide additional functions from analog input  
MSC-64 B64-10064 01

Transistorized converter provides nondissipative regulation  
GSFC-230 B64-10305 01

Stepping motor drive circuit designed for low power drain  
GSFC-198 B65-10026 01

Circuit detects errors in address currents for magnetic core arrays  
M-PS-233 B65-10047 01

Digital-output cardiotachometer measures rapid changes in heartbeat rate  
M-PS-133 B65-10143 01

Sensitive electrometer features digital output  
I-459
GSPC-288  B65-10206  01
Electrometer preamplifier has drift correction feedback
JPL-SC-074  B65-10267  01
Frequency divider is free of spurious outputs
GSPC-308  B65-10336  05
Binary counter uses fluid logic elements
N-FS-323  B65-10377  01
Automatic gas control circuit handles wide
input range
MSC-166  B66-10089  01
Improved system measures output energy of
pyrotechnic devices
WOO-256  B66-10159  01
Microphone multiplexer system provides multiple
outputs from single source
GSPC-406
Phase inverter provides variable reference
push-pull output
HQ-23  B66-10344  01
Transistor circuit increases range of
logarithmic current amplifier
NU-0018  B66-10350  01
Feedback loop compensates for rectifier
nonlinearity
N-FS-309  B66-10382  01
Sensors measure surface ablation rate of
reentry vehicle heat shield
LANGLEY-287  B66-10592  01
MOSFET analog memory circuit achieves long
duration signal storage
N-FS-860  B66-10603  01
Modified univibrator compensates for output
timing errors
ARG-85  B67-10130  01
Amplifier provides dual outputs from a
single source with complete isolation
NUC-10056  B67-10221  01
Limit circuit prevents overdriving of
operational amplifier
NUC-10082  B67-10343  01
Digital-to-analog converter operates from
low level inputs
JPL-907  B67-10357  01
Circuit automatically calibrates flowmeter
against liquid-level gage reference
N-FS-2194  B67-10376  01
Proposed method of rotary dynamic balancing
by laser
N-FS-12422  B67-10452  02
Tool reconstructs data input points
(corresponding to first order output graph
N-FS-18003  B66-10154  02
Parallel-to-serial biphase-data converter
MSC-17600  B66-10241  01
Performance of low-pressure thermonic
converters is evaluated
ARG-10276  B69-10090  01
Self-starting circuit for switching
regulators
LEWIS-10686  B69-10128  05
MAGNYX - Program for calculating velocities
in magnified region of turbomachines
LEWIS-10709  B69-10132  06
Mass spectrometer analysis
MSC-13239  B69-10134  06

Full wave dc-to-dc converter using energy
storage transformers
LEWIS-10375  B69-10140  01
Schmitt trigger multivibrator
MSC-10955
Positive and negative output circuits
LEWIS-10715  B69-10151  01
Decode/Decode facility for FORTRAN 4
ARG-10335
Magnetically coupled emission regulator
GSPC-10056  B69-10213  01
Calibratable solid-state pressure switch
N-FS-20474  B69-10437  05
Special purpose computer provides
programmable digital filter for sampled-data
control systems
N-FS-20290  B69-10454  06
High voltage pulse generator
MSC-12778  B69-10548  01
Highly stable high-rate discriminator for
nuclear counting
ARG-10483  B69-10614  01

Adjustable thermal tree
MSC-15556  B69-10485  01

Pressure sensor responds only to shock wave
N-FS-238  B66-10184  01
Magnetic latches provide positive
overpressure control
NU-0057  B66-10279  05
Hermetically sealed cells protected from
internal gas pressure
GSPC-555  B66-10692  01
Integral valve provides automatic relief
and remote venting
N-FS-12134  B69-10545  05

Circuit protects regulated power supply
against overload current
GSPC-853  B66-10292  01
Triphase spark gap actuates overvoltage
relay
ARC-68  B66-10557  01
Low energy chopper can be used to test
sensitive circuits, other meters
SAR-10013  B66-10269  01
Current-limiting voltage regulator
MSC-11824  B66-10305  01
Transistorized Marx bank pulse circuit
provides voltage multiplication with
nanosecond rise-time
ARG-10110  B66-10328  01
Nondestructive test determines overload
and destruction characteristics of current
limiter fuses
XGS-08566  B69-10364  01
Low-cost voltage-level detector
LEWIS-10885  B69-10217  01
Fuse protects circuit from voltage and
current overloads
MSC-12135  B69-10490  01

Cryopumping of hydrogen in vacuum chambers is
aided by catalytic oxidation of hydrogen
LEWIS-15  B63-10340  05
Impurity diffusion process for silicon semiconductors is fast and precise

GSFC-397 B65-10300 01

Improved tool easily removes brazed tube connectors

MSc-263 B66-10003 05

Process reduces pore diameters to produce superior filters

WOO-093 B66-10037 03

Protective coating withstands high temperature in oxidizing atmosphere

K-FS-529 B66-10044 03

Tool provides constant purge during tube welding

K-FS-547 B66-10053 05

High temperature thermocouple operates in reduction atmosphere

ND-0046 B66-10134 01

Device removes hydrogen gas from enclosed spaces

GSFC-495 B66-10340 03

Thin-film ferrites vapor deposited by one-step process in vacuum

MSc-259 B66-10398 03

Radioactive method enables determination of surface areas rapidly and accurately

ND-0086 B66-10710 03

Ion exchange determines iodine-131 concentration in aqueous samples

ARG-208 B67-10129 04

Process facilitates photoresist mask alignment on SiC crystals

K-FS-2394 B67-10144 01

Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination

ARG-262 B67-10421 03

Ultrasonics used to measure residual stress

K-FS-1349 B67-10428 02

Reaction of steam with molybdenum is studied

ARG-295 B67-10502 03

Silicon oxide films grown in microwave discharge

K-FS-14634 B66-10171 01

Studies in zirconium oxidation

ARG-10099 B66-10199 03

Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics

SAN-10012 B68-10204 03

Preparation of silver-activated zinc sulfide thin films

GSFC-10667 B68-10271 03

Ignition of binary alloys of uranium

ARG-10057 B68-10280 01

Precise doping of metals by small gas flows

LEWIS-10444 B68-10526 03

Study of actinide chemistry in saturated potassium fluoride solution

ARG-10204 B69-10004 03

Electrochemical study of aluminum corrosion in boiling high purity water

ARG-10306 B69-10033 03

Technical report on galvanic cells with fused-salt electrolytes

ARG-10297 B69-10155 01

Technique for pinpointing submicron particles in the electron microprobe

HQ-10043 B69-10466 01

OXIDATION RESISTANCE

Nickel-base superalloys developed for high-temperature applications

LEWIS-226 B66-10222 03

Reinforced thermal-shock resistant ceramics

LEWIS-10376 B66-10085 03

High strength nickel-base alloy with improved oxidation resistance up to 2200 degrees F

LEWIS-10145 B68-10094 03

High-temperature bearing lubricants

LEWIS-10408 B68-10249 05

High temperature alloy

LEWIS-10377 B66-10253 03

Nickel base alloy with improved stress rupture properties

LEWIS-10263 B66-10344 03

Tungsten fiber-reinforced nickel superalloy

LEWIS-10424 B66-10369 03

Nickel-base superalloy with excellent properties promote its service to 2200 degrees F

LEWIS-10355 B68-10380 03

Improved high-temperature silicide coatings

LEWIS-10817 B69-10266 03

OXIDIZERS

Reference black body is compact, convenient to use

ABC-3 B63-10004 03

Removable preheater elements improve oxide induction furnace

JEL-288 B63-10193 01

Improved thermal insulation materials made of foamed refractory oxides

K-FS-735 B66-10286 03

Apparatus enables accurate determination of alkali oxides in alkali metals

LEWIS-256 B66-10296 03

Multilayer refractory nozzles produced by plasma-spray process

K-FS-310 B66-10611 05

Refractory oxide insulated thermocouple designed and analyzed for high temperature applications

ARG-10022 B66-10055 03

Multiple-mask chemical etching

MSc-13114 B69-10221 01

Improved retort for cleaning metal powders with hydrogen

LEWIS-10718 B69-10468 03

Improved method of producing oxide-dispersion-strengthened alloys

HQ-10461 B69-10536 03

Electrolytic separation of crystals of transition-metal oxides

ARG-10506 B69-10642 02

Mass-spectrometric study of the chromium-oxygen system

ARG-10421 B68-10645 02

Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces

ERG-10254 B66-10689 01

OXIDIZERS

Fuel and oxidizer valve assembly employs
OXYACETYLENE

single solenoid actuator
MSC-1046

Spherical pipe joint delivers loads equally to mating flange
M-FS-007

Addition of solid oxidizer increases liquid fuel specific impulse
JPL-861

Ignition of binary alloys of uranium
ARG-10057

Between-bearing shaft seal, a concept
I-PS-18179

Multiple-orifice throttle valve
XNP-09698

Two-step rocket engine bipropellant valve concept
MSC-10951

OXYACETYLENE

Electric arc heater is self starting
LANGLEY-200

OXYGEN

Cryopumping of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogen
LEWIS-15

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures
MSC-118

Heated die facilitates tungsten forming
LEWIS-25A

Microorganisms detected by enzyme-catalyzed reaction
JPL-782

Oxygen-hydrogen torch is a small-scale steam generator
NU-0082

Dual regulator controls two gases from a single reference
MSC-227

Apparatus enables accurate determination of alkali oxides in alkali metals
LEWIS-256

Sniffer used as portable hydrogen leak detector
M-FS-846

Cold trap increases sensitivity of gas chromatography
M-FS-1617

Grit blasting nozzle fabricated from mild tool steel proves satisfactory
M-FS-1420

Hermetically sealed cells protected from internal gas pressure
GSFC-555

Portable spectrometer monitors inert gas shield in welding process
M-FS-12144

Wear studies made of slip rings and gas bearing components
M-FS-12062

Adhesives for laminating polyimide insulated flat conductor cable
M-FS-12066

Fluid properties handbook
M-FS-13462

Evaluation of ignition mechanisms in selected nonmetallic materials

SUBJECT INDEX

MSC-11645

Saran film is fire-retardant in oxygen atmosphere
MSC-11604

Zinc-oxygen primary cell yields high energy density
M-FS-14661

Improved fuel-cell-type hydrogen sensor
M-FS-14656

Eating of electrical wires in vacuum environments
MSC-15108

One-dimensional reacting gas nonequilibrium performance program
MSC-11777

One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780

Axisymmetric reacting gas nonequilibrium performance program
MSC-11781

Precise doping of metals by small gas flows
LEWIS-10444

Two systems developed for purifying inert atmospheres
ARG-10234

Coatings decrease metal fatigue failure
ARC-10015

Plasma-heating by induction
LANGLEY-10528

Improved anode design for metal-oxygen cells
LEWIS-10871

Improved inorganic ion exchange membranes
LEWIS-10737

Device for obtaining separation of oxygen
LANGLEY-11007

Rate of heat extraction controller for environmental control
BG-10318

Adding calcium improves lithium ferrite core
ERC-10036

Chromatographic detection and analysis of traces of hydrocarbons
MSC-10388

Burn-rate testing apparatus
MSC-10947

OXYGEN ANALYZERS

Fuel cell serves as oxygen level detector
JPL-SC-072

New electrolyte may increase life of polarographic oxygen sensors
MSC-1049

Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
MSC-11018

Leak enables measurement of oxygen concentration in presence of water vapor
MSC-10043

Improved sample capsule for determination of oxygen in hemolyzed blood
MSC-11017

I-462
OXYGEN BREATHING
Respiratory transfer value has fail-safe feature
ARC-1 B65-10369 01

OXYGEN COMPounds
Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle
JVL-545 B63-10517 05
Substitution of stable isotopes in Chlorella
ARC-10258 B69-10197 04

OXYGEN CONSUMPTION
Plant respirometer enables high resolution of oxygen consumption rates
HQ-47 B66-10406 04

OXYGEN FLUIDR EYES
Single-element coaxial injector for rocket fuel
NNO-11095 B69-10547 05

OXYGEN MASKS
Miniature oxygen resuscitator
KSC-10398 B69-10319 04

OXYGEN REGULATORS
Plant respirometer enables high resolution of oxygen consumption rates
HQ-47 B66-10406 04

OXYGEN SUPPL Y EQUIPMENT
Respiratory transfer value has fail-safe feature
ARC-1 B65-10369 01
Hollow needle used to cut metal honeycomb structures
MSC-486 B66-10244 05
Plant respirometer enables high resolution of oxygen consumption rates
HQ-47 B66-10406 04
Improved chlorate candle provides concentrated oxygen source
MSC-1137 B67-10095 03

OXYGENATION
Process reduces pore diameters to produce superior filters
WGO-093 B66-10037 03
Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
MSC-11018 B67-10252 04

OXYHEMOGLOBIN
Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
MSC-11018 B67-10252 04

OZONE
Porous glass makes effective substrate for ozone-sensing reagent
GSPC-388 B65-10364 03
Reaction rates of graphite with ozone measured by etch decoration
ASG-10386 B68-10101 03
Rocket sonde measurements of ozone in the upper atmosphere
GSPC-10580 B69-10077 02

P-N JUNCTIONS
Lasor beam transmits electric power
GSPC-293 B65-10158 01
Pre-regulator feedback circuit utilizes Light Actuated Switch
N-FS-1180 B66-10542 01

P-TYPE SEMICONDUCTORS
Simplified method introduces drift fields into cells
GSPC-572 B67-10102 03
Process facilitates photosensit mask alignment on SiC crystals
JPL-SC-111 B65-10077 01
High efficiency square-wave oscillator operator at high power levels
GSPC-112 B63-10554 01
Novel circuit combines pulse stretcher with NOR gate
GSPC-187 B64-10150 01
Economical fabrication process produces high quality junction transistors
JPL-SC-065 B66-10330 01
Transistor voltage comparator performs own sensing
GSPC-228 B65-10028 01
Synchronized pulse generator needs no external power
GSPC-274 B65-10072 01
Electrolytes controlled optical latch and switch requires less current
JPL-SC-111 B66-10414 01
Semiconductors can be tested without removing them from circuitry
N-FS-1163 B66-10447 01
Equivalent circuit for a field effect transistor established for computer simulation
N-FS-1752 B66-10690 01
Conceptual techniques for reducing parasitic current gain of lateral pnp transistors
MSC-13199 B69-10244 01
Lateral pnp bipolar transistor with aiding field diffusions
MSC-13072 B69-10741 01

P-REGENERATION
Substrate anode transmits electric power
GSPC-293 B65-10158 01
Pre-regulator feedback circuit utilizes Light Actuated Switch
N-FS-1180 B66-10542 01

P-TYPE SEMICONDUCTORS
Miniature stress transducer has directional capability
JPL-591 B65-10023 01
Radiation used to temperature compensate semiconductor strain gages
LANGL-207 B66-10186 02
Solar cell submodule design facilitates assembly of lightweight arrays
JPL-728 B66-10231 02
Semiconductor forms biomedical radiation probe
MSC-320 B66-10252 04
Simplified method introduces drift fields into cells
GSPC-572 B67-10102 03
Process facilitates photosensit mask alignment on SiC crystals
JPL-SC-111 B65-10077 01
Silicon carbide diode for increased light output

Battery-package design provides for cell cooling and constraint

Lightweight magnesium-lithium alloys show promise

New inflatable liferaft is non-tippable

Hollow plastic hoops protect thermocouple in storage and handling

Frequency discriminator with binary output eliminates tuned circuits

Epoxy-coated containers easily opened by wire band

Critical parts are stored and shipped in environmentally controlled reusable container

Packaging of electronic modules

Repairable, high-density microelectronic module provides effective heat sink

Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board

Cone and column solar energy concentrator

Piggy-back mounting would increase microcircuit packaging density

Packaging criteria for transportation and handling shock and vibration

Low energy chaser can be used to test sensitive circuits, other meters

Standards for compatibility of printed circuit and component lead materials

Food products for space applications

One-dimensional reacting gas nonequilibrium performance program

Contamination control handbook

Microelectronic device data handbook

PACKAGING

Library of documents compressed into lap-held display kit

Battery-package design provides for cell cooling and constraint

Lightweight magnesium-lithium alloys show promise

New inflatable liferaft is nontippable

Hollow plastic hoops protect thermocouple in storage and handling

Frequency discriminator with binary output eliminates tuned circuits

Epoxy-coated containers easily opened by wire band

Critical parts are stored and shipped in environmentally controlled reusable container

Packaging of electronic modules

Repairable, high-density microelectronic module provides effective heat sink

Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board

Cone and column solar energy concentrator

Piggy-back mounting would increase microcircuit packaging density

Packaging criteria for transportation and handling shock and vibration

Low energy chaser can be used to test sensitive circuits, other meters

Standards for compatibility of printed circuit and component lead materials

Food products for space applications

One-dimensional reacting gas nonequilibrium performance program

Contamination control handbook

Microelectronic device data handbook

PACKAGING

Library of documents compressed into lap-held display kit

Battery-package design provides for cell cooling and constraint

Lightweight magnesium-lithium alloys show promise

New inflatable liferaft is nontippable

Hollow plastic hoops protect thermocouple in storage and handling

Frequency discriminator with binary output eliminates tuned circuits

Epoxy-coated containers easily opened by wire band

Critical parts are stored and shipped in environmentally controlled reusable container

Packaging of electronic modules

Repairable, high-density microelectronic module provides effective heat sink

Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board

Cone and column solar energy concentrator

Piggy-back mounting would increase microcircuit packaging density

Packaging criteria for transportation and handling shock and vibration

Low energy chaser can be used to test sensitive circuits, other meters

Standards for compatibility of printed circuit and component lead materials

Food products for space applications

One-dimensional reacting gas nonequilibrium performance program

Contamination control handbook

Microelectronic device data handbook
The response of nonoenergetic gamma rays in finite media are investigated.

ARG-10295

Cryopumping of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogen.

LNHS-15

New alloy brazes titanium to stainless steel.

MSC-102

Device removes hydrogen gas from enclosed spaces.

GSFC-695

Sniffer used as portable hydrogen leak detector.

N-PS-846

Purification train produces ultrapure hydrogen gas.

N-PS-11974

High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes.

LNHS-90271

Device separates hydrogen from solution in water at ambient temperatures.

MSC-13335

Trace levels of metallic corrosion in water determined by emission spectrography.

MSC-1193

Quantitive determination of flavin nucleotide using the bacterial bioluminescent reaction.

GSFC-10565

Laser doppler flowmeter measures gas velocity.

N-PS-1747

Aerodynamic forces of fluttering cylindrical and/or planar structures.

N-PS-20497

Portable display paneling has wide use, easy take down and assembly.

ARC-17

Electronic assembly rack panels snap on and off.

GSFC-59

Intrnument adjustment knob locks to prevent accidental maladjustment.

N-PS-190

Illuminated display panel is easily changed.

MSC-108

Screening technique makes reliable bond at room temperature.

N-PS-227

Flexible curtain shields equipment from intense heat fluxes.

N-PS-48

Transducer senses displacements of panels subjected to vibration.

ARC-37

Galvanic corrosion reduced in aluminum fabrications.

N-PS-272

Integral rims forced in metal panels by cold-press extrusion.

N-PS-230

Expandable insert serves as screw anchor.

MSC-301

Concealed hinge permits flush mounting of doors and hatches.

MSC-623

Ultrasonic emission method enables testing of adhesive bonds.

N-PS-799

Veratilbe machine mills, saves light materials.

N-PS-627

Impact and puncture resistant material protects parts from damage.

MSC-747

Study made to control depth of potting compound for honeycomb sandwich fasteners.

LEWIS-370

Preformed stiffeners used to fabricate structural components for pressurized tanks.

N-PS-2540

Application of distorted models in developing scaled structural models.

N-PS-1796

Roll diffusion bonding of titanium alloy panels.

N-PS-2540

Simulated hailstonle fabrication and use in testing weatherability of structures.

NRO-10783

Compound taper milling machine.

MSC-1574

Pressure-control purge panel for automatic butt welding.

N-PS-18465

Electronic circuitry used to automate paper chromatography.

JPL-840

Mechanism continuously measures static and dynamic cable loads.

MSC-217

Expandable takeup reel facilitates paper tape removal.

WG-271

Coded photographic proof paper could serve.
PARA HYDROGEN

as convenient densitometer
M-FS-13374 B67-10443 02

Investigation of temperature dependence of
development and aging
ARG-10145 B69-10022 04

Technique for highly efficient recovery
of microbiological contaminants
MSC-13250 B69-10273 04

PARA HYDROGEN

Real fluid properties of normal and
parahydrogen
LEWIS-10458 B68-10361 06

PARABOLIC ANTENNAS

computer programs for antenna feed system
design and analysis
NPO-10359 B67-10504 06

PARABOLIC BODIES

cone and column solar energy concentrator
LANGLEY-210 B67-10517 01

Multi-feed cone for Cassegrainian antennas
NPO-10539 B69-10269 01

PARABOLIC REFLECTORS

trommel cup reflector directed maximum energy
from light source
JPL-424 B63-10263 03

Interferometer construction assures
parallelism of critical components
JPL-704 B65-10292 02

Unique construction makes interferometer
insensitive to mechanical stresses
JPL-725 B65-10295 02

Small, high-intensity flasher permits
continuous close-in photography
BU-0043 B66-10119 03

scanning means for Cassegrainian antennas
JPL-946 B67-10174 05

Glancing incidence telescope for far
ultraviolet and soft X-rays
GSPC-10052 B67-10508 02

Energy-storage of a prescribed impedance
NPO-10303 B69-10380 01

PARABOLOID MIRRORS

wide-aperture solar energy collector is light
in weight
JPL-SC-055 B65-10046 02

Circuit board hole coordinate locator
concept
S-FS-14737 B69-10539 01

PARACHUTE DESCENT

Nylon shock absorber prevents injury to
parachute jumpers
MSC-226 B66-10080 05

PARACHUTES

Improved control system power unit for
large parachutes
MSC-12052 B67-10677 05

Quick-attach clamp
XPE-05421 B68-10250 05

Rocket sonde measurements of ozone in the
upper atmosphere
GSPC-10580 B69-10077 02

PARACHUTING INJURY

Nylon shock absorber prevents injury to
parachute jumpers
MSC-226 B66-10080 05

PARAFFINS

Variable-transparency wall regulates
temperatures of structures

SUBJECT INDEX

LANGLEY-25 B63-10528 03

High-temperature bearing lubricants
LEWIS-10408 B68-10249 05

PARALLAX

Multipurpose binocular scanning apparatus
NPO-11002 B69-10311 02

Stereo TV enhancement study
M-FS-14805 B69-10497 01

PARALLEL PLATES

Absolute viscosity measured using
instrumented parallel plate system
JPL-874 B67-10041 01

Machining heavy plastic sections
M-FS-12720 B67-10381 03

Electrochemical cell has internal resistive
heater element
GSPC-10358 B66-10325 01

PARALLELIPIPEDS

Computer program resolves radiative,
conductive, and convective heat transfer
problems for variety of geometries
N-FS-1910 B67-10329 06

PARALYSIS

Human transfer functions used to predict
system performance parameters
LANGLEY-203 B66-10379 01

PARAMETRIC

Calibration of resistance thermometer
down to 0.04 degrees K
ARG-10318 B69-10149 01

Production of solvated electrons
ARG-10416 B69-10830 03

PARABOLOID FREQUENCY CONVERTERS

Parametric up-converter increases flexibility
of maser
KSC-67-98 B67-10104 01

PARASITE

Conceptual techniques for reducing
parasitic current gain of lateral pnp
transistors
MSC-13199 B69-10244 01

PARITY

Simplified circuit corrects faults in parallel
binary information channels
JPL-SC-090 B66-10261 01

Detection system ensures positive alarm
activation in digital message loss
WGO-208 B66-10287 01

PARTIAL DIFFERENTIAL EQUATIONS

Computer simulation program is adaptable to
industrial processes
LEWIS-240 B66-10426 01

HICV - Newton-Raphson calculus of
variation with automatic transversalities
M-FS-14468 B68-10232 06

Solution of differential equations by
application of transformation groups
N-FS-14082 B68-10276 02

Controllability of distributed-parameter
systems
N-FS-14929 B68-10346 02

I-466
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PARTICLE TRAJECTORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-dimensional Coulomb-damped wave motion in prismatic bars</td>
<td>GSPC-252</td>
</tr>
<tr>
<td>B66-10548</td>
<td>B65-10048</td>
</tr>
<tr>
<td>PARTICLE ACCELERATORS</td>
<td>PARTICLE INTERACTIONS</td>
</tr>
<tr>
<td>Fuel cell serves as oxygen level detector</td>
<td>Electron interaction in matter</td>
</tr>
<tr>
<td>JPL-SC-072</td>
<td>B69-10674</td>
</tr>
<tr>
<td>Now electrolyte may increase life of</td>
<td>02</td>
</tr>
<tr>
<td>polarographic oxygen sensors</td>
<td>PARTİCLE MASS</td>
</tr>
<tr>
<td>MSC-1049</td>
<td>Microparticle impact sensor measures energy directly</td>
</tr>
<tr>
<td>B67-10003</td>
<td>GSPC-252</td>
</tr>
<tr>
<td>03</td>
<td>B65-10048</td>
</tr>
<tr>
<td>PARTICLE ACCELERATOR TARGETS</td>
<td>Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio</td>
</tr>
<tr>
<td>Electron interaction in matter</td>
<td>GSPC-509</td>
</tr>
<tr>
<td>B68-10686</td>
<td>B66-10347</td>
</tr>
<tr>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>PARTICLE ACCELERATORS</td>
<td>PARTICLE MOTION</td>
</tr>
<tr>
<td>Cold cathode ionization gage has rigid metal housing</td>
<td>Photographic method measures particle size and velocity in fluid streams</td>
</tr>
<tr>
<td>GSPC-445</td>
<td>B66-10666</td>
</tr>
<tr>
<td>B66-10041</td>
<td>B66-10668</td>
</tr>
<tr>
<td>01</td>
<td>01</td>
</tr>
<tr>
<td>Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio</td>
<td>On investigation of particle mixing in a gas-fluidized bed</td>
</tr>
<tr>
<td>GSPC-509</td>
<td>B68-10407</td>
</tr>
<tr>
<td>B66-10347</td>
<td>B66-10668</td>
</tr>
<tr>
<td>01</td>
<td>01</td>
</tr>
<tr>
<td>Reducing bubbles in glass coatings improves electrical breakdown strength</td>
<td>Fluorescent photography of spray droplets using a laser light source</td>
</tr>
<tr>
<td>LEWIS-10278</td>
<td>B69-10122</td>
</tr>
<tr>
<td>B66-10214</td>
<td>B67-10054</td>
</tr>
<tr>
<td>03</td>
<td>02</td>
</tr>
<tr>
<td>Glass coated single grid for charged particle acceleration</td>
<td>Improved atmospheric particle analyzer</td>
</tr>
<tr>
<td>LEWIS-10106</td>
<td>B67-10231</td>
</tr>
<tr>
<td>B68-10215</td>
<td>B66-10231</td>
</tr>
<tr>
<td>03</td>
<td>01</td>
</tr>
<tr>
<td>Advances in light-gas gun technology</td>
<td>Characteristics of fluidized-packed beds</td>
</tr>
<tr>
<td>B68-104270</td>
<td>B68-10270</td>
</tr>
<tr>
<td>B66-10288</td>
<td>B68-10270</td>
</tr>
<tr>
<td>05</td>
<td>03</td>
</tr>
<tr>
<td>On-line computer system for use with low-energy nuclear physics experiments is reported</td>
<td>Preparing rock powder specimens of controlled size distribution</td>
</tr>
<tr>
<td>ARG-10257</td>
<td>B68-100007</td>
</tr>
<tr>
<td>B69-10094</td>
<td>B68-10297</td>
</tr>
<tr>
<td>01</td>
<td>05</td>
</tr>
<tr>
<td>Spherical ion source</td>
<td>Beam profiles measured with thermoluminescent dosimeters</td>
</tr>
<tr>
<td>TRP-08698</td>
<td>ARG-10229</td>
</tr>
<tr>
<td>B69-10186</td>
<td>B69-10024</td>
</tr>
<tr>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td>PARTICLE BEAMS</td>
<td>Direct indication of particle size in fluidized beds</td>
</tr>
<tr>
<td>Cooling method prolongs life of hot-wire transducer</td>
<td>ARG-10130</td>
</tr>
<tr>
<td>LEWIS-41</td>
<td>B69-10083</td>
</tr>
<tr>
<td>B63-10344</td>
<td>05</td>
</tr>
<tr>
<td>02</td>
<td>05</td>
</tr>
<tr>
<td>PARTICLE DENSITY (CONCENTRATION)</td>
<td>Health hazards of ultrafine metal and metal oxide powders</td>
</tr>
<tr>
<td>Microparticle impact sensor measures energy directly</td>
<td>LEWIS-10878</td>
</tr>
<tr>
<td>GSPC-252</td>
<td>B69-10268</td>
</tr>
<tr>
<td>B65-10048</td>
<td>B69-10268</td>
</tr>
<tr>
<td>01</td>
<td>04</td>
</tr>
<tr>
<td>Improved atmospheric particle analyzer</td>
<td>A new method for the determination of particulate contamination levels for surface cleanliness of fluid systems</td>
</tr>
<tr>
<td>ERC-33</td>
<td>KSC-10267</td>
</tr>
<tr>
<td>B67-10231</td>
<td>B69-10520</td>
</tr>
<tr>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td>Mathematical relation predicts achievable densities of compacted particles</td>
<td>Flow properties of suspensions rich in collagen</td>
</tr>
<tr>
<td>ARG-10082</td>
<td>ARG-10481</td>
</tr>
<tr>
<td>B67-10592</td>
<td>B69-10622</td>
</tr>
<tr>
<td>03</td>
<td>02</td>
</tr>
<tr>
<td>Beam profiles measured with thermoluminescent dosimeters</td>
<td>Surface-renewal models for heat-transfer between walls and fluidized beds</td>
</tr>
<tr>
<td>ARG-10229</td>
<td>ARG-10372</td>
</tr>
<tr>
<td>B69-10024</td>
<td>B69-10772</td>
</tr>
<tr>
<td>02</td>
<td>02</td>
</tr>
<tr>
<td>PARTICLE DIFFUSION</td>
<td>PARTICLE THEORY</td>
</tr>
<tr>
<td>Computer program VARI-QUIR 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations</td>
<td>Experiments to investigate particulate materials in reduced gravity fields</td>
</tr>
<tr>
<td>NUC-10052</td>
<td>B68-13306</td>
</tr>
<tr>
<td>B67-10345</td>
<td>B67-10394</td>
</tr>
<tr>
<td>06</td>
<td>02</td>
</tr>
<tr>
<td>PARTICLE EMISISON</td>
<td>PARTICLE TRAJECTORIES</td>
</tr>
<tr>
<td>Quantum mechanical calculations of reactive scattering cross sections in bimolecular encounters</td>
<td>An investigation of particle mixing in a</td>
</tr>
<tr>
<td>B65-13594</td>
<td></td>
</tr>
</tbody>
</table>
PARTICLES

- Gas-fluidized bed
  ARG-10182

- Probe samples components of rocket engine exhaust
  M-PS-885

- Cleanroom air sampler collects and protects minute particles
  HQ-10037

- Microprobe investigation of brittle segregates in aluminum ARG-10264

- Technique for pinpointing submicron particles in the electron microprobe
  HQ-10043

- A comparison of two methods of measuring particle size of Al2O3 produced by a small rocket motor
  NPO-11198

PARTITION (MATHEMATICS)

- Root-cubing and general root-powering methods for finding the zeros of polynomials
  ARG-10444

PASSIVITY

- Concept for passive system to control gas flow independently of temperature
  N-PS-982

- Abraded cadmium-plated cable connectors repaired by conversion coating
  N-PS-1424

- Radiation tolerant silicon nitride insulated gate field effect transistors
  GSC-10581

- Storage of electric and magnetic energy in passive nonreciprocal networks
  ARG-10360

PASTE

- Improved electrode gives high-quality biological recordings
  MSC-17

- Improved conductive paste secures biomedical electrodes
  MSC-107

- Wire winding increases lifetime of oxide coated cathodes
  LEWIS-154

- Composite solar cell matrix is reliable, lightweight and flexible
  NPO-10821

- Improved fuel-cell-type hydrogen sensor
  M-PS-14656

- Quick don-doff electrode pastes
  NSC-13249

- Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
  ARG-10452

PATHOGENS

- Development and test of flexible fill coupon strips for use as a sampling technique
  M-PS-20448

SUBJECT INDEX

- Color-television medical microscopy
  MSC-13086

- Buoyant stokes litter assembly used for sea rescue operations
  MSC-131

- Simulator effects partial gravity conditions
  MSC-152

- Automated patient monitoring system
  M-PS-14552

- New electrical plethysmograph monitors cardiac output
  MSC-11447

- Electrocardiograph transmitted by RF and telephone links in emergency situations
  FBC-10031

- Automatic patient respiration failure detection system with wireless transmission
  ARG-10174

PATTERN RECOGNITION

- Improvement in recording and reading holograms
  EBC-10151

PATTERNS

- Measuring coplanarity of surfaces
  MSC-12044

- Checking flat conductor cable spacing by means of a noise pattern
  M-PS-20426

- Measurement technique for the determination of antenna directivity
  M-PS-12799

PAYLOADS

- Speed-sensing device aids crane operators
  WS-4

- Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
  M-PS-12516

- System automatically provides dynamic launch decision criteria
  M-PS-13063

- Earth orbit rendezvous evaluation program
  M-PS-13016

PEAKS

- Monitoring system determines amplitude and time of vibration channel peaks
  JPL-879

PACLET RUBBER

- Liquid-metal heat transfer in a co-current-flow, double-pipe heat exchanger is investigated
  ARG-10261

PEEL

- Fingertip current control facilitates use of arc welding gun
  MSC-289

PEELING

- Peel resistance of adhesive bonds accurately measured
  GSFC-320

PEEL-OUT

- Soluble undercoating facilitates removal of foamed-in-place insulation
  LEWIS-193

- Rotary-knife stripper facilitates removal
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PERFORATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>of X-ray film from pack</td>
<td>Sealed container sampling device</td>
</tr>
<tr>
<td>H-FS-14837</td>
<td>E69-10682 03</td>
</tr>
<tr>
<td>Simple test indicates degree of cure of polyimide coatings</td>
<td>Surface-renewal models for heat-transfer between walls and fluidized beds</td>
</tr>
<tr>
<td>MSC-15487</td>
<td>ARG-10372 02</td>
</tr>
<tr>
<td>PENNING</td>
<td>PENETRATORS</td>
</tr>
<tr>
<td>Peel resistance of adhesive bonds accurately measured</td>
<td>Extendable mast used in one shot soil penetrometer</td>
</tr>
<tr>
<td>GSPC-320</td>
<td>JPL-685 B66-10146 05</td>
</tr>
<tr>
<td>PELLETS</td>
<td>Radiographic threshold detection levels of aluminum weld defects</td>
</tr>
<tr>
<td>Standards for electron probe microanalysis of silicates prepared by convenient method</td>
<td>H-FS-20487 B69-10418 01</td>
</tr>
<tr>
<td>GSPC-469</td>
<td>B66-10234 03</td>
</tr>
<tr>
<td>PENDULUMS</td>
<td>PENNING EFFECT</td>
</tr>
<tr>
<td>Visco-pendulum damper suppresses structural vibrations</td>
<td>Cold cathode ionization gage has rigid metal housing</td>
</tr>
<tr>
<td>LANL-10281</td>
<td>GSPC-445 B66-10041 01</td>
</tr>
<tr>
<td>Seismic transducer measures small horizontal displacements</td>
<td>B66-10272 05</td>
</tr>
<tr>
<td>H-FS-81</td>
<td>PENNING GAGES</td>
</tr>
<tr>
<td>Device enables measurement of moments of inertia about three axes</td>
<td>Rod and disk cathode improves penning-type vacuum gage</td>
</tr>
<tr>
<td>GSPC-49</td>
<td>GSPC-447 B66-10082 01</td>
</tr>
<tr>
<td>Shock-operated valve would automatically protect fluid systems</td>
<td>B65-10176 05</td>
</tr>
<tr>
<td>H-FS-801</td>
<td>PENS</td>
</tr>
<tr>
<td>Automatic system determines moments of inertia of asymmetrical objects</td>
<td>Soldering tool heats workpieces and applies solder in one operation</td>
</tr>
<tr>
<td>H-FS-1765</td>
<td>LEWIS-247 B66-10115 05</td>
</tr>
<tr>
<td>PENETRANTS</td>
<td>Machining technique prevents undercutting in tensile specimens</td>
</tr>
<tr>
<td>Surfactant for dye-penetrant inspection is insensitive to liquid oxygen</td>
<td>B66-10352 05</td>
</tr>
<tr>
<td>H-FS-475</td>
<td>A magnifying scratch-gage force transducer</td>
</tr>
<tr>
<td>Instruction manuals for liquid penetrant nondestructive testing</td>
<td>LANL-10496 B69-10212 01</td>
</tr>
<tr>
<td>H-FS-14010</td>
<td>B66-10278 05</td>
</tr>
<tr>
<td>PENETRATION</td>
<td>PENTANS</td>
</tr>
<tr>
<td>Improved sensor counts micrometeoroid penetrations</td>
<td>Tritiated alumina serves as reagent for self-labeling analysis</td>
</tr>
<tr>
<td>LEWIS-76</td>
<td>ARG-209 B67-10315 03</td>
</tr>
<tr>
<td>Insulated weld tooling permits uniform, high quality weld</td>
<td>Synthesis of polyethers of hexafluorobenzene and hexafluoropentanedio1</td>
</tr>
<tr>
<td>MSC-42</td>
<td>H-FS-14962 B69-10636 03</td>
</tr>
<tr>
<td>Corrosion of metal samples rapidly measured</td>
<td>B66-10397 01</td>
</tr>
<tr>
<td>NU-0041</td>
<td>Modified algerimeter provides accurate depth measurements</td>
</tr>
<tr>
<td>B66-10140 03</td>
<td>MSC-616</td>
</tr>
<tr>
<td>Minimum permissible leakage resistance established for instrumentation systems</td>
<td>System maintains constant penetration during fusion welding</td>
</tr>
<tr>
<td>H-FS-046</td>
<td>H-FS-937</td>
</tr>
<tr>
<td>B66-10397 01</td>
<td>Study to minimize hydrogen embrittlement of ultra-high-strength steels</td>
</tr>
<tr>
<td>Modified algerimeter provides accurate depth measurements</td>
<td>H-FS-2455</td>
</tr>
<tr>
<td>MSC-616</td>
<td>Hand-held instrument should relieve hematoma pressure</td>
</tr>
<tr>
<td>B66-10647 04</td>
<td>H-FS-595</td>
</tr>
<tr>
<td>Cut-through tester accurately measures insulation failure rates</td>
<td>Ultrafast tool used to measure residual stress</td>
</tr>
<tr>
<td>H-FS-12506</td>
<td>H-FS-12449</td>
</tr>
<tr>
<td>Ultrasonics used to measure residual stress</td>
<td>Mixing weld gases offers advantages</td>
</tr>
<tr>
<td>B67-10354 03</td>
<td>H-FS-16413</td>
</tr>
<tr>
<td>PEROXIDE COMPOUNDS</td>
<td>PERFORATED PLATES</td>
</tr>
<tr>
<td>Solder flux leaves corrosion-resistant coating on metal</td>
<td>Filter for high-pressure gases has easy take-down, assembly</td>
</tr>
<tr>
<td>JFL-611</td>
<td>JFL-373 B63-10234 03</td>
</tr>
<tr>
<td>PERFORATION</td>
<td>HELIUM TUBE SEPARATES NITROGEN GAS FROM LIQUID NITROGEN</td>
</tr>
<tr>
<td>H-FS-398</td>
<td>JFL-398</td>
</tr>
</tbody>
</table>
PERFORMANCE

Perforations in jet engine supersonic inlet increase shock stability
NEO-8 B66-10530 05

PERFORMANCE
Titanium diaphragm makes excellent amplitron cathode support
GSPC-394 B65-10298 01

Centrifugal device separates liquid from gas
MSC-282 B65-10394 05

Electron multiplier has improved performance and stability
GSPC-546 B67-10060 01

Experimental scaling study of fluid amplifier elements
K-FS-1682 B67-10088 02

General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions
K-FS-13094 B67-10331 06

Performance of low-pressure thermionic converter is evaluated
AMG-10276 B69-10090 01

Programmed schedule holds for improving launch vehicle holds
K-FS-14502 B69-10662 03

PERFORMANCE PREDICTION
High efficient square-wave oscillator operator at high power levels
GSPC-112 B63-10554 01

Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379 01

Computer program determines performance efficiency of remote measuring systems
K-FS-1317 B66-10503 01

Performance of turbine-type flowmeters in liquid hydrogen
LEWIS-10137 B67-10506 01

Computerized Schedule Effectiveness Technique /SET/ determines present and future schedule position
K-FS-13012 B67-10522 06

Development of reliability prediction technique for semiconductor diodes
GSPC-10231 B67-10651 06

Effect of surface irregularities on bellows fatigue life
K-FS-14480 B68-10229 05

New method for critical failure prediction of complex systems
K-FS-1433 B68-10252 02

Nondestructive test determines overload destruction characteristics of current limiter fuses
XGS-08566 B68-10364 01

Axisymmetric two-phase perfect gas performance program
MSC-11774 B69-10374 06

One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780 B69-10376 06

Propellant tank pressurization analysis program
K-FS-12623 B69-10007 06

Experimental prediction of performance by superconducting cables
AMG-10215 B69-10161 01

Prediction of performance of centrifugal pumps during starts under pressure
LEWIS-10900 B69-10263 05

Method for predicting pump cavitation performance
LEWIS-10916 B69-10446 02

Estimating reliability by application of matrix representation
HQ-10286 B69-10793 02

PERFORMANCE TESTS
Temperature-compensation circuit stabilizes performance of vidicons
JPL-486 B69-10226 01

Vibration tests on vidicons made by improved method
JPL-SC-115 B66-10042 01

Linear signal noise number accurately determines and controls S/N ratio
JPL-SC-152 B66-10433 01

An improved method for testing performance of vidicons during vibration
JPL-SC-113 B66-10442 01

Fixture tests bellovs reliability through repetitive pressure/temperature cycling
MCS-1176 B67-10111 01

Personal communication system combines high performance with miniaturization
MCS-720 B67-10119 01

Torque meter aids study of hysteresis motor rings
K-FS-12219 B67-10412 01

Assembly, checkout, and operation optimization analysis technique for complex systems
K-FS-14105 B68-10222 05

Calibrated water tank facilitates proof-loading of cranes and derricks
K-FS-15059 B69-10109 05

Battery case shear
GSPC-10783 B69-10127 05

Performance statistics of the FORTRAN 4 //5/ library for the IBM system/360
AMG-10299 B69-10157 06

Computer programs for axial flow compressor design
LEWIS-10765 B69-10174 06

Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings
K-FS-18453 B69-10178 05

Computer program for off-design performance of radial inflow turbines
LEWIS-10764 B69-10267 06

Hydrogen flash lamps studied
ARG-10419 B69-10411 02

Design and sparing techniques to meet specified performance life
HQ-10200 B69-10528 02

PERIGEES
Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
K-FS-12916 B67-10307 06

PERIODIC VARIATIONS
Radioactive tracer system detects oil contaminants in fluid lines
K-FS-512 B66-10090 03

Tester periodically registers dc amplifier characteristics

I-470
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PB</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERIODICALS</td>
<td></td>
</tr>
<tr>
<td>A simplified PERT system</td>
<td>B67-10241 05</td>
</tr>
<tr>
<td>Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination</td>
<td>B67-10421 03</td>
</tr>
<tr>
<td>Gas diffusion cell removes carbon dioxide from occupied airtight enclosures</td>
<td>B64-10319 03</td>
</tr>
<tr>
<td>Plastic film stainless-steel fibers make resilient, impermeable material</td>
<td>B65-10117 03</td>
</tr>
<tr>
<td>Improved electrode paste provides reliable measurement of galvanic skin response</td>
<td>B66-10049 04</td>
</tr>
<tr>
<td>New energy storage concept uses tapes</td>
<td>B66-10098 02</td>
</tr>
<tr>
<td>Special treatment reduces helium permeation of glass in vacuum systems</td>
<td>B66-10372 02</td>
</tr>
<tr>
<td>Braze joint quality tested electrographically</td>
<td>B67-10333 01</td>
</tr>
<tr>
<td>Spiral-flow apparatus for measuring permeation of solids by gases</td>
<td>B69-10357 03</td>
</tr>
<tr>
<td>Device for obtaining separation of oxygen</td>
<td>B69-10477 01</td>
</tr>
<tr>
<td>Ionene membrane battery separator</td>
<td>B69-10501 03</td>
</tr>
<tr>
<td>Device separates hydrogen from solution in water at ambient temperatures</td>
<td>B69-10635 03</td>
</tr>
<tr>
<td>Thermal conductivity probe</td>
<td>B69-10780 03</td>
</tr>
<tr>
<td>Substitution of stable isotopes in Chlorella</td>
<td>B69-10197 04</td>
</tr>
<tr>
<td>New energy storage concept uses tapes</td>
<td>B66-10098 02</td>
</tr>
<tr>
<td>A simplified PERT system</td>
<td>B67-10241 05</td>
</tr>
<tr>
<td>Computer program conducts facilities utilization and occupancy survey</td>
<td>B68-10137 06</td>
</tr>
<tr>
<td>Contamination control handbook</td>
<td>B68-10392 03</td>
</tr>
<tr>
<td>Improved electrode paste provides reliable measurement of galvanic skin response</td>
<td>B66-10049 04</td>
</tr>
<tr>
<td>Computer/PERT technique monitors actual vs. allocated costs</td>
<td>B67-10025 01</td>
</tr>
</tbody>
</table>

**Vis-A-Plan (visualize a plan) management technique provides performance-time scale.**

**A simplified PERT system**

**Computerized Schedule Effectiveness Technique (CSET) determines present and future schedule position.**

**Graphic visualization of program performance aids management review.**

**Visual task analysis (VISTA).**

**PERTurbation**

**Study of dynamic response of elastic space stations.**

**Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors.**

**Study made of large amplitude fuel sloshing.**

**Propagation of density disturbances in air-water flow.**

**A sterilizable high-impact antenna.**

**PERTurbation Theory**

**Problem of oscillating cone in supersonic flow is solved by small perturbation techniques.**

**Dynamics of moving bubbles in single and binary component systems.**

**Dynamic calibration of turbine flowmeters.**

**Trajectory optimization using regularized variables.**

**PETROGRAPHY**

**Preparing rock powder specimens of controlled size distribution.**

**PH**

**Adherent protective coatings plated on magnesium-lithium alloy.**

**Reusable chelating resins concentrate metal ions from highly dilute solutions.**

**Large volume continuous counterflow dialyzer has high efficiency.**

**Hydrogen peroxide etching proves useful for germanium.**

**Improved pH-buffering agent for sodium hypochlorite.**

**Primary radical yields in pulse irradiated alkaline aqueous solution.**

**Improved nickel plating of Inconel X-750.**
PHARMACOLOGY

Development and test of flexible film coupon strips for use as a sampling technique
NPS-20448 B69-10339 03

PHASE CONTROL

Phase inverter provides variable reference push-pull output
Eq-23 B66-10344 01

Phase multiplying electronic scanning array
NPO-10302 B69-10381 01

PHASE DEMODULATORS

PS acquisition demodulator achieves automatic synchronization of a telemetry channel
JPL-612 B66-10423 01

Phase detector circuit synthesizes own reference signal
NPS-24B7 B65-10080 01

Electronic ohmmeter provides direct digital output
GSPC-363 B65-10274 01

Magnetometer measures orthogonal components of magnetic fields
GSPC-395 B65-10315 01

Control circuit maintains unity power factor of reactive load
RSC-192 B66-10431 01

Single-sideband modulator accurately reproduces phase information in 2-Mc signals
NPS-664 B66-10437 01

Circuit increases capability of hysteresis synchronous motor
RSC-1080 B67-10084 01

Solid state phase detector replaces bulky transformer circuit
RSC-11007 B67-10253 01

Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions
ABO-147 B67-10296 01

Improved circuit for measuring capacitive and inductive reactances
NPS-13083 B67-10513 01

Conceptual servo technique for controlling tape drives
NPS-12955 B67-10595 01

One hundred MHz voltage-controlled oscillator
NPS-11004 B69-10133 01

Improved VHF direction finding system
NPS-20439 B69-10378 01

Phase-locked-loop phase modulator with high modulation index, low distortion
RSC-12247 B69-10487 01

An interferometer tracking radar system
RSC-10956 B69-10523 01

PHASE DEVIATION

Improved gas ring laser
RSC-11584 B68-10304 02

Phase error

Method of reducing time base error in digital magnetic recorders
GSPC-10108 B68-10317 01

Multi-feed cone for Cassegrainian antenna
NPS-10539 B69-10269 01

PHASE LOCK DEMODULATORS

Improved phase locked loop receiver
GSPC-09561 B68-10008 01

PHASE LOCKED SYSTEMS

Bandwidth switching is transient-free, avoids loss of loop lock
NPS-054 B64-10349 01

Electronic phase-locked-loop speed control system is stable
JPL-SC-084 B66-10232 01

An investigation of phase-lock loop swept-frequency synchronization
NPS-456 B66-10423 01

Single-sideband modulator accurately reproduces phase information in 2-Mc signals
NPS-664 B66-10437 01

Experimetal coherent fractional frequency multiplier at S-band
NPS-2427 B67-10250 01

Solid state phase detector replaces bulky transformer circuit
RSC-11007 B67-10253 01

Interference effects eliminated in random oriented space station antenna system
RSC-11004 B67-10435 01

Video synchronization processor overcomes poor signal-to-noise ratio
RSC-10002 B67-10515 01

Diversity RF receiving system with improved phase-lock characteristics
E02-01222 B68-10068 01

Phase-lock loop frequency control and the dropout problem
NPS-13948 B68-10130 01

New passive telemetry system
HQ-10214 B69-10312 01

A method for reducing sampling jitter in digital control systems
NPS-11008 B69-10338 01

Wide-band doubler and sine wave quadrature generator
RSC-11133 B69-10383 01

Phase-locked-loop phase modulator with high modulation index, low distortion
RSC-12247 B69-10487 01

Design for a rapid automatic sync acquisition system
NPS-10214 B69-10538 01

Data processing method for a weak, moving telemetry signal
NPS-11003 B69-10639 01

PHASE MODULATION

Laser system generates single-frequency light
NPS-2556 B67-10288 02

Stable ac phase and amplitude comparator
NPS-13086 B67-10459 01

Laser communication system is insensitive to atmospherically induced noise
GSPC-10396 B67-10587 01

Electro-optic modulator for infrared laser using gallium arsenide crystal
GSPC-10686 B68-10255 02

Acquisition of pseudonoise signals by sequential estimation
NPS-13098 B68-10258 01

Communication system features dual mode

I-472
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PHENOMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>range acquisition plus time delay measurement</td>
<td>ARG-10428</td>
</tr>
<tr>
<td>System converts optical phase changes to RF phase changes</td>
<td>Fast Fourier Transform Spectral Analysis Program</td>
</tr>
<tr>
<td>Active frequency control system for argon FS laser</td>
<td>PCM synchronization by word stuffing</td>
</tr>
<tr>
<td>New passive telemetry system</td>
<td>PHASE SHIFT CIRCUITS</td>
</tr>
<tr>
<td>A theoretical study of radar backscatter from distributed targets with emphasis on polarization dependence</td>
<td>Magnetic tape system efficiently records and reproduces data</td>
</tr>
<tr>
<td>Long range holographic contour mapping concept</td>
<td>Thermonic scanner pinpoints work function of emitter surfaces</td>
</tr>
<tr>
<td>PHASE BULK</td>
<td>Electronic frequency discriminator</td>
</tr>
<tr>
<td>The thermodynamic properties of the wustite phase are studied</td>
<td>High power dc/dc and dc/ac electrical power conversion techniques developed</td>
</tr>
<tr>
<td>Computer circuit will fit on single silicon chip</td>
<td>Dielectric prisms would improve performance of quasi-optical microwave components</td>
</tr>
<tr>
<td>Phase shift frequency synthesizer is efficient, small in size</td>
<td></td>
</tr>
<tr>
<td>Magnetometer measures orthogonal components of magnetic fields</td>
<td>PHASE SHIFT KEYING</td>
</tr>
<tr>
<td>Circuit operates as sine function generator</td>
<td>Phase shift-keyed detector</td>
</tr>
<tr>
<td>Multicolor stroboscope pinpoints resonances in vibrating components</td>
<td>PHASE TRANSFORMATIONS</td>
</tr>
<tr>
<td>Linear signal noise summer accurately determines and controls S/N ratio</td>
<td>CINDA – Chrysler improved Numerical Differencing Analyzer computer program</td>
</tr>
<tr>
<td>Antenna simulator permits preinstallation system checkout</td>
<td>Thick transducers used for generating short-duration stress pulses in thin specimens</td>
</tr>
<tr>
<td>Mechanical device accurately measures RF phase differences in VHF or UHF ranges</td>
<td>Laser interferometer micrometer system</td>
</tr>
<tr>
<td>Means for improving apparent resolution of television</td>
<td></td>
</tr>
<tr>
<td>Improved circuit for measuring capacitive and inductive reactances</td>
<td>PHASE VELOCITY</td>
</tr>
<tr>
<td>Method of reducing time base error in digital magnetic recorders</td>
<td>A positive taper traveling-wave tube</td>
</tr>
<tr>
<td>Amplifier improvement circuit</td>
<td>A sterilizable high-impact antenna</td>
</tr>
<tr>
<td>Flow angle sensor and readout system</td>
<td>PHENOMIC RESINS</td>
</tr>
<tr>
<td>Phase multiplying electronic scanning array</td>
<td>Insulation for cryogenic tanks has reduced thickness and weight</td>
</tr>
<tr>
<td>A thirty-six element array antenna system</td>
<td>Mill profiler machines soft materials accurately</td>
</tr>
<tr>
<td>A compact rotary vane attenuator</td>
<td>Improved method facilitates debulking and curing of phenolic impregnated asbestos</td>
</tr>
<tr>
<td>Energy-storage of a prescribed impedance</td>
<td>Flame sprayed dielectric coatings improve heat dissipation in electronic packaging</td>
</tr>
<tr>
<td></td>
<td>A method for observing gas evolution during plastic laminate cure</td>
</tr>
</tbody>
</table>

**PHENOMS**

| Composite bulkhead fabrication development | ARG-10344 | B69-10198 03 |

**PHENOMS**

| Recent development in organic scintillators | | |

I-473
PHONOCARDIOGRAPHY

Phonocardiograph system monitors heart sounds
MSC-165 B66-10154 04

Phonocardiograph microphone is rugged and moistureproof
MSC-212 B66-10314 04

A phonocardiogram simulator
MSC-67-94 B67-10239 01

PHONOCARDIOGRAPHY

Measurements of thermoelectric power in annealed and quenched gold-platinum alloys
ARC-10303 B69-10206 03

PHOSPHOR COMPOUNDS

Impermeation diffusion process for silicon semiconductors is fast and precise
GSFC-397 B65-10300 01

Sintering characteristics and properties of PZS and PZP are determined
ARG-10229 B69-10058 03

PHOSPHOR ISOTOPES

An improved nuclear magnetic resonance spectrometer
JPL-762 B67-10234 01

PHOTOCATHODES

Point-source light sensor circuit is insensitive to background light
N-P-S-778 B66-10502 01

Design concept for improved photo-scan tube
JPL-818 B67-10157 01

Electronic shutter gates image orthicon on and off
HSQ-96 B67-10270 01

Laser system generates single-frequency light
N-P-S-2556 B67-10288 02

PHOTOCHENICAL REACTIONS

Beparin insulcinilized with crosslinking agent
NPO-10834 B66-10299 03

PHOTOCOUPLED SYSTEMS

A prototype high power portable lamp
L-PS-20229 B69-10189 01

The Quantasyn, an improved quantum detector
EBC-10148 B69-10443 01

Precisely repeatable rotary mechanism
NPO-11133 B69-10383 01

PHOTODETECTORS

Light-sensitive potentiometer measures product of two variables
GSFC-240 B65-10076 01

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems
W-PS-340 B67-10552 01

PHOTODETECTORS

Compact cartridge driven coded tape at constant readout speed
JEL-472 B64-10222 01

Instrument calibrates low gas-rate flowmeters
B65-10132 02

PHOTODETECTORS

Compact cartridge driven coded tape at constant readout speed
JEL-472 B64-10222 01

Instrument calibrates low gas-rate flowmeters
B65-10132 02
Laser beam transmits electric power
GSC-293  B65-10137  01

Brushless dc motor uses electron beam switching tube as commutator
GSC-345  B65-10158  01

Photoresistance analog multiplier has wide range
GSC-360  B65-10237  01

Miniature servo accelerometer is force-balanced
JPL-155  B65-10340  01

Optical output enhances flowmeter accuracy
N-FS-482  B65-10395  02

Photoelectric cells
MSC-134

Elastic analysis
GSPC-293  B65-10137  01

Laser beam transmits electric power
GSC-293  B65-10137  01

Brushless dc motor uses electron beam switching tube as commutator
GSC-345  B65-10158  01

Photoresistance analog multiplier has wide range
GSC-360  B65-10237  01

Miniature servo accelerometer is force-balanced
JPL-155  B65-10340  01

Optical output enhances flowmeter accuracy
N-FS-482  B65-10395  02

Photoelectric cell

Abbreviations:
GSC: Government Standard Code
JPL: Jet Propulsion Laboratory
MSC: NASA Marshall Space Flight Center
GSPC: NASA Goddard Space Flight Center

Subject Index

PHOTOELASTIC ANALYSIS
Servo system facilitates photoelastic strain measurements on resins
JPL-504  B64-10280  01

Proposed acousto-optic filter
N-FS-1040  B69-10466  02

PHOTOELASTIC CELLS
Solar-angle sensor has no moving parts
JPL-418  B63-10260  02

Liquid-level meter has no moving parts
N-FS-3  B63-10378  03

New method used to fabricate gallium arsenide photoemitter device
WGO-062  B64-10191  01

Nulling pyrometer uses Kerr cell shutter for fast responses
JPL-0079  B65-10050  01

Sensitive level sensor made with spirit level, gives electrical output
LANGLEY-49  B65-10047  01

System measures angular displacement without contact
LANGLEY-46  B65-10073  01

Magnetometer measures orthogonal components of magnetic fields
GSC-395  B65-10315  01

Photoelectric system continuously monitors liquid level
N-FS-417  B65-10382  01

Flowmeter measures low gas-flow rates
N-FS-215  B66-10036  01

Sensor detects hydrocarbon oil contaminants in fluid lines
N-FS-522  B66-10068  01

Continuous microbial cultures maintained Photosensors used to maintain welding electrode-to-joint alignment
MSC-243  B65-10401  01

High-speed camera synchronization
I-FS-18062  B68-10282  02

Brushless dc motor has high efficiency, long life
GSPC-181  B66-10355  01

Selective video blanking technique
B65-10037  01

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSC-10675  B69-10374  01

Photoelectric effect

RF noise suppression using the photodiode in semiconductors
ARG-10295  B69-10556  01

Photoelectric emission

CIRCUIT—A digital computer program for transient analysis of electronic circuits
N-FS-15002  B68-10416  06

Photoelectric materials

Low-cost tape system measures velocity of acceleration
GSC-85  B63-10512  01

Photoelectric scanner reads detailed work function maps of metal surface
JPL-SC-176  B66-10410  01

Photoelectric system

Photoelectric semiconductor switch operates with low level inputs
JPL-SC-060  B65-10033  01

Photoelectric sensor output controlled by eyeball movements
N-FS-274  B65-10079  01

Star/horizon simulator used to test space guidance system
MSC-407  B67-10110  02

Subject Index

PHOTOELASTIC ANALYSIS
Servo system facilitates photoelastic strain measurements on resins
JPL-504  B64-10280  01

Proposed acousto-optic filter
N-FS-1040  B69-10466  02

PHOTOELASTIC CELLS
Solar-angle sensor has no moving parts
JPL-418  B63-10260  02

Liquid-level meter has no moving parts
N-FS-3  B63-10378  03

New method used to fabricate gallium arsenide photovoltaic device
WGO-062  B64-10191  01

Nulling pyrometer uses Kerr cell shutter for fast responses
JPL-0079  B65-10050  01

Sensitive level sensor made with spirit level, gives electrical output
LANGLEY-49  B65-10067  01

System measures angular displacement without contact
LANGLEY-46  B65-10073  01

Magnetometer measures orthogonal components of magnetic fields
GSC-395  B65-10315  01

Photoelectric system continuously monitors liquid level
N-FS-417  B65-10382  01

Flowmeter measures low gas-flow rates
N-FS-215  B66-10036  01

Sensor detects hydrocarbon oil contaminants in fluid lines
N-FS-522  B66-10068  01

Continuous microbial cultures maintained Photosensors used to maintain welding electrode-to-joint alignment
MSC-243  B65-10401  01

High-speed camera synchronization
I-FS-18062  B68-10282  02

Brushless dc motor has high efficiency, long life
GSPC-181  B66-10355  01

Selective video blanking technique
B65-10037  01

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSC-10675  B69-10374  01

Photoelectric effect

RF noise suppression using the photodiode in semiconductors
ARG-10295  B69-10556  01

Photoelectric emission

CIRCUIT—A digital computer program for transient analysis of electronic circuits
N-FS-15002  B68-10416  06

Photoelectric materials

Low-cost tape system measures velocity of acceleration
GSC-85  B63-10512  01

Photoelectric scanner reads detailed work function maps of metal surface
JPL-SC-176  B66-10410  01

Photoelectric system

Photoelectric semiconductor switch operates with low level inputs
JPL-SC-060  B65-10033  01

Photoelectric sensor output controlled by eyeball movements
N-FS-274  B65-10079  01

Star/horizon simulator used to test space guidance system
MSC-407  B67-10110  02

Subject Index

PHOTOELASTIC ANALYSIS
Servo system facilitates photoelastic strain measurements on resins
JPL-504  B64-10280  01

Proposed acousto-optic filter
N-FS-1040  B69-10466  02

PHOTOELASTIC CELLS
Solar-angle sensor has no moving parts
JPL-418  B63-10260  02

Liquid-level meter has no moving parts
N-FS-3  B63-10378  03

New method used to fabricate gallium arsenide photovoltaic device
WGO-062  B64-10191  01

Nulling pyrometer uses Kerr cell shutter for fast responses
JPL-0079  B65-10050  01

Sensitive level sensor made with spirit level, gives electrical output
LANGLEY-49  B65-10067  01

System measures angular displacement without contact
LANGLEY-46  B65-10073  01

Magnetometer measures orthogonal components of magnetic fields
GSC-395  B65-10315  01

Photoelectric system continuously monitors liquid level
N-FS-417  B65-10382  01

Flowmeter measures low gas-flow rates
N-FS-215  B66-10036  01

Sensor detects hydrocarbon oil contaminants in fluid lines
N-FS-522  B66-10068  01

Continuous microbial cultures maintained Photosensors used to maintain welding electrode-to-joint alignment
MSC-243  B65-10401  01

High-speed camera synchronization
I-FS-18062  B68-10282  02

Brushless dc motor has high efficiency, long life
GSPC-181  B66-10355  01

Selective video blanking technique
B65-10037  01

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSC-10675  B69-10374  01

Photoelectric effect

RF noise suppression using the photodiode in semiconductors
ARG-10295  B69-10556  01

Photoelectric emission

CIRCUIT—A digital computer program for transient analysis of electronic circuits
N-FS-15002  B68-10416  06

Photoelectric materials

Low-cost tape system measures velocity of acceleration
GSC-85  B63-10512  01

Photoelectric scanner reads detailed work function maps of metal surface
JPL-SC-176  B66-10410  01

Photoelectric system

Photoelectric semiconductor switch operates with low level inputs
JPL-SC-060  B65-10033  01

Photoelectric sensor output controlled by eyeball movements
N-FS-274  B65-10079  01

Star/horizon simulator used to test space guidance system
MSC-407  B67-10110  02
Determination of the absolute contours of optical flats
ARG-10352  B69-10209  05

Multichannel spectroscopy guide
HQ-10441  B69-10550  01

Impurity diffusion process for silicon semiconductors is fast and precise
GSPC-399  B65-10300  01

Vapor grown silicon dioxide improves transistor base-collector junctions
GSPC-389  B66-10091  01

Offset lenses add versatility to phototypesetting machine
HQ-9  B66-10173  02

Design of printed circuit coils
HQ-10431  B69-10665  01

Ultraviolet photographic pyrometer used in rocket exhaust analysis
M-PS-499  B66-10095  02

Camera lens adapter magnifies image
M-PS-11955  B67-10398  02

Improvement in recording and reading holograms
ERC-10151  B68-10347  02

Rotary-knife stripper facilitates removal of X-ray film from pack
M-PS-14837  B68-10509  05

Camera mount for close-up stereo photographs
LANGLEY-10442  B69-10226  02

Improved camera for better X-ray powder photographs
HQ-10424  B69-10537  01

Rotating filters permit wide range of optical pyrometry
LANGLEY-33  B65-10100  02

Means for improving apparent resolution of television
ERC-65  B67-10152  01

Shortened processing time technique for color industrial radiography
ARG-10235  B69-10001  02

Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-10495  B69-10236  04

Illustrated display panel is easily changed
MSC-108  B65-10003  05

Nulling pyrometer uses Kerr cell shutter for fast responses
NU-0010  B65-10050  01

Modified contour projector makes excellent contour densitometer
LANGLEY-93  B65-10084  02

Rotating filters permit wide range of optical pyrometry
LANGLEY-33  B65-10100  02

Simple circuit positions film frames in projector
JPL-508  B65-10132  02

Planetary camera control improves microfiche production
HQ-1  B65-10313  01

FORTRAN program flow chart is automatically produced
M-PS-1369  B66-10062  01

Small, high-intensity flasher permits continuous close-in photography
NU-0043  B66-10119  03

Commercial film produces positive X-ray photo in ten seconds
M-PS-521  B66-10307  02

Inflatable holding fixture permits X-rays to be taken of inner weld areas
M-PS-856  B66-10327  03

Mylar film eliminates silk screening of equipment panels
MSC-798  B66-10455  05

Planetary camera control improves microfiche production
HQ-1  B65-10313  01

Camera lens adapter magnifies image
M-PS-11955  B67-10398  02

Improvement in recording and reading holograms
ERC-10151  B68-10347  02

Rotary-knife stripper facilitates removal of X-ray film from pack
M-PS-14837  B68-10509  05

Camera mount for close-up stereo photographs
LANGLEY-10442  B69-10226  02

Improved camera for better X-ray powder photographs
HQ-10424  B69-10537  01

Rotating filters permit wide range of optical pyrometry
LANGLEY-33  B65-10100  02

Means for improving apparent resolution of television
ERC-65  B67-10152  01

Shortened processing time technique for color industrial radiography
ARG-10235  B69-10001  02

Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-10495  B69-10236  04

Illustrated display panel is easily changed
MSC-108  B65-10003  05

Nulling pyrometer uses Kerr cell shutter for fast responses
NU-0010  B65-10050  01

Modified contour projector makes excellent contour densitometer
LANGLEY-93  B65-10084  02

System selects framing rate for spectrograph camera
LANGLEY-55  B65-10086  01

Magnets position X-ray film for weld inspection
M-PS-253  B65-10110  05

Simple circuit positions film frames in projector
JPL-508  B65-10132  02

Single projector accommodates slides of different size and format
MSC-399  B66-10016  02

FORTRAN program flow chart is automatically produced
M-PS-1369  B66-10062  01

Small, high-intensity flasher permits continuous close-in photography
NU-0043  B66-10119  03

Commercial film produces positive X-ray photo in ten seconds
M-PS-521  B66-10307  02

Inflatable holding fixture permits X-rays to be taken of inner weld areas
M-PS-856  B66-10327  03

Mylar film eliminates silk screening of equipment panels
MSC-798  B66-10455  05
SUBJECT INDEX

Gas pressure feeds film into camera at high speed
ARG-97  B66-10474  02

Polaroid film helps locate objects in inaccessible areas quickly
MSC-960  B67-10088  02

Means for improving apparent resolution of television
MSC-65  B67-10152  01

Electron beam welder X-rays its own welds
LEWIS-10111  B67-10216  02

Fresnel diffraction plates are simple and inexpensive
H-PS-12731  B67-10297  02

Areas of irregular, discontinuous patterns rapidly and accurately measured
GSFC-10184  B67-10674  01

Hydra 1 data display system
MSC-11594  B67-10155  01

X-ray film holder permits single continuous picture of tubing joint
LEWIS-10382  B68-10343  05

Rotary-knife stripper facilitates removal of X-ray film from pack
H-PS-14837  B68-10509  05

Shortened processing time technique for color industrial radiography
ARG-10235  B69-10100  02

Imprinting of confining sites for cell cultures on thermoplasticsubstrates
LANGLY-10495  B69-10236  04

A concept for magazine Bitmap processor
ESC-06786  B69-10275  02

Electrooptical scanning of film
NPO-11106  B69-10568  01

PHOTOGRAPHIC MEASUREMENT
Photographic method measures particle size and velocity in fluid stream
H-PS-1536  B66-10668  01

Slide rule-type color chart predicts reproduced photo tones
ESC-1227  B66-10680  01

PHOTOGRAPHIC PROCESSING
Commercial film produces positive X-ray photo in ten seconds
H-PS-521  B66-10307  02

PHOTOGRAPHIC PROCESSING EQUIPMENT
Dual photochemical replenisher system reduces chemical losses
ASK-67-111  B67-10485  02

PHOTOGRAPHIC RECORDING
Numerical data frame readout system used in testing telemetry systems
GSFC-551  B67-10175  01

Measuring coplanarity of surfaces
MSC-12044  B67-10371  02

High-speed camera synchronization
H-PS-18062  B68-10282  02

Microscopes and computers combined for analysis of chromosomes
ARG-10256  B69-10088  04

Electrooptical scanning of film
NPO-11106  B69-10568  01

PHOTOGRAPHS
Built-in templates speed up process for making accurate models
LANGLY-23  B63-10526  05

PHOTOGRAPHY
Indicator system provides complete data of engine cylinder pressure variation
LEWIS-291  B66-10470  05

VICAR-DIGITAL image processing system
NPO-10770  B69-10139  06

Stereo TV enhancement study
H-PS-14805  B69-10497  01

Discrimination of fish oil and mineral oil slicks on sea water
EQ-10412  B69-10673  01

PHOTOGRAPHY
Electro mechanically operated camera shutter provides uniform exposure
JPL-357  B63-10227  01

Camera shutter is actuated by electric signal
ARC-20  B63-10560  05

Front and back printed circuit layouts presented on single sheet
GSFC-93  B63-10596  01

Magnets position X-ray film for weld inspection
H-PS-501  B65-10110  05

Beam splitter used in dual filming technique
H-PS-856  B66-10307  02

Commercial film produces positive X-ray photo in ten seconds
H-PS-521  B66-10307  02

Inflatable holding fixture permits X-rays to be taken of inner weld areas
H-PS-856  B66-10327  03

Dot patterns provide reproducible flaw areas for study of adhesive bonds
H-PS-862  B66-10367  05

Exposure Value /EV/ system expanded to include filter factors and transmittance
LANGLEY-190  B66-10602  02

Rocket engine vibration accurately measured by photography
H-PS-1916  B66-10652  02

Digital computer processing of X-ray photos
JPL-792  B67-10005  04

Fatigue zones in metals identified by polarized light photography
WDO-286  B67-10082  02

Improved television signal processing system
NPO-10140  B67-10246  01

Computer program for Video Data Processing System /VDP/ NPO-10042  B67-10630  06

Photographic and drafting techniques simplify method of producing engineering drawings
H-PS-716  B68-10126  02

Fluorescent particles enable visualization of gas flow
H-PS-18503  B68-10259  02

X-ray film holder permits single continuous picture of tubing joint
LEWIS-10382  B68-10383  05

An investigation of particle mixing in a gas-fluidized bed
ARG-10182  B68-10407  05

Rapid-response, light-exposure control system
NPO-10236  B68-10502  01

Fluorescent photography of spray droplets
I-477
PHOTOINTERPRETATION

using a laser light source
LEWIS-10777 B69-10122 02

A prototype high power portable lamp
N-PS-20229 B69-10189 02

Multipurpose binocular scanning apparatus
NPO-11002 B69-10311 02

Technique for pinpointing submicron
particles in the electron microprobe
HQ-10043 B69-10465 01

Automatic sample rotator for metallocraphic
polishing
NPO-11015 B69-10596 03

PHOTOINTERPRETATION

Laser measuring system accurately locates
point coordinates on photograph
AEG-74 B66-10560 02

PHOTOIONIZATION

Ion chambers simplify absolute intensity
measurements in the vacuum ultraviolet
SRC-10 B66-10439 01

An improved soft X-ray photoionization
detector
GSFC-540 B67-10072 02

PHOTOLUMINESCENCE

Electronic gating circuit and ultraviolet
laser excitation permit improved dosimeter
sensitivity
ARG-10169 B68-10077 02

PHOTOLYSIS

Production of crystalline polymers via
liquid crystal monomers
HQ-10235 B69-10744 03

PHOTOMETERS

New method used to fabricate gallium arsenide
photovoltaic device
NIO-006 B64-10019 01

Electro mechanical flowmeter accurately
monitors fluid flow
GSFC-357 B65-10273 01

Sensor detects hydrocarbon oil contaminant
in fluid lines
N-PS-522 B66-10068 01

Scanning photometer system automatically
determines atmospheric layer height
MSC-245 B66-10170 01

Optical device enables small detector to see
large field of view
NIO-253 B66-10263 02

Solvent residue content measured by light
scattering technique
N-PS-850 B66-10320 01

Uniform reflective films deposited on large
surfaces
GSFC-507 B66-10483 02

Preregulator feedback circuit utilizes
Light Activated Switch
M-PS-1180 B66-10542 01

Photocell shadowing technique improves light
source detector
JPL-809 B66-10564 01

Sensors measure surface ablation rate of
reentry vehicle heat shield
LANGLEY-207 B66-10592 01

Blackbody cavity radiometer has rapid
response
JPL-521 B66-10679 01

Local measurements in turbulent flows
through cross correlation of optical signals
LBWIS-10128 B68-10279 03

I-478
SUBJECT INDEX

PHOTON DENSITY
An improved soft X-ray photoionization detector
GSPC-540 B67-10072 02

PHOTONS
Concept for improved vacuum pressure measuring device
J-PS-20172 B69-10421 02
Ion mass spectrometer for special uses
HQ-10418 B69-10510 02

PHOTOSENSITIVITY
Modified developer increases line resolution in photosensitive resist
GSPC-386 B65-10278 01
Selenium bond decreases ON resistance of light-activated switch
JPL-SC-101 B65-10324 01
Vibration tests on vidicons made by improved method
JPL-SC-115 B66-10042 01
New television camera eliminates vidicon tube
J-PS-472 B66-10112 01
Plotter design simplifies determination of image sensor transfer characteristic
NPO-10164 B67-10206 01
Photonsensitive filler minimizes internal stresses in epoxy resins
J-PS-1880 B67-10227 03
Portable spectrometer monitors inert gas shield in welding process
J-PS-12144 B67-10326 02
Gimbal angle sensor
GSPC-10305 B68-10315 01
System measures response time of photomultiplier tubes
LEWIS-10437 B68-10382 01

PHOTOSTRESSES
Ultrasonics used to measure residual stress
J-PS-12449 B67-10428 02

PHOTOSYNTHESIS
Aggregation of metallochlorophylls - Examination by spectroscopy
ARG-10273 B69-10163 04

PHOTOTRANSISTORS
Instrument accurately measures extremely low air densities
J-PS-193 B65-10221 01
New television camera eliminates vidicon tube
J-PS-472 B66-10112 01
Electrically controlled optical latch and switch requires less current
JPL-SC-111 B66-10414 01
Selective video blanking technique
J-PS-20013 B68-10434 01
An integrated circuit switch
NPO-11073 B69-10326 01

PHOTOVOLTAICS
An integrated circuit switch
NPO-11073 B69-10326 01

Analog device simulates physiological waveforms
MSC-51 B64-10109 01
Servo system facilitates photoelastic strain measurements on resins
JPL-504 B64-10280 01
Design concept for improved photo-scan tube
JPL-818 B67-10157 01

New method used to fabricate gallium arsenide

I-479
 POTENTIAL APPLICATIONS
Photovoltaic cells

- **Photovoltaic device**
  - WO-0052

- **Cuprous selenide and sulfide as improved photovoltaic barriers**
  - WO-0052

- **Optics used to measure torque at high rotational speeds**
  - Lewis-13

- **Laser beam transmits electric power**
  - GSFC-293

- **Cuprous selenide and sulfide as improved photovoltaic barriers**
  - WO-0052

- **Solar cell submodule design facilitates assembly of lightweight arrays**
  - JPL-728

- **Feasibility study of wireless power transmission systems**
  - B68-10309

- **Photovoltaic effect in organic polymer-iodine complex**
  - B67-10634

- **Method for copper staining of germanium crystals**
  - ARG-10403

- **Optimizing solar-cell grid geometry**
  - B69-10460

- **Uranyl phthalocyanines show promise in the treatment of brain tumors**
  - B67-10188

- **Apparatus presents visual display of semiconductor surface characteristics**
  - JPL-665

- **Production of solvated electrons**
  - ARG-10416

- **Improved electrode gives high-quality biological recordings**
  - MSC-17

- **Spray-on electrodes enable EKG monitoring of physically active subjects**
  - FBC-36

- **Special tool kit aids heavily garmented workers**
  - MSC-176

- **Study of hydrogen slush-hydrogen gel utilization**
  - M-PS-13068

- **Photomicroscopy**
  - M-PS-14556

- **Simulator effects partial gravity conditions**
  - MSC-152

- **Substituted silane-diol polymers have improved thermal stability**
  - M-PS-469

- **Siloxane elastomer remains resilient at 400 deg C**
  - M-PS-1144

- **Materials data handbooks prepared for aluminum alloys, 2014, 2219, and 5456, and stainless steel alloy 301**
SUBJECT INDEX

PIEZOELECTRIC CRYSTALS
Improved holder protects crystal during high acceleration and impact
JPL-463
B65-10037
05
Piezoresistive gage tests pin-connector sockets
JPL-675
B65-10128
01
Crystall measures short-term, large-magnitude forces
JPL-77
B65-10187
01
Voltage variable oscillator has high phase stability
LANGLEY-123
B65-10204
01
Communication system uses modulated laser beam
GSFC-377
B65-10333
01
Phonocardiograph system monitors heart sounds
MSC-185
B66-10154
04
Acceleration-compensated pressure transducer has fast response
LANGLEY-113
B66-10353
01
Quartz crystals detect gas contaminants during vacuum chamber evacuation
NPO-10144
B67-10205
01
A piezo-bar pressure probe
LEWIS-393
B67-10259
01
Fluidic-thermochromic display device
ERG-10031
B68-10350
01
Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
TCP-09802
B69-10028
02
Piezoelectric linear actuator
MSC-13194
B69-10469
02
PIEZOELECTRIC GAGES
A piezo-bar pressure probe
LEWIS-393
B67-10259
01
PIEZOELECTRIC TRANSDUCERS
Device calibrates vibration transducer at amplitudes up to 20 g
M-P5-86
B63-10572
01
Ultra-sensitive transducer advances micro-measurement range
ARC-26
B64-10004
01
Damping technique gives accelerometer flat frequency response
M-P5-471
B66-10293
01
Phonocardiograph microphone is rugged and moistureproof
MSC-212
B66-10314
04
Ultrasonic emission method enables testing of adhesive bonds
M-P5-759
B66-10341
01
Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system
ARC-73
B66-10533
01
High-energy-rate magneto-hydraulic metal forming system
M-P5-2142
B67-10126
02
Design concepts using ring lasers for frequency stabilization
M-P5-2448
B67-10143
01
Automatic system nondestructively monitors and records fatigue crack growth
LANGLEY-10091
B68-10379
01
PIEZOELECTRICITY
Simple device produces accelerometer calibration pulse
M-P5-363
B65-10269
01
A conceptual design for squeeze film bearings
M-P5-573
B66-10226
05
Miniature piezoelectric triaxial accelerometer measures cranial accelerations
ABC-71
B66-10534
01
Improved gas ring laser
MSC-11584
B68-10304
02
Power consumption in acoustic amplifiers under conditions of maximum stable gain
GSFC-10067
B67-10281
02
Piezoelectric lock mechanism resists lockpicking
SAW-10037
B69-10281
01
A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux
ARC-10052
B69-10295
05
PIEZORESISTIVE TRANSDUCERS
Pressure transducer 3/8-inch in size can be fairied into surface
W00-005
B64-10021
05
Miniature stress transducer has directional capability
JPL-591
B65-10023
01
Gas pressure in sealed electrochemical cells measured externally
GSFC-10004
B67-10551
03
Pressure-sensitive bonded junction transducers
ERC-10087
B68-10563
01
PIGGYBACK SYSTEMS
Concept to standardize space vehicle piggyback experiment modules
M-P5-1697
B68-10038
05
PIGMENTS
Inorganic paint is durable, fireproof, easy to apply
GSFC-366
B65-10156
03
Pigmented coating resists thermal shock
JPL-5C-083
B65-10354
03
White primer permits a corrosion-resistant coating of minimum weight
M-P5-304
B66-10207
03
Film coating permits low-force scribbling
MSC-990
B66-10609
03
Cytology is advanced by studying effects of deuterium environment
ABC-205
B67-10304
04
Advances in aluminum anodizing
M-P5-14600
B69-10144
05
Comparative chromatography of chloroplast...
pigment
ARG-10415

PILOT PERFORMANCE

Helmet system broadcasts
electroencephalograms of wearer
ARC-70
B66-10536 01

Integral valve provides automatic relief
and remote venting
M-PS-12134
B69-10545 05

PILOT SELECTION

Improved perceptual-motor performance
measurement system
HQ-10123
B69-10385 01

PHONUES

Improved system measures output energy of
pyrotechnic devices
W00-256
B66-10159 01

Optical device enables small detector to see
large field of view
W00-253
B66-10263 02

PIES

Tool facilitates sealing of metal fill tubes
M-SC-24
B63-10519 05

Gage measures electrical connector pin
retention force
JPL-SC-071
B65-10034 03

Screw locking cups quickly and neatly crimped
RU-0009
B65-10049 05

Piezoresistive gage tests pin-connector
sockets
JPL-675
B65-10128 01

Floating device aligns blind connections
M-SC-256
B66-10007 05

Single connector provides safety fuses for
multiple lines
M-SC-199
B66-10050 01

Plugged hollow shaft makes fatigue-resistant
shear pin
LANGLEY-195
B66-10077 05

Polarizing keys prevent mismatch of connector
plugs and receptacles
M-SC-443
B66-10251 01

Alignment tool facilitates pin placement on
irregular horizontal surfaces
LANGLEY-219
B66-10410 05

Controlled release device prevents damage
from dynamic stresses
M-SC-66-14
B66-10628 05

Coldplate of pin fin design makes efficient
heat exchanger
M-SC-1093
B67-10073 05

Cracks in glass electrical connector
headers removed by dry blasting with fine
abrasive
LEWIS-381
B67-10148 03

Test device prevents weld joint damage by
eliminating axial pin forces on unpotted
modules
LEWIS-10201
B67-10359 01

Machine tests slow-speed sliding friction in
high vacuum
M-PS-12341
B67-10379 05

Connector shorting cap provides pin
alignment, inspection, and stray voltage
protection
M-PS-13111
B67-10635 01

Refractory oxide insulated thermocouple
design and analyzed for high temperature
applications
ARG-10202
B69-10053 03

Repair of honeycomb panels with welded
breakaway studs
MSC-15046
B69-10261 05

Countersunk head screw retainer
M-PS-10481
B69-10282 05

Breakaway electrical connector
NPO-11140
B69-10847 01

Improved camera for better X-ray powder
photographs
Eq-10428
B69-10537 01

An electrical connector pin protector
MSC-15660
B69-10742 01

PIPE FLOW

Studies reveal effects of pipe bends on fluid
flow cavitation
M-PS-516
B66-10228 05

Thermal neutron image intensifier tube
provides brightly visible radiographic
pattern
ARG-120
B67-10296 02

PIPE NOSELS

Oxygen-hydrogen torch is a small-scale
steam generator
NU-0042
B66-10120 03

PIPELINES

Blade valve isolates compartment in pipe,
opens to allow free flow
JFL-585
B64-10188 05

Sensor detects hydrocarbon oil contaminants
in fluid lines
M-PS-522
B66-10068 01

Capacitive system detects and locates fluid
leaks
M-PS-878
B66-10099 01

Portable power tools machine weld joints in
field
M-PS-258
B66-10145 05

Studies reveal effects of pipe bends on fluid
flow cavitation
M-PS-516
B66-10220 05

Expandable rubber plug seals openings for
pressure testing
NU-0048
B66-10229 05

Computer prograss determines gas flow rates in
piping systems
M-PS-443
B66-10300 01

External linkage tie permits reduction in
ducting system flange thickness
M-PS-823
B66-10326 05

Inexpensive insulation is effective for
cryogenic transfer lines
MSC-648
B66-10348 02

Closed loop operation eliminates need for
auxiliary gas in high pressure pumping
station
M-PS-893
B66-10408 05

Leak locator for vacuum jacketed pipelines
eliminates need for removal of outer jacket
M-PS-888
B66-10412 01

Teflon sheet permits valve and valve
operator to move as a single unit in a
cryogenic pipe line
RU-0077
B66-10702 05

Technique cuts time and cost of bending
jacketed piping
MSC-333
B67-10016 05
Inexpensive cryogenic insulation replaces vacuum-jacketed line

NUC-10061 B67-10264 02

Study made of pneumatic high pressure piping materials /10,000 psi/

KSC-10133 B67-10437 03

Conceptual apparatus for detecting leaks of nonconductive liquids

M-PS-16713 B68-10303 01

Well preparation tool for pipes and tubing

KSC-09955 B68-10551 05

Shell design computer program

LEWIS-8B B65-10115 05

Tracer of electrical conduit pipes

JPL-655 B65-10068 01

Study made of pneumatic high pressure piping materials

KSC-10133 10.000 psi/ B67-10000 03

Multiple test tubes stirred mechanically

ARC-42 B65-10120 01

Apparatus facilitates pressure-testing of metal tubing

LEWIS-174 B65-10131 05

Metal bellows custom-fabricated from tubing

LEWIS-192 B65-10150 05

Portable tool removes burrs from pipe and tubing

ISC-237 B65-10360 05

Portable tool cleans pipes and tubing

ISC-238 B65-10375 05

Filter for high-pressure gases has easy take-down, assembly

JPL-373 B65-10226 05

Tungsten wire and tubing joined by nickel brazing

JPL-398 B65-10391 05

Improved variable-reluctance transducer measures transient pressures

LANGLEY-10 B65-10321 01

Connector for vacuum-jacketed lines cuts tubing system cost

LEWIS-66 B65-10367 05

Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems

LEWIS-67 B65-10368 05

Vacuum-type backup bar speeds weld repairs

M-PS-12 B65-10384 05

Tool facilitates sealing of metal fill tubes

M-PS-24 B65-10519 05

Connector for thermocouple leads saves costly wire, makes reliable connectors

M-PS-25 B65-10529 01

Ellipsoidal optical reflectors reproduced by electroforming

GSFC-92 B65-10547 05

Guide for extrusion dies eliminates straightening operation

LEWIS-152 B64-10014 05

Spring loaded beaded cable makes efficient wire puller

W00-108 B65-10031 05

Automatic thermal switch accelerates cooling-down of cryogenic system

JPL-655 B65-10066 01

Insert gas spraying device aids in repair of hazardous systems

LEWIS-88 B65-10115 05

Apparatus facilitates pressure-testing of metal tubing

LEWIS-192 B65-10150 05

Portable tool removes burrs from pipe and tubing

M-PS-237 B65-10360 05

Portable tool cleans pipes and tubing

M-PS-238 B65-10375 05

Economical and maintenance-free gas system operates railroad switches

BU-0045 B65-10124 05
Aluminum oxide filler prevents obstructions in tubing during welding
M-PS-258 B66-10145 05

Bismuth alloy potting seals aluminum connector in cryogenic application
M-PS-260 B66-10138 03

Portable power tool machines weld joints in field
M-PS-258 B66-10145 05

Split glass tube assures quality in electron beam brazing
M-PS-564 B66-10151 05

Argon purge gas cooled by chill box
M-PS-560 B66-10153 02

Simple device facilitates inert-gas welding of tubes
M-PS-558 B66-10155 05

Cryogenic liquid transfer system reduces residual boiloff
LEWIS-274 B66-10157 02

Thin-film gage measures low heat-transfer rates
LANGLEY-205 B66-10180 01

Wide-range instrument monitors flow rates of chemically active fluids
M-SC-166 B66-10205 01

Liquid trap seals thermocouple leads
M-PS-688 B66-10212 05

Electric arc heater is self starting
LANGLEY-208 B66-10230 03

Insert sleeve prevents tube soldering contamination
M-SC-552 B66-10238 05

Hand tool permits shrink sizing of assembled tubing
M-SC-504 B66-10239 05

Pressure-welded flange assembly provides leak-tight seal at reduced bolt loads
M-PS-640 B66-10247 05

Tool separates sleeve-type unions without heat
M-SC-497 B66-10253 05

Remotely controlled system couples and decouples large diameter pipes
NU-0062 B66-10276 05

O-rings with mylar back-up provide high-pressure cryogenic seal
M-PS-603 B66-10278 05

High pressure tube coupling requires no threads or flares
M-SC-600 B66-10285 05

Bypass rod transfers heat developed in thermionic diode
JPL-SC-136 B66-10303 03

Union would facilitate joining of tubing, minimize braze contamination
M-SC-777 B66-10311 05

Torus elements used in effective shock absorber
M-PS-114 B66-10318 05

Special mandrel permits uniform welding of out-of-round tubing
M-PS-706 B66-10323 05

Inspection of fine wires simplified by capillary tube wire holder
M-SC-358 B66-10329 01

Adapter assembly prevents damage to tubing

**Subject Index**

during high pressure tests
MSC-563 B66-10330 02

Inductive system detects level of conducting fluids
LEWIS-322 B66-10392 01

High pressure cryogenic liquid flow might assembly provides streamlined flow for easy observation
LEWIS-310 B66-10394 01

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54 B66-10471 05

Hydraulic fluid serves as mandrel for small diameter refractory tube drawing
ARG-44 B66-10523 05

Gage tests tube flares quickly and accurately
KSC-66-19 B66-10537 05

Ductile mandrel and parting compound facilitate tube drawing
ARG-43 B66-10584 05

Glass formulation has high coefficient of thermal expansion
M-PS-1920 B66-10597 03

Glass formulation has high coefficient of thermal expansion
M-PS-1920 B66-10597 03

Clamp provides efficient connection for high-density currents
M-PS-2917 B67-10140 01

Workmanship standards for fusion welding
NUC-10048 B67-10195 05
SUBJECT INDEX

WUC-10050  B67-10200  05
Pipe joints reinforced in place with fitted aluminum sleeves  B67-10271  05
Square tubing reduces cost of telescoping bridge crane hoist  B67-10293  05
Liquid oxygen dicting cleaned by falling film method  B67-10299  03
Jacketed cryogenic piping is stress relieved  B67-10308  05
Ultrasonic wrench produces leaktight connections  B67-10353  05
Extrusion of small-diameter, thin-wall tungsten tubing  B67-10355  05
Transducer measures embedment stresses in electronic modules  B67-10367  01
Use of color-coded sleeve shutters accelerates oscillograph channel selection  B67-10362  01
Large volume continuous counterflow dialyzer has high efficiency  B67-10395  04
Standard surface grinder for precision machining of thin-wall tubing  B67-10400  05
Metal tube reducer is inexpensive and simple to operate  B67-10401  05
Improved sample capsule for determination of oxygen in hemolyzed blood  B67-10408  04
Fluid behavioral patterns found in subscale geysering study  B67-10462  02
Aluminum and stainless steel tubes joined by simple ring and welding process  B67-10472  05
Study made of thin-walled pipe response to turbulent fluids  B67-10518  05
Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area  B67-10538  01
Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing  B67-10538  01
Study made of heat transfer and pressure drop through tubes with internal interrupted fins  B67-10555  05
Lamb waves increase sensitivity in nondestructive testing  B67-10605  02
Thoriated tungsten tube provides improved high temperature thermocouple sheath  B67-10627  03
Flow tube used to cool solar-pumped laser  B66-10010  02

BEAD-10329  05
Beat-shrink plastic tubing seals joints in glass tubing
LEWIS-10267

ARG-10115  05
Remotely installed pipe plug provides effective seal in hazardous environment  B66-10053  05
Method for reinforcing tubing joints  B66-10149  01
System remotely impact, measures, and records internal irregularities in piping  B66-10235  05
Tube swaging device uses explosive force  B66-10248  05
Tensile testing grips ensure uniform loading of bimetal tubing specimens  B66-10248  05
One hundred angstrom niobium wire  B66-10279  03
Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing  B66-10284  05
Electron beam selectively seals porous metal filters  B66-10331  05
X-ray film holder permits single continuous picture of tubing joint  B66-10343  05
Hand-tightened, high-pressure seal  B66-10417  05
Tube joint leak repair coupling  B66-10540  05
Weld preparation tool for pipes and tubing  B66-10551  05
Insertion device for pressure testing  B66-10615  03
Surface irregularities detected by flare inspection instrument  B66-10511  01
Improved liquid-level sensor for cryogenics  B66-10210  02
J-beveling of pipe ends with a hand-held tool  B66-10229  05
Tool simplifies machining of pipe ends for precision welding  B66-10231  05
Thermal radiation shields for piping in vacuum environments  B66-10262  03
Technique for anchoring fasteners to honeycomb panels  B66-10265  03
Repair of weld defects in thin-walled stainless steel tubes  B66-10305  05
Remote control thermal actuator  B66-10307  01
Mechanically extensible boom  B66-10328  05
Restricted-flow junction between liquids  B66-10332  02
Removal of retaining washers of the waffle-spring type  B66-10350  05

I-885
PIPETTES

High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes

Levis-90271 B69-10376 01

Tool repairs tube components in situ

Rsc-15348 B69-10379 05

Magnetic forming of resistive materials

K-FS-20417 B69-10397 03

Pneumatic flow comparator

K-FS-18373 B69-10400 05

Nondestructive testing of welds on thin-walled tubing

K-FS-18144 B69-10402 01

Wall-thickness changes predicted in hollow-drawn tubing

ABC-10425 B69-10428 02

Improved nickel plating of Inconel

K-FS-18604 B69-10463 05

Device for obtaining separation of oxygen

Langley-11007 B69-10477 01

Freon, T-B1 cutting fluid

Msc-11486 B69-10485 05

Heat-shrinkable jacket holds fluid in contact with tensile test specimen

KSC-15395 B69-10495 05

Boron fiber-reinforced aluminum alloy tubing /experimental/

Msc-15633 B69-10509 05

Flared-tube fittings with replaceable seat inserts

KSC-15372 B69-10519 05

Device separates hydrogen from solution in water at ambient temperatures

KSC-13335 B69-10635 03

Sealed container sampling device

Gsfc-10690 B69-10662 03

Flow direction measurement with fixed probes

Levis-11044 B69-10714 02

PIPETTES

Mouthpiece adapter for pipettes protects mouth from harmful liquids

Langley-87 B65-10043 03

Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination

ABC-262 B67-10421 03

PIBANI GASES

Vapor pressure measured with inflatable plastic bag

Gsfc-281 B65-10136 03

PISTONS

Veined piston seal prevents fluid leakage between two chambers

Jpl-179 B63-10141 05

High-pressure regulating system prevents pressure surges

Jpl-231 B63-10170 05

Device induces lungs to maintain known constant pressure

KSC-50 B64-10108 04

Nonresonant support facilitates vibration testing of structures

K-FS-224 B65-10039 05

Improved fluid control valve extends diaphragm life

Jpl-3845 B65-10147 05

SUBJECT INDEX

Device disconnects several couplings simultaneously

Jpl-226 B65-10163 05

Inexpensive check valve is installed in standard AN fittings

Jpl-22A B65-10222 05

Shock absorber operates over wide range

KSC-168 B65-10241 05

Respiratory transfer value has fail-safe feature

Arc-1 B65-10369 01

Tensile-strength apparatus applies high strain-rate loading with minimal shock

Jpl-2B B66-10063 05

Tool post modification allows easy turret lathe cutting-tool alignment

K-FS-581 B66-10191 05

Quick-closing valve is actuated by explosive discharge

Arc-55 B66-10233 05

Labyrinth-type valve seat increases valve life by decreasing fluid velocity

N-Fs-1051 B66-10424 05

Device accurately measures and records low gas-flow rates

N-FS-1077 B66-10569 01

Positive displacement cylinder measures corrosive liquid volume

KSC-1038 B66-10589 05

Design concept for pressure switch calibrator

Eq-36 B66-10598 01

Friction brake cushions acceleration and vibration loads

Msc-715 B66-10608 05

Check valve installation in pilot operated relief valve prevents reverse pressurization

N-FS-1925 B66-10655 05

Negative feedback system reduces pump oscillations

N-FS-1852 B67-10064 05

Device enables calibration of microphones at high sound pressure levels

N-FS-11980 B67-10336 01

Metal tube reducer is inexpensive and simple to operate

Arc-89 B67-10401 05

Fluorocarbon seal replaces metal piston ring in low density gas environment

Levis-10277 B67-10591 05

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers

Nuc-10024 B67-10664 05

Conceptual dead weight device to provide pressure calibration

N-FS-14672 B68-10264 01

Two-axis winch installer for heavy ducts in confined space

N-FS-18254 B68-10062 05

Quick-acting backup tool for welding ducts

N-FS-18404 B69-10396 05

Calibratable solid-state pressure switch

N-FS-20474 B69-10437 05

Integral valve provides automatic relief and remote venting

N-FS-12134 B69-10545 05
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Planetary Atmospheres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid-metal-piston MHD generator</td>
<td>Automatic leveling and equalizing hoist device</td>
</tr>
<tr>
<td>ABG-10500</td>
<td>B69-10549 02</td>
</tr>
<tr>
<td>pocket-sized tone-modulated FM transmitter</td>
<td>Hermetically sealed vibration damper</td>
</tr>
<tr>
<td>B69-10725</td>
<td>B69-10634 05</td>
</tr>
<tr>
<td>Pocket-sized tone-modulated FM transmitter</td>
<td>Precisely repeatable rotary mechanisms</td>
</tr>
<tr>
<td>B69-11800</td>
<td>B69-10696 05</td>
</tr>
<tr>
<td>PITCH (INCLINATION)</td>
<td>Pocket-sized tone-modulated PI</td>
</tr>
<tr>
<td>Knob linkage permits one-hand control of several operations</td>
<td>B67-10214 02</td>
</tr>
<tr>
<td>MSC-30</td>
<td>B67-10091 01</td>
</tr>
<tr>
<td>Spiral heater coils hand-formed with fixture</td>
<td>Work platform is supported by self-locking blades</td>
</tr>
<tr>
<td>Lewis-208</td>
<td>B67-10180 05</td>
</tr>
<tr>
<td>Developmental instrumental supplies accurate attitude and attitude-rate data</td>
<td>Study made of large amplitude fuel sloshing</td>
</tr>
<tr>
<td>HO-57</td>
<td>B67-10401 01</td>
</tr>
<tr>
<td>Three-axis attitude and direction reference instrument has only one moving part</td>
<td>Blood pressure reprogramming adapter assists signal recording</td>
</tr>
<tr>
<td>H-PS-1619</td>
<td>B69-10781 02</td>
</tr>
<tr>
<td>PITCHING ROBOTS</td>
<td>Program computes zero lift wave drag of entire aircraft</td>
</tr>
<tr>
<td>Air-cushion lift pad</td>
<td>Langley-10079</td>
</tr>
<tr>
<td>H-PS-14665</td>
<td>B69-10530 06</td>
</tr>
<tr>
<td>PILOT TUBES</td>
<td>Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor</td>
</tr>
<tr>
<td>Probe measures characteristics of hot gas stream</td>
<td>ABG-10158</td>
</tr>
<tr>
<td>H-PS-240</td>
<td>B69-10191 01</td>
</tr>
<tr>
<td>Noise study of single stage compressor rotor-stator interaction</td>
<td>Multichannel analyzers at high rates of input</td>
</tr>
<tr>
<td>Langley-137</td>
<td>ABG-10355</td>
</tr>
<tr>
<td>A mass flux probe for measurement in a supersonic stream</td>
<td>B69-10214 02</td>
</tr>
<tr>
<td>Lewis-10695</td>
<td>Improved method of fabricating planar gallium arsenide diodes</td>
</tr>
<tr>
<td>B69-10533</td>
<td>XNP-04235</td>
</tr>
<tr>
<td>FITTING</td>
<td>Resonant microwave dichroic surface</td>
</tr>
<tr>
<td>Chemical milling solution produces smooth surface finish on aluminum</td>
<td>GSFC-10658</td>
</tr>
<tr>
<td>MSC-549</td>
<td>B69-10274 01</td>
</tr>
<tr>
<td>B69-10312</td>
<td>Improved circularly polarized planar-array antenna</td>
</tr>
<tr>
<td>PILOT BOXES</td>
<td>B67-10301</td>
</tr>
<tr>
<td>Setting of angles on machine tools speeded by magnetic protractor</td>
<td>B69-10382 01</td>
</tr>
<tr>
<td>ARC-5</td>
<td>Quick-release hook-and-loop fastener</td>
</tr>
<tr>
<td>B69-10006</td>
<td>B69-10388 05</td>
</tr>
<tr>
<td>Electrical probe ensures reliable contact in socket</td>
<td>Aerodynamic forces of fluttering cylindrical and/or planar structures</td>
</tr>
<tr>
<td>H-PS-315</td>
<td>B69-10781 02</td>
</tr>
<tr>
<td>Scoop attachment makes helicopter recoveries easier and safer</td>
<td>Improved ferrous shielding for flat cables</td>
</tr>
<tr>
<td>MSC-130</td>
<td>H-PS-14524</td>
</tr>
<tr>
<td>B69-10229</td>
<td>Experimental design for research on shock-turbulence interaction</td>
</tr>
<tr>
<td>B69-10160</td>
<td>H-PS-20031</td>
</tr>
<tr>
<td>Patented tester achieves true axial motion through flex plates and bars</td>
<td>Planetary Atmospheres</td>
</tr>
<tr>
<td>H-20021</td>
<td>High intensity radiation heat source is</td>
</tr>
<tr>
<td>B69-10164</td>
<td>LEWIS-284</td>
</tr>
<tr>
<td>Universal transloader moves delicate equipment without stress</td>
<td>B69-10606 01</td>
</tr>
<tr>
<td>MSC-513</td>
<td>LEWIS-10763</td>
</tr>
<tr>
<td>B69-10213</td>
<td>B69-10113 01</td>
</tr>
<tr>
<td>Cylindrical claw clamp has quick release feature</td>
<td>PLANAR WAVE</td>
</tr>
</tbody>
</table>
PLANTARY COMPOSITION

capable of sustained operation
ABC-61 B66-10547 02

PLANTARY COMPOSITION
Study made of far infrared spectra of
silicate minerals
E-PS-1811 B67-10075 02

PLANTAR ENVIROMENTS
Experiments to investigate particulate
materials in reduced gravity fields
E-PS-13308 B67-10394 02

PLANTAR QUANTAMITS
SPAN C - Terminal sterilization process
analysis program
NPO-10805 B69-10039 02
SPAN - Terminal sterilization process
analysis program
NPO-10804 B69-10104 02

PLANTARY SURFACES
Combination ranging system and mapping
radar
NPO-11001 B69-10325 01

PLANTS
Analog solar system model relates celestial
bodies spatially
JPL-195 B66-10413 01

PLANFORMS
Modified Multiple mean camber computer
program
LANGLEY-10376 B68-10446 06

PLANETARY
Titanium diaphragms makes excellent amplitron
cathode support
GSTC-394 B65-10298 01
Feasibility study of wireless power
transmission systems
E-PS-14691 B68-10309 01
PLANTS
Plant respirometer enables high resolution
of oxygen consumption rates
HQ-47 B66-10406 04
Cytology is advanced by studying effects
of deuterium environment
ARS-205 B67-10304 04
Airborne Fraunhofer Line Discriminator
HSC-13146 B69-10594 02
PLASMA ACCELERATION
Gas-injection valve operates at high speed
EQ-49 B66-10381 05
PLASMA ACCELERATORS
Fused plasma accelerator operates
repetitively without complex controls
LANGLEY-46 B65-10062 01
Segmented electrode increases operating
pressure of MHD accelerator
LANGLEY-95 B65-10356 02
Large capacitor performs as a distributed
parameter pulse line
LEWIS-176 B66-10291 01
Fast-acting calorimeter measures heat output
of plasma gun accelerator
LEWIS-388 B67-10192 01
Movable RF probe eliminates need for
calibration in plasma accelerators
LEWIS-10127 B67-10362 01
Ferromagnetic core valve gives rapid action
on minimal energy
LEWIS-10135 B67-10623 05

PLASMA COMPOSITION
Concept for using laser beams to measure

PLASMA DENSITY
Microwave technique measures plasma
characteristics
LANGLEY-134 B65-10122 02
Spherical ion source
XRP-08998 B69-10186 01
Method for determining properties of
microinstabilities of a magnetized plasma
HQ-10447 B69-10462 02

PLASMA DIODES
Thermionic diode switching has high
temperature application
NPO-10404 B67-10672 01

PLASMA ELECTRODE
Plasma jet electrode has longer operating
life
NU-0098 B67-10104 02

PLASMA GENERATORS
Plasma jet electrode has longer operating
life
NU-0098 B67-10104 02

PLASMA JETS
Fast-acting calorimeter measures heat output
of plasma gun accelerator
LEWIS-388 B67-10192 01

PLASMA HEATING
Plasmas-heating by induction
LEWIS-10528 B69-10185 02

PLASMA JETS
Carbon arc ignition improved by simple
auxiliary circuit
HSC-103 B65-10018 01
Fused plasma accelerator operates
repetitively without complex controls
LANGLEY-46 B65-10062 01
Protective coating withstands high temperature
in oxidizing atmosphere
E-PS-529 B66-10044 03
Suppressor plate eliminates undesired arcing
during electron beam welding
E-PS-1126 B66-10357 05
Light-intensity modulator withstands high
heat fluxes
HSC-246 B66-10532 02
Plasma jet electrode has longer operating
life
NU-0098 B67-10024 02
Sprayed shielding of plastic-encapsulated
electronic modules
E-PS-13570 B69-10607 01

PLASMA SHEATHS
Plasmas-heating by induction
LEWIS-10528 B69-10185 02

PLASMA SPRAYING
Multilayer refractory nozzles produced by
plasma-spray process
WGO-318 B66-10611 05
Intergranular metal phase increases thermal
shock resistance of ceramic coating
E-PS-1862 B66-10651 03
High temperature coatings for gas bearings
LEWIS-10793 B69-10200 03

I-488
PLASMA TEMPERATURE
Microwave technique measures plasma characteristics
LANGLEY-134 B65-10122 02

PLASMAS (PHYSICS)
Computer programs calculate potential and charge distributions in a plasma
M-PS-671 B66-10553 01

Sensors measure surface ablation rate of reentry vehicle heat shield
LANGLEY-287 B66-10592 01

movable RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127 B67-10362 01

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10010 B67-10399 01

PLASTERS
Spray-on technique simplifies fabrication of complex thermal insulation blanket
M-PS-497 B66-10053 03

Cork is used to make tooling patterns and molds
MSC-425 B66-10328 01

PLASTIC COATINGS
Flexible magnetic planning boards are easily transported
M-PS-340 B65-10219 05

Fogging technique used to coat magnesium with plastic
LEWIS-10316 B67-10594 03

Sprayed shielding of plastic-encapsulated electronic modules
M-PS-13570 B69-10607 01

PLASTIC DEFORMATION
New package for Belleville spring permits rate change, easy disassembly
JPL-392 B63-10247 05

Plastic plus stainless-steel fibers make resilient, impermeable material
MGC-294 B65-10374 03

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 B66-10187 02

Treatment increases stress-corrosion resistance of aluminum alloys
M-PS-1840 B66-10595 05

Hydrodynamics of a new concept of primary containment by energy absorption
ARG-10242 B69-10046 05

PLASTIC FLOW
Integral ribs formed in metal panels by cold-press extrusion
M-PS-230 B65-10141 05

PLASTIC PROPERTIES
High strength superplastic superalloy
LEWIS-10805 B69-10293 03

PLASTIC TAPES
Calibrating ultrasonic test equipment for checking thin metal strip stock
NWC-10009 B67-10127 01

Automated microorganism Sample Collection Module
SQ-10421 B69-10223 04

Masking of aluminum surface against anodizing
M-PS-12964 B69-10335 05

Helical recorder
GSFC-10614 B69-10340 01

PLASTICIZERS
Mechanical properties of plastics predetermined by empirical method
ARC-20 B64-10068 03

PLASTICS
Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application
LANGLEY-64 B65-10318 03

Flexible honeycomb structure can bend to fit compound curves
M-PS-13 B63-10385 05

Portable flooring protects finished surfaces, is easily moved
M-PS-15 B63-10387 05

Variable-transparency wall regulates temperatures of structures
LANGLEY-25 B63-10528 03

Connector for thermocouple leads saves costly wire, makes reliable connectors
LANGLEY-26 B63-10529 01

A technique for making animal restraints
ARC-25 B63-10564 05

Plastic molds reduce cost of encapsulating electric cable connectors
M-PS-69 B63-10568 05

Front and back printed circuit layouts presented on single sheet
GSFC-93 B69-10596 01

Cryogenic waveguide window is sealed with plastic foam
JPL-559 B63-10613 01

Modified RF coaxial connector ends vacuum chamber wiring problems
GSFC-150 B64-10010 01

Mechanical properties of plastics predetermined by empirical method
ARC-20 B64-10068 03

Plastic films for reflective surfaces reproduced from masters
GSFC-188 B64-10151 03

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures
MSC-118 B64-10319 03

Polychart contour plotter enables data extrapolation from multiple plotting charts
M-PS-37 B64-10406 05

Illuminated display panel is easily changed
MSC-100 B65-10003 05

Helical coaxial-resonator makes excellent RF filter
GSFC-243 B65-10012 01

Optical arrangement increases useful light output of semiconductor diodes
JPL-SC-064 B65-10020 05

Seismic transducer measures small horizontal displacements
M-PS-01 B65-10029 05

Improved holder protects crystal during high acceleration and impact
JPL-463 B65-10037 05

Thermistor connector assembly increases accuracy of measurements
LANGLEY-62 B65-10045 01

Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 03
Simple scale interpolator facilitates reading of graphs
LANGLEY-86 B65-10070 05

Compact assembly generates plastic foam, inflates flotation bag
LANGLEY-96 B65-10090 05

Vapor pressure measured with inflatable plastic bag
GSFC-281 B65-10136 03

Epoxy-resin patterns speed shell-molding of aluminum parts
M-PS-303 B65-10177 05

Inexpensive electrical connector is moisture and corrosion-proof
ISC-164 B65-10196 01

Hollow plastic hoops protect thermocouple in storage and handling
NU-0023 B65-10256 05

Organic reactants rapidly produce plastic foam
LANGLEY-37 B65-10288 03

Removable well in reaction flask facilitates carbon dioxide collection
ABC-47 B65-10316 03

Inert-gas welding and brazing enclosure fabricated from sheet plastic
LEWIS-220 B65-10338 05

Improved poppet valve provides positive damageproof seal
M-PS-293 B65-10346 05

Fastener distributes stress evenly from sandwich-panel-hung items
MSC-236 B65-10358 05

Flexible plastic ring assembly makes durable shaft seal
WOO-227 B65-10367 05

Respiratory transfer value has fail-safe feature
ABC-1 B65-10369 01

Plastic plus stainless-steel fibers make resilient, impermeable material
WOO-246 B65-10374 03

Device detects unbonded areas in plastic laminates
WOO-206 B65-10380 01

Drill bit design assures clean holes in laminated materials
WOO-098 B65-10386 05

Shrinkable sleeve eliminates shielding gap in RF cable
WOO-207 B65-10387 01

Beach vise adapter grips tubing securely and safely
MSC-279 B66-10056 05

Plastic scintillator converts standard photomultiplier to ultraviolet range
BBC-9 B66-10108 02

Rotating sandrel speeds assembly of plastic inflatables
LANGLEY-155 B66-10137 05

Corrosion of metal samples rapidly measured
NU-0041 B66-10140 03

Silazane polymers show promise for high-temperature application
M-PS-466 B66-10194 03

Special tool seals conductors with combination of plastic sleeves
M-PS-579 B66-10209 05

Flow ring valve is simple, quick-acting
M-PS-752 B66-10255 05

Electrically conductive fibers thermally isolate temperature sensor
GSFC-456 B66-10349 01

Device serves as hinge and electrical connector for circuit boards
M-PS-743 B66-10359 01

Alignment tool facilitates pin placement on irregular horizontal surfaces
LANGLEY-219 B66-10410 05

Plastic tubing protects flexible copper hose
M-PS-772 B66-10588 05

Thin plastic sheet eliminates need for expensive plating
M-PS-1896 B66-10681 03

Thermocouple-flexible cable connector insulation is highly reliable
NU-0062 B66-10709 01

Dispersion of borax in plastic is excellent fire-retardant heat insulator
ABG-5 B66-10116 03

Static electricity of polymers reduced by treatment with iodine
WOO-10062 B66-10132 03

Cryogenic seal remains leaktight during thermal displacement
ABG-96 B66-10134 02

Improved compression molding process
LANGLEY-10027 B66-10302 03

Pocket-size manual tape reader device aids computer tape checking
KSC-10058 B66-10361 01

Machining heavy plastic sections
M-PS-12720 B66-10381 03

Polarized light reveals stress in machined laminated plastics
LEWIS-10018 B66-10383 03

Dielectric prisms would improve performance of quasi-optical microwave components
BBC-10011 B66-10416 01

Adhesives for laminating polyimide insulated flat conductor cable
M-PS-12066 B66-10429 03

Warpage eliminated in copper-clad microwave circuit laminates
M-PS-13892 B66-10454 03

Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing
NUC-10010 B67-10416 01

Epoxy resins produce improved plastic scintillators
ABG-241 B67-10596 03

Dynamic captive plastic seal
M-PS-12988 B67-10600 03

Connector shorting cap provides pin alignment, inspection, and stray voltage protection
M-PS-13111 B67-10635 01

Heat-shrink plastic tubing seals joints in glass tubing
LEWIS-10329 B66-10940 05

Plastic preforms facilitate fabrication of welded cordwood electronic modules
LEWIS-90339 B66-10963 01

Improved molding process ensures plastic
evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive

evaluation of a fluorocarbon plastic used in cryogenic valve seals

parts of higher tensile strength

fine-mesh screen made by simplified method

finite element analysis of compressible solids with nonlinear material properties

hermetically sealed pump

load cell design assures structural separation by mild explosive

x-ray film holder permits single splice plate design assures structural separation by mild explosive
Environmental study of miniature slip rings
N-FS-2443 B67-10210 05

High-strength braze joints between copper and steel
N-FS-2519 B67-10211 05

Welding, bonding, and sealing of refractory metals by vapor deposition
LEWIS-123 B67-10232 03

Steel test panel helps control additives in pyrophosphate copper plating
LEWIS-10101 B67-10358 05

Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel
MSC-10008 B67-10539 05

Ion plating technique improves thin film deposition
SAN-10006 B68-10212 03

Method for copper staining of germanium crystals
ARC-10403 B69-10257 03

Improved vacuum deposition apparatus
NPO-11009 B69-10365 02

Pulsed high-voltage dc RF sputtering
LEWIS-10920 B69-10699 01

PLATINUM

New sintering process adjusts magnetic value of ferrite cores
GSFC-129 B63-10606 01

Titanium diaphragm makes excellent aspirator cathode support
GSFC-394 B65-10298 01

Process reduces pore diameters to produce superior filters
WGO-093 B66-10037 03

Thin-film gage measures low heat-transfer rates
LANGLEY 205 B66-10180 01

Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735 B66-10182 01

Standards for electron probe microanalysis of silicates prepared by convenient method
GSFC-469 B66-10234 03

Device removes hydrogen gas from enclosed spaces
GSFC-495 B66-10340 03

Hollow spherical rotors fabricated by electroplating
JPL-SC-117 B66-10366 05

Submicron holes in thin films increase sampling range of mass spectrometers
JPL-SC-097 B66-10380 03

Resistance thermometer has linear resistance-temperature coefficient at low temperatures
WGO-190 B66-10612 01

Substituting gold for silver improves electrical connections
N-FS-2390 B67-10228 03

High-temperature /1100 degrees F/ capacitors operate without supplemental cooling
LEWIS-10324 B67-10550 01

Improved cavity-type absolute total-radiation radiometer
JPL-807 B67-10557 01

Ultran miniature nanosized tipped cardiac

SUBJECT INDEX

catheter
ARC-10054 B67-10669 01

Method of maintaining activity of hydrogen-sensing platinum electrode
N-FS-1422 B68-10009 03

Viscosity and density of methanol/water mixtures at low temperatures
N-FS-14991 B68-10274 03

Optimistic system facilitates colorimetric and fluorometric measurements
NPO-10233 B68-10316 01

Improved radiographic image amplifier panel
N-FS-10522 B68-10363 02

Millivolt signal limiter
LEWIS-90297 B69-10015 01

Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces
NRC-10254 B69-10689 01

PLATINUM ALLOYS

Measurements of thermoelectric power in annealed and quenched gold-platinum alloys
ARC-10303 B69-10206 03

PLATINUM BLACK

Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Improved inorganic ion exchange membranes
LEWIS-10737 B69-10451 03

PLATINUM ISOTOPES

Sensing disks for slug-type calorimeters have higher temperature stability
N-FS-1867 B67-10161 01

PLAYBACKS

Electronic phase-locked-loop speed control system is stable
JPL-SC-084 B66-10232 01

Recording and time expansion technique for high-speed, single-shot transient video signal
ARC-10003 B67-10139 01

Scan rate converter for tape recording and playback of TV pictures
NPO-10166 B67-10676 01

PLATINUM CHAMBERS

Pneumatic power is transmitted through air bearing
MSC-8 B64-10141 05

Averaging probe reduces static-pressure sensing errors
LANGLEY-36 B65-10114 05

Liquid laser cavities
GSFC-10592 B69-10234 02

High pressure real gas effects for helium and nitrogen
LEWIS-10819 B69-10669 06

PLOTTERS

Veitch diagram plotter simplifies Boolean functions
JPL-385 B63-10241 05

Polychart contour plotter enables data extrapolation from multiple plotting charts
N-FS-37 B64-10406 05

Simple scale interpolator facilitates reading of graphs
LEWIS-92 B66-10302 05

Instrument calculates moments of inertia of complex plane figures
MSC-628 B66-10306 01

I-492
SUBJECT INDEX

Recording and time expansion technique for high-speed, single-shot transient video signal
ARC-10003 B67-10139 01

Plotter design simplifies determination of image sensor transfer characteristic
NPO-10164 B67-10206 01

Subroutines GEORGE and DEASTC simplify operation of automatic digital plotter
NUC-10084 B67-10222 06

Rectilinear display gives acceleration load factor and velocity information
MSC-1045 B67-10248 01

Oscilloscope used as X-Y plotter or two-dimensional analyzer
LEWIS-371 B67-10269 01

Computer program utilizes FORTRAN 4 subroutines for contour plotting
NPO-10127 B67-10233 06

X-Y plotter adapter developed for SDS-930 computer
NPO-10220 B67-10554 06

FORTRAN optical lens design program
NPO-10603 B68-10354 06

Oscilloscope used as X-Y plotter or two-dimensional analyzer
LEWIS-371 B67-10269 01

Computer program utilizes FORTRAN 4 subroutines for contour plotting
NPO-10127 B67-10233 06

Computer program calculates steady-state temperature distribution within plane or axisymmetric solids
NUC-10049 B67-10224 06

Computer program samples digital data for CRT display
MSC-999 B67-10249 01

Computer programs for antenna feed system design and analysis
NPO-10359 B67-10504 06

SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield
NUC-10142 B67-10514 06

Analytical drafting curves provide exact equations for plotted data
LANGLEY-285 B67-10601 02

Compilation of detection sensitivities in thermal-neutron activation
ARG-116 B67-10628 06

Phase plane displays detect incipient failure in servo system testing
I-493

PLUGS

Experimental prediction of performance by superconducting cables
ARG-10215 B67-10161 01

Determination of permissible applied load stress in structural elements
NPS-16556 B69-10823 02

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LEWIS-263 B66-10104 03

Design of valve permits sealing even if the stem is misaligned
LEWIS-38 B66-10341 05

Two-part valve acts as quick coupling
JPL-478 B64-10223 05

Keyed plugs and sockets prevent improper connections
MSC-231 B65-10381 01

Electron beam seals outer surfaces of porous bodies
M-PS-562 B66-10033 03

Plugged hollow shaft makes fatigue-resistant shear pin
LANGLEY-155 B66-10077 05

Aluminum oxide filler prevents obstructions in tubing during welding
MSC-222 B66-10125 05

Split glass tube assures quality in electron beam brazing
M-PS-564 B66-10151 05

Soft-seal valve holds hazardous fluids safely
LEWIS-275 B66-10216 06

Expandable rubber plug seals openings for pressure testing
NU-0048 B66-10229 05

Quick-closing valve is actuated by explosive discharge
ARC-55 B66-10233 05

Shock-operated valve would automatically protect fluid systems
M-PS-801 B66-10335 03

Concept for passive system to control gas flow independently of temperature
M-PS-982 B66-10343 03

Diaphragm valve for corrosive and high temperature fluid flow control has unique features
LEWIS-304 B66-10365 05

Plug replaces weld filler as seal in complex casting
NU-0049 B66-10489 05

Study made to control depth of potting compound for honeycomb sandwich fasteners
LEWIS-370 B66-10677 05

Hand-operated plug insertion valve
MS-12019 B67-10466 05

Remotely installed pipe plug provides effective seal in hazardous environment
NUC-10303 B68-10053 05

X-ray film holder permits single continuous picture of tubing joint
LEWIS-10362 B68-10343 05

Fluid sample collection and storage device
MSC-10962 B65-10816 05
PLUNGEES

Predicting surface heating rates and pressures resulting from hot exhaust gases
MSC-971 B66-10633 05

Computer program uses characteristics method for free-jet investigation
LANGLER-10177 B67-10490 06

Prediction of thermal radiation from a rocket's exhaust plume
N-FS-20414 B69-10371 02

SWS

One-shot valve may be remotely actuated
WOO-195 B66-10266 05

High-speed pulse camera
MSC-11353 B66-10329 02

Improved retort for cleaning metal powders with hydrogen
LEWIS-10718 B69-10468 03

Life detection
NPO-10510 B66-10475 04

PLUTONIUM

Neutron irradiation of Am-241 effectively produces curium
ARG-10030 B67-10501 03

Magnesium-zinc reduction is effective in preparation of metals
ARG-10050 B67-10579 03

Daughter growth in freshly separated Pu-236, Ac-227 and U-232
ARG-10093 B69-10266 05

Thick transducers used for generating short-duration stress pulses in thin specimens
ARG-10232 B69-10045 01

Gamma radiation characteristics of plutonium dioxide fuel
NPO-11220 B69-10733 02

PLUTONIUM COMPOUNDS

Sintering characteristics and properties of Pu and PuF are determined
ARG-10228 B66-10058 03

PLUTONIUM ISOTOPES

Transplutonium elements processed from rock debris of underground detonations
ARG-10222 B69-10054 03

PLUTONIUM 239

Transplutonium elements processed from rock debris of underground detonations
ARG-10222 B69-10054 03

PLYWOOD

Argon purge gas cooled by chill box
N-FS-560 B66-10153 02

PNEUMATIC CIRCUITS

Pneumatic analog-to-pulse frequency converter
LEWIS-10345 B69-10276 02

PNEUMATIC CONTROL

Electropneumatic transducer automatically limits motor current
LEWIS-253 B66-10160 01

Pneumatic shutoff and time-delay valve operates at controlled rate
N-FS-602 B66-10189 05

Pneumatic binary encoder replaces multiple solenoid system
N-FS-665 B66-10374 01

Miniature valve accurately controls small volume fluid flow
ARG-66 B66-10473 05

SUSCEPTABILITY

Multidimensional Reaction Kinetic Ablation Program I/ERAT/ N-S-143 B66-10495 05

Hydraulically controlled flexible arm can bend in any direction
KSC-66-20 B66-10626 05

Actuator device schedules rate of valve closure
N-FS-1556 B66-10686 05

Lock-disconnect mechanism gives positive release to joined bodies
N-FS-2147 B67-10123 05

Resilient bearing supports are gas controlled
LEWIS-10109 B67-10364 05

Fire extinguisher control system provides reliable cold weather operation
N-FS-13031 B67-10622 05

PNEUMATIC EQUIPMENT

Pneumatic power is transmitted through air bearing
MSC-8 B66-10141 05

Electropneumatic rheostat regulates high current
ARC-44 B65-10299 01

Economical and maintenance-free gas system operates railroad switches
N-FS-2045 B66-10124 05

Critical parts are stored and shipped in environmentally controlled reusable container
N-FS-703 B66-10258 05

Pneumatic separator gives quick release to heavy loads
KSC-66-10 B66-10294 05

Automatic protective vent has fail-safe feature
LANGLER-210 B66-10369 05

Fluid logic control circuit operates nutator actuator motor
LEWIS-294 B66-10593 05

Pneumatic wrench retains or discharges nuts or bolts as desired
N-FS-10085 B66-10707 05

Orbital tube flaring system produces tubing connectors with zero leakage
N-FS-2016 B67-10019 05

Single wrench separates nuts from free-floating bolts
N-FS-10013 B67-10158 05

Single-source mechanical loading system produces biaxial stresses in cylinders
N-FS-12530 B67-10380 05

Study made of pneumatic high pressure piping materials /10,000 psi/
MSC-10133 B67-10437 03

Analysis of dynamic systems with DAPAN computer program
N-FS-13995 B67-10523 06

Air sampler collects and protects minute particles
HQ-10037 B66-10661 01

Reconnect mechanism
N-FS-12968 B66-10670 05

Pneumatic raft automatically reforms after rupture of buoyant member
MSC-11562 B66-10011 05

High- and low-pressure pneumotachometers
SUBJECT INDEX

measure respiration rates accurately in adverse environments
PNC-10012  B66-10188  01

Portable, high intensity isotopic neutron source provides increased experimental accuracy
ABC-90250  B66-10243  02

Indium adhesion provides quantitative measure of surface cleanliness
SAN-10024  B66-10382  01

Fluidic-thermochromic display device
BRC-10031  B66-10350  01

Two-axis winch installer for heavy ducts in confined space
M-PS-14254  B69-10062  05

Pneumatic analog-to-pulse frequency converter
LEWIS-10345  B69-10276  02

Two-step rocket engine bipropellant valve concept
MSC-10951  B69-10280  05

Stress-testing of the throat of a rocket nozzle
NPO-10311  B69-10358  05

Quick-acting backup tool for welding ducts
M-PS-10404  B69-10396  05

Pneumatic flow comparator
M-PS-18373  B69-10400  05

Improved solenoid valve design
GSFC-10607  B69-10704  05

PNEUMATICS

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers
NOC-10024  B67-10664  05

Diffusion of trace gases for leak detection - A study
N-PS-20254  B69-10067  03

Automatic filter-blowback systems used with sintered-metal filters
ARG-10324  B69-10342  05

Hydraulic calipers
M-PS-10952  B69-10399  05

PHOTOMETRY

Electronic device simulates respiration rate and depth
MSC-89  B66-10255  01

Pneumotachometer counts respiration rate of human subject
MSC-92  B64-10259  01

Gelatin coated electrodes allow prolonged bioelectronic measurements
MSC-153  B66-10088  01

PODS (EXTERNAL STORES)

Program computes zero lift wave drag of entire aircraft
LANGLEY-10019  B67-10530  06

POIKILOMETRY

Investigation of temperature dependence of development and aging
ARG-10145  B69-10022  04

POIUNT DEFECTS

Resistivity measurements of neutron-irradiated pure metals and Al-Zn alloys
ARG-10108  B66-10200  03

POIUNT SOURCES

Point-source detection system rejects spatially extended radiation sources

GSFC-486  B66-10622  01

POINT TO POINT COMMUNICATIONS

Omnidirectional antennas transmit and receive over large bandwidth
GSFC-436  B66-10133  01

POINTS (MATHEMATICS)

The X square statistic and goodness of fit test
GSFC-10547  B66-10136  02

POISONING

Product identification techniques used as training aids for analytical chemists
SAN-10025  B68-10373  03

POISON DENSITY FUNCTIONS

Improved design of item in high speed rotating machinery
B-FS-10441  B69-10373  05

POISSON EQUATION

Design and sparing techniques to meet specified performance life
BG-10200  B69-10528  02

POISSON RATIO

Contact stresses calculated for miniature slip rings
M-PS-280  B65-10098  05

Computer program for determination of natural frequencies of closed spherical sandwich shells
MSC-1246  B67-10279  06

An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10167  B69-10082  02

Damping of thermoelastic structures
M-PS-20002  B69-10467  02

POLAR COORDINATES

Radiation-detector optical-imaging device is of simplified construction
GSFC-251  B64-10299  01

A polar graphic method for determining the attitude of rocket vehicles
GSFC-10860  B69-10591  02

POLARIMETERS

Polarimeter provides transient response in nanosecond range
JPL-890  B67-10021  02

POLARITY

Circuit switches latching relay in response to signals of different polarity
WGO-055  B63-10508  01

Threshold detector produces narrow pulses at high repetition rates
GSFC-383  B65-10310  01

Simple, nondestructive test identifies metals
MSC-525  B66-10305  03

Shaft encoder presents digital output
JPL-SC-191  B66-10436  01

Positive and negative output circuits
LEWIS-10715  B69-10151  01

Magnetic field mapper
LEWIS-10782  B69-10476  01

POLARIZATION

Magnetic field controls carbon arc tail flame
MSC-139  B65-10188  01

Isotopically pure magnesium isotope-24 in

I-495
POLARIZATION (CHARGE SEPARATION)

Prepared from magnesium-24 oxide
ARO-10154 B69-10293 02

POLARIZATION (CHARGE SEPARATION)

Polarizing keys prevent mismatch of connector plugs and receptacles
MSC-443 B66-10251 01

Electrochemical study of aluminum corrosion in boiling high purity water
ARO-10306 B69-10033 03

High-power microwave power divider concept
NFO-11031 B69-10290 01

Storage of electric and magnetic energy in passive non-reciprocal networks
ARO-10360 B69-10630 01

POLARIZATION (WAVES)

Wideband, high efficiency optical modulator requires less than 10 watts drive power
M-PS-12733 B67-10289 01

Range recording technique enables four-way polarization measurements
M-PS-12447 B67-10460 01

Electro-optic modulator for infrared laser using gallium arsenide crystal
GSFC-10686 B68-10255 02

Energy-storage of a prescribed impedance
NFO-10303 B69-10380 01

Instrumentation for potentiostatic corrosion studies with distilled water
ARO-10409 B69-10413 03

Proposed acousto-optic filter
HQ-10440 B69-10466 02

Rotary antenna attenuator
NFO-10648 B69-10502 01

POLARIZATION CHARACTERISTICS

Meter accurately measures flow of low-conductivity fluids
JPL-0021 B67-10280 01

Antenna configurations provide polarization diversity
GSFC-74 B66-10066 01

A theoretical study of radar-backscatter from distributed targets with emphasis on polarization dependence
M-PS-13775 B69-10560 02

POLARIZED LIGHT

Servo system facilitates photoelastic strain measurements on resins
JPL-504 B64-10280 01

Photosensitive filler minimizes internal stresses in epoxy resins
M-PS-1880 B67-10227 03

Simplified technique demonstrates magnetic domain switching
M-PS-13153 B67-10342 02

Polarized light reveals stress in machined laminated plastics
LEWIS-10018 B67-10383 03

Aerial-image enables diagrams and animation to be inserted in motion pictures
ARO-165 B67-10398 02

Synthesis of electro-optic modulators for amplitude modulation of light
M-PS-14268 B68-10275 02

Flow angle sensor and readout system
LEWIS-90298 B69-10050 01

Optically exciting a magnetic memory - A feasibility study

I-496

SUBJECT INDEX

M-PS-14855 B69-10060 02

POLARIZED RADIATION

Improved circularly polarized planar-array antenna
NPO-10301 B69-10382 01

A sterilizable high-impact antenna
NPO-10231 B69-10697 01

POLARIZERS

Servo system facilitates photoelastic strain measurements on resins
JPL-504 B64-10280 01

Walling pyrometer uses Kerr cell shutter for fast responses
WU-0060 B65-10050 01

Rapid-response, light-exposure control system
NFO-10238 B68-10502 01

POLAROGRAPHY

New electrolyte may increase life of polarographic oxygen sensors
MSC-1049 B67-10003 03

Coordination chemistry in fused-salt solutions
ARO-10469 B69-10423 03

Rate of heat extraction controller for environmental control
HQ-10318 B69-10516 01

POLES

Threading hook facilitates safe recovery of heavy loads
MSC-46 B64-10185 05

POLISHING

Ellipsoidal optical reflectors reproduced by electroforming
GSFC-92 B63-10547 05

Portable tool cleans pipes and tubing
MSC-238 B65-10375 05

Seal surfaces protected during assembly
WU-0067 B66-10266 05

Inspection of fine wires simplified by capillary tube wire holder
MSC-358 B66-10329 01

Study made of destructive sectioning of complex structures for examination
LEWIS-381 B66-10676 05

Process sequence produces strong, lightweight reflectors of excellent quality
LEWIS-331 B67-10010 05

Chemical milling solution reveals stress corrosion cracks in titanium alloy
LEWIS-10077 B67-10322 03

Machine heavy plastic sections
M-PS-12720 B67-10381 03

Silicon carbide diode for increased light output
M-PS-20063 B69-10096 01

Raman-plane metallography of deformed pyrolytic carbon
NPO-11196 B69-10888 03

Automatic sample rotator for metallographic polishing
NPO-11015 B69-10596 03

POLUTIOE

New method for critical failure prediction of complex systems
M-PS-14133 B68-10252 02
Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ra-226 in aquatic fauna

Improved poppet valve provides positive damage-proof seal

Buoyant stokes litter assembly used for sea rescue operations

Improved adhesive for cryogenic applications cures at room temperature

Sea dye marker provides visibility for 20 hours

Phonocardiograph microphone is rugged and moisture proof

Impact and puncture resistant material protects parts from damage

Adhesive for polyester films cures at room temperature, has high initial tack

Primary cell utilizes neither liquid nor fused electrolytes

Quick-release hook-and-loop fastener

Polymer film exhibits thermal and radiation stability

New class of thermosetting plastics has improved strength, thermal and chemical stability

One-piece transparent shell improves design of belt assembly

Thermocouple-flexible cable connector insulator is highly reliable

Quick-release hook-and-loop fastener

POLYCRYSTALLS

Cuprous selenide and sulfide form improved photovoltaic barriers

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bisulfate an low-pass velocity filters for neutrons

Preferred-orientation analysis of polycrystalline materials

POLYESTERS

Adhesive for vacuum environments resists shock and vibration

Aluminum alloys protected against stress-corrosion cracking

Improved adhesive for vacuum environments resists shock and vibration

Buoyant stokes litter assembly used for sea rescue operations

Improved adhesive for cryogenic applications cures at room temperature

Improved primer for bonding polyurethane adhesives to metals

Modified filter prevents conduction of microwave signals along high-voltage power supply leads

Adhesive for polyester films cures at room temperature

Dispersion of borax in plastic is excellent fire-retardant heat insulator

Multi-feed cone for Cassegrainian antenna

Thermal protective visor for entering high temperature areas

Improved primer for bonding polyurethane adhesives to metals

Polyester improves properties of an aromatic polymer

High-temperature bearing lubricants

A concept for magazine Bimat processor

Quick-release hook-and-loop fastener

Polyester resin fabricated from sheet plastic

Synthesis of polyethers of hexafluorobenzene and hexafluoropropenadiol

Polyester resin modified filter prevents conduction of microwave signals along high-voltage power supply leads

POLYETHERS

Inert-gas welding and brazing enclosure fabricated from sheet plastic

Primary cells utilize halogen-organic charge transfer complex

Trace hydrazines in aqueous solutions accurately determined by gas chromatography

Vibration damping composition has flash-away feature
**POLYIMIDE RESINS**

- Rapid and precise analysis for calcium in blood serum
  ARG-10246 B69-10160 04

**POLYIMIDE RESINS**

- New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
  LEWIS-10576 B69-10118 03

- Precision mounting for instrument optical elements provided by polyimide bonding
  B66-10081 03

**POLYIMIDE FILMS**

- Film coating permits low-force scribing
  B66-10609 03

**POLYISOBUTYLENE**

- New class of thermosetting plastics has improved strength, thermal and chemical stability
  LEWIS-10576 B69-10118 03

**POLYURETHANES**

- New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
  LEWIS-10576 B69-10118 03

**POLYISOPRENE**

- New class of thermosetting plastis with improved strength, thermal and chemical stability
  LEWIS-10576 B69-10118 03

**POLYMER FILMS**

- Plastic films for reflective surfaces reproduced from masters
  GSFC-198 B64-10151 03

- Efficient thin film heating element takes minimum space
  GSFC-289 B65-10123 01

- Encapsulation process sterilizes and preserves surgical instruments
  JPL-484 B64-10066 05

**POLYURETHANE FILMS**

- Static electricity of polymers reduced by treatment with iodine
  B67-10132 03

**POLYETHYLENE FILMS**

- Substituted silane-diol polymers have improved thermal stability
  I-FS-469 B66-10259 03

**POLYURETHANE FILMS**

- Primary cells utilize halogen-organic charge transfer complex
  B66-10682 02

**POLYOXYMethylene FILMS**

- Photosensitive filler minimizes internal stresses in epoxy resins
  B67-10227 03

**POLYESTERS**

- New method for observing gas evolution during plastic laminate cure
  B69-10530 03

**POLYAMIDE FILMS**

- New isostatic compression process converts polyaromatics into structural material
  B66-10744 03

**POLYETHYLENE FILMS**

- Apparatus measures swelling of membranes in electrochemical cells
  B64-10179 05

**POLYETHYLENE FILMS**

- Low-cost seal compensates for surface irregularities
  B66-10299 03

**POLYETHYLENE FILMS**

- Primary cell utilizes halogen-organic charge transfer complex
  B66-10682 02

**POLYETHYLENE FILMS**

- Photosensitive filler minimizes internal stresses in epoxy resins
  B67-10227 03

**POLYESTER FILMS**

- Encapsulation process sterilizes and preserves surgical instruments
  JPL-484 B64-10066 05

**POLYETHYLENE FILMS**

- Machine tests crease durability of sheet materials
  JPL-604 B64-10179 05

**POLYESTERS**

- Vapor diffusion electrode improves fuel cell operation
  LEWIS-187 B66-10281 03

**POLYETHYLENE FILMS**

- Polyelectrolyte electrolyte produces swelling of membranes in electrochemical cells
  GSFC-198 B65-10087 01

**POLYETHYLENE FILMS**

- New rigid-curing, stable polyimide polymers with high-temperature strength and thermal stability
  LEWIS-10576 B69-10118 03

**SUBJECT INDEX**

- Cone and column solar energy concentrator
  B67-10517 01

- Storage-stable foamy polyurethane is activated by heat
  B66-10111 03

- Substituted silane-diol polymers have improved thermal stability
  B66-10259 03

- Primary cells utilize halogen-organic charge transfer complex
  B66-10682 02

- Photosensitive filler minimizes internal stresses in epoxy resins
  B67-10227 03

- Synthesis of pure aromatic glycidyl esters for use as adhesives
  B67-10647 03

- New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
  B69-10118 03

- Heparin insolubilized with crosslinking agent
  B69-10295 03

- Development of improved potting and conformal coating compounds
  B69-10559 03

- Production of crystalline polymers via liquid crystal monomers
  B69-10744 03

- Low-cost seal compensates for surface irregularities
  B66-10299 03

- Metal plates on fluorocarbon polymers
  B63-10528 03

- Encapsulation process sterilizes and preserves surgical instruments
  B64-10066 05

- Machine tests crease durability of sheet materials
  JPL-604 B64-10179 05

- Apparatus measures swelling of membranes in electrochemical cells
  GSFC-198 B65-10087 01

- Low-cost seal compensates for surface irregularities
  B65-10160 05

- Vapor diffusion electrode improves fuel cell operation
  LEWIS-187 B66-10281 03

- Isostatic compression process converts polyaromatics into structural material
  JPL-692 B67-10160 03
<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>POLYTEFLOROETHYLENE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesives for laminating polyimide insulated flat conductor cable M-PS-12066</td>
<td>B67-10429 03</td>
</tr>
<tr>
<td>Concept for design of variable stiffness damper ABC-11225</td>
<td>B67-10483 05</td>
</tr>
<tr>
<td>Photovoltaic effect in organic polymeric-iodine complex MFO-10373</td>
<td>B67-10634 03</td>
</tr>
<tr>
<td>Improved fuel-cell-type hydrogen sensor M-PS-14656</td>
<td>B68-10263 01</td>
</tr>
<tr>
<td>Temperature or pressure controller LEWS-10297</td>
<td>B68-10337 01</td>
</tr>
<tr>
<td>Frangible electrochemical cell and sealing technique XGS-10010</td>
<td>B69-10056 01</td>
</tr>
<tr>
<td>Refractory-metal compound impregnation of polytetrafluoroethylene LEWIS-10733</td>
<td>B69-10072 03</td>
</tr>
<tr>
<td>New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability LEWIS-10576</td>
<td>B69-10118 03</td>
</tr>
<tr>
<td>Helical recorder GSPC-10614</td>
<td>B69-10340 01</td>
</tr>
<tr>
<td>Thermally conducting electron transfer polymers GSPC-10703</td>
<td>B69-10511 03</td>
</tr>
<tr>
<td>Silphenylene elastomers have high thermal stability and tensile strength M-PS-20250</td>
<td>B69-10580 03</td>
</tr>
<tr>
<td>Chromatographic detection and analysis of traces of hydrocarbons KSC-10388</td>
<td>B69-10716 02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLYETHYL METHACRYLATE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical properties of plastics predetermined by empirical method ABC-28</td>
<td>B64-10068 03</td>
</tr>
<tr>
<td>Wide-aperture solar energy collector is light in weight JPL-SC-035</td>
<td>B65-10046 02</td>
</tr>
<tr>
<td>Spherical model provides visual aid for cubic crystal study LEWIS-108</td>
<td>B65-10065 03</td>
</tr>
<tr>
<td>Inert-gas welding and brazing enclosure fabricated from sheet plastic LEWIS-220</td>
<td>B65-10338 05</td>
</tr>
<tr>
<td>Small, high-intensity flasher permits continuous close-in photography M-0-0043</td>
<td>B66-10119 03</td>
</tr>
<tr>
<td>Machining heavy plastic sections M-PS-12720</td>
<td>B67-10381 03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLYMERES</th>
<th>POLYTEFLOROETHYLENE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of research and development in fluid logic elements M-PS-420</td>
<td>B67-10438 01</td>
</tr>
<tr>
<td>Polynomial manipulator AP-168 MSC-1231</td>
<td>B67-10103 01</td>
</tr>
<tr>
<td>Computer program provides linear sampled-data analysis for high order systems M-PS-12821</td>
<td>B67-10207 06</td>
</tr>
<tr>
<td>Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors M-PS-1687</td>
<td>B67-10434 01</td>
</tr>
<tr>
<td>General frequency response program calculates frequency response of system, open at any specified element M-PS-12817</td>
<td>B67-10521 06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLYURETHANE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Substituted silane-diol polymers have improved thermal stability M-PS-1</td>
<td>B66-10259 03</td>
</tr>
<tr>
<td>High-temperature bearing lubricants LEWIS-10408</td>
<td>B68-10249 05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLYVINYLPHENOLS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Surfactant for dye-penetrant inspection is insensitive to liquid oxygen M-PS-475</td>
<td>B66-10131 03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLYPROPYLENE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Folded stick module MPO-10854</td>
<td>B69-10498 01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLYSTYRENE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Small foamed polystyrene shield protects low-frequency microphones from wind noise M-PS-123</td>
<td>B63-10579 01</td>
</tr>
<tr>
<td>Cryogenic waveguide window is sealed with plastic foam JPL-559</td>
<td>B63-10613 01</td>
</tr>
<tr>
<td>Wide-aperture solar energy collector is light in weight JPL-SC-035</td>
<td>B65-10046 02</td>
</tr>
<tr>
<td>Argon purge gas cooled by chill box M-PS-560</td>
<td>B66-10153 02</td>
</tr>
<tr>
<td>Method accurately measures mean particle diameters of monodisperse polystyrene latexes ARG-207</td>
<td>B67-10056 02</td>
</tr>
<tr>
<td>Polyethylene cryostat facilitates testing tensile specimens under liquid nitrogen NUC-10522</td>
<td>B67-10613 02</td>
</tr>
<tr>
<td>Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures NUC-10521</td>
<td>B67-10617 02</td>
</tr>
<tr>
<td>Fast-response cup anemometer features cosine response ARG-90193</td>
<td>B68-10202 01</td>
</tr>
<tr>
<td>Low-loss C-band parasitic probe KSC-0338</td>
<td>B69-10251 01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POLYTEFLOROETHYLENE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals plated on fluorocarbon polymers JPL-544</td>
<td>B63-10612 03</td>
</tr>
<tr>
<td>Simple transducer measures low heat-transfer rates JPL-866</td>
<td>B64-10122 01</td>
</tr>
<tr>
<td>PTFE-aluminum films serve as neutral density filters LANGLEST-189</td>
<td>B66-10017 02</td>
</tr>
<tr>
<td>Polytetrafluoroethylene lubricates ball bearings in vacuum environment M-PS-379</td>
<td>B66-10081 03</td>
</tr>
</tbody>
</table>
Capacitive system detects and locates fluid leaks
M-PS-478 B66-10099 01

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment
LEWIS-359 B66-10678 05

Feed-through connector couples RF power into vacuum chamber
NO-0096 B67-10027 01

Improved sample capsule for determination of oxygen in hemolyzed blood
MSC-11017 B67-10408 04

Dynamic valve seal is reliable at cryogenic temperatures
M-PS-12987 B66-10526 05

Bearings use dry self-lubricating cage materials
LEWIS-10432 B66-10165 05

Teflon-packed flexible joint
LEWIS-90252 B66-10049 03

FRACTOGRAPHY can be used to analyze failure modes in polytetrafluoroethylene
M-PS-20294 B66-10066 03

Refractory-metal compound impregnation of polytetrafluoroethylene
LEWIS-10733 B66-10072 03

Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings
M-PS-18453 B66-10178 05

Self-lubricating gear
M-PS-14973 B66-10408 05

Improved inorganic ion exchange membranes
LEWIS-10737 B66-10451 03

POLYURETHANE FOAM

Storage-stable foamable polyurethane is activated by heat
LANGLEY-187 B66-10111 03

Special tool kit aids heavily garmented workers
MSC-163 B66-10403 05

Process produces chlorinated aromatic isocyanates in high yield
M-PS-1658 B66-10646 03

Synthesis of various highly halogenated monomers and polymers
M-PS-2143 B66-10100 05

Locating and sealing air leaks in multirooed buildings
NWC-10304 B66-10024 05

Fire retardant foams developed to suppress fuel fires
ARC-10098 B66-10350 03

Fiber glass prevents cracking of polyurethane foam insulation on cryogenic vessels
M-PS-20058 B66-10406 03

An improved method for electrical cable terminations
MFC-10694 B66-10327 01

Improved fire resistant radio frequency anechoic materials
M-PS-16600 B66-10650 05

A new method for fabrication of flexible vacuum purge jackets
M-PS-12646 B66-10564 03

Thermal conductivity probe

POLYURETHANE RESINS

Insulation for cryogenic tanks has reduced thickness and weight
M-PS-326 B66-10183 02

Critical parts are stored and shipped in environmentally controlled reusable container
M-PS-703 B66-10258 05

Phonocardiograph microphone is rugged and moistureproof
MSC-212 B66-10314 04

Strippable grid facilitates removal of grid-surfaced conical workpiece from die
M-PS-716 B66-10334 01

Nonwoven glass fiber mat reinforces polyurethane adhesive
M-PS-2309 B67-10034 03

Vibration damping composition has flush-away feature
M-PS-597 B67-10432 03

Solvent permits solid curing agents to be used at room temperatures
M-PS-13434 B67-10593 03

Compressible sleeve provides automatic centering for grinding or turning of cylinders
SAN-10021 B66-10318 05

Improved primer for bonding polyurethane adhesives to metals
M-PS-9056 B66-10540 03

Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol
M-PS-1395 B66-10636 03

POLYVINYL ALCOHOL

Sea dye marker provides visibility for 20 hours
MSC-714 B66-10313 03

POLYVINYL CHLORIDE

Emergency solar still desalts seawater
MSC-135 B66-10214 03

Primary cells utilize halogen-organic charge transfer complex
JPL-926 B66-10682 02

POWERS

Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-9045 B66-10236 04

POPULATION INVERSION

Rectangular-shape, high-gain laser plasma tube
NO-10234 B69-10193 02

POPULATIONS

Computer program reduces calculation time of normal response functions
M-PS-1517 B67-10108 01

POROSITY

Apparatus facilitates pressure-testing of metal tubing
LEWIS-174 B65-10131 05

Organic reactants rapidly produce plastic foam
LANGLEY-37 B65-10280 03

Reaction heat used in static water removal from fuel cells
M-PS-532 B66-10103 01

Vapor diffusion electrode improves fuel cell operation
LEWIS-187 B66-10281 03

Valve seat pores sealed with thermosetting
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Portable Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>monomer</td>
<td>B66-10322 03</td>
</tr>
<tr>
<td>Effect of welding position on porosity formation in aluminum alloy welds</td>
<td>B67-10177 05</td>
</tr>
<tr>
<td>Study made of anodized aluminum circuit boards</td>
<td>B67-10425 01</td>
</tr>
<tr>
<td>Welding of commercial base plates is investigated</td>
<td>B68-10192 03</td>
</tr>
<tr>
<td>Grain growth inhibitor for porous tungsten materials</td>
<td>B68-10527 03</td>
</tr>
<tr>
<td>Method for controlling density and permeability of sintered powdered metals</td>
<td>B68-10393 03</td>
</tr>
<tr>
<td>Detecting hydrogen-containing contaminants on metal surfaces</td>
<td>B69-10192 03</td>
</tr>
<tr>
<td>Metallic diffusion measured by a modified Knudsen technique</td>
<td>B69-10309 03</td>
</tr>
<tr>
<td>Conversion of continuous-direct-current TIG welded to pulse-arc operation</td>
<td>B69-10393 05</td>
</tr>
<tr>
<td>Generation of sonic power during welding</td>
<td>B69-10404 05</td>
</tr>
<tr>
<td>New type pressure transducer for severe thermal environments</td>
<td>B69-10652 01</td>
</tr>
<tr>
<td>Adding calcium improves lithium ferrite core</td>
<td>B69-10686 06</td>
</tr>
<tr>
<td><strong>POROUS BOUNDARY LAYER CONTROL</strong></td>
<td></td>
</tr>
<tr>
<td>Improved high-temperature silicide coatings</td>
<td>B69-10266 03</td>
</tr>
<tr>
<td><strong>POROUS MATERIALS</strong></td>
<td></td>
</tr>
<tr>
<td>Porous glass makes effective substrate for ozone-sensing reagent</td>
<td>B65-10364 03</td>
</tr>
<tr>
<td>Unique gear design provides self-lubrication</td>
<td>B65-10366 03</td>
</tr>
<tr>
<td>Electron beam seals outer surfaces of porous bodies</td>
<td>B66-10033 03</td>
</tr>
<tr>
<td>Process reduces pore diameters to produce superior filters</td>
<td>B66-10037 03</td>
</tr>
<tr>
<td>Combustion chamber struts can be effectively transpiration cooled</td>
<td>B66-10643 03</td>
</tr>
<tr>
<td>Composites of porous metal and solid lubricants increase bearing life</td>
<td>B67-10007 03</td>
</tr>
<tr>
<td>Porous sandblasts provide uniform deformation in hydrostatic powder metallurgy</td>
<td>B67-10209 03</td>
</tr>
<tr>
<td>Fuel cell life improved by metallic minter activation after electrode assembly</td>
<td>B67-10436 03</td>
</tr>
<tr>
<td>Electron beam selectively seals porous metal filters</td>
<td>B68-10331 05</td>
</tr>
<tr>
<td>Hydrostatic testing of porous assemblies</td>
<td>B68-10439 05</td>
</tr>
</tbody>
</table>

Method for controlling density and permeability of sintered powdered metals  B68-10528 03
Mass transport mechanism in porous fuel cell electrodes                      B69-10343 01

**POROUS PLATES**
Modular Porous Plate Sublimator /NPS/ requires only water supply for coolant  B66-10409 01

**PORTABLE EQUIPMENT**
Portable flooring protects finished surfaces, is easily moved  B63-10387 05
Portable display paneling has wide use, easy take down and assembly  B63-10435 05
Device calibrates vibration transducer at amplitudes up to 20 g  B63-10572 01
Continuity tester screens out faulty socket connections  B64-10065 01
Welding procedures improves quality of welds, offers other advantages  B64-10309 01
Portable tool removes burrs from pipe and tubing  B65-10360 05
Portable tool cleans pipes and tubing  B65-10375 05
Improved tool easily removes brazed tube connectors  B66-10003 05
Portable self-powered device detects internal flaws in tubular structures  B66-10028 01
Seismometer designed for remote operation in random orientation  B66-10085 01
Pipe cutting tool is useful in limited space  B66-10102 05
Mount makes liquid nitrogen-cooled gamma ray detector portable  B66-10103 01
Chart case opens to form briefing easel  B66-10135 05
Portable power tool machines weld joints in field  B66-10145 05
Extendable mast used in one shot soil penetrometer  B66-10146 05
Dispenser leak-tests and sterilizes rubber gloves  B66-10166 03
Ultrasound recording scanner used for nondestructive weld inspection  B66-10220 01
Hand tool permits shrink sizing of assembled tubing  B66-10239 05
Portable sandblaster cleans small areas  B66-10242 05
Ultrasound hand tool allows convenient scanning of spot welds  B66-10289 02

I-501
<table>
<thead>
<tr>
<th>PORTABLE LIFE SUPPORT SYSTEMS</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PORTABLE LIFE SUPPORT SYSTEMS</strong></td>
<td><strong>SUBJECT INDEX</strong></td>
</tr>
<tr>
<td>Portable lightweight cell provides controlled environment</td>
<td>E66-10370 05</td>
</tr>
<tr>
<td>Analog solar system model relates celestial bodies spatially</td>
<td>B66-10413 01</td>
</tr>
<tr>
<td>Automatic cryogenic liquid level controller</td>
<td>B66-10082 01</td>
</tr>
<tr>
<td>Apparatus enables automatic microanalysis of body fluids</td>
<td>ISC-960 B67-10008 02</td>
</tr>
<tr>
<td>Fluid logic control circuit operates nutator actuator motor</td>
<td>EWIS-294 B66-10593 05</td>
</tr>
<tr>
<td>Tool samples subsurface soil free of surface contaminants</td>
<td>MSC-10988 B67-10473 05</td>
</tr>
<tr>
<td><strong>POSITION (LOCATION)</strong></td>
<td><strong>PORTABLE LIFE SUPPORT SYSTEMS</strong></td>
</tr>
<tr>
<td>System locates randomly placed remote objects</td>
<td><strong>SUBJECT INDEX</strong></td>
</tr>
<tr>
<td>Integrated mobility measurement and notation system</td>
<td>E66-10315 01</td>
</tr>
<tr>
<td>Electron beam deflected to determine focal point location</td>
<td>B67-10649 01</td>
</tr>
<tr>
<td>Electron beam standby absorber system</td>
<td>B67-10650 01</td>
</tr>
<tr>
<td>Locating and sealing air leaks in multiroomed buildings</td>
<td>E66-10024 05</td>
</tr>
<tr>
<td>Detection and location of metallic objects imbedded in nonmetallic structures</td>
<td>B66-10413 01</td>
</tr>
<tr>
<td>Study of optimum discrete estimators in measurement analysis</td>
<td>B66-10348 02</td>
</tr>
<tr>
<td>Reidentifying hardware after loss of serial number</td>
<td>B66-10059 05</td>
</tr>
<tr>
<td>ARTHAJ on-site tracking prediction program</td>
<td>B66-10103 06</td>
</tr>
<tr>
<td>Circuit board hole coordinate locator concept</td>
<td>B66-10539 01</td>
</tr>
<tr>
<td><strong>POSITION ERRORS</strong></td>
<td><strong>PORTABLE LIFE SUPPORT SYSTEMS</strong></td>
</tr>
<tr>
<td>Image position sensor</td>
<td><strong>SUBJECT INDEX</strong></td>
</tr>
<tr>
<td><strong>PORTABLE LIFE SUPPORT SYSTEMS</strong></td>
<td><strong>SUBJECT INDEX</strong></td>
</tr>
<tr>
<td>Improved chlorate candle provides concentrated oxygen source</td>
<td>B67-10095 03</td>
</tr>
<tr>
<td>Threaded pilot insures cutting tool alignment</td>
<td>B66-10074 05</td>
</tr>
<tr>
<td>Flow ring valve is simple, quick-acting</td>
<td><strong>PORTABLE LIFE SUPPORT SYSTEMS</strong></td>
</tr>
<tr>
<td><strong>SUBJECT INDEX</strong></td>
<td><strong>PORTABLE LIFE SUPPORT SYSTEMS</strong></td>
</tr>
<tr>
<td>Multiple port pressure scanner valve features greater accuracy, quicker data</td>
<td>B66-10031 05</td>
</tr>
<tr>
<td>Seismographic recording of large rocket engine operation</td>
<td>B66-10049 05</td>
</tr>
<tr>
<td><strong>PORTABLE LIFE SUPPORT SYSTEMS</strong></td>
<td><strong>SUBJECT INDEX</strong></td>
</tr>
<tr>
<td>Improved chlorate candle provides concentrated oxygen source</td>
<td>B67-10082 05</td>
</tr>
<tr>
<td>Threaded pilot insures cutting tool alignment</td>
<td>B66-10074 05</td>
</tr>
<tr>
<td>Flow ring valve is simple, quick-acting</td>
<td><strong>SUBJECT INDEX</strong></td>
</tr>
</tbody>
</table>

I-502
SUBJECT INDEX

Closed circuit TV system automatically guides welding arc 
M-FS-20084 B66-10364 05

Device for diode tuning in a stripl ine varactor harmonic multiplier 
M-FS-20153 B69-10013 01

Helical tape forming device 
GSPC-10830 B69-10137 05

Astronaut's tool for withdrawing/replacing computer cards 
M-FS-20453 B69-10183 05

Camera mount for close-up stereo photographs 
LANGLEY-10442 B69-10226 02

Semiautomatic inspection of microfilm records 
M-FS-20240 B69-10301 02

Surface profilometer for examining grain-boundary grooves 
ARG-10290 B69-10345 05

Piezoelectric linear actuator 
ARG-13194 B69-10469 05

Apparatus alters position of objects to facilitate demagnetization 
GSFC-234 B64-10277 05

Jig and fixture aid fabrication of tungsten rivets 
LEWIS-1085 B65-10101 05

Thermal motor positions magnetometer sensors 
ARG-51 B66-10978 05

Adjustable cutting guide aligns and positions stacks of material 
MSC-321 B66-10210 05

Device facilitates centering of workpieces in lathe chuck 
M-FS-685 B66-10277 05

Inflatable holding fixture permits X-rays to be taken of inner weld areas 
M-FS-656 B66-10327 03

Alignment tool facilitates pin placement on irregular horizontal surfaces 
LANGLEY-219 B66-10410 05

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill 
M-FS-1084 B66-10441 05

Motion drive system is accurately controlled in the 1-micron range 
JPL-684 B66-10695 05

Welding torch and wire feed manipulator 
M-FS-13102 B67-10385 05

X-ray film holder permits single continuous picture of tubing joint 
LEWIS-10382 B66-10334 05

Remotely operated gripper provides vertical control rod movement 
ARG-10160 B66-10359 05

High-torque precision stepping drive 
M-FS-14772 B66-10549 05

Two-axis winch installer for heavy ducts in confined space 
M-FS-149254 B69-10062 05

Positive Feedback
Efficient dc to dc converter eliminates large stray magnetic fields 
GSFC-463 B66-10376 01

POTASSIUM COMPOUNDS

Positive and negative output circuits 
LEWIS-10715 B69-10151 01

Radiometric temperature reference 
MSC-13276 B69-10507 01

POTASSIUM CHLORIDES

Gelatin coated electrodes allow prolonged biochemical measurements 
MSC-153 B66-10088 01

Grain-boundary migration in KCl bicrystals 
ARG-10181 B69-10455 03

Zone purification of potassium chloride 
ARG-10377 B69-10241 03

POTASSIUM CHROMATES

A rapid stress-corrosion test for aluminum alloys 
M-FS-20175 B68-10536 03

POTASSIUM COMPOUNDS

Crack detection method is safe in presence of liquid oxygen 
M-FS-236 B65-10107 03

Air-cured ceramic coating insulates against high heat fluxes 
M-FS-150 B65-10357 03

Submicron metal powders produced by ball milling with grinding aids 
LEWIS-188 B66-10221 03

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel

I-503
POTASSIUM HYDROXIDES

NC-10047  B67-10194  03

Development of low temperature battery
LEWIS-10356  B67-10546  01

A ceramic composite thermal insulation
PS-3-13591  B67-10608  03

Study of actinide chemistry in saturated potassium fluoride solution
ARG-10204  B67-10004  03

Self-discharge in birefringent cells containing alkali metal
ARG-10147  B67-10631  01

POTASSIUM HYDROXIDES
Regenerative fuel cell combines high efficiency with low cost
WOO-090  B67-10363  01

New energy storage concept uses tapes
LEWIS-239  B66-10998  02

Device removes hydrogen gas from enclosed spaces
GSFC-495  B66-10340  03

Cobalt improves nickel hydroxide electrodes for batteries
LEWIS-10760  B67-10228  01

POTASSIUM NITRATES
Hydrated multivalent cations are new class of solen salt mixtures
ARG-211  B67-10033  03

POTASSIUM OXIDES
Glass formulation has high coefficient of thermal expansion
NO-084  B66-10705  03

POTASSIUM SILICATES
Inorganic paint is durable, fireproof, easy to apply
GSFC-366  B65-10156  03

Pigmented coating resists thermal shock
JPL-3C-083  B65-10354  03

Multilayer refractory nozzles produced by plasma-spray process
WOO-318  B66-10611  05

POTENTIAL ENERGY
Increased junction lead inductance ballasts high-frequency transistors
GSFC-387  B65-10259  01

Quantum mechanical calculations of reactive scattering cross sections in bimolecular encounters
PS-13594  B67-10527  03

Storage of electric and magnetic energy in passive nonreciprocal networks
ARG-10360  B69-10630  01

POTENTIAL FLOW
Acoustic wave analysis
PS-160176  B68-10265  02

POTENTIAL GRADIENTS
Density trace made with computer printout
GSFC-322  B65-10200  01

POTENTIOMETERS
Tension is servo controlled in film advance system
LANGLEY-54  B65-10075  05

System selects framing rate for spectrograph camera
LANGLEY-55  B65-10086  01

Simulator produces physiological waveforms
MSC-94  B65-10091  01

Variable load automatically tests dc power

supplies
GSFC-291  B65-10105  01

Simple circuit reduces transistor switching time
GSFC-314  B65-10234  01

Electropneumatic rheostat regulates high current
ARG-44  B65-10299  01

Photonsensors used to maintain welding electrode-to-joint alignment
MSC-243  B65-10401  05

Microminiature thermocouple monitors own installation
PS-1111  B66-10463  05

Double emitter suppressed carrier modulator uses commercially available components
PS-2494  B67-10101  01

(BISITBBTS)

Light-sensitive potentiometer measures product of two variables
GSFC-240  B65-10076  01

Inexpensive infrared source improvised from flashlight
PS-394  B66-10996  02

Accuracy of laser measurements improved by pulse autocorrelator electronic system
RSC-10033  B67-10338  01

Stable ac phase and amplitude comparator
PS-13086  B67-10459  01

Fixture facilitates soldering operations
PS-14456  B68-10573  05

Digital computer technique for setup and checkout of an analog computer
PS-13569  B68-10576  06

Two devices for analysis of nystagmus
HG-01273  B69-10224  01

Instrumentation for potentiostatic corrosion studies with distilled water
ARG-10409  B69-10413  03

Measuremen technique for the determination of antenna directivity
PS-12799  B69-10677  01

POTENTIOMETERS (RESISTORS)
Meter accurately measures flow of low-conductivity fluids
JPL-0021  B63-10280  01

Control system maintains selected liquid level
PS-4-70  B66-10039  01

High voltage potential divider calibrated by simple device
ARG-83  B66-10497  01

Variable-pulse switching circuit accurately controls solenoid-valve actuations
PS-13595  B67-10022  01

Capacitance-coupled wiper increases potentiometer life
ARG-10060  B68-10175  01

Improved dc voltage regulator

I-504
POWDER METALLURGY

Low-cost insulation system for cryostats eliminates need for a vacuum LEWIS-64 B63-10365 03

Fine-particle filter prevents damage to vacuum pumps LEWIS-106 B63-10489 03

Lead oxide ceramic makes excellent high-temperature lubricant LEWIS-144 B64-10116 03

Thin transparent films formed from powdered glass GSPC-352 B65-10217 03

Specimen holder design improves accuracy of X-ray powder analysis JPL-SC-165 B66-10075 02

Improved adhesive for cryogenic applications LEWIS-307 B69-10749 03

POWDER (PARTICLES)

Grain growth inhibitor for porous tungsten LEWIS-198 B66-10203 03

Composite of porous metal and solid lubricants increases bearing life LEWIS-307 B67-10007 03

Porous mandrels provide uniform deformation in hydrostatic powder metallurgy LEWIS-198 B67-10209 03

Alumina-titanium hydride-boron carbide composite provides lightweight neutron shield material NUC-10069 B67-10265 03

Practical new method of measuring thermal-neutron fluence NUC-10086 B67-10352 03

I-505
Method for controlling density and permeability of sintered powdered metals

LEWIS-10353

03

Digitally controlled pulse-level discriminator

GSPC-328

operates over wide voltage range

B66-10129

01

Omnidirectional antennas transmit and receive over large bandwidth

GSPC-436

B66-10133

01

Diffusion technique stabilizes resistor values

MSC-205

B66-10142

01

Tester periodically registers dc amplifier characteristics

MSC-190

B66-10148

01

Transducer measures force in vacuum environment

LEWIS-218

B66-10161

01

Simple circuit provides reliable multiple signal average and reject capability

N6-0069

B66-10282

01

Microphone multiplex system provides multiple outlets from single source

GSPC-426

B66-10308

02

Design concepts using ring lasers for frequency stabilization

M-FS-244

B66-10143

01

Voltage regulator/amplifier is self-regulated

MSC-1240

B66-10156

01

Electroencephalograph amplifier operates over dynamic range of five orders of magnitude

ARC-75

B66-10199

01

Nonreciprocal gain control for ring laser

N-FS-1404

B66-10653

02

Power consumption in acoustic amplifiers under conditions of maximum stable gain

MSC-1067

B66-10327

01

Digitally controlled pulse-level discriminator operates over wide voltage range

GSPC-328

B66-10129

01

Omnidirectional antennas transmit and receive over large bandwidth

GSPC-436

B66-10133

01

Diffusion technique stabilizes resistor values

MSC-205

B66-10142

01

Tester periodically registers dc amplifier characteristics

MSC-190

B66-10148

01

Transducer measures force in vacuum environment

LEWIS-218

B66-10161

01

Simple circuit provides reliable multiple signal average and reject capability

N6-0069

B66-10282

01

Microphone multiplex system provides multiple outlets from single source

GSPC-426

B66-10308

02

Design concepts using ring lasers for frequency stabilization

M-FS-244

B66-10143

01

Voltage regulator/amplifier is self-regulated

MSC-1240

B66-10156

01

Electroencephalograph amplifier operates over dynamic range of five orders of magnitude

ARC-75

B66-10199

01

Nonreciprocal gain control for ring laser

N-FS-1404

B66-10653

02

Power consumption in acoustic amplifiers under conditions of maximum stable gain

MSC-1067

B66-10327

01
SUBJECT INDEX

- thermal-neutron fluence
  NUC-10086  867-10352  02

- Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
  ABG-10220  869-10211  02

POWER SERIES

Boot-cubing and general root-powering methods for finding the zeros of polynomials
  ABG-10444  869-10424  02

POWER SPECTRA

A power-spectral-density computer program
  BFO-10126  867-10160  01

High-power microwave power divider concept
  BFO-11031  869-10290  01

Fast Fourier Transform Spectral Analysis Program
  B-PS-15062  869-10434  06

Long range holographic contour mapping concept
  EQ-10350  869-10700  02

POWER SUPPLIES

Circuit switches latching relay in response to signals of different polarity
  WGO-055  863-10508  01

Comfortable, lightweight safety helmet holds radio transmitter, receiver
  RSC-53  864-10015  05

Emission tester for high-power vacuum tubes
  JPL-628  864-10158  01

PTC thermistor protects multiloaded power supplies
  GSFC-236  864-10281  01

Carbon arc ignition improved by simple auxiliary circuit
  RSC-103  865-10018  01

Pulse height analyzer operates at high repetition rates, low power
  WGO-046  865-10041  01

Zener diode is starter for transistor regulated power supply
  RG-0015  865-10052  01

Fiber glass parts cured during filament winding eliminates oven, saves time
  M-P-FS-16  865-10068  03

Variable voltage supply uses Zener diode as reference
  GSFC-262  865-10097  01

Variable load automatically tests dc power supplies
  GSFC-291  865-10105  01

Dc to ac converter operates efficiently at low input voltages
  GSFC-130  865-10178  01

Improved wire memory matrix uses very little power
  JPL-SC-167  865-10359  01

High-intensity flashing beacon powered by mercury cells
  LANGLEY-80  865-10361  01

Photoelectric system continuously monitors liquid level
  M-PS-417  865-10382  01

Linear signal noise summer accurately determines and controls S/N ratio
  JPL-SC-152  866-10433  01

Standard arc welders provide high asperage

POWER SUPPLY CIRCUITS

- direct current source
  LANGLEY-267  866-10441  01

- Rectilinear accelerometer possesses self-calibration feature
  M-P-FS-1840  866-10452  01

- Preregulator feedback circuit utilizes Light Actuated Switch
  M-P-1180  866-10582  01

- Recharge unit provides for optimum recharging of battery cells
  GSFC-10686  866-10273  01

- High-torque power wrench, a concept
  M-P-1819  866-10299  05

- Electrochemical cell has internal resistive heater element
  GSFC-10358  868-10325  01

- High-efficiency step-up regulator
  M-P-20049  868-10432  01

- Field Effect Transistor /FET/ circuit for variable gain amplifiers
  GSFC-10116  869-10322  01

- Generation of sonic power during welding
  M-P-2030  869-10404  05

- Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
  GSFC-10452  869-10613  01

- Cryogenic flux-concentrator
  AG-10494  869-10654  02

POWER SUPPLY CIRCUITS

- Igniting system for mercury lamps protects transistorized sustaining supply
  JPL-421  863-10262  01

- Modular thermoelectric cell is easily packaged in various arrays
  GSFC-339  865-10199  01

- Dual-voltage power supply has increased efficiency
  LEWIS-107A  866-10002  01

- Circuit exhibits power efficiency greater than 75 percent
  M-P-254  866-10034  01

- Soldering iron temperature is automatically reduced
  ARC-57  866-10203  01

- Control circuit maintains unity power factor of reactive load
  RSC-192  866-10431  01

- Digital-to-analog converter operates from low level inputs
  JPL-907  867-10357  01

- Circuit detects voltage decrease in computer power supply
  RSC-67-12C  866-10019  01

- Short circuit protection for a power distribution system
  M-P-14993  868-10443  01

- Remotely-actuated biomedical switch
  ARC-10105  869-10117  01

- Bootstrap unloader
  XNP-09768  869-10120  01

- Positive and negative output circuits
  LEWIS-10715  869-10151  01

- Low-cost voltage-level detector
  LEWIS-10885  869-10217  01

I-507
POWER TRANSMISSION

Laser beam transmits electric power
GSFC-293 B65-10158 01

Compact actuator converts rotary to linear motion
JPL-786 B66-10245 05

Flexible drive allows blind machining and welding in hard-to-reach areas
MSC-524 B66-10428 05

Feasibility study of wireless, power transmission systems
M-FS-14691 B68-10309 01

PREAMPLIFIERS

Auxiliary circuit enables automatic monitoring of EKG's
MSC-106 B65-10142 01

Boron trifluoride nuclear detector preamplifier uses single-cable connection
LEWIS-178 B65-10255 01

Electrometer preamplifier has drift correction feedback
JPL-SC-074 B65-10267 01

Phonocardiograph system monitors heart sounds
MSC-185 B66-10154 04

Microphone multiplexer system provides multiple outlets from single source
GSFC-426 B66-10308 01

Remote preamplifier circuit maintains stability over wide temperature range
MSC-278 B66-10432 01

Point-source light sensor circuit is insensitive to background light
JPL-778 B66-10502 01

Miniature electrometer preamplifier effectively compensates for input capacitance
ARC-69 B66-10549 01

Current pulse amplifier transmits detector signals with minimum distortion and attenuation
NUC-10055 B67-10347 01

Improved relay optical element for spectroradiometer using cryogenically cooled detector
MSC-11688 B68-10245 02

Laser-Doppler gas-velocity instrument
M-FS-20039 B68-10349 02

Low-cost, fast-response drive circuit for electromechanical torque motors
LEWIS-10143 B68-10386 01

High resolution Ge/Li/ spectrometer reduces rate-dependent distortions at high counting rates
ARG-10144 B68-10420 01

PRECIPITATION

Crack detection method is safe in presence of liquid oxygen
M-FS-236 B65-10107 03

PRECIPITATION (CHEMISTRY)

Standards for electron probe microanalysis of silicates prepared by convenient method
GSFC-869 B66-10234 03

Process for preparing dispersions of alkali metals
JPL-794 B66-10639 03

Ion exchange determines iodine-131 concentration in aqueous samples
ARG-208 B67-10129 04

SUBJECT INDEX

Static electricity of polymers reduced by treatment with iodine
MFC-10062 B67-10132 03

PRECIPITATION HARDENING

Tantalum alloys resist creep deformation at elevated temperatures
LEWIS-350 B66-10558 03

Treatment increases stress-corrosion resistance of aluminum alloys
M-FS-1840 B66-10595 05

Weld microfissuring in Inconel 718 minimized by minor elements
M-FS-18185 B68-10251 03

Strain-age cracking in Rene 41 alloy
M-FS-18650 B69-10605 03

PRECISION

Instrument quickly transposes ground reference target to eye level
MSC-275 B66-10061 05

Threaded pilot insures cutting tool alignment
M-FS-527 B66-10076 05

Etching process mills PH 14-8 Mo alloy steel to precise tolerances
MSC-270 B66-10110 03

Depth indicator and stop aid machining to precise tolerances
M-FS-553 B66-10149 05

Mount enables precision adjustment of optical-instrumentation mirror
MSC-184 B66-10199 02

Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart
JPL-805 B66-10386 01

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill
M-FS-1084 B66-10411 05

Braking mechanism is self-actuating and bidirectional
M-FS-1299 B66-10484 05

Motion drive system is accurately controlled in the 1-micron range
JPL-864 B66-10695 05

Micromanipulation tool is easily adapted to many uses
JPL-129 B67-10004 05

Hydrogen maser as a highly stable frequency reference
M-FS-2437 B67-10146 01

Traveling wire electrode increases productivity of Electrical Discharge Machining /EDM/ equipment
ARG-136 B67-10238 05

Standard surface grinder for precision machining of thin-wall tubing
ARG-10014 B67-10400 05

Precision metal molding
M-FS-13305 B67-10423 05

Automatic transducer switching provides accurate wide range measurement of pressure differential
NUC-10001 B67-10540 01

Precision trimmer aids in preparing biomedical specimen blocks for ultrathin sectioning
ARG-242 B67-10541 05

Modified size bar device measures small
angles with high accuracy  
GSFC-438  
B68-10322  02

Rapid and precise analysis for calcium in blood serum  
ABG-10246  
B69-10160  04

Tool simplifies machining of pipe ends for precision welding  
KSC-10361  
B69-10231  05

Precise gimballing mechanism  
NPO-11057  
B69-10270  01

Precision mounting for instrument optical elements provided by polyimide bonding  
N-P2-20293  
B69-10310  05

Magnetocative forming for precision sizing and joining of large-diameter tubes  
N-P2-20461  
B69-10422  05

Live-timer method of automatic dead-time correction for precision counting  
ABG-10478  
B69-10612  01

Laser interferometer micrometer system  
N-P2-14747  
B69-10633  02

PREDICTIONS  
Mathematical relation predicts achievable densities of compacted particles  
ABG-10082  
B67-10592  03

Study of optimum discrete estimators in measurement analysis  
N-P2-14915  
B68-10348  02

Variable-mesh method of solving differential equations  
NFO-10515  
B69-10017  02

Numerical integration of ordinary differential equations of various orders  
N-P2-10247  
B69-10999  02

ARTEJ on-site tracking prediction program  
NFO-10836  
B69-10103  06

Prediction of friction coefficients for gases  
LEWIS-10774  
B69-10112  02

Application of cryptanalytic techniques to the analysis of half space batteries  
GSFC-10569  
B69-10731  01

Surface-renewal models for heat-transfer between walls and fluidized beds  
ABG-10372  
B69-10772  02

Numerical solutions of differential equations  
N-P2-20537  
B69-10779  02

Determination of permissible applied load stress in structural elements  
N-P2-16555  
B69-10823  02

PREFLIGHT ANALYSIS  
Advanced mission analysis program  
GSFC-10575  
B69-10171  06

PREFLIGHT OPERATIONS  
Separation simulator  
KSC-67-15  
B69-10315  01

PREFORMS  
Plastic preforms facilitate fabrication of welded cordwood electronic modules  
LEWIS-90339  
B68-10063  01

PRELAUNCH TESTS  
Programmed schedule holds for improving launch vehicle holds  
N-P2-14502  
B69-10602  03

PREPARATION  
Weld preparation tool for pipes and tubing  

Gage provides audible signal to facilitate checkout of connector pins
ESC-10335 B69-10173 01

Segmented SiGe-PbTe couples
GSFC-10746 B69-10233 01

Leakage tester for flat conductor cable connector
N-PS-20427 B69-10284 05

TFE-fluorocarbon liners for flexible hoses
N-PS-16480 B69-10288 05

Hermetically sealed pump
LEW-10837 B69-10320 05

Vibration damper for Miles vertical boring mill ram
MSC-15529 B69-10348 05

Hydraulic calipers
N-PS-18052 B69-10399 05

Stud made of thin-walled pipe response to turbulent fluids
I-FS-1321 B67-10518 05

Computer program analyzes and designs supersonic wing-body combinations
ABC-10141 B68-10335 06

Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction
NUC-10189 B68-10450 06

Mechanical properties of a lap joint under uniform clamping pressure
N-PS-14538 B69-10141 05

Computer programs for axial flow compressor design
LEW-10765 B69-10174 06

Vented piston seal prevents fluid leakage
Quick-acting backup tool for welding ducts between two chambers
I-PS-18404 B69-10396 05

Integral coolant channels supply made by Universal bellows joint restraint permits angular and offset movement
1100-102 B65-10371 05

Fluid-pressure meter can be calibrated without removal from flow line
N-PS-98 B63-10502 05

Molibden thin films are superconductive in strong magnetic fields at low temperatures
JPL-SC-174 B66-10122 02

Expandable rubber plug seals openings for pressure testing
BU-0048 B66-10229 05

Portable lightweight cell provides controlled environment
MSC-648 B66-10370 05

Automatic cryogenic liquid level controller is safe for use near combustible substances
LEW-195 B66-10482 01

Rugged switch responds to minute pressure differentials
N-PS-12704 B67-10389 01

Improved method of dicing integrated circuit wafers into chips
SRC-10138 B69-10441 01

Two-part valve acts as quick coupling
JPL-478 B64-10223 05

Calibrated clamp facilitates pressure application
MSC-290 B66-10059 05

Post-stressed concrete foundation may reduce machinery vibration
ARG-130 B67-10237 05

Computer program provides steady state analysis for liquid propellant propulsion systems
MSC-10064 B67-10414 06

Computer program NCAP-TOSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid
NUC-10042 B67-10456 06

Computer program NCAP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solid
NUC-10043 B67-10457 06

Study made of thin-walled pipe response to turbulent fluids
N-PS-1321 B67-10518 05

Distillation device supplies cesium vapor at constant pressure
XNP-08124 B69-10020 03

Computer programs TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction
NUC-10189 B68-10450 06

Mechanical properties of a lap joint under uniform clamping pressure
N-PS-14538 B69-10141 05

Computer programs for axial flow compressor design
LEW-10765 B69-10174 06

Quick-acting backup tool for welding ducts between two chambers
I-PS-18404 B69-10396 05

Study made of thin-walled pipe response to turbulent fluids
N-PS-1321 B67-10518 05

Computer programs TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction
NUC-10189 B68-10450 06

Computer program NCAP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solid
NUC-10043 B67-10457 06

Improved atomic resonance gas cell for use in frequency standards

<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PRESSURE MEASUREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressible sleeve provides automatic centering for grinding or turning of</td>
<td>Materials physically tested in</td>
</tr>
<tr>
<td>cylinders</td>
<td>variable-environment chamber</td>
</tr>
<tr>
<td>SAE-10021</td>
<td>JPL-789</td>
</tr>
<tr>
<td>Computer program analyzes and designs supersonic wing-body combinations</td>
<td>Bellows design features low</td>
</tr>
<tr>
<td>AGC-10141</td>
<td>spring rate and long life</td>
</tr>
<tr>
<td>Hydrodynamics of a new concept of primary containment by energy absorption</td>
<td>Device without electrical</td>
</tr>
<tr>
<td>AGO-10242</td>
<td>connections in tank measures</td>
</tr>
<tr>
<td>Protective clothing for workers with 5-kW and 20-kW short-arc lamps</td>
<td>liquid level</td>
</tr>
<tr>
<td>NFO-11155</td>
<td>WOO-235</td>
</tr>
<tr>
<td>Computer program analyzes and designs supersonic wing-body combinations</td>
<td>Fixture tests bellows</td>
</tr>
<tr>
<td>Quality-weld parameters for micro welding techniques and equipment</td>
<td>reliability through</td>
</tr>
<tr>
<td>N-PS-20484</td>
<td>repetitive pressure/temperature</td>
</tr>
<tr>
<td>A method for using surface tension to determine the size of holes in</td>
<td>cycling</td>
</tr>
<tr>
<td>hardware</td>
<td></td>
</tr>
<tr>
<td>Hydrodynamics of a new concept of primary containment by energy absorption</td>
<td></td>
</tr>
<tr>
<td>Elastic orifice automatically regulates gas bearings</td>
<td></td>
</tr>
<tr>
<td>JPL-135</td>
<td></td>
</tr>
<tr>
<td>Apparatus measures swelling of membranes in electrochemical cells</td>
<td></td>
</tr>
<tr>
<td>GSFC-280</td>
<td></td>
</tr>
<tr>
<td>Ultrasonic wrench produces leak tight connections</td>
<td></td>
</tr>
<tr>
<td>N-PS-12561</td>
<td></td>
</tr>
<tr>
<td>Pressure gage system for radiation environment</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10797</td>
<td></td>
</tr>
<tr>
<td>Pickup device reads pressures from ports in rotating mechanisms</td>
<td>Fluid-pressure meter can be</td>
</tr>
<tr>
<td>LEWIS-158</td>
<td>calibrated without removal</td>
</tr>
<tr>
<td>Fluid-pressure measurement apparatus uses short-length manometer tubes</td>
<td>from flow line</td>
</tr>
<tr>
<td>LEWIS-28</td>
<td></td>
</tr>
<tr>
<td>Differential pressure gauge has fast response</td>
<td></td>
</tr>
<tr>
<td>N-PS-358</td>
<td></td>
</tr>
<tr>
<td>Cryogenic fluid sampling device permits testing under hazardous conditions</td>
<td></td>
</tr>
<tr>
<td>N-PS-1927</td>
<td></td>
</tr>
<tr>
<td>Device enables calibration of microphones at high sound pressure levels</td>
<td></td>
</tr>
<tr>
<td>N-PS-111980</td>
<td></td>
</tr>
<tr>
<td>Ultrasonic wrench produces leak tight connections</td>
<td></td>
</tr>
<tr>
<td>N-PS-12561</td>
<td></td>
</tr>
<tr>
<td>Vacuum gage system for radiation environment</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10797</td>
<td></td>
</tr>
<tr>
<td>Elastic orifice automatically regulates gas bearings</td>
<td></td>
</tr>
<tr>
<td>JPL-135</td>
<td></td>
</tr>
<tr>
<td>Packless valve with all-metal seal handles wide temperature, pressure range</td>
<td></td>
</tr>
<tr>
<td>JPL-361</td>
<td></td>
</tr>
<tr>
<td>Oil-smeared models aid wind tunnel measurements</td>
<td></td>
</tr>
<tr>
<td>LANGLEY-4</td>
<td></td>
</tr>
<tr>
<td>Density trace made with computer printout</td>
<td></td>
</tr>
<tr>
<td>GSFC-322</td>
<td></td>
</tr>
<tr>
<td>Ring valve responds to differential pressure changes</td>
<td></td>
</tr>
<tr>
<td>WOO-247</td>
<td></td>
</tr>
<tr>
<td>JPL-10022</td>
<td></td>
</tr>
<tr>
<td>Prediction of friction coefficients for gases</td>
<td></td>
</tr>
<tr>
<td>HSC-10001</td>
<td></td>
</tr>
<tr>
<td>Precision mounting for instrumental optical elements provided by polyimide</td>
<td></td>
</tr>
<tr>
<td>LS-PS-20293</td>
<td></td>
</tr>
<tr>
<td>Flared-tube fittings with replaceable seat inserts</td>
<td></td>
</tr>
<tr>
<td>N-PS-15372</td>
<td></td>
</tr>
<tr>
<td>Experimental design for research on shock-turbulence interaction</td>
<td></td>
</tr>
<tr>
<td>N-PS-20031</td>
<td></td>
</tr>
<tr>
<td>Vacuum gage system for radiation environment</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10797</td>
<td></td>
</tr>
<tr>
<td>Pickup device reads pressures from ports in rotating mechanisms</td>
<td></td>
</tr>
<tr>
<td>LEWIS-158</td>
<td></td>
</tr>
<tr>
<td>Fluid-pressure measurement apparatus uses short-length manometer tubes</td>
<td></td>
</tr>
<tr>
<td>LEWIS-28</td>
<td></td>
</tr>
<tr>
<td>Pressure transducer 3/8-inch in size can be faired into surface</td>
<td></td>
</tr>
<tr>
<td>WOO-065</td>
<td></td>
</tr>
<tr>
<td>Multiple port pressure scanner valve features greater accuracy, quicker data</td>
<td></td>
</tr>
<tr>
<td>JPL-555</td>
<td></td>
</tr>
<tr>
<td>Pickup device reads pressures from ports in rotating mechanisms</td>
<td></td>
</tr>
<tr>
<td>LEWIS-158</td>
<td></td>
</tr>
<tr>
<td>Fluid-pressure measurement apparatus uses short-length manometer tubes</td>
<td></td>
</tr>
<tr>
<td>LEWIS-28</td>
<td></td>
</tr>
<tr>
<td>Apparatus measures swelling of membranes in electrochemical cells</td>
<td></td>
</tr>
<tr>
<td>GSFC-280</td>
<td></td>
</tr>
<tr>
<td>Shock mount isolates pressure transducers from vibration</td>
<td></td>
</tr>
<tr>
<td>JPL-631</td>
<td></td>
</tr>
<tr>
<td>Averaging probe reduces static-pressure sensing errors</td>
<td></td>
</tr>
<tr>
<td>LANGLEY-36</td>
<td></td>
</tr>
<tr>
<td>Apparatus facilitates pressure-testing of</td>
<td></td>
</tr>
<tr>
<td>Metal tubing</td>
<td>Metal tubing LEWIS-174</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Vapor pressure measured with inflatable plastic bag</td>
<td>Vapor pressure measured with inflatable plastic bag GSPC-281</td>
</tr>
<tr>
<td>Differential pressure gauge has fast response</td>
<td>Differential pressure gauge has fast response M-PS-358</td>
</tr>
<tr>
<td>Remote rapidly varying pressures accurately measured</td>
<td>Remote rapidly varying pressures accurately measured MFC-28</td>
</tr>
<tr>
<td>Special mount improves remote transducer accuracy</td>
<td>Special mount improves remote transducer accuracy LEWIS-269</td>
</tr>
<tr>
<td>Cold cathode ionization gage has rigid metal housing</td>
<td>Cold cathode ionization gage has rigid metal housing GSPC-445</td>
</tr>
<tr>
<td>Transmission system isolates pressure transducer from severe environment</td>
<td>Transmission system isolates pressure transducer from severe environment W00-239</td>
</tr>
<tr>
<td>Rod and dish cathode improves penning-type vacuum gage</td>
<td>Rod and dish cathode improves penning-type vacuum gage GSPC-447</td>
</tr>
<tr>
<td>Microorganisms detected by enzyme-catalyzed reaction</td>
<td>Microorganisms detected by enzyme-catalyzed reaction JPL-792</td>
</tr>
<tr>
<td>Colloidal suspension simulates linear dynamic pressure profile</td>
<td>Colloidal suspension simulates linear dynamic pressure profile W00-266</td>
</tr>
<tr>
<td>Studies reveal effects of pipe bends on fluid flow cavitation</td>
<td>Studies reveal effects of pipe bends on fluid flow cavitation M-PS-516</td>
</tr>
<tr>
<td>Modified McLeod gage records automatically</td>
<td>Modified McLeod gage records automatically LEWIS-290</td>
</tr>
<tr>
<td>Acceleration-compensated pressure transducer has fast response</td>
<td>Acceleration-compensated pressure transducer has fast response LANGLEY-113</td>
</tr>
<tr>
<td>Modified McLeod pressure gage eliminates measurement errors</td>
<td>Modified McLeod pressure gage eliminates measurement errors ABC-62</td>
</tr>
<tr>
<td>Volume-ratio calibration system for vacuum gages</td>
<td>Volume-ratio calibration system for vacuum gages LEWIS-303</td>
</tr>
<tr>
<td>A piezo-bar pressure probe</td>
<td>A piezo-bar pressure probe LEWIS-393</td>
</tr>
<tr>
<td>IR vidicon scanner monitors many test points</td>
<td>IR vidicon scanner monitors many test points M-PS-1937</td>
</tr>
<tr>
<td>Automatic transducer switching provides accurate wide range measurement of pressure differential</td>
<td>Automatic transducer switching provides accurate wide range measurement of pressure differential NUC-10001</td>
</tr>
<tr>
<td>Gas pressure in sealed electrochemical cells measured externally</td>
<td>Gas pressure in sealed electrochemical cells measured externally GSPC-10004</td>
</tr>
<tr>
<td>Quasi-static vapor pressure measurements on reactive systems in inert atmosphere box</td>
<td>Quasi-static vapor pressure measurements on reactive systems in inert atmosphere box ARG-90142</td>
</tr>
<tr>
<td>Welder analyzer</td>
<td>Welder analyzer MSC-12068</td>
</tr>
<tr>
<td>Silicon strain sensors enable pressure measurement at cryogenic temperatures</td>
<td>Silicon strain sensors enable pressure measurement at cryogenic temperatures M-PS-14703</td>
</tr>
<tr>
<td>Conceptual dead weight device to provide pressure calibration</td>
<td>Conceptual dead weight device to provide pressure calibration M-PS-14672</td>
</tr>
<tr>
<td>Real fluid properties of normal parahydrogen</td>
<td>Real fluid properties of normal parahydrogen LEWIS-10458</td>
</tr>
</tbody>
</table>
SOBJBCT
IIDBX
PBBSSURB
SBBSOBS
Dual rate pressure relief valve
M-PS-11606
B67-10302
03
Design of fluid-duct bends with low
pressure loss
M-PS-20716
B68-10395
03
Two-step rocket engine bipropellant valve
concept
M-SC-10951
B69-10280
03
Miniature oxygen resuscitator
M-SC-10398
B69-10319
04
PRESSURE REGULATORS
High-pressure regulating system prevents
pressure surges
JPL-231
B63-10170
05
New package for Belleville spring permits
rate change, easy disassembly
JPL-392
B63-10247
05
Compressed gas system operates semitrailer
brakes during winching operation
JPL-0036
B64-10306
05
Pressure transducer system is force-balanced,
has digital output
M-PS-154
B65-10174
05
One-shot valve may be remotely actuated
WOO-195
B65-10266
05
Ring valve responds to differential pressure
changes
WOO-247
B66-10022
05
Dual regulator controls two gases from a
single reference
MSC-227
B66-10167
05
Control system maintains compartment at
contstant temperature
JPL-SC-145
B66-10188
05
Magnetic latches provide positive
overpressure control
NU-0057
B66-10279
05
Modified hydraulic braking system limits
angular deceleration to safe values
GSFC-476
B66-10310
05
Gas diffuser facilitates withdrawal of
cryogenic liquids from tanks
M-PS-915
B66-10342
05
Pneumatic binary encoder replaces multiple
solenoid system
M-PS-665
B66-10374
01
Multidimensional Reaction Kinetic Ablation
Program /BEKAP/
MSC-143
B66-10495
05
Quick-response servo amplifies small
hydraulic pressure differences
ABG-99
B66-10498
05
Check valve installation in pilot operated
relief valve prevents reverse pressurization
M-PS-1925
B66-10655
05
High speed blowdown system provides rapid
pressure loss
LEWIS-375
B67-10043
05
Portable fixture facilitates pressure
testing of instrumentation fittings
M-PS-2032
B67-10121
03
High impact pressure regulator withstands
impacts of over 15,000 g
WOO-10755
B67-10274
01
Remotely operated high pressure valve
I-513
Plant respirometer enables high resolution of oxygen consumption rates

Indicator system provides complete data of engine cylinder pressure variation

Design concept for pressure switch calibrator

Pressure probe compensates for dimensional tolerance variations

Miniature telemetry system accurately measures pressure

Gas leak detector is simple and inexpensive

Laser Doppler flowmeter measures gas velocity

System enables more complete calibrations of dynamic-pressure transducers

A piezo-bar pressure probe

Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi

Pressure levels and pulsation frequencies can be varied on high pressure/frequency testing device

Pump simulator provides variable pressure-flow characteristics

Design for high-temperature/1800 deg F/liquid metal pressure transducer

Automatic transducer switching provides accurate wide range measurement of pressure differential

Instrumentation monitors transported material through variety of parameters

Gas pressure in sealed electrochemical cells measured externally

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers

Ultraminiature manometer-tipped cardiac catheter

Dual rate pressure relief valve

Miniature pressure transducer for stressed member application

Silicon strain sensors enable pressure measurement at cryogenic temperatures

Cooled miniature pressure transducers effective at high temperatures

Automatic calibration system for pressure transducers

Combination probe for airflow measurements

Pressure-sensitive bonded junction transducers

Direct indication of particle size in fluidized beds

Cryogenic pressure transducer

New type pressure transducer for severe thermal environments

Miniature backward-diode pressure sensor features stability and low power consumption

Inflatable bladder provides accurate calibration of pressure switch

Indicator system provides complete data of engine cylinder pressure variation

Calibratable solid-state pressure switch

Cryogenic filter method produces super-pure helium and helium isotopes

New method forms bond line free of voids

Lightweight door seals cryogenic container against diaphragm type loading

Bismuth alloy potting seals aluminum connector in cryogenic application

Pressure seal ring may be effective over wide temperature range

Pressure vessels fabricated with high-strength wire and electroformed nickel

Expandable rubber plug seals openings for pressure testing

Vapor diffusion electrode improves fuel cell operation

Fluid logic control circuit operates nutator actuator motor

Prefurred stiffeners used to fabricate structural components for pressurized tanks

Purification train produces ultrapure hydrogen gas

Ultrasonics permits brazing complex stainless steel assembly without flux

Crack growth measured on flat and curved surfaces at cryogenic temperatures
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PRINTED CIRCUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lewis-389</td>
<td>B67-10364 01</td>
</tr>
<tr>
<td>Study made of pneumatic high pressure piping materials /10,000 psi/ KSC-10133</td>
<td>B67-10437 03</td>
</tr>
<tr>
<td>Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel NUC-10008</td>
<td>B67-10539 05</td>
</tr>
<tr>
<td>High-voltage pulse generator developed for wide-gap spark chambers ARG-10136</td>
<td>B68-10263 01</td>
</tr>
<tr>
<td>Analysis of filament reinforced metal-shell pressure vessels Lewis-10352</td>
<td>B68-10405 06</td>
</tr>
<tr>
<td>Temperature controlled strain-gaged extensometer Lewis-10353</td>
<td>B68-10543 01</td>
</tr>
<tr>
<td>Welded repairs of punctured thin-walled aluminum pressure vessels N-PS-14836</td>
<td>B69-10051 05</td>
</tr>
<tr>
<td>Adhesive for cryogenic temperature applications Lewis-10264</td>
<td>B69-10074 03</td>
</tr>
<tr>
<td>Sealed container sampling device GSPC-10690</td>
<td>B69-10682 03</td>
</tr>
<tr>
<td>Effects of high-pressure hydrogen on storage vessel materials N-PS-18605</td>
<td>B69-10730 03</td>
</tr>
<tr>
<td>Pressure Welding</td>
<td></td>
</tr>
<tr>
<td>Pressure-welded flange assembly provides leaktight seal at reduced bolt loads N-PS-640</td>
<td>B66-10247 05</td>
</tr>
<tr>
<td>Differential expansion provides pressure for diffusion bonding of large diameter rings N-PS-568</td>
<td>B66-10269 05</td>
</tr>
<tr>
<td>Rhodium-plated barrier against high-temperature fusion bonding N-PS-92155</td>
<td>B69-10544 05</td>
</tr>
<tr>
<td>Preserving</td>
<td></td>
</tr>
<tr>
<td>Low-cost insulation system for cryostats eliminates need for a vacuum Lewis-64</td>
<td>B63-10365 03</td>
</tr>
<tr>
<td>Combustion chamber inlet manifold separates vapor from liquid N-PS-531</td>
<td>B66-10052 05</td>
</tr>
<tr>
<td>Tensile-strength apparatus applies high strain-rate loading with aluminum shock JPL-28</td>
<td>B66-10063 05</td>
</tr>
<tr>
<td>Cryostat modified to aid rotating beam fatigue test N-PS-435</td>
<td>B66-10083 03</td>
</tr>
<tr>
<td>Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons Lewis-263</td>
<td>B66-10104 03</td>
</tr>
<tr>
<td>Adapter assembly prevents damage to tubing during high pressure tests NRC-563</td>
<td>B66-10330 02</td>
</tr>
<tr>
<td>Investigation of pressurized toroidal shells HQ-27</td>
<td>B67-10117 05</td>
</tr>
<tr>
<td>Propellant tank pressurization analysis program N-PS-1506</td>
<td>B67-10625 06</td>
</tr>
<tr>
<td>Pneumatic pressure wave generator provides economical, simple testing of pressure transducers NUC-10024</td>
<td>B67-10664 05</td>
</tr>
<tr>
<td>Compact monitoring and control console for pressurized gas bottles N-PS-14874</td>
<td>B68-10401 05</td>
</tr>
<tr>
<td>Sealed container sampling device GSPC-10690</td>
<td>B69-10682 03</td>
</tr>
<tr>
<td>Primary Batters</td>
<td></td>
</tr>
<tr>
<td>Primary cells utilize halogen-organic charge transfer complex JPL-926</td>
<td>B66-10682 02</td>
</tr>
<tr>
<td>Primary cell uses neither liquid nor fused electrolytes NPO-10001</td>
<td>B67-10275 01</td>
</tr>
<tr>
<td>Primaries</td>
<td></td>
</tr>
<tr>
<td>Automated urinalysis technique determines concentration of creatine and creatinine by colorimetry NPO-10149</td>
<td>B67-10245 04</td>
</tr>
<tr>
<td>PRIMERS</td>
<td></td>
</tr>
<tr>
<td>White primer permits a corrosion-resistant coating of minimum weight N-PS-308</td>
<td>B66-10207 03</td>
</tr>
<tr>
<td>PRIMERS (COATINGS)</td>
<td></td>
</tr>
<tr>
<td>Inorganic paint is durable, fireproof, easy to apply GSPC-366</td>
<td>B65-10156 03</td>
</tr>
<tr>
<td>Improved primer for bonding polyurethane adhesives to metals N-PS-90591</td>
<td>B69-10540 03</td>
</tr>
<tr>
<td>Printed Circuits</td>
<td></td>
</tr>
<tr>
<td>Modular chassis simplifies packaging and interconnecting of circuit boards JPL-236A</td>
<td>B63-10174 01</td>
</tr>
<tr>
<td>Front and back printed circuit layouts presented on single sheet GSPC-93</td>
<td>B63-10596 01</td>
</tr>
<tr>
<td>Compact coaxial connector for printed circuit adds reliability NRC-57</td>
<td>B64-10016 01</td>
</tr>
<tr>
<td>Use of photographs speeds inspection of printed-circuit boards NRC-72</td>
<td>B64-10118 01</td>
</tr>
<tr>
<td>Hand tool bends component leads accurately N-PS-308</td>
<td>B65-10181 05</td>
</tr>
<tr>
<td>Modified developer increases line resolution in photosensitive resist GSPC-386</td>
<td>B65-10278 01</td>
</tr>
<tr>
<td>Assembly jig assures reliable solar cell modules GSPC-455</td>
<td>B66-10040 05</td>
</tr>
<tr>
<td>New television camera eliminates vidicon tube N-PS-472</td>
<td>B66-10112 01</td>
</tr>
<tr>
<td>Tool forms right angles in component leads N-PS-722</td>
<td>B66-10346 05</td>
</tr>
<tr>
<td>Process produces accurate registry between circuit board prints Langley-280</td>
<td>B66-10660 02</td>
</tr>
</tbody>
</table>
Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board
M-PS-13663 B67-10426 01
Areas of irregular, discontinuous patterns rapidly and accurately measured
GSFC-10184 B67-10674 01
Optical system facilitates inspection of printed circuit boards
GSFC-07971 B68-10021 02
Inspection criteria ensure quality control of parallel gap soldering
M-PS-14530 B68-10257 05
Standards for compatibility of printed circuit and component lead materials
M-PS-14531 B68-10310 01
Fixture facilitates soldering operations
M-PS-14456 B68-10573 05
Nondestructive evaluation of printed wiring boards by micros resistance measurements
SAR-10034 B69-10272 01
Self-shielding printed circuit boards for high frequency amplifiers and transmitters
HO-10433 B69-10314 01
Folded stick module
WPO-10854 B69-10498 01
Design of printed circuit coils
HO-10431 B69-10665 01
Investigation of the development of cracks in solder joints
M-PS-20444 B69-10807 01
One-count memory circuit prevents machine mode interaction
ARG-90 B66-10559 01
Density trace made with computer printout
GSFC-322 B65-10200 01
Digital data averages improves conventional measurement system performance
MSC-12078 B68-10018 01
Fully automatic telemetry data processor
GSFC-10576 B68-10336 01
Two devices for analysis of nystagmus
HO-10273 B69-10224 01
Modified procedure speeds camera copy layout for offset printing
GSFC-424 B65-10373 02
Offset lenses add versatility to phototypesetting machine
HO-9 B66-10173 02
Uppercase and lowercase computer printout increases readability
HO-12 B65-10286 01
Expandable takeup reel facilitates paper tape removal
WGO-271 B66-10599 05
Computer program performs statistical analysis for random processes
M-PS-723 B66-10525 01
Computer/PRT technique monitors actual versus allocated costs
LEWTS-260 B67-10025 01
Translator program converts computer printout into braille language

SUBJECT INDEX

N-PS=2061 B67-10087 01
Computer program calculates the effective temperature for a crystalline solid
N-PS=10515 B66-10036 06
PRISMATIC BARS
One-dimensional Coulomb-damped wave motion in prismatic bars
M-PS=14815 B68-10548 02
PRISMS
Liquid-level meter has no moving parts
M-PS=3 B63-10378 03
Optical automatic gain channel
M-PS=1550 B66-10596 02
Special purpose reflectometer uses modified ulbricht sphere
MSC-1135 B67-10109 02
Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries
M-PS=1910 B67-10329 06
Device enables calibration of microphones at high sound pressure levels
M-PS=11900 B67-10336 01
Measuring coplanarity of surfaces
MSC-12044 B67-10371 02
Dielectric prisms would improve performance of quasi-optical microwave components
ERC-10011 B67-10416 01
Laser-Doppler gas-velocity instrument
M-PS=20035 B68-10389 02
Discrimination of fish oil and mineral oil slicks on sea water
HO-10412 B69-10673 01
Probability Density Functions
Independent doubly truncated gamma variables
N-PS=2043 B66-10345 02
On the bound of first excursion probability
NPO-11158 B69-10334 06
Automatic Gaussian random-noise limiter
NPO-10169 B69-10349 01
Probability Distribution Functions
Hybrid computer technique yields random signal probability distributions
ARC-34 B65-10208 01
X-Y plotter adapter developed for SDS-930 computer
NPO-10220 B67-10654 06
The I square statistic and goodness of fit test
GSFC-10547 B68-10136 02
Computer program determines exact two-sided tolerance limits for normal distributions
N-PS=18045 B68-10158 06
Independent doubly truncated gamma variables
N-PS=20143 B68-10345 02
Probability Theory
Computer program reduces calculation time of normal response functions
M-PS=1517 B67-10108 01
Computer program calculates monotonic maximum likelihood estimates using method of reversals
M-PS=1516 B67-10136 01
FM carrier deviation measured by differential probability method
M-PS=2186 B67-10213 01
Probabilistic approach to long range planning of manpower
MSC-11254 B67-10510 06

Computerized Schedule Effectiveness Technique /SET/ determines present and future schedule position
N-PS-13012 B67-10522 06

Development of reliability prediction techniques for semiconductor diodes
GSFC-10231 B67-10651 06

Study of optimum discrete estimators in measurement analysis
N-PS-14915 B68-10348 02

Exact minimal-state system reliability analysis
N-PS-16551 B69-10409 06

A new method for the determination of particulate contamination levels for surface cleanliness of fluid systems
MSC-10267 B69-10520 02

Estimating reliability by application of matrix representation
HQ-10246 B69-10793 02

Determination of permissible applied load stress in structural elements
I-35-16556 B69-10823 02

Cooling method prolongs life of hot-wire transducer
LEWIS-41 B63-10344 02

Continuity tester screens out faulty socket connections
JPL-596 B64-10065 01

Improved insertion-loss tester
JPL-358 B64-10080 01

Spring loaded beaded cable makes efficient wire puller
WOO-108 B65-10031 05

Probe tests microweld strength
WOO-118 B65-10111 05

Probe measures characteristics of hot gas stream
N-PS-240 B65-10133 02

Novel probe simplifies electronic component testing
GSFC-342 B65-10243 01

Probe samples components of rocket engine exhaust
N-PS-485 B65-10384 03

Thermoelectric metal comparator determines composition of alloys and metals
ARG-235 B67-10035 01

Portable detector set discloses helium leak rates
N-PS-1733 B67-10065 01

Rovable RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127 B67-10362 01

Resilient bearing supports are gas controlled
LEWIS-10109 B67-10364 05

Vacuum probe sampler removes micron-sized particles from surfaces
SAN-10003 B68-10231 04

Indium adhesion provides quantitative measure of surface cleanliness
SAN-10024 B68-10342 01

A mass flux probe for measurement in a supersonic stream
LEWIS-10695 B68-10533 02

Propagation of density disturbances in all-water flow
ARG-10260 B69-10043 02

Electronic visualization of gas bearing behavior
LEWIS-10711 B69-10073 01

Concept for a multifunctional oscilloscope probe
N-PS-16390 B69-10129 01

Flow direction measurement with fixed probes
LEWIS-11048 B69-10714 02

New computer program solves wide variety of heat flow problems
N-PS-421 B66-10404 01

Computational procedure for finite difference solution of one-dimensional heat conduction problems reduces computer time
MSC-1120 B66-10556 01

Problem of oscillating cone in supersonic flow is solved by small perturbation technique
I-PS-869 B66-10700 02

Calculation of resonance neutron absorption in two-region problems /the GAROL code/
MSC-10045 B67-10223 06

Computer program for mass optional solutions of some endpoint trajectory problems
N-PS-12976 B67-10310 06

Application of distorted models in developing scaled structural models
N-PS-2540 B67-10321 05

Chemical sintering solution reveals stress corrosion cracks in titanium alloy
LANGLEY-10077 B67-10322 03

Computer subroutine ISDS accurately solves large system of simultaneous linear algebraic equations
NRC-10051 B67-10344 06

Computer program provides steady state analysis for liquid propellant propulsion systems
MSC-10046 B67-10414 06

Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
LANGLEY-10090 B67-10509 06

Linear systems of equations solved using mathematical algorithms
ARG-10146 B68-10292 06

Product identification techniques used as training aids for analytical chemists
SAN-10025 B68-10373 03

Charts designate probable future oceanographic research fields
N-PS-20202 B68-10397 01

Variable-seach method of solving differential equations
EPO-10515 B69-10017 02

The compatible conversion system
E-PS-15010 B69-10031 06

Computer grading of examinations
ARG-10269 B69-10159 06

PROCUREMENT

Vis-A-Plan /visualize a plan/ management

I-517
PRODUCT DEVELOPMENT

Modified contour projector makes excellent contour densitometer
LANGLEY-93 B65-10084 02

Large seals fabricated from small segments reduce procurement lead time
N-PS-1117 B66-10464 05

Developmental instrument supplies accurate attitude and attitude-rate data
BG-57 B66-10607 01

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning
NOC-10073 B67-10348 06

Review of research and development is fluid logic elements
N-PS-4-20 B67-10438 01

Development of lunar drill to take core samples to 100-foot depths
N-PS-13035 B67-10529 05

Development of helical seal for high temperature/f/example/ B67-10655 05

Projection transparencies from printed material
N-PS-14608 B68-10112 01

Improved molding process ensures plastic parts of higher tensile strength
LANGLEY-933 B68-10132 05

Study of convective magnetohydrodynamic channel flow
ARG-10102 B68-10181 02

Beryllium fastener technology
N-PS-20306 B69-10019 05

Production of metals and compounds by radiation chemistry
LEWIS-10231 B69-10426 01

Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings
N-PS-19653 B69-10178 05

Handbook for design of containers of fluids and gases for spacecraft
N-PS-20502 B69-10279 05

Hydrogen flash lamps studied
ARG-10419 B69-10411 02

Microelectronic device data handbook
ECC-10322 B69-10687 01

Optimum structural design based on reliability and proof-load testing
WFO-11228 B69-10723 31

PRODUCT ENGINEERING

Bellow design features low spring rate and long life
MSC-521 B66-10190 05

Hermetically sealed cells protected from internal gas pressure
GSPC-555 B66-10692 01

Effects of heat input rates on T-1 and T-1A steel welds
N-PS-2075 B67-10163 03

Vis-A-Plan /visualize a plan/ management technique provides performance-time scale
KSC-10073 B67-10240 06

SUBJECT INDEX

Materials data handbook, Inconel alloy 718
N-PS-2348 B67-10282 03

Neutron irradiation of Am-241 effectively produces curium
ARG-10030 B67-10501 03

Test and inspection for process control of monolithic circuits
N-PS-13084 B67-10507 01

Automatic planning concept - An analysis of optimum scheduling
N-PS-14198 B68-10127 06

An economical method for the continuous production of iodine-123
LEWIS-10518 B68-10433 03

Materials data handbook, aluminum alloy 6061
N-PS-20381 B69-10065 03

FILES

Computer simulation program is adaptable to industrial processes
LEWIS-240 B66-10426 01

Computer program reduces and provides profile plot of surface plate calibration data
N-PS-13066 B67-10492 06

PROFILES

Device measures curved surface finish on gear teeth
WOO-112 B65-10064 05

Beam profiles measured with thermoluminescent dosimeters
ARG-10229 B69-10024 02

Surface profiler for examining grain-boundary grooves
ARG-10290 B69-10345 05

Calibration standard for dynamic evaluation of a profile-plotter
N-PS-16476 B69-10458 05

PROGRAMS

Numerical Control Machine Data Manual
N-PS-14342 B68-10080 05

PROGRAMMING

Blood pressure reprogramming adapter assists signal recording
MSC-265 B67-10475 01

Development of Electronic Data Processing/EDP/ Augmented Management System
N-PS-14715 B68-10287 06

Random access-random release relay switching matrix
N-PS-12590 B68-10301 01

PROJECT MANAGEMENT

Logic system aids in evaluation of project readiness
MSC-753 B66-10457 05

GREENEX-A new management training concept
GSPC-578 B67-10092 01

Vis-A-Plan /visualize a plan/ management technique provides performance-time scale
KSC-10073 B67-10240 06

KOPE /Kalendar Oriented Program Efforts/ provides data for management decisions
N-PS-12331 B67-10478 06

Graphic visualization of program performance aids management review
NOC-10011 B67-10568 06

Development of Electronic Data Processing
SUBJECT INDEX

PROPELLANT, PROPERTIES

Computer program for mass optional solutions of some endpoint trajectory problems
H-PS-12976 B67-10016 01

PROPELLANT COMBUSTION

Explosive-train initiated through solid bulkhead by pressure cartridge
ARC-11395 B67-10193 01

Two-step rocket engine bipropellant valve concept
MSC-10951 B67-10280 05

PROPELLANT TRANSFER

Study of cryogenic container thermodynamics during propellant transfer
H-PS-19278 B67-10471 05

Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems
H-PS-14447 B67-10158 06

A biaxial weld strength prediction method
H-PS-20019 B67-10310 06

PROPELLANT TESTS

Cryogenic fluid sampling device permits testing under hazardous conditions
H-PS-19278 B67-10471 05

PROPAGATION, VELOCITY

Logic circuit exhibits optimum performance
LANDG-LY-129 B67-10193 01

Improved inorganic ion exchange membranes
LANGLEY-10737 B67-10451 03

Improved circuit minimizes generation time of pseudonoise check bits
JPL-698 B67-10275 01

Propellant tank pressurization analysis
I-PS-12623 B67-10589 03

Study of cryogenic container thermodynamics during propellant transfer
I-PS-14310 B68-10108 05

Propellant tank pressurization analysis
I-PS-15064 B67-10108 02

A biaxial weld strength prediction method
I-PS-20019 B67-10310 06

PROPAGATION, MODES

Novel horn antenna reduces side lobes, improves radiation pattern
JPL-425 B67-10026 01

Study of yttrium iron garnet rods reveals new magnetoelastic echo mode
ERG-37 B67-10153 01

PROPAGATION, TRANSFER

Study of cryogenic container thermodynamics during propellant transfer
I-PS-19278 B67-10471 05

PROPAGATION, MODES

Novel horn antenna reduces side lobes, improves radiation pattern
JPL-425 B67-10026 01

Study of yttrium iron garnet rods reveals new magnetoelastic echo mode
ERG-37 B67-10153 01

PROPAGATION, VELOCITY

Logic circuit exhibits optimum performance
LANDG-LY-129 B67-10193 01

Improved inorganic ion exchange membranes
LANGLEY-10737 B67-10451 03

Improved circuit minimizes generation time of pseudonoise check bits
JPL-698 B67-10275 01

PROPANE

Improved inorganic ion exchange membranes
LANGLEY-10737 B67-10451 03

PROPPELLANT COMBUSTION

Explosive-train initiated through solid bulkhead by pressure cartridge
ARC-11395 B67-10193 01

Two-step rocket engine bipropellant valve concept
MSC-10951 B67-10280 05

PROPellant tank pressurization analysis
I-PS-12623 B67-10589 03

Study of cryogenic container thermodynamics during propellant transfer
I-PS-14310 B68-10108 05

Propellant tank pressurization analysis
I-PS-15064 B67-10108 02

Propellant tank pressurization analysis
I-PS-12623 B69-10007 06

Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems
H-PS-14447 B67-10158 06

A biaxial weld strength prediction method
H-PS-20019 B67-10471 05

PROPPELLANT TESTS

Cryogenic fluid sampling device permits testing under hazardous conditions
H-PS-19278 B67-10471 05

PROPAGATION, TRANSFER

Gas diffuser facilitates withdrawal of cryogenic liquids from tanks
H-PS-915 B67-10039 05

Fuel transfer system permits rapid coupling
H-PS-91326 B67-10108 02

Study of cryogenic container thermodynamics during propellant transfer
I-PS-19278 B67-10471 05
PROPELLANTS

M-PS-14340 B66-10108 02

Gas chromatographic column enables analysis of propellant hydrazines
MSSC-1511 B66-10586 03

Device measures reaction engine thrust vector deviations
JPL-SC-163 B66-10642 05

Axisymmetric two-phase perfect gas performance program
MSSC-11774 B66-10374 06

Axisymmetric reacting gas nonequilibrium performance program
MSSC-11781 B66-10377 06

PROPORTIONAL CONTROL

Heater control circuit provides both fast and proportional control
M-PS-906 B67-10097 01

PROPORTIONAL CONTROLLERS

A fast-neutron spectrometer of advanced design
M-PS-1644 B66-10555 01

Non-dispersive X-ray emission analysis for geochronal exploration
GSFC-10568 B69-10011 02

A simple electrometer for measuring small photoelectric currents
GSFC-10603 B69-10734 01

PROPELLER

Analysis of secondary cells with lithium anodes and immobilized fumed-salt electrolytes
ARC-10452 B69-10613 01

PROPELLER SYSTEM PERFORMANCE

Computer program provides steady state analysis for liquid propellant propulsion systems
MSSC-10605 B67-10414 06

Rocket engine analog simulation
M-PS-14211 B68-10511 01

PROFILES

Special tool seals conductors with combination of plastic sleeves
M-PS-579 B66-10209 05

PROSTHETIC DEVICES

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics
LEWIS-320 B66-10373 03

Human transfer functions used to predict system performance parameters
LANGLAY-203 B66-10379 01

Carbon offers advantages as implant material in human body
M-PS-118207 B69-10087 04

PROTECTION

Portable flooring protects finished surfaces, is easily moved
M-PS-15 B63-10387 05

PTC thermistor protects multiloaded power supplies
GSFC-236 B64-10281 01

Shock absorber protects motive components against overloads
NWW-092 B65-10008 05

Mouthpiece adapter for pipettes protects mouth from harmful liquids
LANGLAY-47 B65-10043 03

Compact retractor protects cabling loops

SUBJECT INDEX

M-PS-561 B66-10018 05

Tool permits damage-free removal of solar cell
GSFC-867 B66-10219 05

Seal surfaces protected during assembly
NU-0667 B66-10626 05

Shock-operated valve would automatically protect fluid systems
M-PS-801 B66-10335 03

Impact and puncture resistant material protects parts from damage
MSSC-747 B66-10375 05

Metal Oxide Silicon /MES/ transistors protected from destructive damage by wire
ARC-65 B66-10419 01

In-tank shutoff valve is provided with maximum blast protection
M-PS-1529 B66-10514 05

Hermetically sealed cells protected from internal gas pressure
GSFC-555 B66-10692 01

Remote operated high pressure valve protects test personnel
MSSC-11010 B67-10291 05

Training course for radiation safety technicians
MPS-216 B67-10477 02

Connector shorting cap provides pin alignment, inspection, and stray voltage protection
M-PS-13111 B67-10635 01

Mechanical shielding reduces weld surface cracking in 6061 T6 aluminum
MSSC-11494 B68-10022 05

Panelized high performance multilayer insulation
M-PS-14023 B68-10031 03

Cover protects critical electrical connectors against damage during handling
MSSC-15662 B69-10526 01

Glass fabric fire barrier for silicone rubber parts
MSSC-15555 B69-10629 03

An electrical connector pin protector
MSSC-15660 B69-10742 01

PROTECTIVE CLOTHING

Comfortable, lightweight safety helmet holds radio transmitter, receiver
MSSC-53 B64-10015 05

Double gloves reduce contamination of dry box atmosphere
LEWIS-211 B65-10117 03

Self-contained clothing system provides protection against hazardous environments
MSSC-536 B66-10201 05

Flexible fastener effects airtight material closure
JPL-684 B66-10304 05

Special tool kit aids heavily garmented workers
MSSC-163 B66-10403 05

Concept to comfort-condition subjects wearing restrictive clothing
MSSC-10964 B68-10178 02

Thermal protective visor for entering high temperature areas
MSSC-10285 B68-10277 05
SUBJECT INDEX

Biological isolation garment
MSC-12206 B66-10500 04

Protective clothing for workers with 5-kW and 20-kW short-arc lamps
NPO-11155 B69-10218 01

PROTECTIVE COATINGS

New cobalt alloys have high-temperature strength and long life in vacuum environments
LEWIS-87 B63-10351 03

Galvanic corrosion reduced in aluminum fabrications
N-PS-272 B65-10140 03

Aluminum alloys protected against stress-corrosion cracking
N-PS-235 B65-10172 03

Thin transparent films formed from powdered glass
GSFC-352 B65-10217 03

Burning technique improves lubrication of threaded fasteners
LEWIS-217 B65-10302 03

Air-cured ceramic coating insulates against high heat fluxes
N-PS-150 B65-10357 03

Fluoride coatings make effective lubricants in molten sodium environment
LEWIS-229 B66-10005 03

Flexible protective coatings made from silicon-nitrogen materials
N-PS-528 B66-10027 03

Epoxy blanket protects milled part during explosive forming
N-PS-307 B66-10029 03

Protective coating withstands high temperature in oxidizing atmosphere
N-PS-529 B66-10044 03

Run-in with chemical additive protects gear surface
N-PS-548 B66-10069 05

Refractory coating protects intricate graphite elements from high-temperature hydrogen burnoff
N-PS-10027 B66-10084 01

Vapor grown silicon dioxide improves transistor base-collector junctions
GSFC-389 B66-10091 01

Epoxy-coated containers easily opened by wire band
N-PS-592 B66-10174 05

Coating permits use of strain gage in water and liquid hydrogen
N-PS-594 B66-10192 01

White primer permits a corrosion-resistant coating of minimum weight
N-PS-304 B66-10207 03

Substituted silane-diol polymers have improved thermal stability
N-PS-469 B66-10259 03

Electroless nickel plating on stainless steels and aluminum
GSFC-533 B66-10479 03

Intergranular metal phase increases thermal shock resistance of ceramic coating
N-PS-1862 B66-10651 03

Study to minimize hydrogen embrittlement of ultrahigh-strength steels
N-PS-2455 B67-10141 03

Coating protects magnesium-lithium alloys against corrosion
N-PS-2446 B67-10149 03

New class of thermosetting plastics has improved strength, thermal and chemical stability
LEWIS-10108 B67-10197 03

Metal flame spray coating protects electrical cables in extreme environment
NUC-10077 B67-10351 03

Encapsulation technique eliminates thermal stresses in welded electronic modules
N-PS-14581 B68-10307 01

Miniature paint-spray gun for recessed areas
MSC-13060 B68-10387 05

Structural thermal-control coatings
NPO-10785 B68-10553 03

Corrosion protection of aluminum alloys in contact with other metals
N-PS-18526 B69-10098 03

Renewal of corrosion protection of coated aluminum after welding
N-PS-20361 B69-10150 05

Improved high-temperature silicon dioxide coatings
LEWIS-10817 B69-10266 03

Nondestructive evaluation of printed wiring boards by microh probe resistance measurements
SAE-10034 B69-10272 01

Improved fire resistant radio frequency anechoic materials
N-PS-16600 B69-10450 05

PROTONS

Large volume continuous counterclockwise dialyzer has high efficiency
HQ-10055 B67-10395 04

Effect of preparation procedures on intensity of radioautographic labeling is studied
ARG-10032 B67-10500 04

Study of behavior of sterols at interfaces
ARG-10085 B68-10281 03

Rate constants measured for hydrated electron reactions with peptides and proteins
ARG-10195 B68-10424 04

Neutron therapy of cancer
ARG-10310 B68-10203 04

Purification and characterization of two fully deuterated enzymes
ARG-10314 B69-10207 04

Inhibition of browning in foodstuffs
EQ-10177 B69-10493 04

PHOTO TRAINS

Beam profiles measured with thalamoluminescent dosimeters
ARG-10229 B69-10024 02

PHOTON IRRADIATION

Semiconductor forms biomedical radiation probe
MSC-320 B66-10252 04

PHOTONS

Status of ultrachemical analysis for semiconductors
N-PS-2254 B67-10138 03

Four pl-recoil proportional counter used as neutron spectrometer
ARG-10101 B68-10326 02

X-521
Rate constants measured for hydrated electron reactions with peptides and proteins

Handbook explaining the fundamentals of nuclear and atomic physics

Application of distorted models in developing scaled structural models

A prototype high power portable lamp

Precise gimballing mechanism

Cytopology is advanced by studying effects of deuterium environment

Setting angles on machine tools speeded by magnetic protractor

Spherical model provides visual aid for cubic crystal study

Spiral heater coils hand-formed with fixture

Experimental program to investigate transonic flow around protuberances

Remote control thermal actuator

Improved circuit minimizes generation time of pseudonoise check bits

PW acquisition demodulator achieves automatic synchronization of a telemetry channel

Interference effects eliminated in random oriented space station antenna system

Acquisition of pseudonoise signals by sequential estimation

Communication system features dual mode range acquisition plus time delay measurement

Combination ranging system and mapping radar

Improved electrode paste provides reliable measurement of galvanic skin response

Tool for reading psychrometric charts

Rate constants measured for hydrated electron reactions with peptides and proteins

Handbook explaining the fundamentals of nuclear and atomic physics

Application of distorted models in developing scaled structural models

A prototype high power portable lamp

Precise gimballing mechanism

Cytopology is advanced by studying effects of deuterium environment

Setting angles on machine tools speeded by magnetic protractor

Spherical model provides visual aid for cubic crystal study

Spiral heater coils hand-formed with fixture

Experimental program to investigate transonic flow around protuberances

Remote control thermal actuator

Improved circuit minimizes generation time of pseudonoise check bits

PW acquisition demodulator achieves automatic synchronization of a telemetry channel

Interference effects eliminated in random oriented space station antenna system

Acquisition of pseudonoise signals by sequential estimation

Communication system features dual mode range acquisition plus time delay measurement

Combination ranging system and mapping radar

Improved electrode paste provides reliable measurement of galvanic skin response

Tool for reading psychrometric charts

PULLEYS

Chain friction system gives positive, reversible drive

Rapid billet loader aids extrusion of refractory metals

Quick-acting clutch disengages idle drive motor

Apparatus alters position of objects to facilitate demagnetization

Mechanism continuously measures static and dynamic cable loads

Carriage system remotely moves drawer over extended distance

Space-saving hoist for tank manholes

Automatic leveling and equalizing hoist device

PULLING

Spring loaded headed cable makes efficient wire puller

Fastener provides bolt misalignment and quick release of flange

Indium adhesion provides quantitative measure of surface cleanliness

PULSE AMPLITUDE

Pulse height analyzer operates at high repetition rates, low power

Simple device produces accelerometer calibration pulse

Threshold detector produces narrow pulses at high repetition rates

Instrument performs nondestructive chemical analysis, data can be telemeasured

Circuit provides accurate four-quadrant multiplication

Single channel pulse-height analyzer operates in subnanosecond range

Simple, one transistor circuit boosts pulse amplitude

Pulse stretcher has improved dynamic range and linearity

Correlation established between heat transfer and ultrasonic transmission properties of copper braze bonds

Solid-state time-to-pulse-height converter developed

Modified univibrator compensates for output timing errors
### PULSE DURATION MODULATION

<table>
<thead>
<tr>
<th>Reference</th>
<th>B67-10029</th>
<th>01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit</td>
<td>N-FS-13370</td>
<td>01</td>
</tr>
<tr>
<td>Shock and vibration response of multistage structure</td>
<td>N-FS-14972</td>
<td>05</td>
</tr>
<tr>
<td>Shock and vibration response of multistage structure</td>
<td>N-FS-14972</td>
<td>05</td>
</tr>
<tr>
<td>Nondestructive test determines overload destruction characteristics of current limiters</td>
<td>XGS-08566</td>
<td>01</td>
</tr>
<tr>
<td>Improved liquid-level sensor for cryogenics</td>
<td>ARG-10162</td>
<td>01</td>
</tr>
<tr>
<td>Compensation of pulse-rebalanced inertial instruments</td>
<td>MSC-13098</td>
<td>01</td>
</tr>
<tr>
<td>An unconventional magnetically-coupled multivibrator</td>
<td>HQ-10226</td>
<td>01</td>
</tr>
<tr>
<td>Phase-locked-loop phase modulator with high modulation index, low distortion</td>
<td>MSC-12247</td>
<td>01</td>
</tr>
<tr>
<td>Analysis of problems related to slingshot shock machine high-velocity shock testing</td>
<td>MFP-11193</td>
<td>01</td>
</tr>
<tr>
<td>Load current sensor for a pulse width modulator power regulator</td>
<td>GSPC-10656</td>
<td>01</td>
</tr>
<tr>
<td>Cryogenic flux-concentrator</td>
<td>ARG-10494</td>
<td>02</td>
</tr>
</tbody>
</table>

### PULSE FREQUENCY MODULATION

<table>
<thead>
<tr>
<th>Reference</th>
<th>B67-10102</th>
<th>01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple circuit functions as frequency discriminator for FPM signals</td>
<td>GSFC-267</td>
<td>01</td>
</tr>
<tr>
<td>Frequency correction device uses digital circuitry</td>
<td>GSFC-268</td>
<td>01</td>
</tr>
<tr>
<td>Circuit exhibits power efficiency greater than 75 percent</td>
<td>MSC-254</td>
<td>01</td>
</tr>
<tr>
<td>Study of yttrium iron garnet rods reveals new magnetostatic echo mode</td>
<td>EBC-37</td>
<td>01</td>
</tr>
<tr>
<td>Fast-response frequency-to-analog converter</td>
<td>N-FS-709</td>
<td>01</td>
</tr>
<tr>
<td>Pneumatic analog-to-pulse frequency converter</td>
<td>LEWIS-10345</td>
<td>01</td>
</tr>
</tbody>
</table>

### PULSE GENERATORS

<table>
<thead>
<tr>
<th>Reference</th>
<th>B64-10320</th>
<th>01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage generator sweeps oscillator frequency linearly with time</td>
<td>N-FS-219</td>
<td>01</td>
</tr>
<tr>
<td>Inexpensive, stable circuit measures heart rate</td>
<td>MSC-95</td>
<td>01</td>
</tr>
<tr>
<td>Pulse generator permits nondestructive testing of component breakdown voltage</td>
<td>MSC-122</td>
<td>01</td>
</tr>
<tr>
<td>Synchronized pulse generator needs no external power</td>
<td>GSFC-274</td>
<td>01</td>
</tr>
<tr>
<td>Simulator produces physiological waveforms</td>
<td>MSC-94</td>
<td>01</td>
</tr>
<tr>
<td>Analog-to-digital converter has increased reliability and reduced power consumption</td>
<td>GSFC-286</td>
<td>01</td>
</tr>
<tr>
<td>Simple circuit produces high-speed, fixed duration pulses</td>
<td>GSFC-285</td>
<td>01</td>
</tr>
<tr>
<td>Solid-state laser transmitter is amplitude modulated</td>
<td>MSC-121</td>
<td>01</td>
</tr>
<tr>
<td>Inductor flyback characteristic gives voltage regulator fast response</td>
<td>GSFC-361</td>
<td>01</td>
</tr>
<tr>
<td>Electromechanical flowmeter accurately measures fluid flow</td>
<td>GSFC-357</td>
<td>01</td>
</tr>
<tr>
<td>Hybrid circuit achieves pulse regeneration with low power drain</td>
<td>GSFC-382</td>
<td>01</td>
</tr>
<tr>
<td>Remote control electrical switching system has 1000-output capability</td>
<td>N-FS-380</td>
<td>01</td>
</tr>
<tr>
<td>Compact SCR trigger circuit for igniter switch operates efficiently</td>
<td>N-FS-371</td>
<td>01</td>
</tr>
<tr>
<td>Multiphase clock-pulse generator uses simplified circuitry</td>
<td>N-FS-297</td>
<td>01</td>
</tr>
<tr>
<td>Pulse generator using transistors and silicon controlled rectifiers produces high current pulses with fast rise and fall times</td>
<td>MSC-405</td>
<td>01</td>
</tr>
<tr>
<td>Digital system provides superregulation of nanosecond amplifier-discriminator circuit</td>
<td>ARG-61</td>
<td>01</td>
</tr>
</tbody>
</table>

### NIXIE TUBE DISPLAY UNIT

<table>
<thead>
<tr>
<th>Reference</th>
<th>B65-10500</th>
<th>01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit multiplies pulse width modulation, exhibits linear transfer function</td>
<td>HQ-56</td>
<td>01</td>
</tr>
<tr>
<td>Laboratory pulse modulator uses minority carrier storage diodes</td>
<td>N-FS-2442</td>
<td>01</td>
</tr>
<tr>
<td>High power dc/dc and dc/ac electrical power conversion techniques developed</td>
<td>N-FS-13327</td>
<td>01</td>
</tr>
<tr>
<td>Analysis and design of a class-D amplifier</td>
<td>N-FS-14863</td>
<td>01</td>
</tr>
<tr>
<td>Constant-frequency, variable-duty-cycle multivibrator</td>
<td>XGS-10033</td>
<td>01</td>
</tr>
</tbody>
</table>

### SUBJECT INDEX

<table>
<thead>
<tr>
<th>Reference</th>
<th>B67-10102</th>
<th>01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple circuit functions as frequency discriminator for FPM signals</td>
<td>GSFC-267</td>
<td>01</td>
</tr>
<tr>
<td>Frequency correction device uses digital circuitry</td>
<td>GSFC-268</td>
<td>01</td>
</tr>
<tr>
<td>Circuit exhibits power efficiency greater than 75 percent</td>
<td>MSC-254</td>
<td>01</td>
</tr>
<tr>
<td>Study of yttrium iron garnet rods reveals new magnetostatic echo mode</td>
<td>EBC-37</td>
<td>01</td>
</tr>
<tr>
<td>Fast-response frequency-to-analog converter</td>
<td>N-FS-709</td>
<td>01</td>
</tr>
<tr>
<td>Pneumatic analog-to-pulse frequency converter</td>
<td>LEWIS-10345</td>
<td>01</td>
</tr>
</tbody>
</table>

### PULSE DURATION MODULATION

<table>
<thead>
<tr>
<th>Reference</th>
<th>B64-10150</th>
<th>01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit exhibits power efficiency greater than 75 percent</td>
<td>MSC-254</td>
<td>01</td>
</tr>
<tr>
<td>Thermocouples electrically checked while connected to data system</td>
<td>LANGLEP-182</td>
<td>01</td>
</tr>
<tr>
<td>Circuit multiplies pulse width modulation, exhibits linear transfer function</td>
<td>HQ-56</td>
<td>01</td>
</tr>
<tr>
<td>Laboratory pulse modulator uses minority carrier storage diodes</td>
<td>N-FS-2442</td>
<td>01</td>
</tr>
<tr>
<td>High power dc/dc and dc/ac electrical power conversion techniques developed</td>
<td>N-FS-13327</td>
<td>01</td>
</tr>
<tr>
<td>Analysis and design of a class-D amplifier</td>
<td>N-FS-14863</td>
<td>01</td>
</tr>
<tr>
<td>Constant-frequency, variable-duty-cycle multivibrator</td>
<td>XGS-10033</td>
<td>01</td>
</tr>
</tbody>
</table>
SUBJECT INDEX

Logic
ARG-117  B66-10512  01

One-count memory circuit prevents machine mode interaction
ARG-90  B66-10559  01

Run numbering system for use with data recorders
K-PS-2557  B67-10215  01

Glow discharge density sensor probe life is extended
K-PS-1707  B67-10229  01

Current steering commutator offers versatility
JPL-812 B67-10215  01

Damage in rolling element bearings may be detected early
HQ-10031  B67-10658  01

One-shot pulse shaper circuit
IGS-11379  B68-10012  01

High-voltage pulse generator developed for wide-gap spark chambers
ARG-10136  B68-10283  03

Solid state high-voltage pulser operates with low supply voltage
K-PS-14034  B68-10308  01

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110  B68-10328  01

Thin transducers used for generating short-duration stress pulses in thin specimens
ARG-10232  B69-10045  01

Remotely-actuated biomedical switch
ARC-10105  B69-10117  01

Design for a rapid automatic sync acquisition system
NFO-10214  B69-10538  01

High voltage pulse generator
HSC-12178  B69-10548  01

PULSE MODULATION
Efficient circuit triggers high-current, high-voltage pulses
KSC-14  B64-10024  01

Frequency divider is free of spurious outputs
GSFC-308  B65-10334  05

Digitally controlled pulse-level discriminator operates over wide voltage range
GSFC-324  B65-10129  01

Electronic filter discriminates between true and false reflections
K-PS-55  B67-10071  02

Means for improving apparent resolution of television
ERC-65  B67-10152  01

Acquisition of pseudonoise signals by sequential estimation
K-PS-13998  B68-10258  01

Analysis of magnetically-controlled processes in pulse-modulation systems
GSFC-10241  B69-10070  01

Magnetically coupled emission regulator
GSFC-10056  B69-10213  01

An electronic circuit for sensing malfunctions in test instrumentation
KSC-10209  B69-10392  01

PULSE POSITION MODULATION
Four pi-recoil proportional counter used as neutron spectrometer
ARG-10101  B68-10326  02

PULSE RATE
Ball bearing used in design of rugged flowmeter
LEWIS-159  B66-10170  05

Phase detector circuit synthesizes own reference signal
K-PS-247  B65-10080  01

Electronic ampere-hour integrator is accurate to one percent
GSFC-203  B65-10308  01

Threshold detector produces narrow pulses at high repetition rates
GSFC-303  B65-10310  01

Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart
K-PS-805  B66-10386  01

Instrument sequentially samples ac signals from several accelerometers
JPL-888  B67-10029  01

Laboratory pulse modulator uses minority carrier storage diodes
K-PS-2482  B67-10226  01

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110  B68-10328  01

Multichannel analyzers at high rates of input
ARG-10355  B69-10214  02

Circuit counts pulses and indicates time of occurrence of slow pulses
XNP-06234  B69-10313  01

Tracer of electrical conduit or pipes
KSC-15223 B69-10347  01

Conversion of continuous-direct-current TIG welder to pulse-arc operation
K-PS-16411  B69-10393  05

PULSE TIME MODULATION
Large capacitor performs as a distributed parameter pulse line
LEWIS-176  B66-10291  01

Modified univibrator compensates for output timing errors
ARG-85  B67-10130  01

Magnetic forming of resistive materials
K-PS-20417  B69-10397  03

PULSE WIDTH AMPLITUDE CONVERTERS
Multichannel pulse height analyzer is inexpensive, features low power requirements
HGB-10020  B67-10258  01

Linear analog dc voltage-to-pulse-width converter
GSFC-556  B69-10003  01

PULSED LASERS
Laser system used for dynamic balancing of gyrors
K-PS-12218  B68-10225  05

Repetitively pulsed, wavelength-selective carbon dioxide laser
ERC-10178  B69-10564  02

Laser microprobe facility used in the elemental analysis of small feature of a sample
## PULSED RADIATION

<table>
<thead>
<tr>
<th>ARG-10359</th>
<th>B69-10165</th>
<th>02</th>
</tr>
</thead>
</table>

### PULSED RADIATION

- Single channel pulse-height analyzer operates in subnanosecond range
  - LEWIS-267 | B66-10377 | 01 |
- Primary radical yields in pulse irradiated alkaline aqueous solution
  - ARG-10322 | B69-10167 | 02 |
- Dual-mode operation of a neutron source, a concept
  - HQ-10106 | B69-10240 | 02 |

## PULSES

- Auxiliary circuit enables automatic monitoring of EKG's
  - MSC-106 | B65-10142 | 01 |
- Digital-output cardiotachometer measures rapid changes in heartbeat rate
  - MSC-133 | B65-10143 | 01 |
- Boron trifluoride nuclear detector preamplifier uses single-cable connection
  - LEWIS-178 | B65-10255 | 01 |
- Simple pulse counting circuit computes sum of squares
  - GSFC-391 | B65-10260 | 01 |
- Binary counter uses fluid logic elements
  - H-FS-323 | B65-10377 | 01 |
- Polarimeter provides transient response in nanosecond range
  - JPL-890 | B66-10021 | 02 |
- Current pulse amplifier transmits detector signals with minimum distortion and attenuation
  - NUC-10055 | B67-10347 | 01 |
- Ultrasonic temperature measuring device
  - LEWIS-10446 | B68-10319 | 01 |
- Thick transducers used for generating short-duration stress pulses in thin specimens
  - ARG-10232 | B69-10045 | 01 |
- Positive and negative output circuits
  - LEWIS-10715 | B69-10151 | 01 |
- Hydrogen flash lamps studied
  - ARG-10419 | B69-10411 | 02 |

## PUNCHCARDS

- Thermal conductivity and dielectric constant of silicate materials
  - H-FS-10456 | B68-10351 | 03 |
- PUMP SUPPLIERS
  - This plastic sheet eliminates need for expensive plating
    - H-FS-1096 | B66-10681 | 03 |
  - Prediction of performance of centrifugal pumps during starts under pressure
    - LEWIS-10900 | B69-10263 | 05 |
  - Method for predicting pump cavitation performance
    - LEWIS-10916 | B69-10446 | 02 |
- PUMP SEALS
  - Visco seal design offers zero-leakage and wear-free characteristics
    - WGO-329 | B67-10047 | 05 |
  - Hermetically sealed pump
    - LEWIS-10837 | B69-10320 | 05 |
- PUMPING
  - Rocket sonde measurements of ozone in the upper atmosphere
    - GSFC-10580 | B69-10077 | 02 |

### SUBJECT INDEX

- PUMPS
  - Vented piston seal prevents fluid leakage between two chambers
    - JPL-179 | B63-10141 | 05 |
  - Level of super-cold liquids automatically maintained by levelometer
    - JPL-397 | B63-10250 | 01 |
  - Air brake-dynamometer accurately measures torque
    - LEWIS-163 | B65-10312 | 05 |
  - Flexible plastic ring assembly makes durable shaft seal
    - WGO-227 | B65-10367 | 05 |
  - Rotating magnetic poles used to pump mercury
    - LEWIS-276 | B66-10434 | 05 |
  - Quick-response servo amplifies small hydraulic pressure differences
    - ARG-99 | B66-10498 | 05 |
  - Single pump maintains liquid helium level in cryostat
    - N-FS-1763 | B67-10039 | 05 |
  - Concept for cryogenic liquid reclamation system
    - NFO-10322 | B67-10420 | 02 |
  - Pump simulator provides variable pressure-flow characteristics
    - LEWIS-10122 | B67-10053 | 05 |
  - A laboratory method for precisely determining the micro-volume-magnitudes of liquid efflux
    - ARG-10052 | B69-10295 | 05 |
  - Repair of weld defects in thin-walled stainless steel tubes
    - N-FS-16293 | B69-10305 | 05 |

- PUNCHCARDS
  - Computer program performs statistical analysis for random processes
    - H-FS-723 | B66-10525 | 01 |
  - Improved computer program for elastic analysis of highly redundant structural configurations
    - N-FS-13087 | B67-10330 | 06 |
  - Computer program conducts facilities utilization and occupancy survey
    - NFO-10326 | B67-10476 | 06 |
  - Fully automatic telemetry data processor
    - GSFC-10576 | B68-10336 | 01 |
  - Nondispersive X-ray emission analysis for geochemical exploration
    - GSFC-10568 | B69-10011 | 02 |
  - SPAN C - Terminal sterilization process
    - NFO-10805 | B69-10039 | 06 |
  - On-line computer system for use with low-energy nuclear physics experiments is reported
    - ARG-10257 | B69-10094 | 01 |
  - Astronauts' tool for withdrawing/replacing computer cards
    - H-FS-20453 | B67-10183 | 05 |
  - Visual task analysis /VISTA/
    - N-FS-14716 | B69-10394 | 06 |
  - GAMEIT program
    - NUC-10243 | B69-10433 | 06 |

- PUNCHCARDS
  - Compact cartridge drives coded tape at constant readout speed
    - JPL-472 | B68-10222 | 01 |
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Pyramids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expandable takeup reel facilitates paper tape removal WGO-271</td>
<td>B66-10399 05</td>
</tr>
<tr>
<td>Tester automatically checks paper tape punch and reader after maintenance ARC-66</td>
<td>B67-10267 01</td>
</tr>
<tr>
<td>Pocket-size manual tape reader device aids computer tape checking ESC-10058</td>
<td>B67-10361 01</td>
</tr>
<tr>
<td>Saturn S-2 Automatic Software System /SASS/ N-FS-17M1</td>
<td>B67-10405 06</td>
</tr>
<tr>
<td>Computer program FPSP-REV calculates fission product inventory for U-235 fission SUC-10089</td>
<td>B67-10450 06</td>
</tr>
<tr>
<td>Punch-magnet delay eliminated by modification of circuit ARG-10333</td>
<td>B67-10416 01</td>
</tr>
<tr>
<td>Battery charge-discharge controller ESC-11636</td>
<td>B67-10747 01</td>
</tr>
<tr>
<td>Punches</td>
<td>See PUNCHES</td>
</tr>
<tr>
<td>Pouches</td>
<td>See POUCHES</td>
</tr>
<tr>
<td>Pumps</td>
<td>See PUMPS</td>
</tr>
<tr>
<td>Purging</td>
<td>See PURGING</td>
</tr>
<tr>
<td>Puriﬁcation</td>
<td>See PURIFICATION</td>
</tr>
</tbody>
</table>

**Purity**

- Niobium thin ﬁlms are superconductive in strong magnetic ﬁelds at low temperatures JPL-SC-135
- Xenon ﬂuorides show potential as ﬂuorinating agents ARG-10113
- Experiments shed new light on nickel-ﬂuorine reactions ARG-10008
- Tool samples subsurface soil free of surface contaminants MSc-10989
- Preparation of high purity copper ﬂuoride by ﬂuorinating copper hydroxyﬂuoride LWHIS-10794
- Apparatus automatically measures soluble residue content of volatile solvents SAN-10032
- Phase inverter provides variable reference push-pull output HQ-23
- Circuit provides overcurrent protection to push-pull ampliﬁer MSc-12033
- Adaptive control circuit prevents ampliﬁer saturation ERC-10026
- Low-cost, fast-response drive circuit for electromagnetic torque motors LWHIS-10143
- Fluidic analog ampliﬁer ERC-10102
- Transmission system isolates pressure transducer from severe environment WGO-239

**Pyramidal Bodies**

- Image position sensor N-FS-14101
- Test device prevents molecular bounce-back GSFC-82
- Antenna conﬁgurations provide polarization diversity GSFC-74
Separation of traces of metal ions from sodium matrices
ARG-10341 B69-10168 03

Colloidal suspension simulates linear dynamic pressure profile
WGO-266 B66-10214 05

Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232 B67-10032 03

Nitrogen dioxide produced by self-sustained pyrolysis of nitrous oxide
LANGELY-32 B65-10074 05

Impurity diffusion process for silicon semiconductors in fast and precise
GSFC-397 B65-10300 01

Welding, bonding, and sealing of refractory metals by vapor deposition
LEWIS-123 B67-10232 03

Analytical technique characterizes all trace contaminants in water
MSC-11032 B67-10243 03

Fire retardant foams developed to suppress fuel fires
ANC-10096 B68-10358 03

Basal-plane metallography of deformed pyrolytic carbon
NPO-11196 B69-10488 03

Nulling pyrometer uses Kerr cell shutter for fast responses
NU-0010 B65-10050 01

Internal cooling increases range of immersion-type temperature probe
LEWIS-171 B65-10157 02

A radioisotope-thermometer for determining gas temperatures
LEWIS-194 B66-10056 01

Self-balancing line-reversal pyrometer automatically measures gas temperatures
LEWIS-1348 B67-10268 01

Detection of effect of deposits on optical windows of pyrometer measurements
LEWIS-10366 B68-10367 01

Study made of Raney nickel technology
N-PZ-2054 B67-10208 03

Steel test panel helps control additives in pyrophosphate copper plating
LEWIS-10101 B67-10358 05

Isothermal drop calorimeter provides measurements for alpha active, pyrophoric materials
ARG-10186 B69-10002 02

Electrically heated diaphragm eliminates use of pyrotechnics
MSC-241 B65-10400 01

Improved system measures output energy of pyrotechnic devices
WGO-256 B66-10159 01

High-speed blowdown system provides rapid pressure loss
LEWIS-375 B67-10043 05

Explosive-train initiated through solid bulkhead by pressure cartridge

SUBJECT INDEX

MSC-11395 B67-10589 03

Pyrotechnic device provides one-shot heat source
LEWIS-10131 B68-10062 03

Pyrotechnic-actuated cable release
TRF-10849 B68-10535 05

Q FACTORS

RF inductor has high Q, is stable at higher temperatures
JPL-1019 B67-10106 01

System precisely controls oscillation of vibrating mass
E-PS-1875 B67-10276 01

Apparatus makes klystron operating frequency adjustable from remote point
NPO-99321 B67-10514 01

Active RC networks of low sensitivity for integrated circuit transfer function
ARC-10146 B68-10210 01

RF noise suppression using the photodiode effect in semiconductors
E-PS-12259 B69-10225 01

Automatic tuning of hydrogen masers
GSPC-10127 B69-10427 01

Fluorescent photography of spray droplets using a laser light source
LEWIS-1777 B69-10122 02

Laser microprobe facility used in the elemental analysis of small feature of a sample
ARG-10359 B69-10165 02

Composite filter steepens rejection slopes in microwave application
GSFC-480 B66-10393 01

Dielectrometer design permits measurement in vacuum under irradiation
E-PS-359 B66-10401 01

A theoretical model for determining turbine flowmeter sensitivity
E-PS-1177 B67-10177 01

Determination of quadratic equation coefficients describing three-dimensional surfaces, their skew and skewed planes, and view point areas
E-PS-15043 B69-10343 01

Composite filter steepens rejection slopes in microwave application
GSFC-480 B66-10393 01

A theoretical model for determining turbine flowmeter sensitivity
E-PS-1177 B67-10177 01

Determination of quadratic equation coefficients describing three-dimensional surfaces, their skew and skewed planes, and view point areas
E-PS-15043 B69-10343 01

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems
WGO-340 B67-10552 01

Combination ranging system and mapping radar
NPO-11001 B69-10325 01

Ion mass spectrometer for special uses
EQ-10418 B69-10510 01

A theoretical model for determining turbine flowmeter sensitivity
E-PS-1177 B67-10177 01

Determination of quadratic equation coefficients describing three-dimensional surfaces, their skew and skewed planes, and view point areas
E-PS-15043 B69-10343 01

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems
WGO-340 B67-10552 01

Combination ranging system and mapping radar
NPO-11001 B69-10325 01

Ion mass spectrometer for special uses
EQ-10418 B69-10510 01

Apparatus enables accurate determination of alkali oxides in alkali metals
LEWIS-256 B66-10296 03

Simple, nondestructive test identifies metals
ARG-525 B68-10305 03

Study made of application of stereoscopic display system to analog computer simulation
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>QUALITY CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace levels of metallic corrosion in water determined by emission spectroscopy RSC-1193</td>
<td>Study made of destructive sectioning of complex structures for examination Lewis-381</td>
</tr>
<tr>
<td>Trace hydrazines in aqueous solutions, accurately determined by gas chromatography M-PS-14542</td>
<td>B66-10590 01</td>
</tr>
<tr>
<td>Vibration testing and dynamic studies of relays N-PS-10004</td>
<td>B66-10590 01</td>
</tr>
<tr>
<td>Nondispersive X-ray emission analysis for geochemical exploration GSFC-10568</td>
<td>B66-10590 01</td>
</tr>
<tr>
<td>Split glass tube assures quality in electron beam brazing M-PS-14542</td>
<td>B66-10151 05</td>
</tr>
<tr>
<td>Weld procedure produces quality welds for thick sections of Hastelloy-X WUC-10048</td>
<td>B66-10195 05</td>
</tr>
<tr>
<td>Electron beam welder K-rays its own welds Lewis-10111</td>
<td>B66-10200 05</td>
</tr>
<tr>
<td>Portable welding head automatically controls arc N-PS-12763</td>
<td>B66-10216 02</td>
</tr>
<tr>
<td>Video synchronization processor overcomes poor signal-to-noise ratio KSC-10002</td>
<td>B66-10515 01</td>
</tr>
<tr>
<td>Increased performance reliability obtained with dual/redundant/oscillator system GSFC-10203</td>
<td>Consolidation and fabrication techniques for vanadium-20 w/o titanium/TV-20/LEWIS-67</td>
</tr>
<tr>
<td>New sintering process adjusts magnetic value of ferrite cores GSFC-10213</td>
<td>B66-10368 05</td>
</tr>
<tr>
<td>Welding procedures improves quality of welds, offers other advantages N-PS-10004</td>
<td>B66-10368 05</td>
</tr>
<tr>
<td>Force controlled solenoid drives microweld tester WCU-10570</td>
<td>B66-10391 03</td>
</tr>
<tr>
<td>Sensor detects hydrocarbon oil contaminants in fluid lines N-PS-10004</td>
<td>B66-10507 05</td>
</tr>
<tr>
<td>Design reliability goal developed from small sample N-PS-10004</td>
<td>B66-10507 05</td>
</tr>
<tr>
<td>Quality control criteria for acceptance testing of cross-wire welds N-PS-10004</td>
<td>B66-10507 05</td>
</tr>
<tr>
<td>Fuel and oxidizer valve assembly employs single solenoid actuator N-PS-10004</td>
<td>B66-10507 05</td>
</tr>
<tr>
<td>Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning NUC-10073</td>
<td>B66-10348 06</td>
</tr>
<tr>
<td>Test and inspection for process control of monolithic circuits N-PS-13084</td>
<td>B66-10507 01</td>
</tr>
<tr>
<td>Computer magnetic tape rehabilitation study GSFC-10283</td>
<td>B66-10635 05</td>
</tr>
<tr>
<td>Inspection criteria ensure quality control of parallel gap soldering N-PS-14530</td>
<td>B66-10257 05</td>
</tr>
<tr>
<td>Standards for compatibility of printed circuit and component lead materials N-PS-14531</td>
<td>B66-10310 01</td>
</tr>
<tr>
<td>Automatic, nondestructive test monitors in-process weld quality N-PS-14596</td>
<td>B66-10333 01</td>
</tr>
<tr>
<td>Nondestructive test determines overload destruction characteristics of current limiter fuses XGS-08566</td>
<td>B66-10364 01</td>
</tr>
<tr>
<td>Consolidation and fabrication techniques for vanadium-20 w/o titanium/TV-20/ABG-10148</td>
<td>B66-10368 03</td>
</tr>
<tr>
<td>Training manuals for nondestructive testing using magnetic particles N-PS-20187</td>
<td>B66-10391 03</td>
</tr>
<tr>
<td>Nondestructive testing of brazed rocket engine components N-PS-10191</td>
<td>B66-10394 03</td>
</tr>
<tr>
<td>Environmental test planning, selection and standardization aids available SAM-10028</td>
<td>B66-10445 06</td>
</tr>
<tr>
<td>Electronic component reliability analysis by data reduction system BGO-10243</td>
<td>B66-10507 05</td>
</tr>
<tr>
<td>Failure rates for accelerated acceptance testing of silicon transistors ZBC-10198</td>
<td>B66-10541 01</td>
</tr>
<tr>
<td>Weight Control System N-PS-15020</td>
<td>B66-10041 06</td>
</tr>
<tr>
<td>Handbooks for nondestructive testing using ultrasonics N-PS-20409</td>
<td>B66-10108 03</td>
</tr>
<tr>
<td>Camera mount for close-up stereo photographs LANGLEY-10042</td>
<td>B66-10226 02</td>
</tr>
<tr>
<td>Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid GSFC-10764</td>
<td>B66-10227 05</td>
</tr>
<tr>
<td>Instruction manuals for liquid penetrant</td>
<td>B66-10541 01</td>
</tr>
</tbody>
</table>
QUANTITATIVE ANALYSIS

nondestructive testing
M-PS-14010 B69-10278 05

Semiautomatic inspection of microfilm records
M-PS-20240 B69-10301 02

Precision mounting for instrument optical elements provided by polyimide bonding
M-PS-20293 B69-10310 05

Electronic analog equalization for vibrational testing
NPO-10544 B69-10472 01

QUANTITATIVE ANALYSIS

Process for preparing dispersions of alkali metals
JPL-734 B66-10639 03

Crystal microbalance measures condensable molecular fluxes
JPL-845 B67-10012 03

Ion exchange determines iodine-131 concentration in aqueous samples
ARG-208 B67-10129 04

Separation technique provides rapid quantitative determination of cerium-137 in irradiated nuclear fuel
NRC-10047 B67-10194 03

Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry
ARG-210 B67-10236 03

Prediction of radiation damage effects in transistors
GSPC-10021 B67-10606 01

Micromprobes investigation of brittle segregates in aluminum MIG and TIG welds
M-PS-14720 B68-10334 03

Indium adhesion provides quantitative measure of surface cleanliness
SAM-10024 B68-10342 01

Nondispersive X-ray emission analysis for geochemical exploration
GSPC-10568 B69-10011 02

Diffusion of trace gases for leak detection - A study
M-PS-20254 B69-10067 03

Quantitative determination of flavin nucleotide using the bacterial bioluminescent reaction
GSPC-10565 B69-10715 04

QUANTUM COUNTERS

The Quantasyn, an improved quantum detector
ERC-10148 B69-10443 01

QUANTUM MECHANICS

Quantum mechanical calculations of reactive scattering cross sections in biomolecular encounters
M-PS-13594 B67-10527 03

QUARTZ

Kiln converted for grinding aspheric surfaces
GSPC-115 B63-10556 05

Thermoelectric elements diffusion-bonded to tungsten electrodes
GSPC-346 B65-10309 01

Miniature servo accelerometer is force-balanced
JPL-155 B65-10340 01

Plastic scintillator converts standard photomultiplier to ultraviolet range
ERC-9 B66-10108 02

SUBJECT INDEX

High-speed furnace uses infrared radiation for controlled brazing
NU-0047 B66-10268 02

Special treatment reduces helium permeation of glass in vacuum systems
BO-25 B66-10372 02

Radon gas, useful for medical purposes, safely fixed in quartz
ARG-208 B66-10468 04

Crystal microbalance measures condensable molecular fluxes
JPL-845 B67-10012 03

A piezo-bar pressure probe
LEWIS-393 B67-10259 01

Precision capacitor has improved temperature and operational stability
ARG-189 B67-10313 01

Movable EF probe eliminates need for calibration in plasma accelerators
LEWIS-10127 B67-10362 01

Dielectric prisms would improve performance of quasi-optical microwave components
NRC-10021 B67-10816 01

Nonreciprocal gain control for ring laser
M-PS-10041 B67-10653 02

Technique developed for measuring transmittance of optical birefringent networks
M-PS-14267 B69-10260 02

Preparation of silver-activated zinc sulfide thin films
GSPC-10687 B68-10271 03

Superconductive thin film makes convenient liquid helium level sensor
LANGLEY-10289 B68-10341 01

Thermal conductivity and dielectric constant of silicate materials
1-35-14856 B68-10351 03

Protective clothing for workers with 5-kW and 20-kW short-arc lamps
NPO-11155 B69-10218 01

Zone purification of potassium chloride
ARG-10377 B69-10241 03

Proposed acousto-optic filter
HQ-10440 B69-10466 02

Deposition monitor and control
NPO-10706 B69-10722 01

A simple electrometer for measuring small photoelectric currents
GSPC-10602 B69-10734 01

QUANTUM LAMPS

Infrared shield facilitates optical pyrometer measurements
LANGLEY-133 B65-10272 02

Electron microscope thermocouple monitors own installation
M-PS-1111 B66-10463 05

QUANTUM TRANSCEIVERS

Quartz crystals detect gas contaminants during vacuum chamber evacuation
NPO-10744 B67-10205 01

QUASI-STeadY STATES

Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes
ARG-10274 B69-10047 02
Aerodynamic forces of fluttering cylindrical and/or planar structures  
M-PS-20497  B69-10781  02

QUATERNARY ALLOYS  
Braze alloy holds bonding strength over wide temperature range  
LPSI-237  B66-10519  03

QUENCHING  
Recent development in organic scintillators  
ARG-10344  B69-10198  03

Measurements of thermoelectric power in annealed and quenched gold-platinum alloys  
ARG-10303  B69-10206  03

QUENCHING (COOLING)  
New sintering process adjusts magnetic value of ferrite cores  
GSPC-129  B66-10100  01

Measurements of thermoelectric power in annealed and quenched gold-platinum alloys  
ARG-10303  B69-10206  03

RAILWAY TRACKING  
Shock absorber protects motive components against overloads  
LPSI-237  B69-10781  02

Thermal conductivity and dielectric constant of silicate materials  
M-PS-14856  B66-10351  03

RADAR TRACKERS  
FM/CW system measures aircraft attitude  
M-PS-276  B66-10290  01

INDEX RADIANT FLUX DENSITY

RAILWAY DISTRIBUTION  
Radial coolant channels fabricated by simplified method  
LPSI-237  B66-10267  05

Radial furnace shows promise for growing straight boron carbide whiskers  
LPSI-237  B66-10267  05

RADAR EQUIPMENT  
Circuit converts AM signals to FM for magnetic recording  
GSPC-227  B65-10001  01

RADAR MOPS  
Combination ranging system and mapping radar  
MPS-11001  B69-10325  01

RADAR MEASUREMENT  
Study made of application of stereoscopic display system to analog computer simulation  
M-PS-1263  B66-10590  01

RADIANT COOLING  
Graphite cloth facilitates vacuum evaporation of silicon monoxide  
M-PS-14764  B66-10256  03

RADIANT FLUX DENSITY  
Ion chambers simplify absolute intensity measurements in the vacuum ultraviolet  
EHC-10  B66-10839  01

Fast-acting calorimeter measures heat output of plasma gas accelerator  
LEWIS-388  B67-10192  01

Foil radiometer accessory improves measurements  
M-PS-12684  B67-10448  01

Improved cavity-type absolute total-radiation radiometer  
JPL-807  B67-10557  01

Automatic solar lamp intensity control system  
JGS-10017  B66-10399  01

Flame radiation program  
I-531
RADIANT HEATING

Gage measures total radiation, including vacuum UV, from ionized high-temperature gases EXF-09802 B69-10026 02

Radiant heater for vacuum furnaces offers high structural rigidity, low heat loss LEWIS-39 B63-10342 01

Graphite element serves as radiant heat source H-FS-105 B65-10416 01

Circular, explosion-proof lamp provides uniform illumination MSC-382 B66-10156 02

Improved system measures output energy of pyrotechnic devices WOO-256 B66-10159 01

Self-supported aluminum thin films produced by vacuum deposition process ARC-3 B66-10387 03

Computer program simplifies transient and steady-state temperature prediction for complex body shapes MSC-989 B66-10619 01

Fast-acting calorimeter measures heat output of plasma gun accelerator LEWIS-388 B67-10192 01

Radiant heat source, vacuum bag, provide portable bonding oven MSC-11342 B67-10570 03

Thermal Network Analyzer Program NUC-10540 B69-10239 06

Thermal radiation shields for piping in vacuum environments LEWIS-10899 B69-10262 03

Technique for predicting temperature distribution in gases LEWIS-10918 B69-10329 01

RADIATION

Indium foil with beryllia washer improves transistor heat dissipation GSFC-42 B63-10033 01

Wide-angle sensor measures radiant heat energy in corrosive atmospheres H-FS-1220 B65-10019 05

Improved atomic resonance gas cell for use in frequency standards MSC-11666 B68-10230 01

Analysis of annular combustors LEWIS-10399 B68-10356 06

The response of nonenergetic gassless rays in sintered media are investigated ARG-10295 B69-10080 01

Silicon carbide diode for increased light output H-FS-20063 B69-10096 01

Optically induced free carrier light modulator GSFC-10216 B69-10114 01

Production of metals and compounds by radiation chemistry LEWIS-10231 B69-10123 03

A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt line profile ARC-10221 B69-10232 06

Subject Index

Deposition monitor and control BFC-10706 B69-10722 01

RADIATION ABSORPTION

Reference black body is compact, convenient to use ARC-3 B63-10004 03

Flange on microwave antenna subreflector cuts ground noise JPL-362 B63-10229 01

Variable-transparency wall regulates temperatures of structures LANGLEY-25 B63-10528 03

Lamp enables measurement of oxygen concentration in presence of water vapor MSC-10043 B67-10387 01

Coolants with selective optical filtering characteristics for ruby laser applications H-FS-20186 B68-10508 02

A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt line profile ARC-10221 B69-10232 06

RADIATION BELTS

Radiation tolerant silicon nitride insulated gate field effect transistors GSFC-10581 B69-10253 01

RADIATION COUNTERS

Multiaxial analyzer detects low-energy electrons GSFC-329 B65-10213 01

Boron trifluoride nuclear detector preamplifier uses single-cable connection LEWIS-178 B65-10255 01

Aluminized thin-window proportional-counter tube is stronger, more responsive in long wavelength region JPL-689 B67-10015 01

Ion exchange determines iodine-131 concentration in aqueous samples ARG-208 B67-10129 04

Radiation counting technique allows density measurement of metals in high-pressure/high-temperature environment ARG-124 B67-10316 02

Compilation of detection sensitivities in thermal-neutron activation ARG-10068 B67-10641 03

Four pi-recoil proportional counter used as neutron spectrometer ARG-10101 B68-10326 02

Fast framing cameras provide high-speed multi-channel data recording ARG-10252 B69-10102 02

Ion mass spectrometer for special uses HGC-10518 B69-10510 02

Conditioning of pulses from aeromol-particle detectors ERC-10250 B69-10691 01

RADIATION DAMAGE

Aluminum doping improves silicon solar cells LEWIS-206 B66-10181 02

Simplified method introduces drift fields into cells GSFC-572 B67-10102 03

RADIATION DETECTORS

Radiation-detector optical-imaging device is of simplified construction GSFC-251 B68-10299 01
Instrument accurately measures extremely low air densities  H-PS-193  B65-10221  01

Instrument performs nondestructive chemical analysis, data can be telemetered  JPL-72-076  B65-10317  01

Calorimeter accurately measures thermal radiation energy  LANGLEY-73  B66-10058  02

Mount makes liquid nitrogen-cooled gamma ray detector portable  LEWIS-259  B66-10103  01

Plastic scintillator converts standard photomultiplier to ultraviolet range  ERC-9  B66-10108  02

Improved system measures output energy of pyrotechnic devices  WO-226  B66-10159  01

Semiconductor forms biomedical radiation probe  MEC-320  B66-10252  04

Hydrogen fire detection system features sharp discrimination  H-PS-643  B66-10368  01

Detector measures power in 50 to 30,000 GHz radiation band  HEC-26  B66-10581  01

A radiometer-pyrometer  LEWIS-204  B66-10606  01

Alpha particle backscattering measurements used for chemical analysis of surfaces  ARG-116  B67-10816  03

Infrared radiometer  H-PS-13373  B67-10422  01

Compilation of detection sensitivities in thermal-neutron activation  ARG-10068  B67-10641  03

Improved relay optical element for spectroradiometer using cryogenically cooled detector  MEC-11688  B68-10245  02

Automatic solar lamp intensity control system  XGS-10017  B68-10399  01

Readout system for radiation detector  MEC-90160  B68-10501  01

The response of monoenergetic gamma rays in finite media are investigated  H-PS-10295  B69-10080  02

The quantasyn, an improved quantum detector  HEC-10148  B69-10443  01

Manganese-56 coincidence-counting facility precisely measures neutron-source strength  ARG-90261  B69-10621  01

Pulse-height defect due to electron interaction in dead layers of Ge/Li/ gamma-ray detectors  ARG-10362  B69-10767  02

RADIATION DISTRIBUTION

Novel horn antenna reduces side lobes, improves radiation pattern  JPL-425  B63-10264  01

Fluid pressure used to test turbopump bearings  WU-6001  B65-10024  03

Electron beam parallel X-ray generator  MEC-11022  B67-10372  02

Computer programs for antenna feed system design and analysis  NFO-10359  B67-10504  06

Noise study of single stage compressor rotor-stator interaction  LANGLEY-137  B67-10516  02

High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes  LEWIS-90271  B69-10376  01

Long range holographic contour mapping concept  EQ-10350  B69-10700  02

RADIATION DOSAGE

Variable-transparency wall regulates temperatures of structures  LANGLEY-25  B63-10528  03

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program  NUC-10126  B67-10536  06

SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield  NUC-10142  B67-10537  06

RADIATION EFFECTS

Irradiation improves properties of an aromatic polyester  LANGLEY-115  B65-10164  03

Dielectrometer design permits measurement in vacuum under irradiation  H-PS-359  B66-10401  01

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures  NUC-10521  B67-10617  02

Deep gamma ray penetration in thick shields  H-PS-14388  B68-10143  02

Deflection circuit monitors force on object under water  NWC-10147  B68-10147  01

Readout system for radiation detector  HSC-90180  B68-10501  02

Radiation effects on bacterial cells  ARG-10264  B68-10169  04

Susceptibility of irradiated steels to hydrogen embrittlement  ARG-10115  B68-10194  03

Study of radiation effects on mammalian cells in vitro  ARG-10191  B68-10294  02

Effects of surface preparation on quality of aluminum alloy weldments  H-PS-13152  B68-10302  03

Experimental study and evaluation of radioprotective drugs  ARG-10196  B68-10320  04

CIRCUS--A digital computer program for transient analysis of electronic circuits  H-PS-15002  B66-10416  06

Rate constants measured for hydrated electron reactions with peptides and proteins  ARG-10195  B68-10424  04

Plume radiation program 
RADIATION HAZARDS

M-PS-13202  B68-10447  06
Hydrogen peroxide etching proves useful for germanium
ARG-10170  B68-10454  03
Diffusion bond method of joining steel and a Teflon-kromel composite
M-PS-20482  B69-10237  03
Gamma radiation characteristics of plutonium dioxide fuel
NPO-11220  B69-10733  02

RADIATION MEASUREMENT

Spherical electrode eliminates high-voltage breakdown
LEWIS-155  B65-10139  01
Training course for radiation safety technicians
ARG-216  B67-10477  02

IONIZATION MEASUREMENT

General computer program for calculation of ionization
E-PS-10  B66-10439  01
Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
XNF-09802  B69-10028  02

RADIATION MEASURING INSTRUMENTS

Mechanical device accurately measures rf phase differences in vhf or uhf ranges
M-PS-1738  B66-10694  05
General computer program for calculation of radiation from inhomogeneous, nonisobaric, nonisothermal rocket exhaust plume
M-PS-19434  B66-10044  06
Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
XNF-09802  B69-10028  02
Measurement technique for the determination of antenna directivity
M-PS-12799  B69-10677  01

RADIATION PROTECTION

Simple control device senses solar position
JPL-638  B65-10061  01
One-piece transparent shell improves design of helmet assembly
NCC-107  B66-10390  05
Method prevents secondary radiation in radiographic inspection
M-PS-13333  B67-10391  02
Double copper sheath multiconductor instrumentation cable in durable and easily installed in high thermal or nuclear radiation area
NUC-10007  B67-10538  01
Control of radiation protection
M-PS-20105  B68-10392  03

RADIATION PYROMETER

Graphite element serves as radiant heat source
M-PS-105  B65-10210  01
Ultraviolet photographic pyrometer used in rocket exhaust analysis
M-PS-899  B66-10095  02

RADIATION SHIELDING

Apparatus facilitates high-temperature tensile testing in vacuum
LEWIS-42  B63-10345  03
Simple control device senses solar position
JPL-638  B65-10061  01

SUBJECT INDEX

Refractory metal shielding/Insulation/Increases operating range of induction furnace
LEWIS-202  B65-10186  02
Infrared shield facilitates optical pyrometer measurements
LANGLEY-133  B65-10272  02
Aluminized fiber glass insulation conforms to curved surfaces
M-PS-677  B66-10024  03
Densitometer system for liquid hydrogen has high accuracy, fast response
M-PS-909  B66-10438  01
Carriage system remotely moves drawer over extended distance
NU-0092  B66-10711  05
Simple motor drive system operates heavy hinged door
NU-0093  B66-10712  05
Swing-out rail system separates overhead crane rails
B66-10713  05
Mechanism of superconductivity investigated by nuclear radiation
M-PS-1944  B67-10057  02
Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
ARG-194  B67-10202  05
Aluminum-titanium hydride-boride carbide composite provides lightweight neutron shield material
NUC-10069  B67-10265  03
N-SAF and G-SAF neutron and gamma ray albedo model scatter shield analysis program
NUC-10126  B67-10536  06
SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield
NUC-10142  B67-10537  06
Graphite cloth facilitates vacuum evaporation of silicon monoxide
M-PS-14764  B68-10256  03
Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide
ARG-10154  B68-10293  02
Miniaturized King furnace permits absorption spectroscopy of small samples
ARG-10177  B68-10418  02
Honzsburger vibration calibration system evaluated
M-PS-20014  B69-10125  01
Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems
M-PS-14447  B69-10158  06
Thermal radiation shields for piping in vacuum environments
LEWIS-10899  B69-10262  03
New shield for gamma-ray spectrometry
ARG-10388  B69-10344  02

RADIATION SOURCES

New sintering process adjusts magnetic value of ferrite cores
GSFC-129  B63-10606  01
Multiple element soft x-ray source produces wide range of radiation
GSFC-286  B65-10082  02
Radon gas, useful for medical purposes,
safely fixed in quartz
ABG-2 866-10468 04

High intensity radiation heat source is capable of sustained operation
ARC-61 866-10547 02

A continuously operating source of vacuum ultraviolet below 500 angstrom
GSPC-545 866-10576 01

Modified blackbody device emits high-density radiation
M-PS-12744 867-10388 02

Computer program FFIP-B6V calculates fission product inventory for U-235
NDC-10089 867-10450 06

Silicon surface barrier detectors used for liquid hydrogen density measurement
M-PS-14115 866-10166 01

RADIATION THERAPY
Uranyl phthalocyanines show promise in the treatment of brain tumors
ARG-100 867-10188 04

Experimental study and evaluation of radioprotective drugs
ARG-10196 868-10320 04

Neutron therapy of cancer
ARG-10310 869-10203 04

RADIATION TOLERANCE
Aluminum doping improves silicon solar cells
LEWIS-206 866-10181 02

Simplified method introduces drift fields into cells
GSPC-572 867-10102 03

Butterfly valve with metal seals controls flow of hydrogen from cryogenic through high temperatures
NRC-10034 867-10567 05

Improved radiographic image amplifier panel
M-PS-14522 866-10363 02

Stratification of centrifuged amoeba nuclei investigated by electron microscopy
ARG-10161 866-10366 04

Abrasion and resistant discharge valve developed
ARG-10219 869-10044 05

Radiation tolerant silicon nitride insulated gate field effect transistors
GSPC-10581 869-10253 01

Improved retort for cleaning metal powders with hydrogen
LEWIS-10718 869-10468 03

Development of improved potting and conformal coating compounds
M-PS-20219 869-10559 03

Balloon batteries, charged and heated by solar energy
GSPC-10769 869-10585 01

RADIATIVE HEAT TRANSFER
Inexpensive insulation is effective for cryogenic transfer lines
MSC-618 866-10348 02

Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries
M-PS-1910 867-10329 06

Thermal conductivity and dielectric constant of silicate materials
M-PS-14856 868-10351 03

High-emittance coatings on metal substrates
LEWIS-10325 B68-10381 03

Monter Carlo direct view factor and generalized radiative heat transfer programs
M-PS-15051 B69-10038 06

Molecular radiation - Its application in physical measurements and analyses
M-PS-14816 B69-10562 02

RADIATORS
Heat flux sensor design reduces extraneous source effects
MSC-400 866-10531 01

RADIATION TREATMENT
Automatic gain control circuit handles wide input range
MSC-166 B66-10089 01

RADIO COMMUNICATION
Compatible, lightweight safety helmet holds radio transmitter, receiver
MSC-53 B64-10015 05

Literal readout of identification signals in Morse code
LANGLEY-10222 B69-10479 01

RADIO DETECTION FINDERS
Improved TVR direction finding system
M-PS-20439 B69-10378 01

RADIO EQUIPMENT
Concept for a multifunctional oscilloscope probe
M-PS-16390 B69-10129 01

Flexible rivet-set
M-PS-20317 B69-10459 05

RADIO FILTERS
Helical coaxial-resonator makes excellent RF filter
GSPC-243 B65-10012 01

Improved S/N meter
MSC-11654 B68-10151 03

RADIO FREQUENCIES
Tiny sensor-transmitter can withstand extreme acceleration, given digital output
ARC-22 B63-10561 01

Modified RF coaxial connector ends vacuum chamber wiring problem
GSPC-150 B64-10010 01

I-535
SUBJECT INDEX

GSFC-354 B65-10276 01

Miniature bioelectric device accurately measures and telemeters temperature
ARC-52 B66-10057 01

Seismometer designed for remote operation in random orientation
JPL-320 B66-10085 01

Automatic patient respiration failure detection system with wireless transmission
ARC-10174 B68-10365 01

RADIO WAVES

Mechanical device accurately measures RF phase differences in VHF or UHF ranges
J-FS-1738 B66-10694 05

RADIOACTIVE CONTAMINANTS

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
ARG-184 B67-10202 05

RADIOACTIVE DECAY

Neutron irradiation of Am-241 effectively produces curium
ARG-10303 B67-10501 03

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes
NUC-10143 B67-10665 06

Daughter growth in freshly separated Ba-226, Ac-227 and U-232
ARG-10226 B69-10003 02

Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ba-226 in aquatic fauna
ARG-10345 B69-10258 02

Live-timer method of automatic dead-time correction for precision counting
ARG-10478 B69-10512 01

Highly stable high-rate discriminator for nuclear counting
ARG-10483 B69-10614 01

Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ARG-90261 B69-10621 01

Synthesis of perbronates
ARG-10459 B69-10647 03

RADIOACTIVE ISOTOPES

Single channel pulse-height analyzer operates in subsensusecond range
LEWIS-267 B66-10377 01

Low-energy gamma ray inspection of brazed aluminum joints
MSC-1189 B67-10337 02

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
NUC-10126 B67-10536 06

Review of physics, instrumentation and dosimetry of radioactive isotopes
ARG-10037 B67-10640 02

Detection sensitivities in 3-8 MeV neutron activation
ARG-10219 B68-10298 02

An economical method for the continuous production of iodine-123
LEWIS-10518 B66-10433 03

Daughter growth in freshly separated Ba-226, Ac-227 and U-232
ARG-10226 B69-10003 02

Nondispersive X-ray emission analysis

RADIOACTIVITY

Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232 B67-10032 03

Tritiated alumina serves as reagent for self-labeling analysis
ARG-209 B67-10315 03

Experiments shed new light on nickel-fluorine reactions
ARG-10008 B67-10397 03

Direct indication of particle size in fluidized beds
ARG-10130 B69-10083 05

Remote balance weighs accurately and high radiation
ARG-10387 B69-10242 05

Handbook explaining the fundamentals of nuclear and atomic physics
NUC-10330 B69-10705 02

RADIOBIOLOGY

Semiconductor forms biomedical radiation probe
MSC-320 B66-10252 04

Ceric and ferrous dosimeters show precision for 50-5000 rad range
ARG-10173 B68-10426 02

An economical method for the continuous production of iodine-123
LEWIS-10518 B68-10433 03

Neutron therapy of cancer
ARG-10310 B69-10203 04

RADIOBIOLOGY

or geochemical exploration
GSFC-10568 B69-10011 02

Recent development in organic scintillators
ARG-10344 B69-10198 03

Concentrations of the naturally occurring radionuclides Pb-210, Po-210, and Ba-226 in aquatic fauna
ARG-10345 B69-10258 02

Automatic bird watcher
ARG-10342 B69-10286 02

New shield for gamma-ray spectrometry
ARG-10388 B69-10344 02

RADIOACTIVE MATERIALS

Double gloves reduce contamination of dry box atmosphere
LEWIS-211 B65-10117 03

Radioactive tracer system detects oil contaminants in fluid lines
M-FS-512 B66-10090 03

Semiconductor forms biomedical radiation probe
MSC-320 B66-10252 04

Radioactive method enables determination of surface areas rapidly and accurately
NU-0088 B66-10710 03

Fused silica method of measuring thermal-neutron fluence
MSC-10006 B67-10352 02

Improved electromechanical master-slave manipulator
ARG-10027 B68-10372 05

RADIOACTIVE WASTES

Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232 B67-10032 03

Handbook explaining the fundamentals of nuclear and atomic physics
NUC-10330 B69-10705 02

I-537
RADIOCEMISTRY

Effect of preparation procedures on intensity of radioautographic labeling is studied
ARG-10032 B67-10500 04

Compilation of detection sensitivities in thermal-neutron activation
ARG-10068 B67-10641 03

RADIOGRAPHY

Magnets position X-ray film for weld inspection
M-PS-253 B65-10110 05

Radioactive tracer system detects oil contaminants in fluid lines
M-PS-512 B66-10090 03

Commercial film produces positive X-ray photo in ten seconds
M-PS-521 B66-10307 02

Inflatable holding fixture permits X-rays to be taken of inner weld areas
M-PS-856 B66-10327 03

Digital computer processing of X-ray photos
JPL-792 B67-10005 04

Polaroid film helps locate objects in inaccessible areas quickly
MSC-960 B67-10008 02

Detection of entrapped moisture in honeycomb sandwich structures
M-PS-1103 B67-10116 01

Improved television signal processing system
NPO-10146 B67-10246 01

Thermal neutron image intensifier tube provides brightly visible radiographic pattern
ARG-120 B67-10296 02

Method prevents secondary radiation in radiographic inspection
M-PS-13383 B67-10391 02

Effect of preparation procedures on intensity of radioautographic labeling is studied
ARG-10032 B67-10500 04

Mechanized X-ray inspection system for large tanks
M-PS-12067 B67-10564 02

Evaluation of methods for nondestructive testing of brazed joints
ARG-90175 B68-10191 03

X-ray film holder permits single continuous picture of tubing joint
LEWIS-10382 B68-10343 05

Improved radiographic image amplifier panel
M-PS-14522 B68-10363 02

Nondestructive testing of brazed rocket engine components
M-PS-18191 B68-10394 03

Shortened processing time technique for color industrial radiography
ARG-10235 B69-10001 02

Radiographic threshold detection levels of aluminum weld defects
M-PS-20467 B69-10418 01

Use of medical and dental X-ray equipment for nondestructive testing
M-PS-13389 B69-10553 01

Direct determination of lead-210 by liquid-scintillation counting
ARG-10462 B69-10611 03

RADIOLOGY

Radon gas, useful for medical purposes, safely fixed in quartz
M-PS-32 B66-10468 04

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
NUC-10126 B67-10536 06

Live-timer method of automatic dead-time correction for precision counting
ARG-10478 B69-10612 01

Electron interaction in matter
M-PS-18086 B69-10674 02

RADIOLYSIS

Polymer film exhibits thermal and radiation stability
LANGLEY-100 B66-10503 02

Reduction by monovalent zinc, cadmium, and nickel cations
ARG-10328 B69-10170 03

Production of solvated electrons
ARG-10416 B69-10430 03

HYDROGEN FIRE DETECTION SYSTEM FEATURES SHARP DISCRIMINATION
M-PS-643 B66-10368 01

A radiometer-pyrometer
LEWIS-284 B66-10660 01

Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Modified blackbody device emits high-density radiation
M-PS-12744 B67-10388 02

Infrared radiometer
M-PS-13373 B67-10422 01

Foil radiometer accessory improves measurements
M-PS-12684 B67-10446 01

Improved cavity-type absolute total-radiation radiometer
JPL-507 B67-10557 01

Gimballed-mirror scanning system capable of spiral pattern
GSFC-10170 B67-10609 02

Properties of optics at high temperature and their measurement, a study
M-PS-14696 B68-10240 02

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSFC-10675 B69-10037 01

Dewpoint temperature inversions analyzed
ARG-10316 B69-10057 02

Separation of traces of metal ions from sodium matrices
ARG-10341 B69-10168 03

A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voight line profile
ARC-10221 B69-10232 06

Multilayer infrared beamsplitter film system
XS-11036 B69-10260 02

SUBJECT INDEX

Effects of high-pressure hydrogen on storage vessel materials
M-PS-18605 B69-10730 03

Hydrogen gas, useful for medical purposes, safely fixed in quartz
M-PS-32 B66-10468 04

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
NUC-10126 B67-10536 06

Live-timer method of automatic dead-time correction for precision counting
ARG-10478 B69-10612 01

Electron interaction in matter
M-PS-18086 B69-10674 02

Polymer film exhibits thermal and radiation stability
LANGLEY-100 B66-10503 02

Reduction by monovalent zinc, cadmium, and nickel cations
ARG-10328 B69-10170 03

Production of solvated electrons
ARG-10416 B69-10430 03

HYDROGEN FIRE DETECTION SYSTEM FEATURES SHARP DISCRIMINATION
M-PS-643 B66-10368 01

A radiometer-pyrometer
LEWIS-284 B66-10660 01

Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Modified blackbody device emits high-density radiation
M-PS-12744 B67-10388 02

Infrared radiometer
M-PS-13373 B67-10422 01

Foil radiometer accessory improves measurements
M-PS-12684 B67-10446 01

Improved cavity-type absolute total-radiation radiometer
JPL-507 B67-10557 01

Gimballed-mirror scanning system capable of spiral pattern
GSFC-10170 B67-10609 02

Properties of optics at high temperature and their measurement, a study
M-PS-14696 B68-10240 02

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSFC-10675 B69-10037 01

Dewpoint temperature inversions analyzed
ARG-10316 B69-10057 02

Separation of traces of metal ions from sodium matrices
ARG-10341 B69-10168 03

A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voight line profile
ARC-10221 B69-10232 06

Multilayer infrared beamsplitter film system
XS-11036 B69-10260 02
SUBJECT INDEX

Thermal calibration target
ICS-11144 B69-10419 01

Radiometric temperature reference
ESC-13276 B69-10507 01

RADIX
Detection of entrapped moisture in honeycomb sandwich structures
ESC-1103 B67-10116 01

Direct determination of lead-210 by liquid-scintillation counting
ARG-10462 B69-10611 03

RADIUS ISOTOPES
Concentrations of the naturally occurring radionucleides Pb-210, Po-210, and Ba-226 in aquatic fauna
ABS-10345 B69-10258 02

RADON
Radon gas, useful for medical purposes, safely fixed in quartz
ARG-2 B66-10468 04

RAFTS
Buoyant stokes litter assembly used for sea rescue operations
ESC-131 B66-10019 05

Pneumatic raft automatically reforms after rupture of buoyant member
ESC-11562 B68-10111 05

RAIL TRANSPORTATION
Economical and maintenance-free gas system operates railroad switches
WQ-0045 B66-10124 05

RAILS
Carriage system remotely moves drawer over extended distance
WQ-0092 B66-10711 05

Swing-out rail system separates overhead crane rails
WQ-0094 B66-10713 05

RAKET ENGINES
Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LENUS-263 B66-10104 03

RAIL FUNCTIONS
Transistorized circuit clamps voltage with 0.1 percent error
GSFC-196 B65-10116 01

Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart
JPL-805 B66-10386 01

Computer program provides linear sampled-data analysis for high order systems
B-PS-12822 B67-10287 06

Simple first order data compression processor concept
BNO-10338 B67-10553 01

Compensation of pulse-rebalanced inertial instruments
ESC-13098 B69-10216 01

RAF'S [STRUCTURES]
Selective tube roughening increases heat transfer capability
B-PS-599 B66-10610 05

RAF'S [PRESSURES]
Materials physically tested in variable-environment chamber

RJPL-789 B66-10130 01

Vibration dampener for Miles vertical boring mill ram
ESC-15529 B69-10348 01

RANDOM ACCESS MEMORY
Development of Curie point switching for thin film, random access, memory device
NFO-10402 B67-10633 02

The compatible conversion system
F-PS-15010 B69-10031 06

RANDOM ERRORS
Study of optimum discrete estimators in measurement analysis
B-PS-14915 B69-10348 02

RANDOM NOISE
Instrument sequentially samples ac signals from several accelerometers
JPL-88a B67-10029 01

A power-spectral-density computer program
BNO-10126 B67-10160 01

Study of random process theory aids digital data processing
B-PS-1475 B67-10309 06

Accuracy of laser measurements improved by pulse autocorrelator electronic system
ESC-10033 B67-10338 01

PHC hit detection with correction for intersymbol interference
GSFC-10155 B69-10153 01

HF noise suppression using the photodielectric effect in semiconductors
ESC-12259 B66-10225 01

On the bound of first excursion probability
FNO-11158 B69-10324 06

Automatic Gaussian random-noise limiter
FNO-10169 B69-10349 01

RANDOM PROCESSES
Computer program performs statistical analysis for random processes
B-PS-723 B66-10525 01

Study of random process theory aids digital data processing
B-PS-1475 B67-10309 06

New technique for determination of cross-power spectral density with damped oscillators
FNO-14022 B67-10602 02

Random access-random release relay switching matrix
B-PS-12590 B68-10301 01

Study of optimum discrete estimators in measurement analysis
B-PS-14915 B68-10348 02

RANDOM SIGNALS
Hybrid computer technique yields random signal probability distributions
ARC-34 B65-10208 01

RANDOM VARIABLES
Independent doubly truncated gamma variables
B-PS-20143 B66-10348 02

RANDOM VIBRATION
A power-spectral-density computer program
BNO-10126 B67-10160 01

Study made of thin-walled pipe response to turbulent fluids
B-PS-1321 B67-10518 05
**SUBJECT**

**RANGE (EXTERNS)**

- **T-handle wrench has torque-limiting action**
  - MSC-280 B66-10065 05
- **Hand drill adapter limits holes to desired depth**
  - MSC-346 B66-10123 05
- **Depth indicator and stop aid machining to precise tolerances**
  - M-PS-533 B66-10149 05
- **SiC/Si diode trigger circuit provides automatic range switching for log amplifier**
  - M-PS-1879 B67-10314 01
- **Method for reducing snap in magnetic amplifiers**
  - LEWIS-10388 B68-10388 01
- **Health hazards of ultrafine metal and metal oxide powders**
  - M-PS-16556 B69-10268 04

**RANGEFINDING**

- **Communication system features dual mode range acquisition plus time delay measurement**
  - M-PS-14323 B68-10306 01
- **Combination ranging system and mapping radar**
  - MPO-11001 B69-10325 01

**RANGER PROJECT**

- **Solid state detectors monitor relay contacts**
  - JPL-765 B66-10396 01

**RARE EARTH ALLOYS**

- **Traveling wire electrode increases productivity of Electrical Discharge Machining /EDM/ equipment**
  - ARG-136 B67-10238 05
- **Improved carbon electrode reduces arc spattering**
  - MSC-219 B66-10026 01

**RARE EARTH COMPOUNDS**

- **Crystal structure analysis of intermetallic compounds**
  - ARG-10092 B66-10198 03
- **Transplutonium elements processed from rock debris of underground detonations**
  - ARG-2022 B69-10054 03
- **Optically exciting a magnetic memory - A feasibility study**
  - M-PS-14854 B69-10060 02
- **Separation of traces of metal ions from sodium matrices**
  - ARG-10341 B69-10168 03
- **Separation of the rare earths by anion-exchange in the presence of lactic acid**
  - ARG-10436 B69-10377 03
- **Dielectric materials for use in thin-film capacitors**
  - M-PS-20471 B69-10387 02

**RARE GASES**

- **Novel clamps align large rocket cases, eliminate back-up bars**
  - M-PS-1 B63-10376 05
- **Hot-air soldering technique prevents overheating of electrical components**
  - GSPC-91 B63-10536 01
- **Welding procedures improve quality of welds, offers other advantages**
  - M-PS-32 B64-10309 01
- **Inert gas spraying device aids in repair of hazardous systems**
  - LEWIS-88 B65-10115 05
- **Double gloves reduce contamination of dry box atmosphere**
  - LEWIS-211 B65-10117 03
- **Thermoelectric elements diffusion-bonded to tungsten electrodes**
  - GSPC-346 B65-10309 01
- **Refactory metals welded or brazed with tungsten inert gas equipment**
  - LEWIS-219 B65-10319 05
- **Improved tool easily removes brazed tube connectors**
  - M-PS-263 B66-10003 05
- **Protective coating withstands high temperature in oxidizing atmosphere**
  - M-PS-529 B66-10044 03
- **Hydrogen-atmosphere induction furnace has increased temperature range**
  - LEWIS-153 B66-10055 05
- **Cryostat modified to aid rotating beam fatigue test**
  - ARG-435 B66-10083 03
- **Solid-film lubricant is effective at high temperatures in vacuum**
  - LEWIS-220 B66-10087 03
- **Tool provides constant purge during tube welding**
  - M-PS-547 B66-10093 05
- **Highly sensitive solids mass spectrometer uses inert-gas ion source**
  - ERC-11 B66-10114 02
- **Aluminum oxide filler prevents obstructions in making during welding**
  - M-PS-222 B66-10125 05
- **Simple device facilitates inert-gas welding of tubes**
  - M-PS-558 B66-10155 05
- **Brazing process using Al-Si filler alloy reliably bonds aluminum parts**
  - M-PS-446 B66-10241 05
- **Differential expansion provides pressure for diffusion bonding of large diameter rings**
  - M-PS-588 B66-10265 05
- **Ion chambers simplify absolute intensity measurements in the vacuum ultraviolet**
  - ERC-10 B66-10439 01
- **Yttrum forms stable compound with fluorine**
  - ARG-4 B66-10467 03
- **Complex surfaces plated by thin-film deposition in one operation**
  - LEWIS-292 B67-10006 05
- **Portable spectrometer monitors inert gas shield in welding process**
  - I-540
Two systems developed for purifying inert atmospheres
ARG-10234 B69-10026 03

Mixing weld gases offers advantages
K-FS-16413 B69-10145 05

Protective clothing for workers with 5-kW and 20-kW short-arc lamps
NRO-11155 B69-10218 01

Zone purification of potassium chloride
ARG-10377 B69-10241 03

High strength, superplastic superalloy
LEWIS-10805 E69-10293 03

High-temperature, gas-filled ceramic rectifiers, thyristors, and voltage-reference tubes
LEWIS-90271 B69-10293 03

Conversion of continuous-direct-current TIG welder to pulse-arc operation
I-PS-16411 B69-10393 05

Improved retort for cleaning metal powders with hydrogen
LEYIS-10718 B69-10468 03

Fluorocarbon seal replaces metal piston ring in low density gas environment
LEYIS-10277 B67-10591 05

Computer circuit calculates cardiac output
MSC-274 B66-10006 01

Quantum mechanical calculations of reactive scattering cross sections in bimolecular encounters
H-PS-13594 B67-10527 03

Scan rate converter for tape recording and playback of TV pictures
MNO-10546 B67-10676 01

Liquid-metal heat transfer in a cocurrent-flow double-pipe heat exchanger is investigated
ARG-10263 B69-10091 02

Device for obtaining separation of oxygen
LANGLEY-11007 B69-10477 01

System converts slow-scan to standard fast-scan TV signals
M5C-90534 B69-10748 01

Rapid helium-air analyzer can measure other binary gas mixtures
LANGLEY-16 B63-10557 03

Digital-output cardiocapmeter measures rapid changes in heartbeat rate
MSC-133 B65-10143 01

High frequency wide-band transformer uses coax to achieve high turn ratio and flat response
ARG-107 B66-10600 01

Eddy current probe measures size of cracks in nonmetallic materials
K-FS-14059 B67-10645 03

Ratio matching of half-bridge weldable strain gages, computer program
MSC-10032 B69-10040 06

Thick transducers used for generating short-duration stress pulses in thin specimens

RAY TRACING
Computer programs simplify optical system analysis
GSFC-306 B65-10093 01

Computer program for optical systems ray tracing
FHC-10017 B67-10549 06

Automatic design of optical systems by digital computer
NRO-10265 B67-10632 06

SELECTIVE VIGNETTING OF TYPE 1 X-RAY TELESCOPES
B69-10356 06

Improved method of optical design
GSFC-10743 B69-10405 02

RAYLEIGH-RITZ METHOD
Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLEY-10093 B67-10531 06

RAYLEIGH SCATTERING
Improvement in recording and reading holograms
HSC-10151 B68-10347 02

The response of monoenergetic gamma rays in finite media are investigated
ARG-10295 B69-10080 02

RAZOR BLADES
Reference black body is compact, convenient to use
RAC-3 B63-10004 03

RC CIRCUITS
Low-power transistorized circuit provides staircase waveform
GSFC-48 B64-10007 01

Stepping motor drive circuit designed for low power drain
GSFC-198 B65-10026 01

Simulator produces physiological waveforms
MSC-94 B65-10091 01

Thin-film resistors used in functional electronic blocks
GSFC-380 B65-10305 01

High-performance RC bandpass filter is adapted to miniaturized construction
ABC-60 B66-10309 01

Solid-state switch increases switching speed
WGO-299 B66-10430 01

Subminiature deflection circuit operates integrated sweep circuits in TV camera
MSC-1253 B67-10155 01

Multiple meter monitoring circuits served by single alarm
MSC-10984 B67-10369 01

Blood pressure reprogramming adapter assists signal recording
MSC-265 B67-10475 01

Active rc networks of low sensitivity for integrated circuit transfer function
ABC-1046 B68-10210 01

Active rc filter permits easy trade-off of amplifier gain and sensitivity to gain
**REACTANCE**

- ARC-10042  B68-10539  01
  Multichannel analyzers at high rates of input
  ARG-10355  B69-10214  02

- Wide-band doubler and siren wave quadrature generator
  BPG-11133  B69-10383  01

**REACTANCE**

- Control circuit maintains unity power factor of reactive load
  MSC-192  B66-10431  01

- Improved circuit for measuring capacitive and inductive reactances
  B-PS-13083  B67-10513  01

- Moebius resistor is noninductive and nonreactive
  SAM-10620  B68-10267  01

- Microelectronic oscillator, 2
  GSFC-10387  B69-10063  01

- Microelectronic oscillator
  GSFC-10375  B69-10064  01

**REACTION CONTROL**

- Fuel and oxidizer valve assembly employs single solenoid actuator
  MSC-1046  B66-10468  05

- Piezoelectric linear actuator
  MSC-13194  B69-10469  02

- Elimination of dissolved gases in hypergolic engine propellants
  B-PS-16179  B69-10692  03

**REACTION KINETICS**

- Improved system measures output energy of pyrotechnic devices
  WGO-256  B66-10159  01

- Computer simulation program is adaptable to industrial processes
  LEVIS-240  B66-10426  01

- Axisymmetric reacting gas nonequilibrium performance program
  MSC-11781  B68-10377  06

- Titanium-nitrogen reaction investigated for application to gettering systems
  ARG-10208  B68-10414  03

- Rate constants measured for hydrated electron reactions with peptides and proteins
  ARG-10195  B68-10424  04

**REACTION TIME**

- Reaction rates of graphite with ozone measured by etch decoration
  ARG-10086  B68-10101  03

- Cryogenic liquid level measuring probe
  ARG-10138  B68-10291  01

- System measures response time of photomultiplier tubes
  LEVIS-10437  B68-10382  01

- Method for making small pointed thermocouples
  SAN-10014  B68-10389  01

- Gamma radiation characteristics of plutonium dioxide fuel
  BPO-11220  B69-10733  02

**REACTION WHEELS**

- Global angle sensor
  GSFC-10305  B68-10315  01

**REACTION WHEELS**

- Improved process for making thin-film sodium niobate capacitors
  MSC-11231  B68-10163  01

- Reduction by monovalent zinc, cadmium, and nickel cations
  ARG-10326  B69-10170  03

**REACTION CODES**

- Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes
  ARG-10274  B69-10047  02

- Fuel element concept for long life high power nuclear reactors
  LEVIS-10309  B69-10154  03

- Identification and evaluation of linear damping models in beam vibrations
  ARG-10275  B69-10196  03

**REACTION DESIGN**

- SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shielding
  NUC-10142  B67-10537  06

**REACTION MATERIALS**

- Computer program calculates the effective temperature of a crystalline solid
  ARG-10147  B68-10147  01

**REACTION PHYSICS**

- Fast framing cameras provide high-speed multi-channel data recording
  ARG-10252  B69-10102  02

- Handbook explaining the fundamentals of nuclear and atomic physics
  NUC-10330  B69-10705  02

**REACTION TECHNOLOGY**

- Hydrodynamics of a new concept of primary containment by energy absorption
  ARG-10242  B69-10046  05

- Studies of cycles for liquid-metal magnetohydrodynamic generation of power
  ARG-10250  B69-10194  02

**READERS**

- Tester automatically checks paper tape punch and reader after maintenance
  ARC-66  B67-10267  01

- Pocket-size manual tape reader device aids computer tape checking
  KSC-10058  B67-10361  01

- Long-term data storage and retrieval system, a concept
  B-PS-14789  B68-10505  01

**READOUT**

- Optics used to measure torque at high rotational speeds
  LEVIS-13  B63-10338  01

- Fluid-pressure meter can be calibrated without removal from flow line
  B-PS-98  B63-10502  05
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>RECEIVERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-cost tape system measures velocity of acceleration&lt;br&gt;GSPC-85</td>
<td>B64-10512 01</td>
</tr>
<tr>
<td>Compact cartridge drives coded tape at constant readout speed&lt;br&gt;JPL-472</td>
<td>B64-10222 01</td>
</tr>
<tr>
<td>Radiation-detector optical-imaging device is of simplified construction&lt;br&gt;GSPC-251</td>
<td>B64-10299 01</td>
</tr>
<tr>
<td>Transistor voltage comparator performs own sensing&lt;br&gt;GSPC-228</td>
<td>B65-10028 01</td>
</tr>
<tr>
<td>Library of documents compressed into lap-held display kit&lt;br&gt;MSC-125</td>
<td>B65-10030 01</td>
</tr>
<tr>
<td>System measures angular displacement without contact&lt;br&gt;LANGLEY-46</td>
<td>B65-10073 01</td>
</tr>
<tr>
<td>Modified contour projector makes excellent contour densitometer&lt;br&gt;LANGLEY-93</td>
<td>B65-10084 02</td>
</tr>
<tr>
<td>Simple pulse counting circuit computes sum of squares&lt;br&gt;GSPC-391</td>
<td>B65-10260 01</td>
</tr>
<tr>
<td>Electrometer preamplifier has drift correction feedback&lt;br&gt;JPL-SC-074</td>
<td>B65-10267 01</td>
</tr>
<tr>
<td>Nonlinear feedback reduces analog-to-digital converter error&lt;br&gt;MRC-46</td>
<td>B65-10277 01</td>
</tr>
<tr>
<td>Three-dimensional wire-mesh capacitor system measures fluid density&lt;br&gt;WOO-194</td>
<td>B65-10379 01</td>
</tr>
<tr>
<td>Solid state thermostat has integral probe and circuitry&lt;br&gt;S-FS-434</td>
<td>B66-10193 01</td>
</tr>
<tr>
<td>Digital frequency counter permits readout without disturbing counting process&lt;br&gt;JPL-906</td>
<td>B66-10658 01</td>
</tr>
<tr>
<td>Design concept for improved photo-scan tube&lt;br&gt;JPL-818</td>
<td>B67-10157 01</td>
</tr>
<tr>
<td>Numerical data frame readout system used in testing telemetry systems&lt;br&gt;GSPC-551</td>
<td>B67-10175 01</td>
</tr>
<tr>
<td>Technique for strip chart recorder time notation&lt;br&gt;GSPC-473</td>
<td>B67-10196 01</td>
</tr>
<tr>
<td>System enables dimensional inspection of very large structures&lt;br&gt;M-FS-2477</td>
<td>B67-10214 05</td>
</tr>
<tr>
<td>Portable spectrometer monitors inert gas shield in welding process&lt;br&gt;M-FS-12144</td>
<td>B67-10326 02</td>
</tr>
<tr>
<td>Digital servo readout system increases recording accuracy of servo-balance scales&lt;br&gt;MOC-10125</td>
<td>B67-10496 01</td>
</tr>
<tr>
<td>Development of Curie point switching for thin films, random access, memory device&lt;br&gt;WFO-10402</td>
<td>B67-10524 01</td>
</tr>
<tr>
<td>Amplitude and frequency readout overlay&lt;br&gt;GSPC-10183</td>
<td>B68-10504 01</td>
</tr>
<tr>
<td>Random access-random release relay switching matrix&lt;br&gt;M-FS-12550</td>
<td>B68-10301 01</td>
</tr>
<tr>
<td>Improvement in recording and reading holograms&lt;br&gt;HRC-10151</td>
<td>B68-10347 02</td>
</tr>
<tr>
<td>Readout system for radiation detector&lt;br&gt;MSC-90180</td>
<td>B68-10501 01</td>
</tr>
<tr>
<td>Flow angle sensor and readout system&lt;br&gt;LEWIS-90190</td>
<td>B69-10050 01</td>
</tr>
<tr>
<td>Direct indication of particle size in fluidized beds&lt;br&gt;ARO-10130</td>
<td>B69-10083 05</td>
</tr>
<tr>
<td>Ring laser angle encoder&lt;br&gt;MOC-13099</td>
<td>B69-10115 01</td>
</tr>
<tr>
<td>Report on a cryogenic gyroscope&lt;br&gt;NPO-11200</td>
<td>B69-10504 02</td>
</tr>
<tr>
<td>Pulse-height analyser with digital readout&lt;br&gt;ARO-10503</td>
<td>B69-10640 01</td>
</tr>
<tr>
<td>Versatile telemetering system&lt;br&gt;ARO-10339</td>
<td>B69-10655 01</td>
</tr>
<tr>
<td>REAL GASES&lt;br&gt;Computer program for high pressure real gas effects&lt;br&gt;LEWIS-10820</td>
<td>B69-10222 06</td>
</tr>
<tr>
<td>High pressure real gas effects for helium and nitrogen&lt;br&gt;LEWIS-10819</td>
<td>B69-10669 06</td>
</tr>
<tr>
<td>REAL TIME OPERATION&lt;br&gt;New computer system simplifies programming of mathematical equations&lt;br&gt;M-FS-841</td>
<td>B66-10361 01</td>
</tr>
<tr>
<td>System automatically provides dynamic launch decision criteria&lt;br&gt;M-FS-13063</td>
<td>B67-10363 01</td>
</tr>
<tr>
<td>Automatic telemetry checkout system&lt;br&gt;M-FS-12586</td>
<td>B67-10402 01</td>
</tr>
<tr>
<td>Versatile analog pulse height computer performs real-time arithmetic operations&lt;br&gt;ARO-10052</td>
<td>B67-10626 06</td>
</tr>
<tr>
<td>X-Y plotter adapter developed for SDS-930 computer&lt;br&gt;NPO-10220</td>
<td>B67-10654 06</td>
</tr>
<tr>
<td>Oculometer for remote tracking of eyes&lt;br&gt;HRC-10174</td>
<td>B69-10844 02</td>
</tr>
<tr>
<td>Electronic analog equalization for vibrational testing&lt;br&gt;NPO-10544</td>
<td>B69-10872 01</td>
</tr>
<tr>
<td>RECEIVERS&lt;br&gt;Tunnel-diode circuit features zero-level clipping&lt;br&gt;GSPC-243</td>
<td>B65-10002 01</td>
</tr>
<tr>
<td>Helical coaxial-resonator makes excellent RF filter&lt;br&gt;GSPC-243</td>
<td>B65-10012 01</td>
</tr>
<tr>
<td>Device measures fluid drag on test vehicles&lt;br&gt;LANGLEY-34</td>
<td>B65-10195 01</td>
</tr>
<tr>
<td>System locates randomly placed remote objects&lt;br&gt;LANGLEY-209</td>
<td>B66-10315 01</td>
</tr>
<tr>
<td>Transient sensor development&lt;br&gt;M-FS-13370</td>
<td>B67-10471 01</td>
</tr>
<tr>
<td>Apparatus makes klystron operating frequency adjustable from remote point&lt;br&gt;NPO-09831</td>
<td>B67-10514 01</td>
</tr>
<tr>
<td>Concept for automatic Doppler compensation in two-way communication systems&lt;br&gt;GSPC-10213</td>
<td>B67-10643 01</td>
</tr>
<tr>
<td>Reflectometer for receiver input system&lt;br&gt;NPO-10843</td>
<td>B67-10657 01</td>
</tr>
<tr>
<td>Improved phase locked loop receiver&lt;br&gt;NPO-10843</td>
<td>B67-10664 01</td>
</tr>
<tr>
<td>Subject Index</td>
<td>Page</td>
</tr>
<tr>
<td>--------------</td>
<td>------</td>
</tr>
<tr>
<td>Modified McLeod gage records automatically</td>
<td>B66-10290</td>
</tr>
<tr>
<td>Apparatus enables automatic microanalysis of body fluids</td>
<td>B66-10515</td>
</tr>
<tr>
<td>Film coating permits low-force scribing</td>
<td>B66-10609</td>
</tr>
<tr>
<td>Technique for strip chart recorder time notation</td>
<td>B67-10196</td>
</tr>
<tr>
<td>Machine tests slow-speed sliding friction in high vacuum</td>
<td>B67-10379</td>
</tr>
<tr>
<td>Instrumentation monitors transported material through variety of parameters</td>
<td>B67-10545</td>
</tr>
<tr>
<td>Recharge unit provides optimum recharging of battery cells</td>
<td>B68-10273</td>
</tr>
<tr>
<td>Direct reading of electrocardiograms and respiration rates</td>
<td>B69-10188</td>
</tr>
<tr>
<td>Integrated sequence display device</td>
<td>B69-10316</td>
</tr>
<tr>
<td>Design of a strain-gage probe</td>
<td>B69-10343</td>
</tr>
<tr>
<td>Experimental design for research on shock-turbulence interaction</td>
<td>B69-10604</td>
</tr>
<tr>
<td>Redescribing hardware after loss of serial number</td>
<td>B69-10059</td>
</tr>
<tr>
<td>Recoverability</td>
<td>B69-10059</td>
</tr>
<tr>
<td>Threading hook facilitates safe recovery of heavy loads</td>
<td>B64-10185</td>
</tr>
<tr>
<td>Compact assembly generates plastic foam, inflates flotation bag</td>
<td>B65-10090</td>
</tr>
<tr>
<td>Scoop attachment makes helicopter recoveries easier and safer</td>
<td>B65-10229</td>
</tr>
<tr>
<td>Organic reactants rapidly produce plastic foam</td>
<td>B65-10288</td>
</tr>
<tr>
<td>Use of steel and tantalum apparatus for molten Ca-Mg-Zn alloys</td>
<td>B66-10594</td>
</tr>
<tr>
<td>Silver-palladium braze alloy recovered from masking materials</td>
<td>B66-10631</td>
</tr>
<tr>
<td>Long time constant timer requires no recovery time</td>
<td>B67-10487</td>
</tr>
<tr>
<td>Recovery zones</td>
<td>B67-10331</td>
</tr>
<tr>
<td>Sea dye marker provides visibility for 20 hours</td>
<td>B66-10313</td>
</tr>
<tr>
<td>Rectangles</td>
<td>B67-10520</td>
</tr>
</tbody>
</table>

**RECIPROCAL**

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSFC-05661</td>
<td>B68-10008</td>
</tr>
<tr>
<td>Diversity RF receiving system with improved phase-lock characteristics</td>
<td>B68-10068</td>
</tr>
<tr>
<td>Two-way digital driver/receiver uses one set of lines</td>
<td>B68-10437</td>
</tr>
<tr>
<td>Low-loss C-band parasitic probe</td>
<td>B69-10251</td>
</tr>
<tr>
<td>Survey of man-made electrical noise affecting radio broadcasting</td>
<td>B69-10308</td>
</tr>
<tr>
<td>PCS synchronization by word stuffing</td>
<td>B69-10959</td>
</tr>
<tr>
<td>Pocket-sized tone-modulated FM transmitter</td>
<td>B69-10725</td>
</tr>
<tr>
<td>Storage of electric and magnetic energy in passive nonreciprocal networks</td>
<td>B69-10630</td>
</tr>
<tr>
<td>Liquid-metal-piston MHD generator</td>
<td>B69-10771</td>
</tr>
<tr>
<td>Concept for cryogenic liquid reclamation system</td>
<td>B67-10420</td>
</tr>
<tr>
<td>Four pi-recoil proportional counter used as neutron spectrometer</td>
<td>B68-10326</td>
</tr>
<tr>
<td>Axisymmetric reacting gas nonequilibrium performance program</td>
<td>B66-10377</td>
</tr>
<tr>
<td>Two-color holography</td>
<td>B69-10662</td>
</tr>
<tr>
<td>Photoelectric system continuously monitors liquid level</td>
<td>B65-10382</td>
</tr>
<tr>
<td>Improvement in recording and reading holograms</td>
<td>B66-10347</td>
</tr>
<tr>
<td>Computer grading of examinations</td>
<td>B69-10159</td>
</tr>
<tr>
<td>Small digital recording head has parallel bit channels, minimizes cross talk</td>
<td>B63-10284</td>
</tr>
<tr>
<td>Device calibrates vibration transducer at amplitudes up to 20 g</td>
<td>B63-10572</td>
</tr>
<tr>
<td>Pressure transducer 38-inch in size can be raised into surface</td>
<td>B66-10021</td>
</tr>
<tr>
<td>Manual-feed adapter permits microfilming of continuous oscillograph output</td>
<td>B65-10249</td>
</tr>
<tr>
<td>Tester periodically registers dc amplifier characteristics</td>
<td>B66-10148</td>
</tr>
<tr>
<td>Ultrasonic recording scanner used for nondestructive weld inspection</td>
<td>B66-10220</td>
</tr>
</tbody>
</table>

I-544
SUBJECT INDEX

tube BQ-10234 B69-10193 02

RECTANGULAR BEAMS
Application of distorted models in developing scaled structural models M-PS-2540 B67-10321 05

RECTANGULAR PANELS
Apparatus measures thermal conductivity of honeycomb-core panels LANGLEY-202 B66-10127 01

RECTIFICATION
Substituting transistor for diode improves rectifying means GSPC-474 B66-10295 01

RECTIFIERS
Transistorized trigger circuit is frequency-controllable GSPC-111 B63-10553 01
Simple circuit continuously monitors thermocouple sensor M-PS-61 B63-10567 01
Ring counter may be advanced or retarded by command signal GSPC-101 B64-10144 01
Helmholzer tester for high-power vacuum tubes JPL-628 B64-10158 01
Motor position sensor switches currents in brushless dc motors GSPC-315 B65-10151 01
Circuit reduces distortion of FM modulator GSPC-257 B65-10152 01
Electrostatics has automatic zero bias control GSPC-350 B65-10242 01
Noncontacting vibration transducer has constant sensitivity LANGLEY-99 B65-10392 01
Dual-voltage power supply has increased efficiency LEWIS-107A B66-10002 01
Thin-film semiconductor rectifier has improved properties M-PS-207 B66-10012 01
Feedback loop compensates for rectifier nonlinearity M-PS-384 B66-10138 01
Electronic test instrument generates extremely small current signals ARG-276 B67-10318 01
High power dc/dc and dc/ac electrical power conversion techniques developed M-PS-13227 B67-10390 01
Control apparatus for spectral energy source LEWIS-391 B67-10404 01
Feasibility study of wireless power transmission system M-PS-14691 B68-10309 01
Remotely-actuated biomedical switch AMC-10105 B69-10117 01
Automatic Gaussian random-noise limiter NPO-10169 B69-10349 01
High-temperature, gas-filled ceramic rectifiers, thyratrons, and voltage-reference tubes LEWIS-90271 B69-10376 01
An electronic circuit for sensing malfunctions in test instrumentation

REDD SHIFT
Hydrogen maser as a highly stable frequency reference M-PS-2437 B67-10146 01

REDUCED GRAVITY
Magnetic fluid readily controlled in zero gravity environment LEWIS-126 B65-10335 03
Simulator effects partial gravity conditions M-PS-152 B66-10339 05

REDUCTION
Metal tube reducer is inexpensive and simple to operate ARG-49 B67-10401 05
Advances in aluminum anodizing M-PS-14600 B69-10144 05

REDUCTION (CHEMISTRY)
Process reduces pore diameters to produce superior filters WGO-093 B66-10037 03
High temperature thermocouple operates in reduction atmosphere NU-0046 B66-10134 01
Apparatus enables accurate determination of alkali oxides in alkali metals LEWIS-256 B66-10296 03
Electroless nickel plating on stainless steels and aluminum GSPC-533 B66-10479 03
Ion exchange determines iodine-131 concentration in aqueous samples ARG-208 B67-10129 04
Static electricity of polymers reduced by treatment with iodine NPO-10062 B67-10132 03
Oxide film on metal substrate reduced to form metal-oxide-metal layer structure ARG-48 B67-10187 03
Study made of Raney nickel technology M-PS-2054 B67-10208 03
Welding, bonding, and sealing of refractory metals by vapor deposition LEWIS-123 B67-10232 03
Magnesium-zinc reduction is effective in preparation of metals ARG-10050 B67-10579 03
Metabolic and toxicological effects of water-soluble xenon compounds are studied ARG-90239 B68-10076 04
Improved fuel-cell-type hydrogen sensor M-PS-14656 B68-10263 01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>An improved magnetic tape recorder</td>
<td>B67-10646</td>
</tr>
<tr>
<td>Improved control system power unit for large parachutes</td>
<td>B67-10677</td>
</tr>
<tr>
<td><strong>ENTRY EFFECTS</strong></td>
<td></td>
</tr>
<tr>
<td>Accurate depth control provided for thermocouple junction locations</td>
<td>B66-10632</td>
</tr>
<tr>
<td><strong>ENTRY PHYSICS</strong></td>
<td></td>
</tr>
<tr>
<td>Colloidal suspension simulates linear dynamic pressure profile</td>
<td>B66-10214</td>
</tr>
<tr>
<td><strong>ENTRY SHIELING</strong></td>
<td></td>
</tr>
<tr>
<td>Fire retardant foams developed to suppress fuel fires</td>
<td>B66-10358</td>
</tr>
<tr>
<td><strong>ENTRY VEHICLES</strong></td>
<td></td>
</tr>
<tr>
<td>Sensors measure surface ablation rate of reentry vehicle heat shield</td>
<td>B66-10592</td>
</tr>
<tr>
<td>High-strength tungsten alloy with improved ductility</td>
<td>B66-10340</td>
</tr>
<tr>
<td><strong>REFERENCE SYSTEMS</strong></td>
<td></td>
</tr>
<tr>
<td>Instrument quickly transposes ground reference target to eye level</td>
<td>B66-10061</td>
</tr>
<tr>
<td>Multiple temperatures sampled using only one reference junction</td>
<td>B66-10260</td>
</tr>
<tr>
<td>Equations provide tabular information on effects of uniform and variable loads on thin, flat, circular plates</td>
<td>B66-10601</td>
</tr>
<tr>
<td><strong>REFLECTANCE</strong></td>
<td></td>
</tr>
<tr>
<td>Air-cured ceramic coating insulates against high heat fluxes</td>
<td>B65-10357</td>
</tr>
<tr>
<td>Aluminized fiber glass insulation conforms to curved surfaces</td>
<td>B65-10024</td>
</tr>
<tr>
<td>Beam splitter used in dual filming technique</td>
<td>B66-10072</td>
</tr>
<tr>
<td>Specimen holder design improves accuracy of x-ray powder analysis</td>
<td>B66-10075</td>
</tr>
<tr>
<td>Uniform reflective films deposited on large surfaces</td>
<td>B66-10483</td>
</tr>
<tr>
<td>Special purpose reflectometer uses modified albright sphere</td>
<td>B67-10109</td>
</tr>
<tr>
<td>Optical integrating sphere operates at visible and infrared wavelengths</td>
<td>B66-10126</td>
</tr>
<tr>
<td>Improved relay optical element for spectroradiometer using cryogenically cooled detector</td>
<td>B66-10245</td>
</tr>
<tr>
<td>Detection of effect of deposits on optical windows of pyrometer measurements</td>
<td>B66-10367</td>
</tr>
<tr>
<td>Structural thermal-control coatings</td>
<td>B66-10553</td>
</tr>
<tr>
<td>Correction for losses in optical birefringent networks, a concept</td>
<td>B66-10571</td>
</tr>
</tbody>
</table>

**REDUNDENCY**

Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide

| B66-10293 | 02 |

Study of actinide chemistry in saturated potassium fluoride solution

| B69-10004 | 03 |

Preparation of thorium magnesium-zinc reduction

| B69-10079 | 03 |

Production of metals and compounds by radiation chemistry

| B69-10123 | 03 |

Primary radical yields in pulse irradiated alkaline aqueous solution

| B69-10167 | 02 |

Reduction by monovalent zinc, cadmium, and nickel cations

| B69-10170 | 03 |

**REDUNDANCY**

Logic redundancy improves digital system reliability

| B65-10025 | 01 |

Conceptual nonorthogonal gyro configuration for guidance and navigation

| B67-10433 | 01 |

Synchronizing redundant power oscillators

| B69-10546 | 01 |

System for computing operational probability equations

| B69-10566 | 06 |

Control jet placement on spacecraft

| B69-10671 | 01 |

Microelectronic device data handbook

| B69-10687 | 01 |

**REDUNDANCY ENCODING**

Automatic computation of data-set definitions

| B69-10608 | 06 |

**REDUNDANT COMPONENTS**

Triple Modular Redundancy /TMR/ computer operation improved

| B67-10085 | 01 |

Automatic channel switching device

| B67-10086 | 01 |

Improved computer program for elastic analysis of highly redundant structural configurations

| B67-10330 | 06 |

Logic realization of simple majority voting connectives

| B67-10511 | 06 |

SEAL /Subnetwork Enumeration And Listing/  

| B68-10227 | 06 |

Design and sparing techniques to meet specified performance life

| B69-10528 | 02 |

**REELS**

Dispensing system eliminates tension in deployed hoses

| B65-10185 | 05 |

Automatic reel controls filler wire in welding machines

| B66-10236 | 05 |

Expandable takeup reel facilitates paper tape removal

| B66-10399 | 05 |

---

**X-546**
SUBJECT INDEX

Advances in aluminum anodizing
M-FS-14600 B69-10144 05

Multilayer infrared beamsplitter film system
IUS-1036 B69-10260 02

Discrimination of fish oil and mineral oil slicks on sea water
HG-10412 B69-10673 01

REFLECTED WAVES

Concept for using laser beams to measure electron density in plasmas
M-FS-965 B66-10645 01

Fatigue zones in metals identified by polarized light photography
WDO-286 B67-10082 02

REFLECTING TELESCOPES

Glancing incidence telescope for far ultraviolet and soft X-rays
GSPC-10052 B67-10508 02

Telescope mount with azimuth-only primary
NFO-10466 B67-10671 02

Improved electro-optical tracking system
M-FS-14791 B68-10311 01

Image position sensor
M-FS-14101 B67-10783 02

REFLECTION

Liquid-level meter has no moving parts
K-FS-3 B63-10378 03

Variable-transparency wall regulates temperatures of structures
LANGLEY-25 B63-10528 03

Attachment converts microscope to point source autocollimator
JEL-499 B64-10124 05

System measures angular displacement without contact
LANGLEY-46 B65-10073 01

Light-sensitive potentiometer measures product of two variables
GSPC-240 B65-10076 01

Pulse technique provides more accurate checkout of exploding bridge wire device
HQ-62 B66-10561 01

Optical automatic gain channel
M-FS-1550 B66-10596 02

Electronic filter discriminates between true and false reflections
HQ-55 B67-10071 02

Dielectric prisms would improve performance of quasi-optical microwave components
HRC-10011 B67-10416 01

Casera lens adapter magnifies image
K-FS-11955 B67-10431 02

Fluidic-thermochromic display device
HRC-10031 B68-10350 01

Automatic system nondestructively monitors and records fatigue crack growth
LANGLEY-10091 B68-10379 01

Thick transducers used for generating short-duration stress pulses in thin specimens
ARG-10232 B69-10045 01

Flow angle sensor and readout system
LEWIS-90290 B69-10050 01

Optically exciting a magnetic memory - A feasibility study

REFLECTORS

M-FS-14854 B69-10060 02

An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10187 B69-10082 02

Surface irregularities detected by flare inspection instrument
M-FS-20157 B69-10152 01

RECEIVERS

Special purpose reflectometer uses modified ulbricht sphere
HSC-1135 B67-10109 02

Ellipsoidal-mirror reflectometer accurately measures infrared reflectance of materials
GSPC-566 B67-10444 01

Reflectometer for receiver input system
NPO-10843 B67-10657 01

Plume on microwave antenna subreflector cuts ground noise
JPL-362 B63-10229 01

Optics used to measure torque at high rotational speeds
LEWIS-13 B63-10338 01

Test device prevents molecular bounce-back
GSPC-82 B63-10546 03

Ellipsoidal optical reflectors reproduced by electroforming
GSPC-92 B63-10547 05

Plastic films for reflective surfaces reproduced from masters
GSPC-188 B64-10151 03

Optical arrangement increases useful light output of semiconductor diodes
JPL-SC-064 B65-10020 05

Sensitive level sensor made with spirit level, gives electrical output
LANGLEY-49 B65-10067 01

Oil-damped mercury pool makes precise optical alignment tool
GSPC-353 B65-10253 02

Infrared shield facilitates optical pyrometer measurements
LANGLEY-113 B65-10272 02

Nickel solution prepared for precision electroforming
WDO-070 B65-10303 03

Communication system uses modulated laser beam
GSPC-377 B65-10333 01

Reflective insulator layers separated by bonded silica beads
MSC-215 B66-10070 03

Optical device enables small detector to see large field of view
WDO-253 B66-10263 02

High-speed furnace uses infrared radiation for controlled brazing
WDO-0047 B66-10268 02

Optical monitor panel provides flexible test panel configurations
HSC-66-18 B66-10494 01

Process sequence produces strong, lightweight reflectors of excellent quality
LEWTS-331 B67-10010 05

Scanning means for Cassegrainian antenna
JEL-946 B67-1017a 05

Cone and column solar energy concentrator
REFRACTED WAVES

Telescope mount with azimuth-only primary  
NRO-10468  B67-10517  01

Resonant microwave dichroic surface  
GSFC-10668  B67-10671  02

A new method for producing optical mirrors  
HQ-10227  B67-10529  02

Multichannel spectroscopy guide  
HQ-10441  B67-10550  01

Design of multilayer insulation systems  
ARC-10166  B67-10615  05

Image position sensor  
N-FS-14101  B69-10783  02

REFRACTED WAVES

Fatigue zones in metals identified by  
polarized light photography  
WGO-286  B67-10082  02

REFRACTION

Liquid-level meter has no moving parts  
N-PS-3  B63-10378  03

Aerial-image enables diagrams and animation  
to be inserted in motion pictures  
ARG-146  B67-10398  02

FORTRAN optical lens design program  
NRO-10603  B68-10354  06

REFRACTIVITY

Star/horizon simulator used to test space  
guidance system  
MSC-407  B67-10110  02

Accuracy of laser measurements improved by  
pulse autocorrelator electronic system  
MSC-10033  B67-10338  01

Computer program for optical systems ray  
tracing  
FRC-10017  B67-10549  06

Method of making conical fiber optical  
components  
XM-09745  B69-10020  02

REFRACTORITIES

Motion drive system is accurately controlled  
in the 1-micron range  
JPL-864  B66-10695  05

REFRACTOMETERS

Laser-Doppler gas-velocity instrument  
N-PS-20039  B68-10349  02

REFRACTORY MATERIALS

Apparatus facilitates high-temperature tensile  
testing in vacuum  
LEWIS-42  B63-10345  03

Refractory ceramic has wide usage, low  
fabrication cost  
N-PS-67  B63-10481  03

Refractory thermal insulation for smooth  
metal surfaces  
N-PS-150  B66-10099  03

Refractory oxides evaluated for  
high-temperature use  
LANGLEY-121  B65-10167  03

Silazane polymers show promise for high-  
temperature application  
N-PS-466  B66-10194  03

Fibers of newly developed refractory ceramics  
produced by improved process  
WGO-169  B66-10196  03

Improved thermal insulation materials made of  
foamed refractory oxides  
LEWIS-10817  B69-10266  03

SUBJECT INDEX

Crucible cast from beryllium oxide and  
refractory cement is impervious to flux  
and molten metal  
ARG-22  B66-10527  03

Multilayer refractory nozzles produced by  
plasma-spray process  
WGO-318  B66-10611  05

Decomposition vessel  
GSFC-10343  B69-10104  03

Refractory oxide insulated thermocouple  
designed and analyzed for high temperature  
applications  
ARG-10202  B69-10053  03

Study of high temperature bearing materials  
LEWIS-10829  B69-10252  03

Mass-spectrometric study of the  
rhenium-oxygen system  
ARG-10421  B69-10645  02

REFRACTORY METAL ALLOYS

New cobalt alloys have high-temperature  
strength and long life in vacuum  
environments  
LEWIS-47  B63-10351  03

Copper-acrylic enamel serves as lubricant  
for cold drawing of refractory metals  
ARG-24  B66-10471  05

New tungsten alloy has high strength  
at elevated temperatures  
LEWIS-336  B66-10551  03

Tantalum alloys resist creep deformation at  
elevated temperatures  
LEWIS-350  B66-10558  03

Welding, bonding, and sealing of refractory  
metals by vapor deposition  
LEWIS-123  B67-10232  03

Design for high-temperature /1800 deg F/  
liquid metal pressure transducer  
LEWIS-10144  B67-10458  01

Cold machining of high density tungsten  
and other materials  
ARG-10289  B69-10110  05

Improved high-temperature silicide coatings  
LEWIS-10817  B69-10266  03

REFRACTORY METALS

Radiant heater for vacuum furnaces offers high  
structural rigidity, low heat loss  
LEWIS-39  B63-10342  01

Wire winding increases lifetime of oxide  
coated cathodes  
LEWIS-154  B65-10032  03

Pulsed plasma accelerator operates  
repetitively without complex controls  
LANGLEY-46  B65-10062  01

Ceramic-coated boat is chemically inert,  
provides good heat transfer  
LANGLEY-90  B65-10063  05

Apparatus facilitates pressure-testing of  
metal tubing  
LEWIS-174  B65-10131  05

Refractory metal shielding /insulation/  
increases operating range of induction  
furnace  
LEWIS-202  B65-10188  02

Refractory metals welded or brazed with  
tungsten inert gas equipment  
LEWIS-219  B65-10319  05

Braking method produces solid-solution bond  
I-548
Regenerative fuel cell combines high efficiency with low cost
Woo-090  B65-10363  01

Iron serves as diffusion barrier in thermally regenerative galvanic cell
Arg-29  B67-10189  03

Regenerative fuel cell combines high efficiency with low cost
Woo-090  B65-10363  01

Iron serves as diffusion barrier in thermally regenerative galvanic cell
Arg-29  B67-10189  03

Hybrid circuit achieves pulse regeneration with low power drain
Gspc-382  B65-10314  01

Foot-operated cell-counter
Arg-10315  B69-10351  01

Hybrid circuit achieves pulse regeneration with low power drain
Gspc-382  B65-10314  01

Foot-operated cell-counter
Arg-10315  B69-10351  01

Survey made of refractory metals
Lewis-10380  B68-10032  03

Improved torch increases weld quality in refractory metals
Lewis-10384  B68-10041  05

Tungsten fiber-reinforced nickel superalloy
Lewis-10424  B68-10065  05

Refined grinding technique for electroless nickel plating
Lewis-10543  B68-10041  01

Precise doping of metals by small gas flows
Lewis-10444  B68-10052  03

Refractory-metal compound impregnation of polytetrafluoroethylene
Lewis-10733  B69-10072  03

Cold machining of high density tungsten and other materials
Arg-10289  B69-10110  05

Improved method of producing oxide-dispersion-strengthened alloys
Ho-10461  B69-10536  03

Free nut and sleeve improve flared connections
K-Fs-194  B65-10180  05

High-pressure, low temperature electrical connector makes no-leak seal
Nsc-276  B66-10079  02

Improved cryogenic refrigeration system
Jpl-731  B67-10128  02

Development of dual solid cryogens for high reliability refrigeration system
Gspc-10186  B67-10644  02

Cold machining of high density tungsten and other materials
Arg-10289  B69-10110  05

Tools made of ice facilitate forming of soft, sticky materials
Ksc-10262  B69-10199  05

Report on a cryogenic gyroscope
Npo-11200  B69-10504  02

Chemical regeneration of emitter surface increases thermionic diode life
Lewis-17  B66-10435  02

New method used to fabricate light-weight heat exchanger for rocket solor
Lewis-43  B63-10346  02

New method used to fabricate light-weight heat exchanger for rocket solor
Lewis-43  B63-10346  02
Reinforcing Fibers

Resilient clamp holds fuel cell stack through thermal cycle

Lightweight, all-metal hose assembly has high flexibility and strength over wide range of temperature and pressure

Pipe joints reinforced in place with fitted aluminum sleeves

Method for reinforcing tubing joints

Boron carbide whiskers produced by vapor deposition

Composite gaskets are compatible with liquid oxygen, resist compression set

Tungsten fiber-reinforced copper composites form high strength electrical conductors

Nonwoven glass fiber mat reinforces polyurethane adhesive

Tungsten fiber-reinforced nickel superalloy

Boron fiber-reinforced aluminum alloy tubing /experimental/

Simple circuit provides reliable multiple signal average and reject capability

Composite filter steepens rejection slopes in microwave application

Solid state circuit averages multiple signals and rejects those varying significantly from the average

Theory of a refined earth model

Temperature-controlled resistor

Fortran 4 program calculates velocities and streamlines in a tandem blade turbine machine

Uni-junction frequency divider is free of backward loading

High-intensity flashing beacon powered by mercury cells

Circuit exhibits power efficiency greater than 75 percent

One-dimensional reacting gas nonequilibrium performance program

RELAY

Circuit switches latching relay in response to signals of different polarity

Pulse generator permits nondestructive testing of component breakdown voltage

Triphasing spark gap actuates overvoltage relay

Instrument sequentially samples ac signals from several accelerometers

Improved relay optical element for spectroradiometer using cryogenically cooled detector

RELIABILITY

Simple mechanism combines positive locking and quick-release features

Instrument adjustment knob locks to prevent accidental maladjustment

Cylindrical claw clamp has quick release feature

Fastener provides for bolt misalignment and quick release of flange

Pneumatic separator gives quick release to heavy loads

Flexible fastener effects airtight material closure

Sea dye marker provides visibility for 20 hours

Controlled release device prevents damage from dynamic stresses

Lock-disconnect mechanism gives positive release to joined bodies

Pyrotechnic-actuated cable release

Tool facilitates sealing of metal fill tubes

Liquid switch is remotely operated by low dc voltage

Compact coaxial connector for printed circuit adds reliability

Logic redundancy improves digital system reliability

Improved holder protects crystal during high acceleration and impact

Solid-state laser transmitter is amplitude modulated

I-550
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>REMOTE CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triple Modular Redundancy /THR/ computer operation improved</td>
<td>B67-10085 01</td>
</tr>
<tr>
<td>Automatic channel switching device</td>
<td>B67-10086 01</td>
</tr>
<tr>
<td>Application of a truncated normal failure distribution in reliability testing</td>
<td>B69-10179 02</td>
</tr>
<tr>
<td>Temperature or pressure controller</td>
<td>B69-10337 01</td>
</tr>
<tr>
<td>Continuous analysis of nitrogen dioxide in gas streams of plants</td>
<td>B69-10254 03</td>
</tr>
<tr>
<td>On the bound of first excursion probability</td>
<td>B69-10334 06</td>
</tr>
<tr>
<td>Exact minimal-state system reliability analysis</td>
<td>B69-10409 06</td>
</tr>
<tr>
<td>Pulsar-magnet delay eliminated by modification of circuit</td>
<td>B69-10416 01</td>
</tr>
<tr>
<td>Synchronizing redundant power oscillators</td>
<td>B69-10546 01</td>
</tr>
<tr>
<td>System for computing operational probability equations</td>
<td>B69-10566 06</td>
</tr>
<tr>
<td>Control for maintaining constant level of a cryogenic liquid</td>
<td>B69-10573 05</td>
</tr>
<tr>
<td>Programmed schedule holds for improving launch vehicle holds</td>
<td>B69-10602 03</td>
</tr>
<tr>
<td>Microelectronic device data handbook</td>
<td>B69-10687 01</td>
</tr>
<tr>
<td>Improved solenoid valve design</td>
<td>B69-10704 05</td>
</tr>
<tr>
<td>Optimum structural design based on reliability and proof-load testing</td>
<td>B69-10723 31</td>
</tr>
<tr>
<td>RELIABILITY ENGINEERING</td>
<td></td>
</tr>
<tr>
<td>Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems LEWIS-67</td>
<td>B63-10368 05</td>
</tr>
<tr>
<td>Assembly jig assures reliable solar cell modules GSFC-455</td>
<td>B66-10040 05</td>
</tr>
<tr>
<td>One-piece transparent shell improves design of helmet assembly NRC-187</td>
<td>B66-10390 05</td>
</tr>
<tr>
<td>Design reliability goal developed from small sample</td>
<td>B66-10405 05</td>
</tr>
<tr>
<td>Fixture tests bellows reliability through repetitive pressure/temperature cycling NRC-1176</td>
<td>B67-10111 01</td>
</tr>
<tr>
<td>Effects of heat input rates on T-1 and T-1A steel welds</td>
<td>B67-10163 03</td>
</tr>
<tr>
<td>Analytical technique permits comparison of reliability of alternate mechanical designs MRC-10560</td>
<td>B67-10261 06</td>
</tr>
<tr>
<td>Electronic component reliability analysis by data reduction system</td>
<td>B69-10507 05</td>
</tr>
<tr>
<td>Failure rates for accelerated acceptance testing of silicon transistors</td>
<td>B69-10545 05</td>
</tr>
<tr>
<td>Calibrated water tank facilitates proof-loading of cranes and derricks M-PF-15059</td>
<td>B69-10109 05</td>
</tr>
<tr>
<td>Design and sparing techniques to meet specified performance life HQ-10200</td>
<td>B69-10528 02</td>
</tr>
<tr>
<td>Estimating reliability by application of matrix representation HQ-10246</td>
<td>B69-10793 02</td>
</tr>
<tr>
<td>RELIEF VALVES</td>
<td></td>
</tr>
<tr>
<td>Sensitive low-pressure relief valve has positive seating against leakage WGO-041</td>
<td>B66-10278 05</td>
</tr>
<tr>
<td>One-shot valve may be remotely actuated WGO-195</td>
<td>B65-10266 05</td>
</tr>
<tr>
<td>Dual regulator controls two gases from a single reference MRC-227</td>
<td>B66-10167 05</td>
</tr>
<tr>
<td>Control system maintains compartment at constant temperature JFL-SC-145</td>
<td>B66-10188 05</td>
</tr>
<tr>
<td>Expandable rubber plug seals openings for pressure testing HQ-0048</td>
<td>B66-10229 05</td>
</tr>
<tr>
<td>Automatic cryogenic liquid level controller is safe for use near combustible substances LEWIS-195</td>
<td>B66-10462 01</td>
</tr>
<tr>
<td>Check valve installation in pilot operated relief valve prevents reverse pressurization M-PF-1925</td>
<td>B66-10655 05</td>
</tr>
<tr>
<td>Improved cryogenic refrigeration system JFL-731</td>
<td>B67-10128 02</td>
</tr>
<tr>
<td>Aspirator increases relief valve poppet stroke HQ-77</td>
<td>B67-10154 05</td>
</tr>
<tr>
<td>Dynamic valve seal is reliable at cryogenic temperatures</td>
<td>B67-10526 05</td>
</tr>
<tr>
<td>Vent and relief valve maintains low leakage rate over broad temperature range M-PF-12807</td>
<td>B66-10014 05</td>
</tr>
<tr>
<td>Device dampens fluid pressure oscillations in vent valve M-PF-1329C</td>
<td>B68-10078 05</td>
</tr>
<tr>
<td>Proposed gas generation assembly would recover deeply submerged objects SAR-10007</td>
<td>B66-10211 05</td>
</tr>
<tr>
<td>Deal rate pressure relief valve M-PF-12987</td>
<td>B69-10237 05</td>
</tr>
<tr>
<td>Integral valve provides automatic relief and remote venting M-PF-12134</td>
<td>B69-10545 05</td>
</tr>
<tr>
<td>REMOVAL CONTROL</td>
<td></td>
</tr>
<tr>
<td>Remote control thermal actuator LEWIS-10873</td>
<td>B69-10307 01</td>
</tr>
<tr>
<td>REMOVAL CONTROL</td>
<td></td>
</tr>
<tr>
<td>Noncontacting transducer measures shaft torque M-PF-474</td>
<td>B66-10048 01</td>
</tr>
<tr>
<td>Variable reluctance switch avoids contact corrosion and contact bounce MRC-1178</td>
<td>B67-10137 01</td>
</tr>
<tr>
<td>REMOTE CONTROL</td>
<td></td>
</tr>
<tr>
<td>Solenoid permits remote control of stop watch and assures restarting FBC-17</td>
<td>B63-10024 01</td>
</tr>
</tbody>
</table>
Simple mechanism combines positive locking and quick-release features
WGO-4 B63-10420 05

Device calibrates vibration transducer at amplitudes up to 20 g
M-PS-86 B63-10572 01

Liquid switch is remotely operated by low dc voltage
GSPC-119 B63-10599 01

Knob linkage permits one-hand control of several operations
BSC-30 B65-10022 05

Flow control valve is independent of pressure drop
JPL-WGO-039 B65-10121 05

Collapsible truss structure is automatically expandable
GSPC-265 B65-10126 05

Quick-disconnect coupling safe transfer of hazardous fluids
LEWIS-125 B65-10202 01

electromechanical flowmeter accurately monitors fluid flow
GSPC-357 B65-10273 01

Remote control electrical switching system has 1000-output capability
M-PS-380 B65-10318 01

Respiratory transfer value has fail-safe feature
ARC-1 B65-10369 01

Threaded split ring connector separates structural sections
LANGLEY-145 B65-10383 05

Economical and maintenance-free gas system operates railroad switches
MU-0065 B66-10124 05

Electric arc heater is self starting
LANGLEY-208 B66-10230 03

Quick-clamping valve is actuated by explosive discharge
ARC-55 B66-10233 05

Remotely controlled system couples and decouples large diameter pipes
MU-0062 B66-10276 05

Latching mechanism operates ir limited access area
MSC-230 B66-10336 05

Junction connectors permit strategic placement of television cameras
KSC-66-22 B66-10391 01

Remote preamplifier circuit maintains stability over wide temperature range
WGO-278 B66-10432 01

Carriage system remotely moves drawer over extended distance
MU-0092 B66-10711 05

Remotely operated high pressure valve protects test personnel
MSC-11010 B67-10291 05

Improved head-controlled TV system produces high-quality remote image
ARG-128 B67-10317 01

Welding torch and wire feed manipulator
M-PS-13102 B67-10385 05

Apparatus makes klystron operating frequency adjustable from remote point
WGO-09589 B67-10514 01

Reconnect mechanism
M-PS-12968 B66-10670 05

Portable, high intensity isotopic neutron source provides increased experimental accuracy
ARG-90250 B66-10243 02

Remotely operated gripper provides vertical control rod movement
ARG-10160 B68-10359 05

Improved electromechanical master-slave manipulator
ARG-10027 B68-10372 05

Pyrotechnic-actuated cable release
INF-10849 B68-10535 05

Welding skate with computerized controls
M-PS-20224 B68-10566 01

Remotely-actuated biomedical switch
ARC-10105 B69-10117 01

Remote balance weighs accurately amid high radiation
ARG-10387 B69-10242 05

Remote control thermal actuator
LEWIS-10073 B69-10307 01

Separation simulator
KSC-67-15 B69-10315 01

Piezoelectric linear actuator
MCC-13194 B69-10469 02

Stereo TV enhancement study
M-PS-14805 B69-10489 01

Integral valve provides automatic relief and remote venting
M-PS-12134 B69-10545 05

Versatile telemonitoring system
ARG-10339 B69-10655 01

Dye-rate testing apparatus
MSC-10947 B69-10740 03

Remote control head-controlled TV system produces high-quality remote image
ABG-128 B67-10317 01

Improved head-controlled TV system produces high-quality remote image
ARG-128 B67-10317 01

Welding skate with computerized controls
M-PS-20224 B68-10566 01

Remotely controlled system couples and decouples large diameter pipes
MU-0062 B66-10276 05

Latching mechanism operates in limited access area
MSC-230 B66-10336 05

Junction connectors permit strategic placement of television cameras
KSC-66-22 B66-10391 01

Remote preamplifier circuit maintains stability over wide temperature range
WGO-278 B66-10432 01

Carriage system remotely moves drawer over extended distance
MU-0092 B66-10711 05

Remotely operated high pressure valve protects test personnel
MSC-11010 B67-10291 05

Improved head-controlled TV system produces high-quality remote image
ARG-128 B67-10317 01

Welding torch and wire feed manipulator
M-PS-13102 B67-10385 05

Apparatus makes klystron operating frequency adjustable from remote point
WGO-09589 B67-10514 01

REMTLEND EANDING

Remotely operated clamping tool has positive grip
WGO-0020 B65-10254 05

Plug-in connector socket accepts coaxial cable end
ABC-9 B66-10476 01

Remotely installed pipe plug provides effective seal in hazardous environment
YGO-10303 B68-10053 05

Random access-random release relay switching matrix
RG-12590 B68-10301 01

REMTLEND SNEOS

One-shot valve may be remotely actuated
WGO-09589 B65-10266 05

Special mount improves remote transducer accuracy
LEWIS-269 B66-10021 01

Seisometer designed for remote operation in random orientation
JPL-320 B66-10085 01

Study made of far infrared spectra of silicate minerals
M-PS-1801 B67-10075 02

Closed circuit TV system monitors welding operations
MCC-11002 B67-10162 01

I-552
REMOVAL
Electronic assembly rack panels snap on and off
GSFC-59 B64-10121 05
Reaction heat used in static water removal from fuel cells
M-PS-532 B66-10013 01
Mounting facilitates removal and installation of flame-detector rods
M-PS-555 B66-10150 05
Tool permits damage-free removal of solar cell
GSFC-467 B66-10150 05
Expandable takeup reel facilitates paper tape removal
WGO-271 B66-10399 05
Single wrench separates nuts from free-floating bolts
NUC-10013 B67-10158 05
Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel
NUC-10047 B67-10194 03
Multiple-mask chemical etching
MSC-13114 B69-10221 01
A method for precision anodize stripping
MSC-15040 B69-10581 03
Liquid oxygen-compatible insulation system
MSC-16113 B69-10599 03
RENDUOUS
Earth orbit rendezvous evaluation program
M-PS-13016 B67-10407 06
RENDUOUS GUIDANCE
Occulting-filter method for obtaining flashing-light visibility data
MSC-13097 B69-10107 02
An interferometer tracking radar system
MSC-15056 B69-10523 01
RENDUOUS TRAJECTORIES
Fortran 4 program for two-impulse rendezvous analysis
M-PS-13977 B67-10479 06
RENEW
Composite weld rod corrects individual filler weaknesses
M-PS-1923 B67-10107 05
Heat treatment procedure to increase ductility of degraded nickel alloy
M-PS-12410 B68-10029 03
Pre-weld heat treatment improves welds in Rene 41
M-PS-18174 B68-10285 03
Strain-age cracking in Rene 41 alloy
M-PS-16650 B69-10605 03
REPEATED
Pulsed plasma accelerator operates repetitively without complex controls
LABGLEY-48 B65-10062 01
Improved first order interpolator
SSC-11065 B69-10291 02
REPEITION
Transformerized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110 B68-10328 01
REPLACING
Mounting facilitates removal and installation of flame-detector rods
M-PS-555 B66-10150 05
Performance statistics of the FORTRAN 4 /V/ library for the IBM system/360
ARG-10299 B69-10157 06
REPORTS
Review of research and development in fluid logic elements
M-PS-420 B67-10438 01
JEKXIC - General key word in context and subject index report generator
KPO-10589 B68-10208 06
Daughter growth in freshly separated Ra-226, Ac-227 and U-232
ARG-10226 B69-10003 02
Corrosion reduction of aluminum alloys in flowing high-temperature water
ARG-10244 B69-10029 03
Weight Control System
M-PS-15028 B69-10041 06
Study of fluoride corrosion of nickel alloys
ARG-10224 B69-10048 03
Investigation of spacecraft coatings
M-PS-20458 B69-10181 06
REPRESENTATIONS
Dot patterns provide reproducible flow areas for study of adhesive bonds
M-PS-862 B66-10367 05
Computer program samples digital data for CRT display
MSC-999 B67-10249 01
REPRODUCTION
Study of radiation effects on mammalian cells in vitro
ARG-10191 B68-10294 02
REPRODUCTION (COPYING)
Front and back printed circuit layouts presented on single sheet
GSFC-93 B63-10596 01
Plastic films for reflective surfaces reproduced from masters
GSFC-188 B64-10151 03
FCM magnetic tape system efficiently records and reproduces data
GSFC-375 B65-10311 01
Modified procedure speeds camera copy layout for offset printing
GSFC-424 B65-10373 02
Improved compression molding process
LABGLEY-10027 B67-10302 03
Shortened procedure for obtaining reproducible copies of 35 mm color slides
KSC-09957 B68-10560 02
Segmented SiGe-PbTe couples
GSFC-10746 B69-10233 01
REQUIREMENTS
Probabilistic approach to long range planning of manpower
MSC-11524 B67-10510 06
RESCUE OPERATIONS
Buoyant strokes litter assembly used for sea rescue operations
MSC-131 B66-10019 05
Miniature oxygen resuscitator
KSC-10398 B69-10319 04
RESEARCH
Multiple correlation computer program determines relationships between several independent and dependent variables
M-PS-13024 B67-10327 06
RESEARCH FACILITIES

Review of research and development in fluid logic elements
M-PS-420 B67-10438 01

Method for determining properties of microinstabilities of a magnetized plasma
HQ-10447 B69-10662 02

RESEARCH FACILITIES

Hydrogen safety manual
LEWIS-10487 B69-10323 01

Purification and characterization of two fully deuterated enzymes
ABG-103111 B69-10207 04

RESEARCH PROJECTS

Built-in templates speed up process for making accurate models
LANGLLEY-23 B63-10526 05

Microelectronic device data handbook
EBC-10322 B69-10687 01

RESERVOIRS

Dynamic-reservoir lubricating device
M-PS-14652 B68-10261 05

RESIDUAL GAS

Auxiliary titanium sublimation pump produces ultrahigh to the minus 11 torr/ vacuum
LANGLLEY-212 B66-10388 02

RESIDUAL STRESS

Glass bead shot peening retards stress corrosion failure of titanium tanks
LANGLLEY-319 B67-10198 05

Photosensitive filler minimizes internal stresses in epoxy resins
M-PS-1880 B67-10227 03

Improved compression molding process
LANGLLEY-10027 B67-10302 03

Stabilizing stainless steel components for cryogenic service
M-PS-13127 B67-10377 05

Machining heavy plastic sections
M-PS-12720 B67-10381 03

Ultrasoundics used to measure residual stress
M-PS-12449 B67-10428 02

Electrochemical cell has internal resistive heater element
GSFC-10558 B68-10325 01

Nondestructive method for measuring residual stresses in metals, a concept
KSC-10237 B68-10378 03

Techniques for controlling warpage and residual stresses in welded structures
M-PS-20307 B69-10086 05

RESIDUES

Solvent residue content measured by light scattering technique
M-PS-850 B66-10320 01

Film coating permits low-force scribing
MSC-990 B66-10609 03

Xenon fluoride solutions effective as fluorinating agents
ARG-217 B67-10133 03

Wear studies made of slip rings and gas bearing components
M-PS-12802 B67-10403 05

Apparatus automatically measures soluble residue content of volatile solvents
SAN-10032 B69-10292 03

RESILIENCE

Comfortable, lightweight safety helmet holds radio transmitter, receiver
MSC-53 B68-10015 05

Plastic plus stainless-steel fibers make resilient, impermeable material
WOO-246 B65-10374 03

Thermoplastic rubberlike material produced at low cost
JPL-753 B66-10453 03

Silane-crosslinked elastomer remains resilient at 400 deg C
M-PS-1144 B66-10667 05

Resilient bearing supports are gas controlled
LEWIS-10109 B67-10364 05

Fiber glass prevents cracking of polyurethane foam insulation on cryogenic vessels
M-PS-20058 B68-10406 02

Pressure transducer
NPO-10853 B69-10364 01

Precisely repeatable rotary mechanisms
NPO-10679 B69-10696 05

RESIN BONDING

Insulation for cryogenic tanks has reduced thicknesses and weight
M-PS-326 B66-10183 02

Improved adhesive for cryogenic applications cures at room temperature
WOO-132 B66-10185 03

Coating permits use of strain gage in water and liquid hydrogen
M-PS-594 B66-10192 01

Dry film lubricant is effective at extreme loads
M-PS-628 B66-10256 03

A new method for fabrication of flexible vacuum purge jackets
M-PS-12646 B69-10564 03

RESINS

Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application
LANGLLEY-6A B63-10318 03

Servo system facilitates photoelastic strain measurements on resins
JPL-504 B64-10280 01

Fiber glass parts cured during filament winding eliminates oven, saves time
M-PS-14 B65-10088 03

Compact assembly generates plastic foam, inflates flotation bag
LANGLLEY-96 B65-10090 05

Polymer film exhibits thermal and radiation stability
LANGLLEY-100 B66-10043 03

Self-supported aluminum thin films produced by vacuum deposition process
ARC-58 B66-10387 03

Reusable chelating resins concentrate metal ions from highly dilute solutions
JPL-758 B66-10451 03

Transducer measures embedment stresses in electronic modules
M-PS-13486 B67-10367 01

Flowmeter determines mix ratio for viscous adhesives
M-PS-2308 B67-10378 01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>RESISTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-temperature bearing lubricants LEWIS-10408</td>
<td>B68-10249 05</td>
</tr>
<tr>
<td>Spiral-flow apparatus for measuring permeation of solids by gases N-FS-16517</td>
<td>B69-10357 03</td>
</tr>
<tr>
<td>Separation of the rare earths by anion-exchange in the presence of lactic acid ARB-10436</td>
<td>B69-10377 03</td>
</tr>
<tr>
<td>Improved primer for bonding polyurethane adhesive to metals N-FS-90591</td>
<td>B69-10540 03</td>
</tr>
<tr>
<td>Spinal-flou apparatus for measuring permepation of solids by gases 1-FS-16517 869-10357</td>
<td></td>
</tr>
<tr>
<td>Separation of the rare earths by anion-exchange in the presence of lactic acid ARB-10436</td>
<td>B69-10377 03</td>
</tr>
<tr>
<td>Improved primer for bonding polyurethane adhesive to metals N-FS-90591</td>
<td>B69-10540 03</td>
</tr>
<tr>
<td>Resistance Kinetic-energy absorber employs frictional force between mating cylinders LEWIS-75</td>
<td>B63-10442 05</td>
</tr>
<tr>
<td>Selenium bond decreases ON resistance of light-activated switch JPL-SC-101</td>
<td>B65-10324 01</td>
</tr>
<tr>
<td>Studies in zirconium oxidation ARB-10099</td>
<td>B69-10199 03</td>
</tr>
<tr>
<td>Welder analyzer MSC-12069</td>
<td>B68-10242 01</td>
</tr>
<tr>
<td>Low energy ohmmeter can be used to test sensitive circuits, other meters SAN-10013</td>
<td>B69-10269 01</td>
</tr>
<tr>
<td>Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor ARB-10158</td>
<td>B69-10191 01</td>
</tr>
<tr>
<td>Automated plotting of equipotentials NGO-11138</td>
<td>B69-10570 01</td>
</tr>
<tr>
<td>Resistance Heating Apparatus facilitates high-temperature tensile testing in vacuum LEWIS-42</td>
<td>B63-10345 03</td>
</tr>
<tr>
<td>Electrically heated diaphragm eliminates use of pyrotechnics MSC-241</td>
<td>B65-10400 01</td>
</tr>
<tr>
<td>Electrical upsetting of metal sheet forms weld edge N-FS-720</td>
<td>B66-10248 05</td>
</tr>
<tr>
<td>Process sequence produces strong, lightweight reflectors of excellent quality LEWIS-331</td>
<td>B67-10010 05</td>
</tr>
<tr>
<td>Resistance heating releases structural adhesive N-FS-1607</td>
<td>B67-10045 05</td>
</tr>
<tr>
<td>Radial furnace shows promise for growing straight boron carbide whiskers HQ-50</td>
<td>B67-10070 03</td>
</tr>
<tr>
<td>Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide ARB-10154</td>
<td>B68-10293 02</td>
</tr>
<tr>
<td>Isothermal drop calorimeter provides measurements for alpha active, pyrophoric materials ARB-10186</td>
<td>B69-10002 02</td>
</tr>
<tr>
<td>Remote control thermal actuator. LEWIS-10873</td>
<td>B69-10307 01</td>
</tr>
<tr>
<td>Resistance Thermometers Resistance thermometer has linear resistance-temperature coefficient at low temperatures WOO-190</td>
<td>B66-10612 01</td>
</tr>
<tr>
<td>Blackbody cavity radiometer has rapid response JPL-521</td>
<td>B66-10679 01</td>
</tr>
</tbody>
</table>

Flow-test device fits into restricted access passages MSC-1078 | B67-10074 01 |
Viscosity and density of methanol/water mixtures at low temperatures N-FS-14991 | B68-10274 03 |
Calibration of a resistance thermometer down to 0.04 degrees K ARB-10318 | B69-10189 01 |

Improved sensor counts micrometeoroid penetrations LEWIS-76 | B63-10443 01 |
Simple circuit provides adjustable voltage with linear temperature variation JPL-WO-029 | B63-10537 01 |
Transistorized trigger circuit is frequency-controllable GSFC-111 | B63-10553 01 |
High efficient square-wave oscillator operator at high power levels GSFC-112 | B63-10554 01 |
Circuit controls transients in SCR inverters GSFC-120 | B63-10660 01 |
Nonvolatile circuit with tunnel diode has fast recovery GSFC-132 | B63-10603 01 |
Temperature-sensitive network drives astable multivibrator GSFC-137 | B63-10609 01 |
Low-power transistorized circuit provides staircase waveform GSFC-48 | B64-10007 01 |
Efficient circuit triggers high-current, high-voltage pulses MSC-14 | B64-10024 01 |
Ring counter may be advanced or retarded by command signal GSFC-101 | B64-10144 01 |
Field effect transistors used as voltage controlled resistors N-FS-174 | B64-10163 01 |
Electronic device simulates respiration rate and depth MSC-89 | B64-10255 01 |
Voltage generator sweeps oscillator frequency linearly with time N-FS-219 | B64-10320 01 |
Circuit converts AM signals to FM for magnetic recording GSFC-227 | B65-10001 01 |
Tunnel-diode circuit features zero-level clipping GSFC-241 | B65-10002 01 |
Inexpensive, stable circuit measures heart rate MSC-95 | B65-10010 01 |
Zener diode function generator requires no external reference voltage JPL-0031 | B65-10013 01 |
Transistor voltage comparator performs own sensing GSFC-228 | B65-10028 01 |
Circuit detects errors in address currents for | |
<table>
<thead>
<tr>
<th>Magnetic core arrays</th>
<th>Needle-probe P10497 01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microparticle impact sensor measures energy directly</td>
<td>Needle-probe P10498 01</td>
</tr>
<tr>
<td>Synchronized pulse generator needs no external power</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Transducer senses displacements of panels subjected to vibration</td>
<td>Needle-probe P10495 01</td>
</tr>
<tr>
<td>Variable voltage supply uses Zener diode as reference</td>
<td>Needle-probe P10499 01</td>
</tr>
<tr>
<td>Boron trifluoride nuclear detector preamplifier uses single-cable connection</td>
<td>Needle-probe P10499 01</td>
</tr>
<tr>
<td>Electropneumatic rheostat regulates high current</td>
<td>Needle-probe P10499 01</td>
</tr>
<tr>
<td>Improved strain-wire flowmeter has fast response time</td>
<td>Needle-probe P10506 01</td>
</tr>
<tr>
<td>Thin-film resistors used in functional electronic blocks</td>
<td>Needle-probe P10499 01</td>
</tr>
<tr>
<td>Electronic ammeter-hour integrator is accurate to one percent</td>
<td>Needle-probe P10499 01</td>
</tr>
<tr>
<td>Compact SCR trigger circuit for ignitron switch operates efficiently</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Vibrating diaphragm measures high electrostatic field strengths</td>
<td>Needle-probe P10499 01</td>
</tr>
<tr>
<td>Segmented electrode increases operating pressure of BPD accelerator</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Temperature transducer has high output, is time stable</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Improved chopper circuit uses parallel transistors</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Digitally controlled pulse-level discriminator operates over wide voltage range</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Diffusion technique stabilizes resistor values</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Mounting improves heat-sink contact with beryllia washer</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Simple circuit provides reliable multiple signal average and reject capability</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Tool forms right angles in component leads</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Function generator eliminates necessity of series summation</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Semiconductors can be tested without removing them from circuitry</td>
<td>Needle-probe P10497 01</td>
</tr>
<tr>
<td>Basic suppression techniques are evaluated</td>
<td>Needle-probe P10497 01</td>
</tr>
</tbody>
</table>
Bootstrap unloader

Integrated circuit with multiple collector current source

Calibration of a resistance thermometer down to 0.04 degrees K

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor

Improved liquid-level sensor for cryogenics

Technique for abrasive cutting of thick-film conductors for hybrid circuits

Continuous analysis of nitrogen dioxide in gas streams of plants

Punch-magnet delay eliminated by modification of circuit

Concept for improved vacuum pressure measuring device

Temperature-controlled resistor

Fuse protects circuit from voltage and current overloads

Radiometric temperature reference

Constant-frequency, variable-duty-cycle multivibrator

Miniature backward-diode pressure sensor features stability and low power consumption

Gapped toroid provides infinite resolution of delay-line pickup

Modified developer increases line resolution in photosensitive resist

Local measurements in turbulent flows through cross correlation of optical signals

Ultraminature television camera

Lamb waves increase sensitivity in nondestructive testing

Circuit enhances vertical resolution in raster scanning systems

Improved gas ring laser

Mounting method improves electrical and vibrational characteristics of screen electrodes

Fluorescent photography of spray droplets using a laser light source

Spherical ion source

Semiautomatic inspection of microfilm records

Combination ranging system and mapping radar

Thermal calibration target

Lamb waves increase sensitivity in nondestructive testing

Improved atomic resonance gas cell for use in frequency standards

Device for diode tuning in a stripline varactor harmonic multiplier

Calculation of resonance neutron absorption in two-region problems /the GAROL code/

Remote rapidly varying pressures accurately measured

Friction device damps linear motion of rotating shaft

Damping technique gives accelerometer flat frequency response

Resonant frequency can be adjusted on vibration mount

Process reduces secondary resonant emission in electronic components

Simple pump maintains liquid helium level in cryostat

Liquid hydrogen densitometer utilizes open-ended microwave cavity

Hydrogen maser as a highly stable frequency reference

Computer program simplifies design of rotating components of turbomachinery

Post-stressed concrete foundation may reduce machinery vibration
System precisely controls oscillation of vibrating mass
MSC-1246  B67-10279  06

Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLEY-10093  B67-10531  06

Mounting method improves electrical and vibrational characteristics of screen electrodes
M-P-20169  B69-10097  01

Resonant microwave dichroic surface
GSFC-10658  B69-10274  01

Computer program for determination of natural frequencies of closed spherical sandwich shells
ISC-1246 B67-10279  06

High- and low-pressure pneumotachometers measure respiration rates accurately in adverse environments
PRC-10012  B68-10188  01

Nosepiece respiration monitor
ERC-10136  B68-10438  01

Mounting method improves electrical and vibrational characteristics of screen electrodes
M-P-20169  B69-10097  01

Resonant microwave dichroic surface
GSFC-10658  B69-10274  01

Automatic tuning of hydrogen masers
GSFC-10127  B69-10452  01

Multicolor stroboscope pinpoints resonances in vibrating components
JPL-0033  B66-10223  01

Low-pass filter reduces effects of resonance on force transducer
N50-321  B66-10550  05

Resonant frequency can be adjusted on vibration mount
JPL-SC-134  B66-10672  05

Edge-type connectors evaluated by electrical noise measurement
M-P-2243  B67-10125  01

A modal combination computer program for dynamic analysis of structures
NPO-10129  B67-10217  06

System precisely controls oscillation of vibrating mass
M-P-1075  B67-10276  01

Study made of large amplitude fuel sloshing
M-P-12381  B67-10439  03

Study made of thin-walled pipe response to turbulent fluids
M-P-1321  B67-10518  05

Nosebauer vibration calibration systems evaluated
M-P-20014  B69-10125  01

RESOURCES
Computer program conducts facilities utilization and occupancy survey
NPO-10438  B68-10137  06

RESPIRATION
Device induces lungs to maintain known constant pressure
MSC-50  B64-10108  04

RESPIRATORY IMMUNITY
Automatic patient respiration failure detection system with wireless transmission
ARC-10174  B66-10365  01

RESPIRATORY RATE
Pneumotachometer counts respiration rate of human subject
MSC-92  B64-10259  01

Simulator produces physiological waveforms
MSC-94  B65-10091  01

Plant respirimeter enables high resolution of oxygen consumption rates
HQ-87  B66-10406  04

High- and low-pressure pneumotachometers measure respiration rates accurately in adverse environments
PRC-10012  B68-10188  01

Nosepiece respiration monitor
ERC-10136  B68-10438  01

Study indicates fluid digital computation systems are feasible
M-P-520  B67-10101  01

Computer program simulates physical systems by solving the simultaneous differential equations describing the systems
NSO-10019  B67-10193  06

Fast-response frequency-to-analog converter
M-P-709  B67-10257  01

Inductor flyback characteristic gives voltage regulator fast response
GSFC-361  B65-10257  01

Differential pressure gauge has fast response
M-P-358  B65-10285  05

Computer program reduces calculation time of normal response functions
M-P-1517  B67-10108  01

Computer program calculates monotonic maximum likelihood estimates using method of reversals
M-P-1516  B67-10136  01

SHOULDER ADJUSTMENTS
Shoulder adapter steadies spot welding gun
N-P-321  B66-10076  05

RESTARTABLE ROCKET ENGINES
Cold solid propellant motor has stop-start capability
JPL-836  B66-10673  03

STORAGE
Multisurface fixture permits easy grinding of tool bit angles
N-P-586  B66-10171  05

Ultrasonic cleaning restores depth-type filters
N-P-540  B66-10298  03

RETAILING
Screw locking cups quickly and neatly crimped
FU-0009  B65-10049  05

High-temperature bearing-cage materials
LEWIS-10403  B68-10176  05

Removal of retaining washers of the waffle-spring type
SUBJECT INDEX

BSC-15531  B69-10350  05
Iris-leaf core retainer for a surface drill  BSC-17402  B69-10496  05
An electrical connector pin protector  BSC-15660  B69-10742  01

RETARDANTS
Punch-magnet delay eliminated by modification of circuit  ARG-10333  B69-10416  01

RETARDERS (DEVICES)
Electron beam parallel X-ray generator  KSC-11022  B67-10372  02

RETENTION
Gage measures electrical connector pin retention force  JPL-SC-071  B65-10034  03
Study of behavior of steels at interfaces  ARG-10333  B69-10416  01

RETICLES
Master linearity of video cameras calibrated with precision tester  GSPC-200  B64-10209  01

RETRACTABLE EQUIPMENT
Sheet metal strip unrolls to form circular boom  GSPC-423  B66-10032  05
Cylindrical claw clamp has quick release feature  KPS-513  B66-10213  05

RETRIEVAL
System locates randomly placed remote objects  LANGLEY-209  B66-10315  01
Reidentifying hardware after loss of serial number  KPS-18133  B65-10059  05

RETROFLEXTION
Optical superheterodyne receiver uses laser for local oscillator  KPS-1605  B66-10584  01

REVERSED FLOW
Check valve installation in pilot operated relief valve prevents reverse pressurization  KPS-1925  B66-10655  05
Automatic filter-blowback systems used with sintered-metal filters  ABC-10324  B69-10342  05

REVERSING
Ring counter may be advanced or retarded by command signal  GSPC-101  B64-10144  01
Thermal motor positions magnetometer sensors  ABC-51  B66-10078  05
Ring counter-circuit switches multiphase motor direction of rotation  JPL-SC-160  B66-10101  01

REVISED
Modified power tool rapidly drives series torque bolts  KPS-221  B66-10054  05
Plastic scintillator converts standard photomultiplier to ultraviolet range  ABC-9  B66-10108  02
Modified drill permits one-step drilling operation  KPS-559  B66-10169  05
Tool post modification allows easy turret lathe cutting-tool alignment  KPS-581  B66-10191  05

REVIVED
Improved cryogenic refrigeration system  JPL-731  B67-10128  02
Study made of ductility limitations of aluminum-silicon alloys  KPS-12524  B69-10392  03
An improved magnetic tape recorder  GSPC-02859  B67-10646  01

RHEOMY
High temperature thermocouple operates in reduction atmosphere  B66-2056  B66-10134  01
Study shows effect of surface preparations on improving thermionic emission  JPL-SC-140  B66-10493  01
High-strength tungsten alloy with improved
ductility  867-10340  03
Reinforced thermal-shock resistant ceramics  868-10085  03
Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing  868-10284  05
Nickel base alloy with improved stress rupture properties  868-10344  03
Tungsten wire and tubing joined by nickel brazing  865-10391  05
Lower-cost tungsten-rhenium alloys  866-10528  03
Tungsten-rhenium alloy thermocouples effective for high-temperature measurements  868-10105  03
Refractory oxide insulated thermocouple designed and analyzed for high temperature applications  869-10053  03
Refractory compounds: Refractory-metal compound impregnation of polytetrafluoroethylene  869-10072  03
Mass-spectrometric study of the rhenium-oxygen system  869-10045  02
Rheo-electrical simulation: Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 ampere to 10 to the minus 3 ampere  866-10706  01
Rheology: Study of high-speed angular-contact ball bearings under dynamic load  869-10367  05
Rhenium: Subminiaturized gas chromatograph gives fast, efficient analysis  866-10182  01
Sensing disks for slug-type calorimeters have higher temperature stability  867-10161  01
Rhodium-plated barrier against high-temperature fusion bonding  869-10544  05
Rhodium alloys: Superconductivity in zirconium-rhodium alloys  869-10010  03
Rubbers: Gas leak detector is simple and inexpensive  866-10669  01
Improved method of edge coating flat ribbon wire  866-10684  03
Fast-acting calorimeter measures heat output of plasma arc accelerator  867-10192  01
Helical tape forming device  869-10137  05
Leads integral with the internal interconnection that penetrate the molded wall of a package  869-10436  01
Ribo nucleic acids: Purification and characterization of two fully deuterated enzymes  869-10207  04
Ribs (Supports): Integral ribs formed in metal panels by cold-press extrusion  865-10141  05
Rigid mounting: Special mount improves remote transducer accuracy  866-10021  01
Electrolytically conductive fibers thermally isolate temperature sensor  866-10349  01
Combination double door high-vacuum valve provides access to vacuum chamber  866-10697  05
Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line  866-10702  05
Post-stressed concrete foundation may reduce machinery vibration  867-10237  05
Connect/disconnect coupling for preadjusted rigid shafts  869-10375  05
Rigid motors: Valve effectively controls amount of contaminant in flow stream  869-1771  05
Rigid structures: Apparatus of small size can be extended into long, rigid boom  863-10200  05
Collapsible truss structure is automatically expandable  865-10126  05
Extendible column can be stowed on drum  865-10191  05
Vacuum chamber provides improved insulation and support for cryostat  865-10368  02
Cold cathode ionization gage has rigid metal housing  866-10041  01
Bellows design features low spring rate and long life  866-10190  05
Fibers of newly developed refractory ceramics produced by improved process  866-169  03
Rugged microelectronic module package supports circuitry on heat sink  866-10245  01
Compact actuator converts rotary to linear motion  866-10265  05
Friction loading device enables accurate testing of brittle materials  866-10345  05
Lateral ring metal elastic wheel absorbs shock loading  866-10663  05
Prefared stiffeners used to fabricate
structural components for pressurized tanks
M-PS-1796 B66-10688 05

Work platform is supported by self-locking blades
M-PS-2297 B67-10180 05

Quick-release hook-and-loop fastener
MSC-10550 B69-10388 05

Modular packaging technique for combining integrated circuits and discrete components
GSFC-10369 B69-10453 01

RIGIDITY
Spring loaded beaded cable makes efficient wire puller
WOO-108 B65-10031 05

Heat treatment stabilizes welded aluminum rings and tool structures
MSC-800 B66-10458 03

A mechanically extendible boom
KPO-11118 B69-10328 05

RING DISCHARGE
Laser system generates single-frequency light
M-PS-2556 B67-10288 02

RING LASERS
Neon isotopes cancel errors in gas laser
M-PS-1476 B66-10583 02

Design concepts using ring lasers for frequency stabilization
M-PS-2448 B67-10143 01

Nonreciprocal gain control for ring laser
M-PS-14047 B67-10653 02

Ring laser angle encoder
MSC-13099 B69-10115 01

RING STRUCTURES
Ring counter may be advanced or retarded by command signal
GSFC-101 B64-10144 01

Ring valve responds to differential pressure changes
WOC-247 B66-10022 05

Noncontacting transducer measures shaft torque
M-PS-4874 B66-10048 01

Angular acceleration measured by deflection in sensing ring
MSC-250 B66-10105 01

Intermediate rotating ring improves reliability of dynamic shaft seal
M-PS-575 B66-10197 05

Pressure seal ring may be effective over wide temperature range
M-PS-486 B66-10211 05

Electron beam welding of copper-Monel facilitated by circular magnetic shields
M-PS-569 B66-10215 05

Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
M-PS-640 B66-10247 05

Flow ring valve is simple, quick-acting
M-PS-752 B66-10255 05

Differential expansion provides pressure for diffusion bonding of large diameter rings
M-PS-588 B66-10269 05

Fastener provides for bolt misalignment and quick release of flange
SU-0074 B66-10275 05

G-rings with mylar back-up provide high-pressure cryogenic seal
M-PS-603 B66-10278 05

High pressure tube coupling requires no threads or flares
MSC-600 B66-10285 05

Union would facilitate joining of tubing, minimize braze contamination
MSC-777 B66-10311 05

Torus elements used in effective shock absorber
WOO-114 B66-10318 05

Electrically conductive fibers thermally isolate temperature sensor
GSFC-456 B66-10349 01

Hollow spherical rotors fabricated by electropolishing
JVL-6C-117 B66-10366 05

Combination spacer and gasket provides effective static seal
M-PS-1397 B66-10485 05

High-reluctance rotor rings improve homopolar generator performance
ABC-104 B66-10543 01

Lateral ring metal elastic wheel absorbs shock loading
M-PS-1312 B66-10663 05

Cryogenic seal remains leaktight during thermal displacement
ARG-96 B67-10134 02

Environmental study of miniature slip rings
M-PS-2443 B67-10210 05

Design concept to decrease relative speed of ball bearings
M-PS-2003 B67-10212 05

Line adapter provides quick disconnect under moderate side loading
M-PS-2155 B67-10256 05

Pipe joints reinforced in place with fitted aluminum sleeves
MSC-1109 B67-10271 05

Circuit automatically calibrates flowmeter against liquid-level gage reference
M-PS-2194 B67-10376 01

Wear studies made of slip rings and gas bearing components
M-PS-12862 B67-10403 05

Torque meter aids study of hysteresis in motor rings
M-PS-12215 B67-10412 01

Aluminum and stainless steel tubes joined by simple ring and welding process
M-PS-13120 B67-10472 05

Cone and column solar energy concentrator
LANGLEP-2 B67-10517 01

Computer program performs rectangular fitting stress analysis
M-PS-13010 B67-10520 06

Dynamic valve seal is reliable at cryogenic temperatures
M-PS-12907 B67-10526 05

Cryogenic seal concept for static and dynamic conditions
M-PS-12986 B67-10673 05

Mass loading effects on vibrated ring and shell structures
M-PS-14979 B68-10532 03
BIBGS
Liquid gallium rotary electric contact
LEWIS-10228 B69-10138 03

Conceptual techniques for reducing parasitic current gain of lateral pnp transistors
MSC-13199 B69-10244 01

Sealing a rubber bladder between two sections of an accumulator
M-PS-20403 B69-10355 05

BIBGS
Contact stresses calculated for miniature slip rings
M-PS-280 B65-10098 05

Improved poppet valve provides positive damageproof seal
M-PS-293 B67-10591 05

Flexible plastic ring assembly ares durable shaft seal
WOO-227 B65-10367 05

Threaded split ring connector separates structural sections
LANGLEY-145 B65-10383 05

Fluorocarbon seal replaces metal piston ring in low density gas environment
LEWIS-10277 B67-10591 05

Shock-absorbing caster wheel is simple and compact
SAN-10019 B68-10266 05

Shock-absorbent mountings for bearings
NEO-10626 B69-10331 05

RIVETS
Jig and fixture aid fabrication of tungsten rivets
LEWIS-185 B65-10101 05

Cable clamp bolt fixture facilitates assembly in close quarters
KSC-67-80 B67-10244 05

Development of structural test articles from magnesium-lithium and beryllium
M-PS-14959 B69-10417 03

Flexible rivet-set
M-PS-20317 B69-10459 05

RCL CIRCUITS
Voltage variable oscillator has high phase stability
LANGLEY-123 B65-10204 01

ROASTING
Direct indication of particle size in fluidized beds
ABO-10130 B69-10063 05

Adding calcium improves lithium ferrite core
HEC-10036 B69-10686 06

ROCKET-BORNE INSTRUMENTS
Shock-absorbent mountings for bearings
NEO-10626 B69-10331 05

ROCKET-BORNE PHOTOGRAPHY
Rocket engine nozzle photographic system
NEO-10174 B68-10113 02

ROCKET ENGINE CASES
New method used to fabricate light-weight heat exchanger for rocket motor
LEWIS-43 B63-10346 02

Novel clamps align large rocket cases, eliminate back-up bars
M-PS-1 B63-10376 05

ROCKET ENGINE CONTROL
Plastic tubing protects flexible copper hose
ROCKET ENGINE DESIGN
Development of detonation reaction engine
M-PS-14020 B69-10652 01

Rocket engine analog simulation
M-PS-14511 B69-10511 01

ROCKET ENGINES
Wire winding increases lifetime of oxide coated cathodes
LEWIS-154 B65-10032 03

Multiple correlation computer program determines relationships between several independent and dependent variables
M-PS-13024 B67-10327 06

Modified blackbody device emits high-density radiation
M-PS-12744 B67-10388 02

Two-fluid, impinging-sheet injector
NEO-10547 B66-10338 05

Rocket engine analog simulation
M-PS-14511 B69-10511 01

Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control
KMP-07074 B69-10016 05

Two-axis winch installer for heavy ducts in confined space
M-PS-14254 B69-10062 05

Improved combustion chamber optical probe
MSC-10953 B69-10142 02

Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings
M-PS-18453 B69-10178 05

Two-step rocket engine bipropellant valve concept
MSC-10951 B69-10280 05

Technique for assessing potential fire hazards
HO-10279 B69-10287 03

Computer simulation of high-frequency combustion instability and its suppression
EQ-10391 B69-10368 06

Prediction of thermal radiation from a rocket exhaust plume
M-PS-20414 B69-10371 02

Burst diaphragm leak detector
M-PS-14500 B69-10543 03

Single-element coaxial injector for rocket fuel
NEO-11095 B69-10547 05

A comparison of two methods of measuring particle size of Al203 produced by a small rocket motor
NEO-11198 B69-10572 03

New type pressure transducer for severe thermal environments
M-PS-20208 B69-10652 01

Seismographic recording of large rocket engine operation
M-PS-20545 B69-10756 01

ROCKET EXHAUST
Refractory thermal insulation for smooth metal surfaces
M-PS-160 B64-10999 03

Air-cured ceramic coating insulates against high heat fluxes
M-PS-150 B65-10357 03
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>RODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe samples components of rocket engine exhaust N-PS-465</td>
<td>B65-10384 03</td>
</tr>
<tr>
<td>Ultraviolet photographic pyrometer used in rocket exhaust analysis N-PS-499</td>
<td>B66-10095 02</td>
</tr>
<tr>
<td>Hydrogen fire detection system features sharp discrimination N-PS-643</td>
<td>B66-10368 01</td>
</tr>
<tr>
<td>Predicting surface heating rates and pressures resulting from hot exhaust gases BSC-977</td>
<td>B66-10663 05</td>
</tr>
<tr>
<td>Study of hot wire techniques in low density flows with high turbulence levels N-PS-1269</td>
<td>B66-10667 01</td>
</tr>
<tr>
<td>General computer program for calculation of radiation from inhomogeneous, nonisobaric, nonisothermal rocket exhaust plume N-PS-14314</td>
<td>B66-10044 06</td>
</tr>
<tr>
<td>Infrared spectroradiometer for rocket exhaust analysis N-PS-18357</td>
<td>B66-10081 02</td>
</tr>
<tr>
<td>Plane radiation program N-PS-13202</td>
<td>B66-10447 06</td>
</tr>
<tr>
<td>Molecular radiation - Its application in physical measurements and analyses N-PS-14816</td>
<td>B69-10562 02</td>
</tr>
<tr>
<td>ROCKET FIELDS</td>
<td></td>
</tr>
<tr>
<td>Fortran 4 program for two-impulse rendezvous analysis N-PS-13971</td>
<td>B67-10479 06</td>
</tr>
<tr>
<td>ROCKET ROSE COMES</td>
<td></td>
</tr>
<tr>
<td>High purity electroforming yields superior metal models ABC-6</td>
<td>B63-10007 05</td>
</tr>
<tr>
<td>ROCKET NOZZLES</td>
<td></td>
</tr>
<tr>
<td>Multilayer refractory nozzles produced by plasma-spray process WCO-318</td>
<td>B66-10611 05</td>
</tr>
<tr>
<td>Silver plating technique seals leaks in thin wall tubing joints N-0090</td>
<td>B66-10703 05</td>
</tr>
<tr>
<td>Stress-testing of the throat of a rocket's nozzle NJO-10311</td>
<td>B69-10358 05</td>
</tr>
<tr>
<td>Hydraulic calipers N-PS-18052</td>
<td>B69-10399 05</td>
</tr>
<tr>
<td>ROCKET PROPELLANTS</td>
<td></td>
</tr>
<tr>
<td>Quick-disconnect coupling safe transfer of hazardous fluids LEWIS-125</td>
<td>B65-10202 01</td>
</tr>
<tr>
<td>Camera mount for close-up stereo photographs LANGLEY-10442</td>
<td>B69-10226 02</td>
</tr>
<tr>
<td>ROCKET SOUNDING</td>
<td></td>
</tr>
<tr>
<td>Multichannel pulse height analyzer is inexpensive, features low power requirements HGQ-10520</td>
<td>B67-10258 01</td>
</tr>
<tr>
<td>ROCKET TEST FACILITIES</td>
<td></td>
</tr>
<tr>
<td>Computer program determines performance efficiency of remote measuring systems N-PS-1137</td>
<td>B66-10503 01</td>
</tr>
<tr>
<td>ROCKET THRUST</td>
<td></td>
</tr>
<tr>
<td>Device measures reaction engine thrust vector deviations JPL-SC-163</td>
<td>B66-10642 05</td>
</tr>
<tr>
<td>ROCKET VEHICLES</td>
<td></td>
</tr>
<tr>
<td>Study of theory and application of long duration heat flux transducers</td>
<td></td>
</tr>
<tr>
<td>M-PS-1265</td>
<td>B66-10614 01</td>
</tr>
<tr>
<td>Electron beam parallel X-ray generator MSC-11022</td>
<td>B67-10372 02</td>
</tr>
<tr>
<td>Handbooks describe eddy current techniques used in nondestructive testing of metal parts and components M-PS-13172</td>
<td>B67-10374 03</td>
</tr>
<tr>
<td>Study made of pneumatic high pressure piping materials /10,000 psi/ KSC-10133</td>
<td>B67-10437 03</td>
</tr>
<tr>
<td>A method of determining combustion gas flow M-PS-13757</td>
<td>B67-10455 03</td>
</tr>
<tr>
<td>A polar graphic method for determining the attitude of rocket vehicles GSFC-10860</td>
<td>B69-10591 02</td>
</tr>
<tr>
<td>Aerodynamic forces of fluttering cylindrical and/or planar structures M-PS-20497</td>
<td>B69-10781 02</td>
</tr>
<tr>
<td>ROCKS</td>
<td></td>
</tr>
<tr>
<td>Rock bit requires no flushing medium to maintain drilling speed JPL-WO-031</td>
<td>B65-10109 05</td>
</tr>
<tr>
<td>Preparing rock powder specimens of controlled size distribution WCO-10007</td>
<td>B68-10297 05</td>
</tr>
<tr>
<td>Transplutonium elements processed from rock debris of underground detonations ARC-10222</td>
<td>B69-10054 03</td>
</tr>
<tr>
<td>ROCKWELL HARDNESS</td>
<td></td>
</tr>
<tr>
<td>Control of component differential hardness increases bearing life LEWIS-190</td>
<td>B65-10251 05</td>
</tr>
<tr>
<td>Flared-tube fittings with replaceable seat inserts MSC-15372</td>
<td>B69-10519 05</td>
</tr>
<tr>
<td>RODS</td>
<td></td>
</tr>
<tr>
<td>Lightweight universal joint transmits both torque and thrust JPL-375</td>
<td>B63-10236 05</td>
</tr>
<tr>
<td>Cooling method prolongs life of hot-wire transducer LEWIS-41</td>
<td>B63-10344 02</td>
</tr>
<tr>
<td>Buckle joins web straps quickly, adjusts easily LANGLEY-21</td>
<td>B64-10119 05</td>
</tr>
<tr>
<td>Simple transducer measures low heat-transfer rates JPL-466</td>
<td>B64-10122 01</td>
</tr>
<tr>
<td>Carbon-arc rod holder has long life, reduces arc splatter MSC-144</td>
<td>B65-10095 03</td>
</tr>
<tr>
<td>System measures unidirectional forces, excludes extraneous forces LEWIS-170</td>
<td>B65-10154 05</td>
</tr>
<tr>
<td>Mounting facilitates removal and installation of flame-detector rods N-PS-555</td>
<td>B66-10150 05</td>
</tr>
<tr>
<td>Fibers of newly developed refractory ceramics produced by improved process WCO-169</td>
<td>B66-10196 03</td>
</tr>
<tr>
<td>Bypass rod transfers heat developed in thermionic diode JPL-SC-136</td>
<td>B66-10303 05</td>
</tr>
<tr>
<td>Ultrasonic water column probe speeds up testing of welds HQ-58</td>
<td>B66-10577 01</td>
</tr>
</tbody>
</table>
Composite weld rod corrects individual filler weaknesses  
N-FS-1923  B67-10107  05

Study of yttrium iron garnet rods reveals new magnetostatic echo mode  
BEC-37  B67-10153  01

High-strength tungsten alloy with improved ductility  
LEWIS-10257  B67-10340  03

Pressure levels and pulsation frequencies can be varied on high pressure/frequency testing device  
LEWIS-10205  B67-10360  05

Fiber glass reinforced structural materials for aerospace application  
N-FS-14806  B66-10360  03

Method of making conical fiber optical components  
IBP-09745  B69-10020  02

An ultrasonic method for studying elastic moduli as a function of temperature  
ARL-10187  B69-10082  02

Restricted-flow junction between liquids  
NRO-10682  B69-10332  02

Piezoelectric linear actuator  
MSC-13194  B69-10469  02

A sterilizable high-impact antenna  
NRO-10231  B69-10697  01

ROLL FORMING  
Metal bellows custom-fabricated from tubing  
LEWIS-192  B65-10150  05

Thermal stress-relief treatments for 2219 aluminum alloy are evaluated  
N-FS-1213  B66-10448  03

Metal tube reducer is inexpensive and simple to operate  
ARL-49  B67-10401  05

Roll diffusion bonding of titanium alloy panels  
N-FS-14743  B68-10161  05

ROOLLER BEARINGS  
Control of component differential hardness increases bearing life  
LEWIS-190  B65-10251  05

Swing-out rail system separates overhead crane rails  
NU-0094  B66-10713  05

Tester for study of rolling element bearings  
LEWIS-305  B67-10009  01

Rolamite – A new mechanical design concept  
SAN-10001  B67-10611  05

Damasges in rolling element bearings may be detected early  
HRO-10031  B67-10658  01

Bearings use dry self-lubricating cage materials  
LEWIS-10432  B68-10165  05

ROLLERS  
Stainless-steel elbows formed by spin forging  
N-FS-122  B63-10590  05

Upsetting butt edge increases weld-joint strength  
N-FS-175  B64-10164  05

T-handle wrench has torque-limiting action  
NSC-280  B66-10065  05

Extensometer automatically measures elongation in elastomers  
N-FS-517  B66-10284  05

Expandable tape reel facilitates paper tape removal  
WGO-271  B66-10399  05

Carriage system remotely moves drawer over extended distance  
NU-0092  B66-10711  05

Web belt load measuring instrument has excellent stability  
BEC-921  B67-10242  01

Tape reading fixture  
N-FS-14146  B69-10008  05

Helical tape forming device  
GSPC-10830  B67-10399  05

A sterilizable high-impact antenna  
NRO-10231  B69-10697  01

ROLING  
Coating protects magnesium-lithium alloys against corrosion  
IFB-123  B67-10149  03

ROLING CONTACT LOADS  
High-temperature bearing lubricants  
LEWIS-10408  B68-10249  05

Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing  
NEC-10308  B69-10034  06

BOOK TEMPERATURE  
Improved adhesive for cryogenic applications cures at room temperature  
WGO-132  B66-10185  03

Radiation used to temperature compensate semiconductor strain gauges  
LANGLEY-207  B66-10186  02

Fluid damping reduces bellows seal fatigue failures  
N-FS-565  B66-10249  05

G-rings with sylar back-up provide high-pressure cryogenic seal  
N-FS-603  B66-10278  05

Single-source mechanical loading system produces biaxial stresses in cylinders  
N-FS-12530  B67-10380  05

Warpage eliminated in copper-clad microwave circuit laminates  
N-FS-13892  B67-10454  03

Environmental control system for cryogenic testing of tensile specimens  
NRC-10523  B67-10618  02

Encapsulation technique eliminates thermal stresses in welded electronic modules  
N-FS-104561  B68-10307  01

Direct measurement of carbon-14 in carbon dioxide by liquid scintillation counting  
BGO-10237  B69-10092  03

Tools made of ice facilitate forming of soft, sticky materials  
KSC-10262  B69-10199  05
Evaluation of magnetic materials for static inverters and converters
LEWIS-10343 B66-10306 01
Laser action from a terbium beta-ketoenolate
at room temperature
GSFC-10593 B66-10324 02
Silphenylene elastomers have high thermal
stability and tensile strength
M-PS-20250 B66-10580 03
Technique for predicting the thermal
expansion coefficients of cryogenic
metallic alloys
NRC-10554 B66-10707 02

ROOMS
Computer program conducts facilities
utilization and occupancy survey
B66-10326 B67-10476 06

ROOT-MEAN-SQUARE ERRORS
Maximum RMS error comparison of several
redundancy techniques
M-PS-15075 B66-10297 01
Automatic Gaussian random-noise limiter
B60-1016 B66-10389 01

ROOTS
Root-cubing and general root-powering
methods for finding the zeros of polynomials
ARG-10444 B66-10424 02

ROOTS OF EQUATIONS
Computer program provides linear sampled-
data analysis for high order systems
M-PS-12921 B67-10287 06
Simple tunnel diode circuit for accurate
zero crossing timing
ARG-10309 B66-10116 01

ROTARY GYROSCOPES
Adaptive control circuit prevents amplifier
saturation
ERC-10026 B67-10648 02

ROTARY STABILITY
Proposed method of rotary dynamic balancing
by laser
M-PS-12422 B67-10452 02
Electromechanical rotary actuator
operates over wide temperature range
M-PS-14002 B66-10100 05

ROTATING BODIES
Shock absorber protects motive components
against overloads
WGO-092 B66-10098 05
Pickup device reads pressures from ports in
rotating mechanisms
LEWIS-158 B65-10021 05
Rotating filters permit wide range of optical
cyrometry
LANGLEY-33 B65-10100 02
Dispensing system eliminates torsion in
deployed hoses
MSC-80 B65-10185 05

Rotating holder permits accurate grinding of
metallurgical microsamples
LEWIS-131 B65-10262 05
Multiple test chamber exposes materials to
various environments
MSC-179 B65-10268 01
Centrifugal device separates liquid from gas
MSC-282 B65-10394 05
Cryostat modified to aid rotating beam fatigue
test
M-PS-435 B66-10083 03

Rotating mandrel speeds assembly of plastic
inflatables
LANGLEY-155 B66-10137 05
Segmented ball valve is easy to open and close
WGO-248 B66-10195 05
Intermediate rotating ring improves
reliability of dynamic shaft seal
M-PS-575 B66-10197 05
Rotary valve controls multiple hydraulic
leveling cylinders
M-PS-361 B66-10402 05
Rotating magnetic poles used to pump mercury
LEWIS-276 B66-10434 05
Process yield Co-Fe alloys with superior
high temperature magnetic properties
LEWIS-333 B66-10535 03
Rotational fluid coupling eliminates hose
tanglements
MSC-312 B66-10585 05
Automatic system determines moments of
inertia of asymmetrical objects
M-PS-1769 B66-10636 01
Computer program simplifies design of
rotating components of turbomachinery
M-PS-10046 B67-10235 06
Eccentric drive mechanisms is adjustable
during operation
M-PS-2576 B67-10373 05
Flowmeter determines mix ratio for viscous
adhesives
M-PS-2308 B67-10378 01
Coaxial cable stripping device facilitates
RF cabling fabrication
B60-1315 B67-10419 05
Tool samples subsurface soil free of
surface contaminants
MSC-10998 B67-10473 05
Between-bearing shaft seal, a concept
M-PS-18179 B66-10286 05
Improved gas ring laser
MSC-11584 B66-10304 02
High-speed pulse camera
MSC-11353 B66-10329 02
Multiple-orifice throttle valve
INF-0969 B69-10300 05
Detecting hydrogen-containing contaminants
on metal surfaces
M-PS-20456 B69-10192 03
Multi-feed cone for Cassegrainian antenna
BPO-10539 B69-10269 01
Precisely repeatable rotary mechanism
BPO-10679 B69-10656 05
Burn-rate testing apparatus
MSC-10947 B69-10740 03

Compact rotating cup anemometer
I-565
<table>
<thead>
<tr>
<th>ROTATING DISKS</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog device simulates physiological waveforms</td>
<td>Environmental study of miniature slip rings</td>
</tr>
<tr>
<td>Gear drive automatically indexes rotary table</td>
<td>M-PS-2443</td>
</tr>
<tr>
<td>System enables dimensional inspection of very large structures</td>
<td>Design concept to decrease relative speed of ball bearings</td>
</tr>
<tr>
<td>Flow angle sensor and readout system</td>
<td>Segmented, arch-bound carbon seal is pressure loaded</td>
</tr>
<tr>
<td>Study of high-speed angular-contact ball bearings under dynamic load</td>
<td>Spiral-grooved shaft seals substantially reduce leakage and wear</td>
</tr>
<tr>
<td>Electronic visualization of gas bearing behavior</td>
<td>Miniature paint-spray gun for recessed areas</td>
</tr>
<tr>
<td>Improved design of item in high speed rotating machinery</td>
<td>Connect-disconnect coupling for preadjusted rigid shafts</td>
</tr>
<tr>
<td>Automatic sample rotator for metallographic polishing</td>
<td>High-pressure seals for rotary shafts</td>
</tr>
<tr>
<td>Rotational fluid coupling eliminates hose entanglements</td>
<td>A rotating, noncapillary heat pipe</td>
</tr>
<tr>
<td>Twin helix system produces fast scan in infrared detector</td>
<td>Cooled miniature pressure transducers effective at high temperatures</td>
</tr>
<tr>
<td>High-speed camera synchronization</td>
<td>Device transmits rotary motion through hermetically sealed wall</td>
</tr>
<tr>
<td>Flow angle sensor and readout system</td>
<td>Bearing transmits rotary and axial motion</td>
</tr>
<tr>
<td>Multipurpose binocular scanning apparatus</td>
<td>Explosives actuate nonmagnetic indexing device</td>
</tr>
<tr>
<td>Optical used to measure torque at high rotational speeds</td>
<td>New coupling compensates for shaft misalignment</td>
</tr>
<tr>
<td>Osmeter senses depletion of lubricant in journal bearings</td>
<td>Universal bellows joint restraint permits angular and offset movement</td>
</tr>
<tr>
<td>Apparatus alters position of objects to facilitate demagnetization</td>
<td>Ring counter circuit switches multiphase motor direction of rotation</td>
</tr>
<tr>
<td>Flexible plastic ring assembly makes durable shaft seal</td>
<td>Compact actuator converts rotary to linear motion</td>
</tr>
<tr>
<td>Friction device daaps linear motion of rotating shaft</td>
<td>Uniform reflective films deposited on large surfaces</td>
</tr>
<tr>
<td>Noncontacting transducer measures shaft torque</td>
<td>Multilayer refractory nozzles produced by plasma-spray process</td>
</tr>
<tr>
<td>Flexible arms provide constant force for pressure switch calibration</td>
<td>Power arc welder touch-started with consumable electrode</td>
</tr>
<tr>
<td>Laser measuring system accurately locates point coordinate on photograph</td>
<td>Welding torch and wire feed manipulator</td>
</tr>
<tr>
<td>Rocket engine vibration accurately measured by photography</td>
<td>Metal tube reducer is inexpensive and simple to operate</td>
</tr>
<tr>
<td>Gimbal angle sensor</td>
<td>Torque meter aids study of hysteresis motor rings</td>
</tr>
<tr>
<td>Swing arm carrier protects flexible lines during test item rotation</td>
<td>Swing arm carrier protects flexible lines during test item rotation</td>
</tr>
</tbody>
</table>

Y-566
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>RUBBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSFC-10305</td>
<td>B66-10315 01</td>
</tr>
<tr>
<td>Liquid gallium rotary electric contract</td>
<td>LEWIS-10328 B69-10138 03</td>
</tr>
<tr>
<td>Journal gas bearing for curved surfaces</td>
<td>M-PS-20423 B69-10182 05</td>
</tr>
<tr>
<td>Precise gimballing mechanism</td>
<td>NPO-11057 B69-10270 01</td>
</tr>
<tr>
<td>Preferred-orientation analysis of polycrystalline materials</td>
<td>NPO-10604 B69-10336 02</td>
</tr>
<tr>
<td>Rotary antenna attenuator</td>
<td>NPO-11058 B69-10502 01</td>
</tr>
<tr>
<td>Method of directing a laser beam with very high accuracy</td>
<td>NPO-10687 B69-10508 02</td>
</tr>
<tr>
<td>Measurement technique for the determination of antenna directivity</td>
<td>N-PS-12799 B69-10677 01</td>
</tr>
<tr>
<td>ROTOR ARBORETUMS</td>
<td></td>
</tr>
<tr>
<td>Simple key locks turbine rotor blades</td>
<td>NPO-103 B66-10023 05</td>
</tr>
<tr>
<td>ROTOR BLADES</td>
<td></td>
</tr>
<tr>
<td>Noise study of single stage compressor rotor-stator interaction</td>
<td>LANGLEY-137 B67-10516 02</td>
</tr>
<tr>
<td>ROTOR BLADES (TURBOMACHINERY)</td>
<td></td>
</tr>
<tr>
<td>Simple key locks turbine rotor blades</td>
<td>NPO-103 B66-10023 05</td>
</tr>
<tr>
<td>Computer programs for axial flow compressor design</td>
<td>LEWIS-10765 B69-10174 06</td>
</tr>
<tr>
<td>ROTOR SPEED</td>
<td></td>
</tr>
<tr>
<td>Noncontacting transducer measures shaft torque</td>
<td>M-PS-474 B66-10048 01</td>
</tr>
<tr>
<td>Variable-capacitance tachometer eliminates troublesome magnetic fields</td>
<td>GSFC-435 B66-10126 01</td>
</tr>
<tr>
<td>Intermediate rotating ring improves reliability of dynamic shaft seal</td>
<td>M-PS-757 B66-10197 05</td>
</tr>
<tr>
<td>Valve effectively controls amount of contaminant in flow stream</td>
<td>M-PS-1771 B66-10683 05</td>
</tr>
<tr>
<td>Design concept to decrease relative speed of ball bearings</td>
<td>M-PS-2003 B67-10212 05</td>
</tr>
<tr>
<td>Computer program simplifies design of rotating components of turbomachinery</td>
<td>NUC-10046 B67-10235 06</td>
</tr>
<tr>
<td>Rotors</td>
<td></td>
</tr>
<tr>
<td>Pickup device reads pressures from ports in rotating mechanisms</td>
<td>LEWIS-158 B65-10021 05</td>
</tr>
<tr>
<td>Rotor position sensor switches currents in brushless dc motors</td>
<td>GSFC-315 B65-10151 01</td>
</tr>
<tr>
<td>Brushless dc motor uses electron beam switching tube as commutator</td>
<td>GSFC-345 B65-10237 01</td>
</tr>
<tr>
<td>Ring counter circuit switches multiphase motor direction of rotation</td>
<td>JPL-SC-166 B66-10101 01</td>
</tr>
<tr>
<td>Switching mechanisms sense angular acceleration</td>
<td>GSFC-462 B66-10158 01</td>
</tr>
<tr>
<td>Brushless dc motor has high efficiency, long life</td>
<td></td>
</tr>
<tr>
<td>Hollow spherical rotors fabricated by electroplating</td>
<td>JPL-SC-117 B66-10366 05</td>
</tr>
<tr>
<td>Shaft encoder presents digital output</td>
<td>JPL-SC-191 B66-10436 01</td>
</tr>
<tr>
<td>High-reluctance rotor rings improve homopolar generator performance</td>
<td>ARG-104 B66-10543 01</td>
</tr>
<tr>
<td>Pressure probe compensates for dimensional tolerance variations</td>
<td>LEWIS-302 B66-10599 01</td>
</tr>
<tr>
<td>Resilient bearing supports are gas controlled</td>
<td>LEWIS-10109 B67-10364 05</td>
</tr>
<tr>
<td>Wear studies made of slip rings and gas bearing components</td>
<td>M-PS-12862 B67-10403 05</td>
</tr>
<tr>
<td>Torque meter aids study of hysteresis motor rings</td>
<td>M-PS-12215 B67-10412 01</td>
</tr>
<tr>
<td>Shallow grooves in journal improve air bearing performance</td>
<td>LEWIS-10396 B69-10134 05</td>
</tr>
<tr>
<td>Laser system used for dynamic balancing of gyros</td>
<td>M-PS-12218 B69-10225 05</td>
</tr>
<tr>
<td>Acoustic wave analysis</td>
<td>M-PS-18076 B69-10265 02</td>
</tr>
<tr>
<td>Sweep frequency detector</td>
<td>NPO-10669 B69-10289 01</td>
</tr>
<tr>
<td>Hermetically sealed pump</td>
<td>LEWIS-10837 B69-10320 05</td>
</tr>
<tr>
<td>A compact rotary vane attenuator</td>
<td>NPO-10562 B69-10427 01</td>
</tr>
<tr>
<td>Foil bearing support for high-speed rotor</td>
<td>HQ-10315 B69-10661 05</td>
</tr>
<tr>
<td>BOUGENESS</td>
<td></td>
</tr>
<tr>
<td>Chemical milling solution produces smooth surface finish on aluminum</td>
<td>MSC-549 B66-10312 03</td>
</tr>
<tr>
<td>Selective tube roughening increases heat transfer capability</td>
<td>M-PS-599 B66-10610 05</td>
</tr>
<tr>
<td>Method for predicting frictional loss in metal bellows and flexible hose</td>
<td>M-PS-883 B66-10662 05</td>
</tr>
<tr>
<td>Steel test panel helps control additives in pyrophosphate copper plating</td>
<td>LEWIS-10101 B67-10358 05</td>
</tr>
<tr>
<td>Damages in rolling element bearings may be detected early</td>
<td>HQ-10031 B67-10658 01</td>
</tr>
<tr>
<td>EP-1 ROCKET PROPPELLANTS</td>
<td></td>
</tr>
<tr>
<td>Run-in with chemical additive protects gear surface</td>
<td>M-PS-548 B66-10069 05</td>
</tr>
<tr>
<td>Ultraviolet photographic pyrometer used in rocket exhaust analysis</td>
<td>M-PS-499 B66-10095 02</td>
</tr>
<tr>
<td>RUBBER</td>
<td></td>
</tr>
<tr>
<td>Frictional wedge shock mount is inexpensive, has good damping characteristics</td>
<td>JPL-IT-1001 B63-10289 05</td>
</tr>
<tr>
<td>Vacum-type backup bar speeds weld repairs</td>
<td></td>
</tr>
</tbody>
</table>
Improved electrode gives high-quality biological recordings
M-BC-17 B64-10025 04
Dispenser leak-tests and sterilizes rubber gloves
M-BC-265 B66-10166 03
Coating permits use of strain gage in water and liquid hydrogen
M-BC-594 B66-10192 01
Expandable rubber plug seals openings for pressure testing
M-P-0048 B66-10229 05
Fixed vacuum plate clamps styrofoam for machining
M-PS-683 B66-10283 05
Special mandrel permits uniform welding of out-of-round tubing
M-PS-706 B66-10323 05
Thermoplastic rubberlike material produced at low cost
JPL-793 B66-10453 03
Static electricity of polymers reduced by treatment with iodine
JPO-10062 B67-10132 03
Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique
ARG-203 B67-10295 02
Liquid mercury chamber and microsyringe designs allow more efficient micromanipulations
ARG-251 B67-10305 04
Centric drive mechanism is adjustable during operation
M-PS-2576 B67-10373 05
X-ray film holder permits single continuous picture of tubing joint
LEWIS-10362 B68-10343 05
Sealing a rubber bladder between two sections of an accumulator
M-PS-20403 B69-10355 05
Spiral-flow apparatus for measuring permeation of solids by gases
M-PS-16517 B69-10357 03
Development of structural test articles from magnesium-lithium and beryllium
M-PS-14959 B69-10417 03
Flexible rivet-set
M-PS-20317 B69-10459 05

RUBIDIUM

Magnetometer measures orthogonal components of magnetic fields
GSFC-295 B65-10315 01
Electrodeless discharge lamp is easily started, has high stability
WOO-030 B66-10015 01
Improved atomic resonance gas cell for use in frequency standards
M-BC-11666 B68-10230 01

RUBIDIUM COMPOUNDS

Synthesis of perbromates
ARG-10439 B69-10647 03

RUBY

Improved traveling wave maser amplifier
JPO-10548 B68-10244 01

RUBY LASERS

Laser system used for dynamic balancing of

S

S CURVES

Unique frequency-shift-keyed demodulation system
GSFC-217 B67-10668 01

S WAVES

Ultrasomics used to measure residual stress
M-PS-12449 B67-10628 02

An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10187 B69-10082 02

SADDLES (SUPPORTS)

Vertical boring mill capacity is increased
M-PS-16196 B68-10530 05

Detachable caster adapter
M-SC-9115 B69-10164 05
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>SAFETY FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SAFETY</strong></td>
<td></td>
</tr>
<tr>
<td>Automatic cryogenic liquid level controller is safe for use near combustible substances</td>
<td>B66-10482 01</td>
</tr>
<tr>
<td>Miniature piezoelectric triaxial accelerometer measures cranial accelerations</td>
<td>E66-10534 01</td>
</tr>
<tr>
<td>Ambient temperature catalyst for hydrogen ignition</td>
<td>B66-10520 03</td>
</tr>
<tr>
<td>Hydrodynamics of a new concept of primary containment by energy absorption</td>
<td>B66-10482 05</td>
</tr>
<tr>
<td>Instruction manuals for liquid penetrant nondestructive testing</td>
<td>B66-10278 05</td>
</tr>
<tr>
<td><strong>SAFETY DEVICES</strong></td>
<td></td>
</tr>
<tr>
<td>Break-up of metal tube makes one-time shock absorber, bare rebound</td>
<td>B63-10304 05</td>
</tr>
<tr>
<td>Self-balancing beam permits safe, easy load handling under overhang</td>
<td>B66-10571 05</td>
</tr>
<tr>
<td>Comfortable, lightweight safety helmet holds radio transmitter, receiver</td>
<td>B66-10015 05</td>
</tr>
<tr>
<td>Filler device for handling hot corrosive materials</td>
<td>B66-10166 03</td>
</tr>
<tr>
<td>Threading hook facilitates safe recovery of heavy loads</td>
<td>B66-10185 05</td>
</tr>
<tr>
<td>Instrument adjustment knob locks to prevent accidental maladjustment</td>
<td>B66-10249 05</td>
</tr>
<tr>
<td>Safety restrainer prevents whipping of ruptured high-pressure hose</td>
<td>B66-10348 05</td>
</tr>
<tr>
<td>Mouthpiece adapter for pipettes protects mouth from harmful liquids</td>
<td>B66-10043 03</td>
</tr>
<tr>
<td>Double gloves reduce contamination of dry box atmosphere</td>
<td>B65-10117 03</td>
</tr>
<tr>
<td>Fluid check valve has fail-safe feature</td>
<td>B66-10207 05</td>
</tr>
<tr>
<td>Cam-operated limit switch features safe fuse replacement</td>
<td>B66-10322 01</td>
</tr>
<tr>
<td>Single connector provides safety fuses for multiple lines</td>
<td>B66-10050 01</td>
</tr>
<tr>
<td>Nylon shock absorber prevents injury to parachute jumpers</td>
<td>B66-10080 05</td>
</tr>
<tr>
<td>Dispenser leak-tests and sterilizes rubber gloves</td>
<td>B66-10166 03</td>
</tr>
<tr>
<td>Safety switch permits emergency bridge crane shutdown</td>
<td>B66-10168 05</td>
</tr>
<tr>
<td>Lifting clamp positively grips structural shapes</td>
<td>B66-10176 05</td>
</tr>
<tr>
<td>Self-inflating lifevest stores in small package</td>
<td>B66-10184 04</td>
</tr>
<tr>
<td>BODY-FITTED HARNESS PROVIDES SAFE AND EASY COMPONENT HANDLING</td>
<td>B66-10202 05</td>
</tr>
<tr>
<td>ADJUSTABLE CUTTING GUIDE ALIGNS AND POSITIONS STACKS OF MATERIAL</td>
<td>B66-10210 05</td>
</tr>
<tr>
<td>SOFT-SEAL VALVE HOLDS HAZARDOUS FLUIDS SAFELY</td>
<td>B66-10216 05</td>
</tr>
<tr>
<td>KEY-LOCKED GUARD PREVENTS ACCIDENTAL SWITCH ACTUATION</td>
<td>B66-10235 05</td>
</tr>
<tr>
<td>LATHE-CHUCK KEY INCORPORATES SAFETY FEATURES</td>
<td>B66-10243 05</td>
</tr>
<tr>
<td>MAGNETIC LATCHES PROVIDE POSITIVE OVERPRESSURE CONTROL</td>
<td>B66-10279 05</td>
</tr>
<tr>
<td>MODIFIED HYDRAULIC BRAKING SYSTEM LIMITS ANGULAR DECELERATION TO SAFE VALUES</td>
<td>B66-10310 05</td>
</tr>
<tr>
<td>ADAPTER ASSEMBLY PREVENTS DAMAGE TO TUBING DURING HIGH PRESSURE TESTS</td>
<td>B66-10330 02</td>
</tr>
<tr>
<td>SNIFTER USED AS PORTABLE HYDROGEN LEAK DETECTOR</td>
<td>B66-10356 01</td>
</tr>
<tr>
<td>EMERGENCY ESCAPE SYSTEM PROTECTS PERSONNEL FROM EXPLOSION AND FIRE</td>
<td>B66-10634 05</td>
</tr>
<tr>
<td>TOROIDAL RING PREVENTS GAS IGNITION AT VENT STACK OUTLET</td>
<td>B66-10098 05</td>
</tr>
<tr>
<td>DEVICE ENABLES CALIBRATION OF MICROPHONES AT HIGH SOUND PRESSURE LEVELS</td>
<td>B66-10336 01</td>
</tr>
<tr>
<td>SAFETY YOKE WOULD PROTECT CONSTRUCTION WORKERS FROM FALLING</td>
<td>B66-10075 05</td>
</tr>
<tr>
<td>SARIAN FILM IS FIRE-RETRACTANT IN OXYGEN ATMOSPHERE</td>
<td>B66-10445 05</td>
</tr>
<tr>
<td>THERMAL PROTECTIVE VISOR FOR ENTERING HIGH TEMPERATURE AREAS</td>
<td>B66-10177 03</td>
</tr>
<tr>
<td>SOLID STATE HIGH-VOLTAGE PULSER OPERATES WITH LOW SUPPLY VOLTAGE</td>
<td>B66-10277 05</td>
</tr>
<tr>
<td>PROTECTIVE CLOTHING FOR WORKERS WITH 5-KW AND 20-KW SHORT-ARC LAMPS</td>
<td>B69-10218 01</td>
</tr>
<tr>
<td>IMPROVED FIRE RESISTANT RADIO FREQUENCY AERIAL MATERIALS</td>
<td>B66-10450 05</td>
</tr>
<tr>
<td>EXPLODING BRIDGEWIRE DETONATOR SIMULATOR</td>
<td>B65-10782 01</td>
</tr>
<tr>
<td><strong>SAFETY FACTORS</strong></td>
<td></td>
</tr>
<tr>
<td>Emission tester for high-power vacuum tubes</td>
<td>B64-10158 01</td>
</tr>
<tr>
<td>Compressed gas system operates semitrailer brakes during winching operation</td>
<td>B64-10306 05</td>
</tr>
<tr>
<td>MINIATURE BEARINGS LUBRICATION BY SONIC DISPERSION METHOD</td>
<td>B66-10106 03</td>
</tr>
<tr>
<td>INERT GAS SPRAYING DEVICE AIDS IN REPAIR OF HAZARDOUS SYSTEMS</td>
<td>B65-10115 05</td>
</tr>
</tbody>
</table>
Self-contained clothing system provides protection against hazardous environments
N-FS-536 B66-10201 05

Nonhazardous acid etches weld samples
N-FS-975 B66-10378 05

Remotely operated high pressure valve protects test personnel
MSC-11010 B67-10291 05

Training course for radiation safety technicians
ABS-216 B67-10477 02

Quick-attach clamp
IFP-05421 B68-10250 05

Low energy channel can be used to test sensitive circuits, other meters
SAM-10013 B68-10269 01

Hydrogen safety manual
LEWIS-10487 B68-10323 01

Calibrated water tank facilitates proof-loading of cranes and derricks
I-PS-15059 B69-10109 05

Automated microorganism sample collection module
HQ-10421 B69-10223 04

Electronic analog equalization for vibrational testing
HPF-10544 B69-10233 01

Fuse protects circuit from voltage and current overloads
MSC-12135 B69-10109 05

Estimating reliability by application of matrix representation
SQ-10246 B69-10793 02

Salt bath coating protects magnesium-lithium alloys against corrosion
N-FS-2446 B67-10149 03

Salt spray tests
Corrosion protection of aluminum alloys in contact with other metals
N-FS-18526 B69-10098 03

Salt crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
ABO-22 B66-10527 03

Coordination chemistry in fused-salt solutions
ABO-10469 B69-10423 03

Sample rock bit requires no flushing medium to maintain drilling speed
JPL-1000-031 B65-10160 04

Plastic bags in evacuated chamber make lightweight gas sampling system
FRC-31 B65-10264 01

Frequency correction device uses digital circuitry
GSFC-268 B65-10307 01

Probe samples components of rocket engine exhaust
N-FS-485 B65-10384 03

Cryogenic fluid sampling device permits testing under hazardous conditions
N-FS-1927 B66-10654 02

Two techniques enable sampling of filtered and unfiltered molten metals
ABS-150 B67-10034 03

System automatically supplies precise analytical samples of high-pressure gases
N-FS-1814 B67-10090 01

Self-sealing closure enables access to several fluid containers
JFO-10123 B67-10207 04

An improved nuclear magnetic resonance spectrometer
JPL-762 B67-10234 01

Improved ultrasonic TV images achieved by use of laser-wave orientation technique
ABG-203 B67-10295 02

Tool samples subsurface soil free of surface contaminants
MSC-10988 B67-10473 05

Development of lunar drill to take core samples to 100-foot depths
N-FS-13015 B67-10529 05

Air sampler collects and protects minute particles
SQ-10037 B67-10661 01

Vacuum probe sampler removes micron-sized particles from surfaces
SAM-10033 B66-10231 04

Automated microorganism sample collection module
SQ-10421 B69-10223 04

Sealed container sampling device
GSFC-1069C B69-10682 03

Fluid sample collection and storage device
MSC-10962 B69-10816 05

Samples
Rapid and precise analysis for calcium in blood serum
ABG-10246 B69-10160 04

Laser microprobe facility used for the elemental analysis of small feature of a sample
ABG-10359 B69-10165 02

Sampling
PCB magnetic tape system efficiently records and reproduces data
GSFC-375 B65-10311 01

Sensor detects hydrocarbon oil contaminants in fluid lines
N-FS-522 B66-10068 01

Radioactive tracer system detects oil contaminants in fluid lines
N-FS-512 B66-10090 03

Multiple temperatures sampled using only one reference junction
GSFC-485 B66-10260 01

Submicron holes in thin films increase sampling range of mass spectrometers
JPL-SC-097 B66-10380 03
### SUBJECT INDEX

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cryogenic fluid sampling device permits testing under hazardous conditions</td>
<td>M-FS-1927</td>
<td>02</td>
</tr>
<tr>
<td>Automated microsyringe is highly accurate and reliable</td>
<td>WPO-10412</td>
<td>01</td>
</tr>
<tr>
<td>Improved atmospheric particle analyzer</td>
<td>BSC-33</td>
<td>01</td>
</tr>
<tr>
<td>Analytical technique characterizes all trace contaminants in water</td>
<td>MSC-11032</td>
<td>01</td>
</tr>
<tr>
<td>Computer program uses Monte Carlo techniques for statistical system</td>
<td>M-FS-2294</td>
<td>06</td>
</tr>
<tr>
<td>Multiplexer uses insulated gate-field effect transistors</td>
<td>M-FS-13096</td>
<td>01</td>
</tr>
<tr>
<td>Computer program generates averaged value data tapes</td>
<td>M-FS-12720</td>
<td>06</td>
</tr>
<tr>
<td>Method for X-ray study under extreme temperature and pressure conditions</td>
<td>MSC-11232</td>
<td>02</td>
</tr>
<tr>
<td>The X square statistic and goodness of fit test</td>
<td>GSPC-10547</td>
<td>02</td>
</tr>
<tr>
<td>Preparing rock powder specimens of controlled size distribution</td>
<td>WPO-10007</td>
<td>05</td>
</tr>
<tr>
<td>Failure rates for accelerated acceptance testing of silicon transistors</td>
<td>BSC-10198</td>
<td>01</td>
</tr>
<tr>
<td>Experimental prediction of performance by superconducting cables</td>
<td>AEP-10215</td>
<td>01</td>
</tr>
<tr>
<td>Apparatus automatically measures soluble residue content of volatile solvents</td>
<td>SAM-10032</td>
<td>03</td>
</tr>
<tr>
<td>Sampling and handling of desert soils</td>
<td>NPO-11171</td>
<td>04</td>
</tr>
<tr>
<td>Circuit counts pulses and indicates time of occurrence of slow pulses</td>
<td>XNP-06234</td>
<td>01</td>
</tr>
<tr>
<td>Development and test of flexible film coupon strips for use as a sampling technique</td>
<td>M-FS-20440</td>
<td>03</td>
</tr>
<tr>
<td>Basal-plane metallography of deformed pyrolytic carbon</td>
<td>MPO-11196</td>
<td>03</td>
</tr>
<tr>
<td>Sands</td>
<td>M-523</td>
<td>05</td>
</tr>
<tr>
<td>Selective tube roughening increases heat transfer capability</td>
<td>M-FS-599</td>
<td>05</td>
</tr>
<tr>
<td>Heat-treatment of metal parts facilitated by sand embedment</td>
<td>M-FS-1543</td>
<td>03</td>
</tr>
<tr>
<td>Sandwich structures</td>
<td>M-FS-257</td>
<td>02</td>
</tr>
<tr>
<td>Apparatus permits flexure testing of specimens at cryogenic temperatures</td>
<td>B65-10129</td>
<td>02</td>
</tr>
<tr>
<td>Fastener distributes stress evenly from sandwich-panel-hung items</td>
<td>M-523</td>
<td>05</td>
</tr>
<tr>
<td>Composite bulkhead fabrication development</td>
<td>B66-10582</td>
<td>05</td>
</tr>
<tr>
<td>Study made to control depth of potting compound for honeycomb sandwich fasteners</td>
<td>LEWIS-370</td>
<td>05</td>
</tr>
<tr>
<td>Detection of entrapped moisture in honeycomb sandwich structures</td>
<td>MSC-11032</td>
<td>01</td>
</tr>
<tr>
<td>Computer program for determination of natural frequencies of closed spherical sandwich shells</td>
<td>M-524</td>
<td>06</td>
</tr>
<tr>
<td>Metal flame spray coating protects electrical cables in extreme environment</td>
<td>MCR-10077</td>
<td>03</td>
</tr>
<tr>
<td>Analysis of stability-critical orthotropic cylinders subjected to axial compression</td>
<td>M-525</td>
<td>03</td>
</tr>
<tr>
<td>Heavy-gage bonded honeycomb sandwich as primary load-bearing structure</td>
<td>M-526</td>
<td>05</td>
</tr>
<tr>
<td>Shock-absorbing caster wheel is simple and compact</td>
<td>SAM-10019</td>
<td>05</td>
</tr>
<tr>
<td>Thermal protective visor for entering high temperature areas</td>
<td>MSC-10285</td>
<td>05</td>
</tr>
<tr>
<td>Sapphire</td>
<td>SAM-10024</td>
<td>01</td>
</tr>
<tr>
<td>Proposed accusto-optic filter</td>
<td>B69-10466</td>
<td>02</td>
</tr>
<tr>
<td>Satellite Attitude Control Study indicates fluid digital computation systems are feasible</td>
<td>M-520</td>
<td>01</td>
</tr>
<tr>
<td>Satellite Instruments Electron beam parallel X-ray generator</td>
<td>MSC-1122</td>
<td>02</td>
</tr>
<tr>
<td>Charts designate probable future oceanographic research fields</td>
<td>M-523</td>
<td>02</td>
</tr>
<tr>
<td>Satellite Television Video synchronization processor overcomes poor signal-to-noise ratio</td>
<td>KSC-10002</td>
<td>01</td>
</tr>
<tr>
<td>Satellite Transmission Communication system uses modulated laser beam</td>
<td>GSPC-377</td>
<td>01</td>
</tr>
<tr>
<td>Fully automatic telemetry data processor</td>
<td>GSPC-10576</td>
<td>01</td>
</tr>
<tr>
<td>Satellites</td>
<td>B66-10340</td>
<td>03</td>
</tr>
<tr>
<td>Device removes hydrogen gas from enclosed spaces</td>
<td>GSPC-495</td>
<td>03</td>
</tr>
<tr>
<td>An investigation of phase-lock loop swept-frequency synchronization</td>
<td>M-526</td>
<td>01</td>
</tr>
<tr>
<td>Earth orbit rendezvous evaluation program</td>
<td>M-527</td>
<td>06</td>
</tr>
<tr>
<td>Saturation</td>
<td>B67-10252</td>
<td>04</td>
</tr>
<tr>
<td>Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples</td>
<td>MSC-11018</td>
<td>04</td>
</tr>
<tr>
<td>Thermodynamic properties of saturated liquid parahydrogen charted for important</td>
<td>B66-10243</td>
<td>05</td>
</tr>
<tr>
<td>Subject Index</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Adaptive control circuit prevents amplifier saturation</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Possible correlation between work-hardening and fatigue-failure</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Experimental program to investigate transonic flow around protuberances</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Versatile machine mills, saws light materials</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Hole saw drill attachment has zero force reaction</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Traveling-wave tube circuit simplifies microwave relay</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Circuit operates as sine function generator</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Circuit provides accurate four-quadrant multiplication</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Series transistors isolate amplifier from flyback voltage</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Continuous wave detector has wide frequency range</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Computer program generates averaged value data tapes</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Study made of large amplitude fuel sloshing</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Computer program performs rectangular fitting stress analysis</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Accurate digital technique simulates flight control system</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Improved phase-shift-keyed detector</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>System for computing operational probability equations</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Novel clamps align large rocket cases, eliminate back-up bars</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Analysis of stability-critical orthotropic cylinders subjected to axial compression</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Saturn S-2 Automatic Software System</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Space-saving hoist for tank manholes</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Phantom plane displays detect incipient failure in servo system testing</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Tool facilitates installation of Marson clamps</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Study of theory and application of long duration heat flux transducers</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>System automatically provides dynamic launch decision criteria</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Earth orbit rendezvous evaluation program</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>New method for critical failure prediction of complex systems</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Improved technique for digital simulation of bending and slosh phenomena</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
<tr>
<td>Monte Carlo simulation by computer for life-cycle costing</td>
<td>[HSC-10346 03] 05</td>
<td></td>
</tr>
</tbody>
</table>
SCALING
Subroutines GEORGE and DRASTC simplify operation of automatic digital plotter
SUB-10044 B67-10222 06
Locating and sealing air leaks in multiroomed buildings
SUB-10304 B68-10024 05
High-energy, high-power, long-life battery
LEWIS-10724 B69-10131 01

SCALING LAWs
Experimental scaling study of fluid amplifier elements
M-PS-1882 B67-10088 02

SCANNERS
Multiple port pressure scanner valve features greater accuracy, quicker data
JPL-555 B64-10031 05
Distant objects detected visually with optical filters
LANGLEY-166 B65-10252 02
Ultrasonic recording scanner used for nondestructive weld inspection
M-PS-284 B66-10220 01
Ultrasonic hand tool allows convenient scanning of spot welds
M-PS-539 B66-10289 02
Instrument calculates moments of inertia of complex plane figures
MSC-628 B66-10306 01
Photoelectric scanner makes detailed work function maps of metal surface
JPL-SC-176 B66-10440 01
Thermionic scanner pinpoints work function of emitter surfaces
JPL-SC-177 B66-10444 01
Electrical continuity scanner facilitates identification of wires for soldering to connectors
MSC-626 B66-10605 01
Motion drive system is accurately controlled in the 1-micron range
JPL-864 B66-10695 05
Instrument sequentially samples ac signals from several accelerometers
JPL-884 B67-10029 01
High impact pressure regulator withstands impacts of over 15,000 g
NFO-10175 B67-10274 01
New electron microscope employs new video display technique
ARG-158 E67-10312 03
Electronic test instrument generates extremely small current signals
ARG-276 B67-10318 01
Computer program utilizes FORTRAN subroutines for contour plotting
NFO-10127 B67-10323 06
Brass joint quality tested electromagnetically
M-PS-12795 B67-10333 01
Development of mechanized ultrasonic scanning system
M-PS-13638 B68-10004 05
Circuit enhances vertical resolution in raster scanning systems
MSC-12123 B68-10121 01
Improved electro-optical tracking system
M-PS-14791 B68-10311 01

SCATTERING CROSS SECTIONS
System for measuring spatial distribution of ejected droplets, a concept
NFO-10185 B68-10402 01
Microscopes and computers combined for analysis of chromosomes
ARG-10256 B69-10088 04
Ring laser angle encoder
MSC-13099 B69-10115 01
Surface irregularities detected by flare inspection instrument
M-PS-20157 B69-10152 01
Multipurpose binocular scanning apparatus
NFO-11002 B69-10311 02
Phase multiplying electronic scanning array
NFO-10302 B69-10381 01

SCANNING
An improved method for testing performance of vidicons during vibration
JPL-SC-113 B66-10442 01
Scan rate converter for tape recording and playback of TV pictures
NFO-10166 B67-10676 01
Closed circuit TV system automatically guides welding arc
M-PS-20008 B68-10357 01
Determination of the absolute contours of optical flats
ARG-10352 B69-10209 05
A thirty-six element array antenna system
M-PS-20435 B69-10390 01
Technique for pinpointing submicron particles in the electron microscope
Hq-10043 B69-10465 01
Electrooptical scanning of films
NFO-11106 B69-10568 01
Flexible high-voltage supply for experimental electron microscope
ARG-10482 B69-10603 01
System converts slow-scan to standard fast-scan TV signals
MSC-90534 B69-10748 01

SCARPING
Study made to establish parameters and limitations of explosive welding
M-PS-13006 B67-10393 05

SCATTERING CROSS SECTIONS
Calculation of resonance neutron absorption in two-region problems /the GIAROL code/
SUB-10045 B67-10223 06
Quantum mechanical calculations of reactive scattering cross sections in bimolecular encounters
M-PS-13594 B67-10527 03
Compilation of detection sensitivities in thermal-neutron activation
ARG-10068 B67-10641 03
Computer program /P1-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas
NUC-1041

Electron interaction in matter
M-PS-14886

SCAVAGING

Primary radical yields in pulse irradiated alkaline aqueous solution
ARG-10322

SCAVAGING

Actuator device schedules rate of valve closure
M-PS-1556

SCHEDULING

Vis-A-Plan /visualize a plan/ management technique provides performance-time scale
KSC-10073

KOPE /Kalendar Oriented Program Efforts/ provides data for management decisions
N-PS-12331

Computerized Schedule Effectiveness Technique /SET/ determines present and future schedule position
N-PS-13012

Automatic planning concept - An analysis of optimum scheduling
N-PS-14188

DSN seven day/twelve week schedule program
EPPO-10752

Visual task analysis /VISTA/
M-PS-14716

Programmed schedule holds for improving launch vehicle holds
M-PS-14502

SCHOOLS

Handbooks for nondestructive testing using ultrasonics
M-PS-20409

SCINTILLATION

Thin carbon film serves as UV bandpass filter
B66-10060

Tunnel diode circuit used as nanosecond-range time marker
ARG-90164

Dual-mode operation of a neutron source, a concept
HQ-10106

Direct in-vial collection for liquid-scintillation assay of carbon-14 and tritium
ARG-10424

SCINTILLATION COUNTERS

Cesium iodide crystals fused to vacuum tube faceplates
CSFC-67

Plastic scintillator converts standard photomultiplier to ultraviolet range
ERC-9

Nondestructive test method accurately sorts mixed bolts
M-PS-1426

Radioactive method enables determination of surface areas rapidly and accurately
NS-0088

Thermal neutron image intensifier tube provides brightly visible radiographic pattern
ARG-120

New electron microscope employs new video display technique
ARG-158

Epoxy resins produce improved plastic scintillators
ARG-241

The response of monoenergetic gamma rays in finite media are investigated
ARG-10295

Mossbauer vibration calibration systems evaluated
M-PS-20014

Recent development in organic scintillators
ARG-10344

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331

Improved pulse shape discriminator for fast neutron-gamma ray detection system
ARG-10462

Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ARG-90261

Electro-Plan /visualize a plan/ management technique provides performance-time scale
KSC-10073

Recent development in organic scintillators
ARG-10344

Direct measurement of carbon-14 in carbon dioxide by liquid scintillation counting
ARG-10237

Improved method of dicing integrated circuit wafers into chips
ERC-10138

Direct in-vial collection for liquid-scintillation assay of carbon-14 and tritium
ARG-10424

COATING

Run-in with chemical additive protects gear surface
M-PS-548

Film coating permits low-force scribining
M-PS-990

Scribable coating for plastic films
M-PS-11194

Coaxial cable stripping device facilitates RF cabling fabrication
EPPO-10315

Restricted-flow junction between liquids
FPO-10682

Improved method of dicing integrated circuit wafers into chips
ERC-10138

Mounting method improves electrical and vibrational characteristics of screen electrodes
M-PS-20169

Mounting method improves electrical and vibrational characteristics of screen electrodes
M-PS-20169

SCREEN EFFECT

Luminescent screen composition for cathode ray tubes
ERC-19

Mounting method improves electrical and vibrational characteristics of screen electrodes
M-PS-20169

SCREENS

Technique for abrasive cutting of thick-fil conductors for hybrid circuits
B66-10235

Filter for high-pressure gases has easy take-down, assembly
JPL-373

Servo system facilitates photoelastic strain measurements on resins
JPL-504

Fine-mesh screen made by simplified method
WOO-104

I-574
Screening technique makes reliable bond at room temperature
M-FS-227 B65-10004 03

Library of documents compressed into lap-held display kit
MSC-125 B65-10030 01

Nozzles for size reclassification of microfog particles
LEWIS-10705 B65-10076 05

Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid
GSFC-10764 B66-10227 05

SCREWS
V-slotted screw head and matching driving tool facilitate insertion and removal of screw fasteners
PMC-16 B63-10023 05

Screw locking cups quickly and neatly crimped
RU-0009 B65-10049 05

Coiled spring makes self-locking device for threaded fasteners
MSC-149 B65-10135 05

Electrochemical flowmeter accurately monitors fluid flow
GSFC-357 B65-10273 01

Die and telescoping punch form convolutions in thin diaphragms
JPL-SC-135 B65-10393 05

Adhesive-backed terminal board eliminates mounting screws
MSC-173 B65-10396 01

Expandable insert serves as screw anchor
MSC-301 B66-10132 05

Mounting facilitates removal and installation of flame-detector rods
M-FS-555 B66-10150 05

Quick-attach clasp
XFR-05421 B68-10250 05

Countersunk head screw retainer
M-FS-16481 B69-10282 05

Shock-absorbent mountings for bearings
WPO-10626 B69-10331 05

Removal of retaining washers of the waffle-spring type
MSC-15531 B69-10350 05

Precisely repeatable rotary mechanism
WPO-10679 B69-10696 05

SDS 930 COMPUTER
Computer program for Video Data Processing
System /VPDPS/ WPO-10042 B67-10630 06

X-Y plotter adapter developed for SDS-930 computer
WPO-10220 B67-10654 06

ABTAJ on-site tracking prediction program
WPO-10836 B69-10103 06

SEA WATER
Emergency solar still desalts seawater
MSC-135 B65-10214 03

Buoyant stokes’ litter assembly used for sea rescue operations
MSC-131 B66-10019 05

Sea dye marker provides visibility for 20 hours
MSC-714 B66-10313 03

Proposed gas generation assembly would recover deeply submerged objects
SAR-10007 B68-10211 05

Separation of traces of metal ions from sodium matrices
ABS-10341 B69-10168 03

SEALERS
Oil-smear models aid wind tunnel measurements
LANGley-4 B63-10311 03

Composite seal reduces alkaline battery leakage
GSFC-337 B65-10271 01

Liquid trap seals thermocouple leads
I-FS-688 B66-10212 05

Thermoplastic rubberlike material produced at low cost
JPL-337 B67-10350 03

Screw locking cups quickly and neatly crimped
NU-0009 B65-10049 03

Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment
NUC-10083 B67-10350 03

Coiled spring makes self-locking device for threaded fasteners
ISC-149 B65-10135 03

Dynamic captive plastic seal
I-FS-10705 B66-10076 03

Electrochemical flowmeter accurately monitors fluid flow
GSPC-357 B65-10273 01

Inspection criteria ensure quality control of parallel gap soldering
I-35-14530 B68-10257 05

Die and telescoping punch form convolutions in thin diaphragms
JPL-SC-135 B65-10393 05

Electromechanical flowmeter accurately monitors fluid flow
GSPC-357 B65-10273 01

Thermoplastic rubberlike material produced at low cost
JPL-337 B67-10350 03

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401 B65-10370 01

Fratography can be used to analyze failure modes in polytetrafluoroethylene of flame-detector rods
H-18-20294 B66-10257 05

Inspection criteria ensure quality control of parallel gap soldering
I-35-14530 B68-10257 05

Ductile iron facilitates forming of soft, sticky materials
KSC-10262 B69-10331 05

Improved cure method for single component silicone rubber
MSC-12230 B69-10749 03

Vented piston seal prevents fluid leakage between two chambers
JPL-179 B63-10141 05

Packless valve with all-metal seal handles wide temperature, pressure range
JPL-361 B63-10228 05

Design of valve permits sealing even if the stem is misaligned
LEWIS-38 B63-10341 05

Liquid-level meter has no moving parts
M-FS-3 B63-10370 03

Vacuum-type backup bar speeds weld repairs
M-FS-12 B63-10384 05

Tool facilitates sealing of metal fill tubes
MSC-24 B63-10519 05

Cryogenic waveguide window is sealed with plastic foam
JPL-559 B69-10519 05

Blade valve isolates compartment in pipe, opens to allow free flow
JPL-585 B64-10188 05

Pressure molding of powdered materials improved by rubber mold insert
WPO-190 B64-10270 03
<table>
<thead>
<tr>
<th>Connector seals fluid lines at cryogenic temperatures and high vacuums</th>
<th>B64-10327 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of tear ring permits repair of sealed module circuitry</td>
<td>B65-10014 05</td>
</tr>
<tr>
<td>Metal sheath improves thermocouple using graphite in one leg</td>
<td>B65-10051 01</td>
</tr>
<tr>
<td>Seal allows blind assembly and thermal expansion of components</td>
<td>B65-10053 05</td>
</tr>
<tr>
<td>Low-cost seal compensates for surface irregularities</td>
<td>B65-10160 05</td>
</tr>
<tr>
<td>Diaphragm eliminates leakage in cryogenic fluid duct coupling</td>
<td>B65-10227 05</td>
</tr>
<tr>
<td>Coating method enables low-temperature brazing of stainless steel</td>
<td>B65-10250 03</td>
</tr>
<tr>
<td>Improved poppet valve provides positive damageproof seal</td>
<td>B65-10346 05</td>
</tr>
<tr>
<td>Flexible plastic ring assembly makes durable shaft seal</td>
<td>B65-10367 05</td>
</tr>
<tr>
<td>Lightweight door seals cryogenic container against diaphragm type loading</td>
<td>B65-10402 05</td>
</tr>
<tr>
<td>Electron beam seals outer surfaces of porous bodies</td>
<td>B66-10033 03</td>
</tr>
<tr>
<td>Rotating mandrel speeds assembly of plastic inflatables</td>
<td>B66-10137 05</td>
</tr>
<tr>
<td>Bismuth alloy potting seals aluminum connector in cryogenic application</td>
<td>B66-10138 03</td>
</tr>
<tr>
<td>Circular, explosion-proof lamp provides uniform illumination</td>
<td>B66-10156 02</td>
</tr>
<tr>
<td>Special tool seals conductors with combination of plastic sleeves</td>
<td>B66-10209 05</td>
</tr>
<tr>
<td>Pressure seal ring may be effective over wide temperature range</td>
<td>B66-10211 05</td>
</tr>
<tr>
<td>Expandable rubber plug seals openings for pressure testing</td>
<td>B66-10229 05</td>
</tr>
<tr>
<td>Insert sleeve prevents tube soldering contamination</td>
<td>B66-10229 05</td>
</tr>
<tr>
<td>Brazing process using Al-Si filler alloy reliably bonds aluminum parts</td>
<td>B66-10338 05</td>
</tr>
<tr>
<td>Pressure-welded flange assembly provides leak tight seal at reduced bolt loads</td>
<td>B66-10347 05</td>
</tr>
<tr>
<td>Diffusion bonding makes strong seal at flanged connector</td>
<td>B66-10250 05</td>
</tr>
<tr>
<td>Critical parts are stored and shipped in environmentally controlled reusable container</td>
<td>B66-10258 05</td>
</tr>
<tr>
<td>Seal surfaces protected during assembly</td>
<td>B66-10258 05</td>
</tr>
</tbody>
</table>
sheathed instrumentation cables B66-10704 05
Visco seal design offers zero-leakage and wear-free characteristics B67-10047 05
Vacuum chamber is remotely sealed by eutectic metal B67-10059 05
Undercoat prevents blistering of silver plating at elevated temperatures B67-10096 05
Cryogenic seal remains leaktight during thermal displacement A66-96 06
Cracks in glass electrical connector headers removed by dry blasting with fine abrasive LEWIS-301 B67-10148 03
Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination AGR-184 B67-10202 05
Welding, bonding, and sealing of refractory metals by vapor deposition LEWIS-123 B67-10232 03
Inexpensive cryogenic insulation replaces vacuum jacketed line UCC-10061 B67-10264 02
Pipe joints reinforced in place with fitted aluminum sleeves USA-11109 B67-10271 05
Static seal concept to accommodate seat tolerances N-PS-18254 B67-10285 05
Segmented, arch-bound carbon seal is pressure loaded N-PS-12777 B67-10325 05
Low-energy gamma ray inspection of brazed aluminum joints NCC-1189 B67-10337 02
Study made of anodized aluminum circuit boards N-PS-13580 B67-10425 01
Hand-operated plug insertion valve N-PS-12019 B67-10466 05
Dynamic valve seal is reliable at cryogenic temperatures N-PS-12987 B67-10526 05
Flame sprayed dielectric coatings improve heat dissipation in electronic packaging N-PS-13569 B67-10534 01
Fluorocarbon seal replaces metal piston ring in low density gas environment LEWIS-10277 B67-10597 05
Development of helical seal for high temperature/2000 degree F application N-PS-13304 B67-10655 05
Cryogenic seal concept for static and dynamic conditions N-PS-12986 B67-10673 05
Heat-shrink plastic tubing seals joints in glass tubing LEWIS-10329 B68-10040 05
Inspection criteria ensure quality control of parallel gap soldering N-PS-14530 B68-10257 05
Electron beam selectively seals porous metal filters LEWIS-10162 B66-10331 05
Hydrostatic testing of porous assemblies M-PS-18298 B66-10439 05
Frangible electrochemical cell and sealing technique IGS-10010 B66-10055 01
Insertion device for pressure testing MNS-15185 B66-10061 03
Advances in aluminum anodizing N-PS-14600 B66-10144 05
Sealing a rubber bladder between two sections of an accumulator N-PS-20403 B66-10355 05
Heat-shrinkable jacket holds fluid in contact with tensile test specimen MSC-13195 B69-10495 05
Two-functional seal for hose connection N-PS-14802 B69-10586 05
Sealed container sampling device GSFC-10690 B66-10682 03
Fluid sample collection and storage device LBUIS-10162 B67-10682 05
Seals (SToppers)
High-temperature, high-pressure spherical segment valve provides quick opening ARC-13 B63-10431 05
Elastomers bonded to metal surfaces seal electrochemical cells GSFC-168 B64-10113 03
Quick-disconnect coupling safe transfer of hazardous fluids LEWIS-125 B67-10202 05
Ring valve responds to differential pressure changes W0O-247 B66-10022 05
Resilient clamp holds fuel cell stack through thermal cycle MSC-313 B66-10035 05
High-pressure, low temperature electrical connector makes no-leak seal NCC-276 B66-10079 02
Cryostat modified to aid rotating beam fatigue test N-PS-435 B66-10083 03
Capacitive system detects and locates fluid leaks N-PS-478 B66-10099 01
Intermediate rotating ring improves reliability of dynamic shaft seal N-PS-575 B66-10197 05
Fiberglass container shells form contamination-free storage units W00-275 B66-10217 05
Expandable rubber plug seals openings for pressure testing B0-0048 B66-10229 05
Fluid damping reduces bellows seal fatigue failures N-PS-565 B66-10245 05
Diffusion bonding makes strong seal at flanged connector N-PS-637 B66-10250 05
Flow ring valve is simple, quick-acting N-PS-752 B66-10255 05
Seals surfaces protected during assembly
B-H-0067  B66-10266  05

Bypass rod transfers heat developed in thermonic diode
JPL-SC-136  B66-10303  05

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics
LEWIS-320  B66-10373  03

Labyrinth-type valve seat increases valve life by decreasing fluid velocity
M-PS-1051  B66-10424  05

In-tank shutoff valve is provided with maximum blast protection
M-PS-1529  B66-10514  05

Cryogenic seal remains leaktight during thermal displacement
ABQ-96  B67-10134  02

Static seal concept to accommodate seat tolerances
M-PS-1854  B67-10285  05

Ultransonic wrench produces leaktight connections
M-PS-12561  B67-10353  05

Single-source mechanical loading system produces biaxial stresses in cylinders
M-PS-12530  B67-10380  05

Development of lunar drill to take core samples to 100-foot depths
M-PS-13015  B67-10529  05

Eddy current disk valve
LEWIS-10123  B67-10638  05

Development of helical seal for high temperature/2000 degrees F/ application
M-PS-13304  B67-10655  05

Cryogenic seal concept for static and dynamic conditions
M-PS-12886  B67-10673  05

Asbestos and Inconel combined to form hot-gas seal
M-PS-14004  B67-10162  05

Spiral-grooved shaft seals substantially reduce leakage and wear
LEWIS-10397  B68-10270  05

Between-bearing shaft seal, a concept
M-PS-18179  B68-10286  05

Hand-tightened, high-pressure seal
M-PS-18416  B68-10417  05

Evaluation of a fluorocarbon plastic used in cryogenic valve seals
M-PS-18189  B68-10523  03

Tube joint leak repair coupling
MSC-10042  B68-10540  05

Abrasion and resistant discharge valve developed
ARG-10219  B69-10044  05

Tools made of ice facilitate forming of soft, sticky materials
MSC-10262  B69-10199  05

Sealing a rubber bladder between two sections of an accumulator
M-PS-20463  B69-10355  05

Flared-tube fittings with replaceable seat inserts
MSC-15372  B69-10519  05

Burst diaphragm leak detector

SUBJECT INDEX

M-PS-14500  B69-10543  03

High-pressure seals for rotary shafts
M-PS-18548  B69-10649  05

SEAS (JOINTS)

Method of welding joint in closed vessel improves quality of seal
JPL-170  B63-10139  05

Rotating mandrel speeds assembly of plastic inflatables
LANGLEY-155  B66-10137  05

Hollow spherical rotors fabricated by electroplating
JPL-SC-117  B66-10366  05

SEARCHING

System locates randomly placed remote objects
LANGLEY-209  B66-10315  01

Computer optimization program finds values for several independent variables that minimize a dependent variable
M-PS-13030  B67-10328  06

Reidentifying hardware after loss of serial number
M-PS-18133  B69-10059  05

SEARCHLIGHTS

Improved carbon electrode reduces arc sputtering
MSC-219  B66-10026  01

SEAS

Discrimination of fish oil and mineral oil slicks on sea water
BC-10412  B69-10673  01

SEAT BELTS

Break-up of metal tube makes one-time shock absorber, bars rebound
LANGLEY-14  B63-10304  05

Buoyant stokes litter assembly used for sea rescue operations
MSC-131  B66-10019  05

SEATS

Valve designed with elastic seat
JPL-442  B65-10040  05

Flared-tube fittings with replaceable seat inserts
MSC-15372  B69-10519  05

Improved solenoid valve design
GSPC-10607  B69-10704  05

SECONDARY EMISSION

Lightweight coaxial cable connector reduces signal loss
JPL-720  B65-10244  01

SECTIONS

Study made of destructive sectioning of complex structures for examination
LEWIS-341  B66-10676  05

SECURITY

Security warning system monitors up to fifteen remote areas simultaneously
MSC-66-39  B66-10548  01

SEERBE EFFECT

Thermoelectric metal comparator determines composition of alloys and metals
ABQ-235  B67-10035  01

Identification of thermocouple material
M-PS-18540  B69-10356  01

SEEDS

Study made of relationship between growth and metabolism
ARG-10046  B67-10604  04
SUBJECT INDEX

SEEPAGE
Restricted-flow junction between liquids
NPO-10682 B69-10332 02

SEGMENTS
Extensible column can be stowed on drum
JPL-686 B65-10191 05
Segmented ball valve is easy to open and close
WOO-248 B66-10195 05
Pressure vessels fabricated with high-strength wire and electroformed nickel
N-PS-580 B66-10218 05
Segmented Side-PbTe couples
GSFC-10746 B69-10233 01

SEISMIC WAVES
Unmanned seismometer levels self, corrects drift errors
GSFC-100 B63-10551 01
Seismometer designed for remote operation in random orientation
JPL-320 B66-10085 01

SEISMOGRAPHS
Unmanned seismometer levels self, corrects drift errors
GSFC-100 B63-10551 01
Ultra-sensitive transducer advances micro-measurement range
ARC-26 B64-10004 01
Seismometer designed for remote operation in random orientation
JPL-320 B66-10085 01
Seismographic recording of large rocket engine operation
N-PS-20585 B69-10756 01

SEISMOLOGY
Seismic transducer measures small horizontal displacements
N-PS-81 B65-10029 05

SELECTIVITY
Study of behavior of sterols at interfaces
ARS-10085 B68-10281 03
Tunable bandpass filter with variable selectivity
ARC-10191 B69-10130 01

SELENIUM
Environmental study of miniature slip rings
N-PS-2443 B67-10210 05

SELENIUM
Selenium bond decreases ON resistance of light-activated switch
JPL-SC-101 B65-10324 01
Electrically conductive fibers thermally isolate temperature sensor
GSFC-456 B66-10349 01
Automatic bird watcher
ARS-10342 B69-10286 02

SELENIUM OXIDES
Synthesis of perbromates
ARS-10859 B69-10647 03

SELENOGRAFHER
Non dispersive X-ray emission analysis for geochemical exploration
GSFC-10568 B69-10011 02

SELF ALIGNMENT
Self-aligning fixture used in lathe chuck jaw indexing
FBC-21 B65-10198 05
Floating device aligns blind connections
MSC-256 B66-10007 05

Quick attach and release fluid coupling assembly is self-aligning, self-sealing
KSC-66-8 B66-10627 05
Self-aligning rod prevents eccentric loading of tensile specimens
WUC-10525 B67-10594 05
Foil bearing support for high-speed rotor
HQ-10315 B69-10661 05

SELF DEPLOYING DEVICES
Self-inflating lifevest stores in small package
B66-10184 04
Metal tube can be folded for compact stowage, is self-erecting
LEWIS-288 B66-10450 05
Automatic telemetry checkout system
B67-10402 01
Quick-acting backup tool for welding ducts
N-PS-10404 B69-10396 05

SELF LUBRICATING MATERIALS
Composites of porous metal and solid lubricants increase bearing life
LEWIS-307 B67-10007 03
Self-lubricating gear
N-PS-14971 B69-10408 05

SELF LUBRICATION
Unique gear design provides self-lubrication
JPL-SC-079 B65-10366 03
Compact retractor protects cabling loops
N-PS-561 B66-10018 05

SELF OSCILLATION
Voltage regulator/amplifier is self-regulated
KSC-1240 B67-10156 01

SELF SEALING
Quick attach and release fluid coupling assembly is self-aligning, self-sealing
KSC-66-8 B66-10627 05
Self-sealing closure enables access to several fluid containers
NFO-10123 B67-10207 04
Fire retardant foams developed to suppress fuel fires
ARC-10098 B68-10358 03

SEMICONDUCTING FILMS
Modified developer increases line resolution in photosensitive resist
GSFC-386 B65-10278 01
Capacitive system detects and locates fluid leaks
N-PS-478 B66-10099 01
Single-crystal semiconductor films grown on foreign substrates
WOO-076 B66-10225 01
Process facilitates photore sist mask alignment on SiC crystals
N-PS-2394 B67-10144 01

SEMICONDUCTOR DEVICES
Thermocompression bonding produces efficient surface-barrier diode
JPL-SC-066 B65-10007 05
Optical arrangement increases useful light output of semiconductor diodes
JPL-SC-064 B65-10020 05
Photoelectric semiconductor switch operates with low level inputs
JPL-SC-068 B65-10033 01
Piezoresistive gage tests pin-connector

I-579
<table>
<thead>
<tr>
<th><strong>SUBJECT INDEX</strong></th>
<th><strong>SEMI CONDUCTOR JUNCTIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse-height defect due to electron interaction in dead layers of Ge/Li/ gamma-ray detectors B69-10767</td>
<td>02</td>
</tr>
<tr>
<td><strong>SEMI CONDUCTOR JUNCTIONS</strong></td>
<td><strong>SEMI CONDUCTOR JUNCTIONS</strong></td>
</tr>
<tr>
<td>Impurity diffusion process for silicon semiconductors is fast and precise B65-10300</td>
<td>01</td>
</tr>
<tr>
<td>Vapor grown silicon dioxide improves transistor base-collector junctions B66-10091</td>
<td>01</td>
</tr>
<tr>
<td>Improved chopper circuit uses parallel transistors B66-10113</td>
<td>01</td>
</tr>
<tr>
<td>Optically driven switch turn-off time reduced by opaque coatings B66-10141</td>
<td>01</td>
</tr>
<tr>
<td>Diffusion technique stabilizes resistor values B66-10142</td>
<td>01</td>
</tr>
<tr>
<td>Circuit protects regulated power supply against overload current B66-10292</td>
<td>01</td>
</tr>
</tbody>
</table>

| **SEMI CONDUCTORS (MATERIALS)** | **SEMI CONDUCTORS (MATERIALS)** |
| Temperature-compensation circuit stabilizes performance of viologens B64-10226 | 01 |
| Radiation-detector optical-imaging device is of simplified construction B64-10299 | 01 |
| High permeability semiconductors permit close-tolerance soldering B65-10134 | 05 |
| Refractory coating protects intricate graphite elements from high-temperature hydrogen NU-0027 B66-10084 | 01 |
| Status of ultrachemical analysis for semiconductors B67-10138 | 03 |
| Process controls introduction of selected impurities into semiconductor wafers B67-10303 | 01 |
| Silicon strain sensors enable pressure measurement at cryogenic temperatures B69-10690 | 01 |

<p>| <strong>sockets</strong> | <strong>JPL-675</strong> | B65-10128 | 01 |
| Thin-film semiconductor rectifier has improved properties | <strong>MSC-207</strong> | B66-10012 | 01 |
| Optically driven switch turn-off time reduced by opaque coatings | <strong>JPL-SC-107</strong> | B66-10141 | 01 |
| Radiation used to temperature compensate semiconductor strain gages | <strong>LANGLEY-207</strong> | B66-10186 | 02 |
| Apparatus presents visual display of semiconductor surface characteristics | <strong>JPL-665</strong> | B66-10200 | 01 |
| Semiconductor forms biomedical radiation probe | <strong>MSC-320</strong> | B66-10252 | 04 |
| System for etching thick aluminum layers minimizes bridging and undercutting | <strong>M-FS-1366</strong> | B66-10400 | 03 |
| Semiconductors can be tested without removing them from circuitry | <strong>M-FS-1163</strong> | B66-10847 | 01 |
| Computer program searches characteristic data of diodes and transistors | <strong>GSFC-493</strong> | B66-10529 | 01 |
| Process facilitates photoresist mask alignment on SiC crystals | <strong>M-FS-2394</strong> | B67-10144 | 01 |
| Thermal and bias cycling stabilizes planar silicon devices | <strong>BEC-40</strong> | B67-10176 | 01 |
| Alpha particle backscattering measurements used for chemical analysis of surfaces | <strong>ARG-116</strong> | B67-10186 | 03 |
| Fused diode provides visual indication of fuse condition | <strong>MSC-67-16</strong> | B67-10230 | 01 |
| Thermionic diode switching has high temperature application | <strong>NFO-10404</strong> | B67-10672 | 01 |
| Bilateral, zero-impedance static semiconductor switch | <strong>LWIS-10129</strong> | B68-10118 | 01 |
| Semiconductor ac static power switch | <strong>LWIS-10344</strong> | B68-10224 | 01 |
| Feasibility study of wireless power transmission systems | <strong>M-FS-14691</strong> | B68-10309 | 01 |
| CIRCUIS—a digital computer program for transient analysis of electronic circuits | <strong>M-FS-15002</strong> | B68-10416 | 06 |
| Silicon carbide diode for increased light output | <strong>M-FS-20063</strong> | B69-10096 | 01 |
| Radiation tolerant silicon nitride insulated gate field effect transistors | <strong>GSFC-10581</strong> | B69-10253 | 01 |
| Concept for improved vacuum pressure measuring device | <strong>M-FS-20172</strong> | B69-10421 | 02 |
| Improved method of dicing integrated circuit wafers into chips | <strong>ERC-10138</strong> | B69-10441 | 01 |
| Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces | <strong>ERC-10254</strong> | B69-10689 | 01 |</p>
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>SENSITIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>B68-10262</td>
<td>01</td>
</tr>
<tr>
<td>B68-10327</td>
<td>01</td>
</tr>
<tr>
<td>B68-10333</td>
<td>01</td>
</tr>
<tr>
<td>B68-10355</td>
<td>02</td>
</tr>
<tr>
<td>B68-10562</td>
<td>01</td>
</tr>
<tr>
<td>B69-10048</td>
<td>03</td>
</tr>
<tr>
<td>B69-10221</td>
<td>01</td>
</tr>
<tr>
<td>B69-10225</td>
<td>01</td>
</tr>
<tr>
<td>B69-10377</td>
<td>05</td>
</tr>
<tr>
<td>B69-10460</td>
<td>01</td>
</tr>
<tr>
<td>B69-10480</td>
<td>01</td>
</tr>
<tr>
<td>B69-10699</td>
<td>01</td>
</tr>
<tr>
<td>B69-10732</td>
<td>01</td>
</tr>
<tr>
<td>B69-10823</td>
<td>02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SENSITIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra-sensitive transducer advances micro-measurement range B64-10004 01</td>
</tr>
<tr>
<td>Sensitive low-pressure relief valve has positive seating against leakage WOO-041 B64-10278 05</td>
</tr>
<tr>
<td>Sensitive level sensor made with spirit level, gives electrical output LANGLEY-49 B65-10067 01</td>
</tr>
<tr>
<td>Noncontacting vibration transducer has constant sensitivity LANGLEY-99 B65-10392 01</td>
</tr>
<tr>
<td>Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths GSFC-422 B66-10051 01</td>
</tr>
<tr>
<td>Auxiliary coil controls temperature of RF induction heater GSFC-428 B66-10067 01</td>
</tr>
<tr>
<td>Rod and dish cathode improves penning-type vacuum gage GSFC-447 B66-10082 01</td>
</tr>
<tr>
<td>Highly sensitive solids mass spectrometer uses inert-gas ion source SRC-11 B66-10114 02</td>
</tr>
<tr>
<td>Surfactant for dye-penetrant inspection is insensitive to liquid oxygen B66-10131 03</td>
</tr>
<tr>
<td>Binary fluid amplifier solves stability and load problems ERC-15 B66-10177 01</td>
</tr>
</tbody>
</table>

| Power consumption in acoustic amplifiers under conditions of maximum stable gain GSFC-10067 |
| Temperature or pressure controller LEWIS-10297 |
| Electron beam recrystallization of amorphous semiconductor materials LEWIS-10443 |
| Reliable method for testing gross leaks in semiconductor component packages B68-10556 |
| Study of fluoride corrosion of nickel alloys ARG-10024 |
| Multiple-mask chemical etching ISC-13114 |
| RF noise suppression using the photodielectric effect in semiconductors B68-10658 |
| Calibratable solid-state pressure switch B69-10437 |
| Optimizing solar-cell grid geometry EQ-10477 |
| An unconventional magnetically-coupled multivibrator EQ-10226 |
| Pulsed high-voltage dc RF sputtering LEWIS-10920 |
| Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites B69-10732 |
| Determination of permissible applied load stress in structural elements B69-10823 |
| Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions ARG-147 B67-10298 01 |
| Practical new method of measuring thermal-neutron fluence NUC-10086 B67-10352 02 |
| Measuring coplanarity of surfaces B68-10221 |
| Instrumentation monitors transported material through variety of parameters B68-10545 01 |
| Lamb waves increase sensitivity in nondestructive testing ARG-10069 B67-10605 02 |
| Compilation of detection sensitivities in thermal-neutron activation ARG-10059 B67-10614 03 |
| Review of biological mechanisms for application to instrument design B67-10663 04 |
| Liquid crystal calibrator B68-10221 03 |
| Detection sensitivities in 3-8 MeV neutron activation ARG-10210 B68-10298 02 |
| Temperature or pressure controller LEWIS-10257 B68-10337 02 |

**I-581**
is safe for use near combustible substances
LEWIS-195 B66-10482 01

Sensors measure surface ablation rate of
reentry vehicle heat shield
JPL-267 B66-10592 01

Study of theory and application of long
duration heat flux transducers
M-FS-1265 B66-10614 01

Automatic system determines moments of
inertia of asymmetrical objects
M-FS-1769 B66-10636 01

Logic circuitry used to automatically test
shielded cables
EQ-60 B66-10659 01

Miniature capacitive pressure sensor
JPL-903 B67-10020 01

Flow test device fits into restricted
access passages
ESC-1078 B67-10074 01

System maintains constant penetration
during fusion welding
M-FS-937 B67-10091 01

Glow discharge density sensor probe life is
extended
M-FS-1707 B67-10229 01

Improved fuel cell type hydrogen sensor
M-FS-14656 B68-10263 01

Gimbals angle sensor
GSFC-10305 068-10350 01

Explosives actuate nonmagnetic indexing device
GSFC-237 B65-10017 05

Wide angle sensor measures radiant heat energy
in corrosive atmospheres
M-FS-228 B65-10019 05

Microparticle impact sensor measures energy
directly
GSFC-252 B65-10048 01

Sensitive level sensor made with spirit
level, gives electrical output
LANL-49 B65-10067 01

Photodetectors sensor output controlled by
eyeball movements
M-FS-274 B65-10079 01

Transducer senses displacements of panels
subjected to vibration
ABC-37 B65-10085 01

Bolt position sensor switches currents in
brushless dc motors
GSFC-315 B65-10151 01

Ball and socket joints provide accurate
biaxial gimbal
JPL-658 B65-10205 05

Phototransistors used to maintain welding
electrode-to-joint alignment
MSC-243 B65-10401 05

Pressure transducers dynamically tested with
sinusoidal pressure generator
LEWIS-268 B65-10031 01

Microscopic thermocouple monitors own
installation
M-FS-1111 B66-10463 05

Automatic cryogenic liquid level controller
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>SERVICE LIFE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SEPARATED FLOW</strong></td>
<td><strong>SBBIBS</strong></td>
</tr>
<tr>
<td>FORTRAN 4 program calculates velocities and streamlines in a tandem blade turbomachine</td>
<td>LEWIS-10743 B69-10219 06</td>
</tr>
<tr>
<td><strong>SEPARATION</strong></td>
<td><strong>LIPB</strong></td>
</tr>
<tr>
<td>Gas diffusion cell removes carbon dioxide from occupied airtight enclosures</td>
<td>M-PS-116 B64-10319 03</td>
</tr>
<tr>
<td>Splice plate design assures structural separation by mild explosive</td>
<td>M-SC-137 B65-10166 05</td>
</tr>
<tr>
<td>Threaded split ring connector separates structural sections</td>
<td>LANGLEY-145 B65-10383 05</td>
</tr>
<tr>
<td>Dual regulator controls two gases from a single reference</td>
<td>M-SC-227 B66-10167 05</td>
</tr>
<tr>
<td>Use of steel and tantalum apparatus for solution Cd-Hg-Zn alloys</td>
<td>ARC-199 B66-10594 03</td>
</tr>
<tr>
<td>Resistance heating releases structural adhesive</td>
<td>M-PS-1607 B67-10045 05</td>
</tr>
<tr>
<td>Large volume continuous countercflow dianlyzer has high efficiency</td>
<td>HP-70055 B67-10395 04</td>
</tr>
<tr>
<td>Vibration testing and dynamic studies of relays</td>
<td>M-PS-14542 B68-10268 01</td>
</tr>
<tr>
<td>Spiral-grooved shaft seals substantially reduce leakage and wear</td>
<td>LEWIS-10397 B68-10270 05</td>
</tr>
<tr>
<td>Transplutonium elements processed from rock debris of underground detonations</td>
<td>ANG-10222 B69-10054 03</td>
</tr>
<tr>
<td>Improved mouse cage provides versatility and ease in handling laboratory mice</td>
<td>M-SC-12250 B69-10124 04</td>
</tr>
<tr>
<td>Separation of traces of metallic ions from sodium nitrate</td>
<td>ANG-10341 B69-10168 03</td>
</tr>
<tr>
<td>Improved nickel plating of Inconel X-750</td>
<td>M-PS-18604 B69-10463 05</td>
</tr>
<tr>
<td><strong>SEPARATORS</strong></td>
<td><strong>SERVICB LIPB</strong></td>
</tr>
<tr>
<td>Centrifugal device separates liquid from gas</td>
<td>M-SC-262 B65-10394 05</td>
</tr>
<tr>
<td>Automatic fluid separator supplies own driving power</td>
<td>WO-085 B66-10008 02</td>
</tr>
<tr>
<td>Combustion chamber inlet manifold separates vapor from liquid</td>
<td>M-PS-531 B66-10052 05</td>
</tr>
<tr>
<td>Pneumatic separator gives quick release to heavy loads</td>
<td>KSC-66-10 B66-10294 05</td>
</tr>
<tr>
<td>Hydrostatic testing of porous assemblies</td>
<td>M-PS-18298 B68-10439 05</td>
</tr>
<tr>
<td>Separator for alkaline batteries</td>
<td>GSFC-10173 B68-10557 03</td>
</tr>
<tr>
<td>Frangible electrochemical cell and sealing technique</td>
<td>XS-10010 B69-10056 01</td>
</tr>
<tr>
<td>Improved anode design for metal-oxygen cells</td>
<td>LEWIS-10871 B69-10318 01</td>
</tr>
<tr>
<td>Study of high-speed angular-contact ball bearings under dynamic load</td>
<td>M-PS-20542 B69-10367 05</td>
</tr>
<tr>
<td><strong>SEPTUM</strong></td>
<td><strong>COMPUTBBS</strong></td>
</tr>
<tr>
<td>Self-sealing closure enables access to several fluid containers</td>
<td>ANG-10123 B67-10207 04</td>
</tr>
<tr>
<td><strong>SEQUENCING</strong></td>
<td><strong>LAMPS</strong></td>
</tr>
<tr>
<td>Fluid logic control circuit operates nutator actuator motor</td>
<td>LEWIS-294 B66-10593 05</td>
</tr>
<tr>
<td>Monitoring system determines amplitude and time of vibration channel peaks</td>
<td>JPL-879 B66-10699 01</td>
</tr>
<tr>
<td>Multiplexing control device enables handling of wide variations in sampling rates</td>
<td>M-PS-1871 B67-10150 01</td>
</tr>
<tr>
<td>Computer program offers new method for constructing periodic orbits in nonlinear dynamical systems</td>
<td>M-PS-14654 B68-10217 06</td>
</tr>
<tr>
<td>Parallel-to-serial biphase-data converter</td>
<td>M-PS-11600 B68-10241 01</td>
</tr>
<tr>
<td>Acquisition of pseudonoise signals by sequential estimation</td>
<td>M-PS-13898 B68-10258 01</td>
</tr>
<tr>
<td>Simultaneous message framing and error detection</td>
<td>MSC-12001 B68-10330 01</td>
</tr>
<tr>
<td><strong>SEQUENTIAL ANALYSIS</strong></td>
<td><strong>SBBIBS</strong></td>
</tr>
<tr>
<td>Binary sequence detector uses minimum number of decision elements</td>
<td>JPL-673 B66-10264 01</td>
</tr>
<tr>
<td>Study of optimum discrete estimators in measurement analysis</td>
<td>M-PS-14915 B68-10348 02</td>
</tr>
<tr>
<td>Simple quasi-exponential slope generator</td>
<td>NPO-11130 B69-10439 01</td>
</tr>
<tr>
<td><strong>SEQUENTIAL COMPUTERS</strong></td>
<td><strong>SBBIBS</strong></td>
</tr>
<tr>
<td>Concept for simplified serial digital decoder</td>
<td>NPO-10150 B68-10045 06</td>
</tr>
<tr>
<td><strong>SEQUENTIAL CONTROL</strong></td>
<td><strong>SERVICB LIPB</strong></td>
</tr>
<tr>
<td>Ring counter may be advanced or retarded by command signal</td>
<td>GSFC-101 B64-10144 01</td>
</tr>
<tr>
<td>Analog-to-digital converter has increased reliability and reduced power consumption</td>
<td>GSFC-246 B65-10194 01</td>
</tr>
<tr>
<td>Current steering commutator offers versatility</td>
<td>JPL-812 B67-10410 01</td>
</tr>
<tr>
<td><strong>SERIES (MATHEMATICS)</strong></td>
<td><strong>SERVICB LIPB</strong></td>
</tr>
<tr>
<td>Function generator eliminates necessity of series summation</td>
<td>GSFC-218 B66-10351 01</td>
</tr>
<tr>
<td>General series solution technique for bending of irregular laterally loaded flat plates</td>
<td>M-SC-10170 B69-10035 06</td>
</tr>
<tr>
<td><strong>SEQUINS</strong></td>
<td><strong>COMPUTBBS</strong></td>
</tr>
<tr>
<td>Rapid and precise analysis for calcium in blood serum</td>
<td>ANG-10246 B69-10160 04</td>
</tr>
<tr>
<td><strong>SERVICE LIFE</strong></td>
<td><strong>SBBIBS</strong></td>
</tr>
<tr>
<td>Lamp automatically switches to new filament on burnout</td>
<td>LEWIS-10781 B69-10318 01</td>
</tr>
</tbody>
</table>
SBEVOCIPIPLIFI

Gimballed-mirror scanning system capable of spiral pattern
GSFC-10170 B67-10609 02

Hydraulic servo system increases accuracy in fatigue testing
LANGLEY-217 B67-10637 01

Conceptual dead weight device to provide pressure calibration
N-PS-14672 B68-10264 01

Improved electromechanical master-slave manipulator
ARG-10027 B68-10372 05

Low friction servo valve
LWIS-10574 B68-10440 05

Automatic calibration apparatus for telemetry systems
NRO-10566 B68-10514 01

Welding skate with computerized controls
N-PS-20224 B68-10566 01

Microwave interferometer controls cutting depth of plastics
N-PS-14673 B68-10012 01

Torsion system for creep testing with multiple stress reversals
BQ-10039 B68-10147 03

Oculometer for remote tracking of eye movement
ESC-10114 B69-10444 02

SBEVOCIPIPLIFI

Apparatus measures very small thrusts
WGO-046 B64-10284 05

Tension is servo controlled in film advance system
LANGLEY-54 B65-10075 05

Servo calorimeter measures material heating rate
MU-0024 B65-10247 01

Hydraulic servo system increases accuracy in fatigue testing
LANGLEY-217 B67-10637 01

Closed circuit TV system automatically guides welding arc
N-PS-20084 B68-10357 01

Low-cost, fast-response drive circuit for electromagnetic torque motors
LEWIS-10143 B68-10386 01

Remote balance weighs accurately amid high radiation
ARG-10087 B69-10242 05

SBEVOCOUTROL

Tension is servo controlled in film advance system
LANGLEY-54 B65-10075 05

Crystal measures short-term, large-magnitude forces
JPL-77 B65-10187 01

Magnetometer measures orthogonal components of magnetic fields
GSFC-395 B65-10315 01

Quick-response servo amplifies small hydraulic pressure differences
ARG-99 B66-10498 05

Precision CW laser automatic tracking system investigated
N-PS-1606 B66-10629 01

Automatic system determines moments of inertia of asymmetrical objects
N-PS-1769 B66-10636 01

System maintains constant penetration during fusion welding
N-PS-937 B67-10091 01

Low speed, long term tracking electric drive system has zero backlash
NRO-10173 B67-10220 01

Conceptual servo technique for controlling tape drivers
N-PS-12955 B67-10595 01

SBEVOCOUTROL

System measures angular displacement without contact
LANGLEY-46 B65-10073 01

System selects framing rate for spectrograph camera
LANGLEY-55 B65-10086 01

Digital system accurately controls velocity of electromechanical drive
GSFC-287 B65-10096 01

High-gain amplifier has excellent stability and low power consumption
GSFC-272 B65-10138 01

Ball and socket joints provide accurate biaxial gimbals
JPL-658 B65-10205 05

Miniature servo accelerometer is force-balanced
JPL-155 B65-10340 01

Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01

Simulator effects partial gravity conditions
ESC-152 B66-10339 05

Brushless dc motor has high efficiency, long life
GSFC-181 B66-10355 01

Concept of planetary gear system to control fluid mixture ratio
N-PS-1785 B66-10477 05
**SUBJECT INDEX**

**Polyatomic manipulator AP-168**

**Material fatigue data obtained by card-programmed hydraulic loading system**

**Digital servo readout system increases recording accuracy of servo-balance scales**

**Light-controlled resistors provide quadrature signal rejection for high-gain servo systems**

**Phase plane displays detect incipient failure in servo system testing**

**Alternating current electromagnetic servo induction meter**

**Digital laser-beam deflection sensor**

**Hydraulic device provides accurate displacements to microinches**

**Electronic ohmmeter provides direct digital output**

**Noncontacting vibration transducer has constant sensitivity**

**Photosensors used to maintain welding electrode-to-joint alignment**

**Rotary valve controls multiple hydraulic leveling cylinders**

**Light-intensity modulator withstands high heat fluxes**

**Laser measuring system accurately locates point coordinates on photograph**

**Simple motor drive system operates heavy hinged door**

**Closed circuit TV system monitors welding operations**

**Concept for sleeve induction motor with 1-msec mechanical time constant**

**Improved electromechanical master-slave manipulator**

**Remote balance weighs accurately amid high radiation**

**Precise gibbing mechanism**

**Automatic leveling and equalizing hoist device**

**SET THEORY**

**Automatic computation of data-set**

---

**SHAFTS (MACHINE ELEMENTS)**

**Polynomial manipulator AP-168**

**Material fatigue data obtained by card-programmed hydraulic loading system**

**Digital servo readout system increases recording accuracy of servo-balance scales**

**Light-controlled resistors provide quadrature signal rejection for high-gain servo systems**

**Phase plane displays detect incipient failure in servo system testing**

**Alternating current electromagnetic servo induction meter**

**Digital laser-beam deflection sensor**

**Hydraulic device provides accurate displacements to microinches**

**Electronic ohmmeter provides direct digital output**

**Noncontacting vibration transducer has constant sensitivity**

**Photosensors used to maintain welding electrode-to-joint alignment**

**Rotary valve controls multiple hydraulic leveling cylinders**

**Light-intensity modulator withstands high heat fluxes**

**Laser measuring system accurately locates point coordinates on photograph**

**Simple motor drive system operates heavy hinged door**

**Closed circuit TV system monitors welding operations**

**Concept for sleeve induction motor with 1-msec mechanical time constant**

**Improved electromechanical master-slave manipulator**

**Remote balance weights accurately amid high radiation**

**Precise gibbing mechanism**

**Automatic leveling and equalizing hoist device**

**SET THEORY**

**Automatic computation of data-set**
reliability of dynamic shaft seal
SOBJECT 866-10197 05
Mount enables precision adjustment of
optical-instrumentation mirror
M5C-15470 869-10375 05
Torque wrench allows readings from
inaccessible locations
M5C-517 866-10331 05
Extensometer automatically measures
eelongation in elastomers
M5C-598 866-10204 05
Diaphragm spring gives clutch over-center
toggle effect
62PC-499 866-10297 05
Interior servicing platform simplifies
maintenance of storage tanks
MFS-1300 866-10425 05
Flexible drive allows blind machining and
welding in hard-to-reach areas
M5C-524 866-10428 05
Shaft encoder presents digital output
JPL-SC-191 867-10436 01
Braking mechanism is self actuating and
bidirectional
MFS-1299 866-10484 05
Swing-out rail system separates overhead
crane rails
NU-0094 866-10713 05
Lock-disconnect mechanism gives positive
release to joined bodies
MFS-2147 867-10123 05
Resilient bearing supports are gas
controlled
LEWIS-10109 867-10364 05
Machine tests slow-speed sliding friction in
high vacuum
MFS-12341 867-10379 05
Welding torch and wire feed manipulator
MFS-13102 867-10385 05
Shallow grooves in journal improve air
bearing performance
LEWIS-10396 868-10134 05
Between-bearing shaft seal, a concept
MFS-10179 868-10286 05
Remotely operated gripper provides vertical
control rod movement
ARG-10160 868-10359 05
Computer program analyzes whirl critical
speeds and bearing loads for shafts coupled
by nonlinear springs to machine housing
NMC-10308 869-10034 06
Electronic visualization of gas bearing
behavior
LEWIS-10711 869-10073 01
Magneto tuner has locking feature
IMP-09771 869-10119 05
Journal gas bearing for curved surfaces
MFS-20423 869-10182 05
High temperature coatings for gas bearings
LEWIS-10793 869-10200 03
Study of high temperature bearing materials
LEWIS-10829 869-10252 03
Shock-absorbent mountings for bearings
NPO-10626 869-10331 05
Connect-disconnect coupling for preadjusted
rigid shafts
M5C-15470 869-10375 05

Air bearing provides friction-free support
for shaker system slip table
N0-0086 866-10708 05
Vibrator elapsed time is automatically
controlled
MFS-2073 867-10284 01
Pneumatic pressure wave generator provides
economical, simple testing of pressure
transducers
NMC-10024 867-10664 05
Shock and vibration response of multistage
structure
MFS-10972 868-10353 05
Analysis of space vehicle structures using
the transfer-function concept
NPO-11162 869-10337 06
Electronic analog equalization for
vibrational testing
NPO-10544 869-10472 01
Shaker slip-plate adapter
MFS-10463 869-10785 05

Compound taper milling machine
M5C-15174 869-10018 05

Portable flooring protects finished surfaces,
is easily moved
MFS-15 863-10387 05
Device measures curved surface finish on
gear teeth
W00-112 865-10064 05
Aluminized fiberglass insulation conforms
to curved surfaces
MFS-477 866-10024 05
Specimen holder design improves accuracy
of X-ray powder analysis
JPL-SC-165 866-10075 02
Swiveling lathe jaw concept for holding
irregular pieces
MFS-783 866-10321 05
Alignment tool facilitates pin placement on
irregular horizontal surfaces
LARGLEY-219 866-10410 05
Packaging of electronic modules
JPL-801 866-10664 01
Monte Carlo direct view factor and
generalized radiative heat transfer
programs
MFS-15051 869-10038 06

Mechanical properties of a lap joint under
uniform clamping pressure
MFS-14538 869-10141 05
Study of hot wire techniques in low density
flows with high turbulence levels
MFS-1269 869-10687 01

An ultrasonic method for studying elastic
moduli as a function of temperature
ARG-10107 869-10082 02
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>SHELL COVERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEAR STRENGTH</td>
<td>SHEAR STRESS</td>
</tr>
<tr>
<td>Modified power tool rapidly drives series</td>
<td>Splice plate design assures structural</td>
</tr>
<tr>
<td>torque bolts</td>
<td>separation by slid explosive</td>
</tr>
<tr>
<td>BSC-221</td>
<td>BSC-137</td>
</tr>
<tr>
<td>Improved adhesive for cryogenic applications</td>
<td>Stress calculator speedily converts strain</td>
</tr>
<tr>
<td>cures at room temperature</td>
<td>data</td>
</tr>
<tr>
<td>WOC-132</td>
<td>M-FS-2021</td>
</tr>
<tr>
<td>B66-10054</td>
<td>B67-10182</td>
</tr>
<tr>
<td>Synthesis of pure aromatic glycidyl esters</td>
<td>Computer program for determination of</td>
</tr>
<tr>
<td>for use as adhesives</td>
<td>natural frequencies of closed spherical</td>
</tr>
<tr>
<td>N-FS-12705</td>
<td>sandwich shells</td>
</tr>
<tr>
<td>B67-10647</td>
<td>B67-10279</td>
</tr>
<tr>
<td>Buckling strength of filament-wound</td>
<td>Buckling Of Shells Of Revolution</td>
</tr>
<tr>
<td>cylinders under axial compression is</td>
<td>with various wall constructions</td>
</tr>
<tr>
<td>investigated</td>
<td>LANGLEY-10441</td>
</tr>
<tr>
<td>HQ-10032</td>
<td>B67-10659</td>
</tr>
<tr>
<td>B67-10659</td>
<td>B67-10300</td>
</tr>
<tr>
<td>SHEAR STRESSES</td>
<td>SHEAR STRESS</td>
</tr>
<tr>
<td>Splice plate design assures structural</td>
<td>Splice plate design assures structural</td>
</tr>
<tr>
<td>separation by slid explosive</td>
<td>separation by mild explosive</td>
</tr>
<tr>
<td>BSC-137</td>
<td>Analysis of stability-critical orthotropic</td>
</tr>
<tr>
<td></td>
<td>cylinders subjected to axial compression</td>
</tr>
<tr>
<td></td>
<td>M-FS-12869</td>
</tr>
<tr>
<td>Stress calculator speedily converts strain</td>
<td>Improved sample capsule for determination</td>
</tr>
<tr>
<td>data</td>
<td>of oxygen in hemolyzed blood</td>
</tr>
<tr>
<td>M-FS-2021</td>
<td>HQ-10032</td>
</tr>
<tr>
<td>B67-10182</td>
<td>B67-10375</td>
</tr>
<tr>
<td>Computer program for determination of</td>
<td>Buckling Of Shells Of Revolution</td>
</tr>
<tr>
<td>natural frequencies of closed spherical</td>
<td>with various wall constructions</td>
</tr>
<tr>
<td>sandwich shells</td>
<td>LANGLEY-10441</td>
</tr>
<tr>
<td>MSC-1246</td>
<td>B67-10659</td>
</tr>
<tr>
<td>B67-10279</td>
<td>B67-10300</td>
</tr>
<tr>
<td>SHEARS</td>
<td>SHEARS</td>
</tr>
<tr>
<td>Versatile impact hand tool</td>
<td>Battery case shear</td>
</tr>
<tr>
<td>N-FS-20140</td>
<td>GSPC-10783</td>
</tr>
<tr>
<td>B68-10371</td>
<td>B69-10127</td>
</tr>
<tr>
<td>B69-10127</td>
<td>B69-10175</td>
</tr>
<tr>
<td>SHEATHS</td>
<td>SHEATHS</td>
</tr>
<tr>
<td>Metal sheath improves thermocouple using</td>
<td>Glass fabric fire barrier for silicone</td>
</tr>
<tr>
<td>graphite in one leg</td>
<td>rubber parts</td>
</tr>
<tr>
<td>NU-0011</td>
<td>ISC-15555</td>
</tr>
<tr>
<td>B65-10051</td>
<td>B66-10704</td>
</tr>
<tr>
<td>Metal boot permits fabrication of</td>
<td>Glass formulation has high coefficient of</td>
</tr>
<tr>
<td>thermally sealed splices in metal</td>
<td>thermal expansion</td>
</tr>
<tr>
<td>sheathed instrumentation cables</td>
<td>NU-0084</td>
</tr>
<tr>
<td>NU-0083</td>
<td>NU-0084</td>
</tr>
<tr>
<td>B66-10706</td>
<td>B66-10705</td>
</tr>
<tr>
<td>Thermocouple-flexible cable connector</td>
<td>Thermocouple-flexible cable connector</td>
</tr>
<tr>
<td>insulated is highly reliable</td>
<td>insulated is highly reliable</td>
</tr>
<tr>
<td>NU-0082</td>
<td>NU-0082</td>
</tr>
<tr>
<td>B66-10709</td>
<td>B66-10709</td>
</tr>
<tr>
<td>Double copper sheath multiconductor</td>
<td>Double copper sheath multiconductor</td>
</tr>
<tr>
<td>instrumentation cable is durable and</td>
<td>instrumentation cable is durable and</td>
</tr>
<tr>
<td>easily installed in high thermal or nuclear</td>
<td>easily installed in high thermal or nuclear</td>
</tr>
<tr>
<td>radiation area</td>
<td>radiation area</td>
</tr>
<tr>
<td>MSC-10007</td>
<td>MSC-10007</td>
</tr>
<tr>
<td>B67-10538</td>
<td>B67-10538</td>
</tr>
<tr>
<td>Thoriated tungsten tube provides improved</td>
<td>Thoriated tungsten tube provides improved</td>
</tr>
<tr>
<td>high temperature thermocouple sheath</td>
<td>high temperature thermocouple sheath</td>
</tr>
<tr>
<td>MSC-10185</td>
<td>MSC-10185</td>
</tr>
<tr>
<td>B67-10627</td>
<td>B67-10627</td>
</tr>
<tr>
<td>Design concept for nonarcing electrical</td>
<td>Design concept for nonarcing electrical</td>
</tr>
<tr>
<td>connector</td>
<td>connector</td>
</tr>
<tr>
<td>M-FS-14937</td>
<td>M-FS-14937</td>
</tr>
<tr>
<td>B68-10408</td>
<td>B68-10408</td>
</tr>
<tr>
<td>Refractory oxide insulated thermocouple</td>
<td>Refractory oxide insulated thermocouple</td>
</tr>
<tr>
<td>designed and analyzed for high temperature</td>
<td>designed and analyzed for high temperature</td>
</tr>
<tr>
<td>applications</td>
<td>applications</td>
</tr>
<tr>
<td>ARG-10202</td>
<td>ARG-10202</td>
</tr>
<tr>
<td>B69-10053</td>
<td>B69-10053</td>
</tr>
<tr>
<td>Glass fabric fire barrier for silicone</td>
<td>Glass fabric fire barrier for silicone</td>
</tr>
<tr>
<td>rubber parts</td>
<td>rubber parts</td>
</tr>
<tr>
<td>MSC-15555</td>
<td>MSC-15555</td>
</tr>
<tr>
<td>B69-10629</td>
<td>B69-10629</td>
</tr>
<tr>
<td>SHEETS</td>
<td>SHEETS</td>
</tr>
<tr>
<td>Machine tests crease durability of sheet</td>
<td>Machine tests crease durability of sheet</td>
</tr>
<tr>
<td>materials</td>
<td>materials</td>
</tr>
<tr>
<td>JPL-604</td>
<td>B68-10178</td>
</tr>
<tr>
<td>B68-10178</td>
<td>B68-10178</td>
</tr>
<tr>
<td>Teflon sheet permits valve and valve</td>
<td>Teflon sheet permits valve and valve</td>
</tr>
<tr>
<td>operator to move as a single unit in a</td>
<td>operator to move as a single unit in a</td>
</tr>
<tr>
<td>cryogenic pipe line</td>
<td>cryogenic pipe line</td>
</tr>
<tr>
<td>HQ-0077</td>
<td>B66-10702</td>
</tr>
<tr>
<td>SHELL STABILITY</td>
<td>SHELL STABILITY</td>
</tr>
<tr>
<td>Static structural analysis of shell-type</td>
<td>Static structural analysis of shell-type</td>
</tr>
<tr>
<td>structures</td>
<td>structures</td>
</tr>
<tr>
<td>BSC-11555</td>
<td>B66-10066</td>
</tr>
<tr>
<td>Computer program analyzes Buckling Of</td>
<td>Computer program analyzes Buckling Of</td>
</tr>
<tr>
<td>Shells Of Revolution with various wall</td>
<td>Shells Of Revolution with various wall</td>
</tr>
<tr>
<td>construction, B66-10226</td>
<td>construction, B66-10226</td>
</tr>
<tr>
<td>B68-10300</td>
<td>B68-10300</td>
</tr>
<tr>
<td>Buckling Of Shells Of Revolution</td>
<td>Buckling Of Shells Of Revolution</td>
</tr>
<tr>
<td>/B66-10226/ with various wall constructions</td>
<td>/B66-10226/ with various wall constructions</td>
</tr>
<tr>
<td>B68-10300</td>
<td>B68-10300</td>
</tr>
<tr>
<td>SHELL THEORY</td>
<td>SHELL THEORY</td>
</tr>
<tr>
<td>Analysis of stability-critical orthotropic</td>
<td>Analysis of stability-critical orthotropic</td>
</tr>
<tr>
<td>cylinders subjected to axial compression</td>
<td>cylinders subjected to axial compression</td>
</tr>
<tr>
<td>M-FS-12869</td>
<td>M-FS-12869</td>
</tr>
<tr>
<td>B67-10375</td>
<td>B67-10375</td>
</tr>
<tr>
<td>Buckling strength of filament-wound</td>
<td>Buckling strength of filament-wound</td>
</tr>
<tr>
<td>cylinders under axial compression is</td>
<td>cylinders under axial compression is</td>
</tr>
<tr>
<td>investigated</td>
<td>investigated</td>
</tr>
<tr>
<td>HQ-10032</td>
<td>HQ-10032</td>
</tr>
<tr>
<td>B67-10659</td>
<td>B67-10659</td>
</tr>
<tr>
<td>SHELLS (STRUCTURAL FORMS)</td>
<td>SHELLS (STRUCTURAL FORMS)</td>
</tr>
<tr>
<td>A technique for making animal restraints</td>
<td>A technique for making animal restraints</td>
</tr>
<tr>
<td>ARC-25</td>
<td>ARC-25</td>
</tr>
<tr>
<td>B63-10564</td>
<td>B63-10564</td>
</tr>
<tr>
<td>Fiberglass container shells form</td>
<td>Fiberglass container shells form</td>
</tr>
<tr>
<td>contamination-free storage units</td>
<td>contamination-free storage units</td>
</tr>
<tr>
<td>WOC-275</td>
<td>WOC-275</td>
</tr>
<tr>
<td>B66-10217</td>
<td>B66-10217</td>
</tr>
<tr>
<td>Improved sample capsule for determination</td>
<td>Improved sample capsule for determination</td>
</tr>
<tr>
<td>of oxygen in hemolyzed blood</td>
<td>of oxygen in hemolyzed blood</td>
</tr>
<tr>
<td>M-FS-14979</td>
<td>M-FS-14979</td>
</tr>
<tr>
<td>B68-10532</td>
<td>B68-10532</td>
</tr>
<tr>
<td>Buckling Of Shells Of Revolution</td>
<td>Buckling Of Shells Of Revolution</td>
</tr>
<tr>
<td>with various wall constructions</td>
<td>with various wall constructions</td>
</tr>
<tr>
<td>B68-10300</td>
<td>B68-10300</td>
</tr>
<tr>
<td>SHELVES</td>
<td>SHELVES</td>
</tr>
<tr>
<td>Storage-stable foamable polyurethane is</td>
<td>Storage-stable foamable polyurethane is</td>
</tr>
<tr>
<td>activated by heat</td>
<td>activated by heat</td>
</tr>
<tr>
<td>LANGLEY-187</td>
<td>LANGLEY-187</td>
</tr>
<tr>
<td>B66-10111</td>
<td>B66-10111</td>
</tr>
<tr>
<td>SHELLING</td>
<td>SHELLING</td>
</tr>
<tr>
<td>Small foamed polystyrene shield protects</td>
<td>Small foamed polystyrene shield protects</td>
</tr>
<tr>
<td>low-frequency microphones from wind noise</td>
<td>low-frequency microphones from wind noise</td>
</tr>
<tr>
<td>M-FS-123</td>
<td>M-FS-123</td>
</tr>
<tr>
<td>B63-10579</td>
<td>B63-10579</td>
</tr>
<tr>
<td>Temperature-sensitive network drives astable</td>
<td>Temperature-sensitive network drives astable</td>
</tr>
<tr>
<td>multivibrator</td>
<td>multivibrator</td>
</tr>
<tr>
<td>GSPC-1137</td>
<td>GSPC-1137</td>
</tr>
<tr>
<td>B63-10609</td>
<td>B63-10609</td>
</tr>
<tr>
<td>Spherical electrode eliminates high-voltage</td>
<td>Spherical electrode eliminates high-voltage</td>
</tr>
<tr>
<td>breakdown</td>
<td>breakdown</td>
</tr>
<tr>
<td>LEUIS-155</td>
<td>LEUIS-155</td>
</tr>
<tr>
<td>B65-10139</td>
<td>B65-10139</td>
</tr>
<tr>
<td>Superconductor shields test chamber from</td>
<td>Superconductor shields test chamber from</td>
</tr>
<tr>
<td>ambient magnetic fields</td>
<td>ambient magnetic fields</td>
</tr>
<tr>
<td>JPL-627</td>
<td>JPL-627</td>
</tr>
<tr>
<td>B65-10297</td>
<td>B65-10297</td>
</tr>
<tr>
<td>Titanium diaphragm makes excellent</td>
<td>Titanium diaphragm makes excellent</td>
</tr>
<tr>
<td>amplitron cathode support</td>
<td>amplitron cathode support</td>
</tr>
<tr>
<td>GSPC-394</td>
<td>GSPC-394</td>
</tr>
<tr>
<td>B65-10298</td>
<td>B65-10298</td>
</tr>
<tr>
<td>Calorimeter accurately measures thermal</td>
<td>Calorimeter accurately measures thermal</td>
</tr>
<tr>
<td>radiation energy</td>
<td>radiation energy</td>
</tr>
<tr>
<td>LANGLEY-173</td>
<td>LANGLEY-173</td>
</tr>
<tr>
<td>B66-10058</td>
<td>B66-10058</td>
</tr>
<tr>
<td>Logic circuitry used to automatically test</td>
<td>Logic circuitry used to automatically test</td>
</tr>
<tr>
<td>shielded cables</td>
<td>shielded cables</td>
</tr>
<tr>
<td>HQ-60</td>
<td>HQ-60</td>
</tr>
<tr>
<td>B66-10659</td>
<td>B66-10659</td>
</tr>
<tr>
<td>Portable spectrometer monitors inert gas</td>
<td>Portable spectrometer monitors inert gas</td>
</tr>
<tr>
<td>shield in welding process</td>
<td>shield in welding process</td>
</tr>
<tr>
<td>M-FS-12144</td>
<td>M-FS-12144</td>
</tr>
<tr>
<td>B67-10326</td>
<td>B67-10326</td>
</tr>
</tbody>
</table>
Modified blackbody device emits high-density radiation
N-PS-12744 B67-10306 02

Coaxial cable stripping device facilitates RF cabling fabrication
NPO-10315 B67-10419 05

Training course for radiation safety technicians
AAQ-216 B67-10477 02

Mechanical shielding reduces weld surface cracking in 6061 T6 aluminum
MSC-11949 B68-10022 05

Rocket engine nozzle photographic system
NPO-10174 B68-10113 02

X-ray film holder permits single continuous picture of tubing joint
LEWIS-10382 B68-10343 05

Hydrodynamics of a new concept of primary containment by energy absorption
AED-20942 B69-10046 05

Refractory-metal compound impregnation of polytetrafluoroethylene
LEWIS-10733 B69-10072 03

Improved fire resistant radio frequency anechoic materials
M-PS-16600 B69-10450 05

Balloon batteries, charged and heated by solar energy
GSPC-10769 B69-10585 01

Peripheral registers
Small digital recording head has parallel bit channels, minimizes cross talk
JPL-0029 B63-10284 01

Computer circuit will fit on single silicon chip
JPL-513 B63-10514 01

Blocking oscillator uses low triggering voltage
MSC-58 B64-10017 01

Ring counter may be advanced or retarded by command signal
GSPC-101 B64-10144 01

Magnetic-shift-register circuit controls step motor operation
GSPC-340 B65-10226 01

Queuing register uses fluid logic elements
M-PS-317 B66-10100 05

Binary sequence detector uses minimum number of decision elements
JPL-673 B66-10264 01

Electronic frequency discriminator
M-PS-2434 B67-10151 01

Improved television signal processing system
NPO-10140 B67-10246 01

Review of research and development in fluid logic elements
M-PS-420 B67-10438 01

Parallel-to-serial biphase-data converter
MSC-11600 B68-10241 01

Acquisition of pseudonoise signals by sequential estimation
M-PS-13098 B68-10258 01

Simultaneous message framing and error detection
MSC-12001 B68-10330 01

Fluidic-thermochromic display device
BRC-10031 B69-10350 01

Simple quasi-exponential slope generator
NPO-11130 B69-10439 01

Flexible rivet-set
M-PS-20317 B69-10459 05

Nondestructive determination of cohesive strength of adhesive-bonded composites
M-PS-20397 B69-10464 03

Explosive bonding of metal-matrix composites
M-PS-20657 B69-10804 05

Simple device produces accelerometer calibration pulse
N-PS-343 B65-10269 01

Perforations in jet engine supersonic inlet increase shock stability
NPO-8 B66-10530 05

Thermally conductive metal wool-silicone rubber material can be used as shock and vibration damper
JPL-321 B63-10207 03

Break-up of metal tube makes one-time shock absorber, bars rebound
LANGLEY-18 B63-10340 05

Portable flooring protects finished surfaces, is easily moved
M-PS-15 B63-10387 05

Novel shock absorber features varying yield strengths
MSC-63A B64-10138 03

Shock absorber protects motive components against overloads
WOO-992 B65-10008 05

Shock mount isolates pressure transducers from vibration
JPL-631 B65-10113 05

Wire mesh isolator protects sensitive electronic components
GSPC-347 B65-10216 05

Shock absorber operates over wide range
MSC-168 B65-10241 05

Nylon shock absorber prevents injury to parachute jumpers
MSC-226 B66-10080 05

Torque elements used in effective shock absorber
WOO-114 B66-10318 05

Lateral ring metal elastic wheel absorbs shock loading
M-PS-1312 B66-10663 05

Land landing couch dynamics computer program
MSC-1210 B67-10233 06

Sleeved damper limits spring surging
MSC-12071 B68-10111 05

Pressure variable orifice for hydraulic control valve
MSC-11323 B68-10120 05

Shock-absorbing caster wheel is simple and compact
SAN-10019 B68-10266 05
Calibrated water tank facilitates proof-loading of cranes and derricks
H-PS-15059 B69-10109 05

Shock-absorbent mountings for bearings
NFO-10626 B69-10331 05

Vibration damper for Niles vertical boring mill ram
MSC-15529 B69-10348 05

Effects of sterilization on the energy-dissipating properties of balsa wood
NPO-11207 B69-10592 03

Hermetically sealed vibration damper
MSC-10959 B69-10634 05

SHOCK LOADS
Nylon shock absorber prevents injury to parachute jumpers
MSC-226 B66-10080 05

Rugged microelectronic module package supports circuitry on heat sink
MSC-81 A B66-10245 01

Damping technique gives accelerometer flat frequency response
N-PS-471 B66-10293 01

Treatment increases stress-corrosion resistance of aluminum alloys
N-PS-1840 B66-10595 05

Design concept for pressure switch calibrator
HQ-36 B66-10598 01

Boron fiber-reinforced aluminum alloy tubing /experimental/
MSC-15633 B69-10509 05

SHOCK RESISTANCE
Adhesive for vacuum environments resists shock and vibration
MSC-56 B65-10016 03

Pigmented coating resists thermal shock
JPL-SC-083 B65-10354 03

Phonocardiograph microphone is rugged and moistureproof
MSC-212 B66-10314 04

Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
ABQ-22 B66-10527 03

Design concept for pressure switch calibrator
HQ-36 B66-10598 01

Multilayer refractory nozzles produced by plasma-spray process
WOO-318 B66-10611 05

Photosensitive filler minimizes internal stresses in epoxy resins
N-PS-1880 B67-10227 03

Rugged switch responds to minute pressure differentials
N-PS-12704 B67-10389 01

Newly developed foam ceramic body shows promise as thermal insulation material at 3000 deg F
H-PS-11526 B67-10441 03

Reinforced thermal-shock resistant ceramics
LWIS-10376 B69-10085 03

Thermally conducting electron transfer polymers
GSFC-10703 B69-10511 03

SHOCK TESTS
Analysis of problems related to sling shot shock machine high-velocity shock testing
NPO-11193 B69-10506 05

SHOCK TUBES
Blade valve isolates compartment in pipe, opens to allow free flow
JPL-585 B66-10188 05

Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
LAMBERT-10090 B67-10509 06

Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
JMP-09802 B69-10028 02

Multichannel spectroscopy guide
HQ-10441 B69-10550 01

SHOCK TUBES
Accleration-compensated pressure transducer has fast response
LAMBERT-113 B66-10353 01

SHOCK WAVES
Development of detonation reaction engine
M-PS-14020 B67-10652 01

Experimental design for research on shock-turbulence interaction
M-PS-20031 B69-10604 02

SHOCK WAVES INTERACTION
Experimental design for research on shock-turbulence interaction
M-PS-20031 B69-10604 02

SHOCK WAVES PROBLERATION
Shock and vibration response of multistage structure
M-PS-14972 B69-10353 05

SHOCK WAVES
Microparticle impact sensor measures energy directly
GSFC-252 B65-10048 01

Pressure sensor responds only to shock wave
M-PS-238 B65-10184 01

High-energy-rate magnetohydraulic metal forming system
M-PS-2142 B67-10126 02

Study made to establish parameters and limitations of explosive welding
M-PS-13006 B67-10393 05

High energy forming facility
M-PS-14026 B67-10588 05

Explosive-train initiated through solid bulkhead by pressure cartridge
MSC-11395 B67-10589 03

Modified cryogenic storage tank subsystem
KSC-10380 B69-10556 02

SHOES
Plastic shoe facilitates ultrasonic inspection of wall metal tubing
NDC-10010 B67-10542 02

SHORT CIRCUITS
New method used to fabricate gallium arsenide photovoltaic device
WOO-062 B69-10019 01

Calculations enable optimum design of magnetic brake
LWIS-251 B66-10073 05

T-589
Thermocouple-flexible cable connector insulator is highly reliable NU-0002 B66-10709 01

Fused diode provides visual indication of fuse condition KSC-67-16 B67-10230 01

Liquid crystals detect voids in fiber glass laminates LEWIS-10104 B67-10286 03

Current-limiting voltage regulator BSC-11024 B68-10709 01

Novec terminal strips for transformers NPO-10842 B69-10246 01

Ionene membrane battery separator NPO-11091

Testing the flammability of materials exposed to arcs HSC-15225 B69-10531 03

Load current sensor for a pulse width power regulator GSPC-10656 B69-10578 01

Design of printed circuit coils HQ-10431 B69-10665 01

Glass bead shot peening retards stress corrosion failure of titanium tanks LANGLEP-319 B67-10198 05

Nondestructive method for measuring residual stresses in metals, a concept KSC-10237 B68-10378 03

Shoulder adapter steadies spot welding gun N-PS-321 B66-10076 05

Band tool permits shrink sizing of assembled tubing BSC-504 B66-10239 05

Cork is used to make tooling patterns and molds BSC-425 B66-10328 01

New backup-bar groove configuration improves helical welding of 2014-T6 aluminum BSC-806 B66-1043 05

Photosensitive filler minimizes internal stresses in epoxy resins N-PS-1880 B67-10227 03

Computer program performs flow analysis through turbines LEWIS-236 B66-10496 01

Shock-operated valve would automatically protect fluid systems N-PS-801 B66-10335 03

Solid state annunciator facilitates complex system troubleshooting N-PS-1254 B66-10505 01

Computer program PPPI-REV calculates fission product inventory for U-235 NUC-10089 B67-10450 06

Nulling pyrometer uses Kerr cell shutter for fast responses NU-0010 B65-10050 01

Brushless dc motor uses electron beam switching tube as commutator GSPC-345 B65-10237 01

Use of color-coded sleeve shutters accelerates oscillograph channel selection KSC-10092 B67-10382 01

Phase shift frequency synthesizer is efficient, small in size N-PS-250 B65-10169 01

Compact microwave mixer has high conversion efficiency GSPC-197 B66-10625 01

Double emitter suppressed carrier modulator uses commercially available components N-PS-2894 B67-10101 01

Absolute frequency stabilization of laser oscillator against laser amplifier N-PS-2559 B67-10255 01

Interference effects eliminated in random oriented space station antenna system NUC-10088 B67-10435 01

Novel horn antenna reduces side lobes, improves radiation pattern JPL-425 B63-10264 01

Strainer fits inside flared-tube fittings LANGLEY-180 B66-10308 05

Adding calcium improves lithium ferrite core ERC-10036 B65-10666 06

Study made of acoustical monitoring for mechanical checkout N-PS-13372 B67-10430 02

New technique for determination of cross-power spectral density with damped oscillators N-PS-18022 B67-10602 02

Single channel pulse-height analyzer operates in subnanosecond range LEWIS-267 B66-10377 01

Multichannel pulse height analyzer is inexpensive, features low power requirements BQN-10020 B67-10258 01

Solid state circuit averages multiple signals and rejects those varying significantly from the average NUC-10066 B67-10262 01

Oscilloscope used as X-Y plotter or two-dimensional analyzer LEWIS-311 B67-10269 01

Machine tests slow-speed sliding friction in high vacuum N-PS-12341 B67-10379 05

Multichannel analyzers at high rates of input A&E-10355 B69-10214 02

New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation AEC-2 B63-10003 04

Gapped toroid provides infinite resolution of delay-line pickup GSPC-370 B65-10258 01

Frequency correction device uses digital circuitry GSPC-268 B65-10307 01

FET comparator detects analog signal levels
SUBJECT INDEX

without loading analog device
M-FS-503  B66-10224  01

Point-source light sensor circuit is
insensitive to background light
JPL-778  B66-10502  01

Optical automatic gain channel
M-FS-1550  B66-10596  02

MOSFET analog memory circuit achieves long
duration signal storage
M-FS-660  B66-10603  01

Scanning means for Cassegrainian antenna
JPL-946  B67-10174  05

Current pulse amplifier transmits detector
signals with minimum distortion and
attenuation
MBC-10055  B67-10347  01

Improved dc voltage regulator
IEX-06467  B69-10369  01

A positive taper traveling-wave tube
LANGLEY-10263  B69-10407  01

Data processing method for a weak, moving
telemetry signal
NFO-11003  B69-10639  01

Pocket-sized tone-modulated FM
transmitter
NFO-11180  B69-10725  01

Pulse-height defect due to electron
interaction in dead layers of Ge/Li/
gamma-ray detectors
ABG-10362  B69-10767  02

SIGNAL DETECTORS
Phase detector circuit synthesizes own
reference signal
M-FS-247  B65-10080  01

Detector circuit compensates for vidicon beam
current variations
GSFC-310  B65-10212  01

Frequency discriminator with binary output
eliminates tuned circuits
M-FS-376  B65-10349  01

Digitally controlled pulse-level discriminator
operates over wide voltage range
GSFC-324  B66-10129  01

Simple circuit provides reliable multiple
signal average and reject capability
NU-0065  B66-10282  01

Hydrogen fire detection system features sharp
discrimination
M-FS-643  B66-10368  01

Infrasound automatically selects peak
acceleration signal from several
accelerometers
JPL-816  B66-10462  01

Spray-on electrodes enable EEG monitoring
of physically active subjects
FSE-86  B66-10649  04

Monitor assures availability and quality of
communication channels
KSC-66-38  B67-10028  01

Electronic frequency discriminator
M-FS-2434  B67-10151  01

Oscilloscope used as X-Y plotter or
two-dimensional analyzer
LEWIS-311  B67-10269  01

Transistor biased amplifier minimizes diode
discriminator threshold attenuation
ABG-1623  B67-10311  01

SIGNAL GENERATORS
Accuracy of laser measurements improved by
pulse autocorrelator electronic system
HSC-10033  B67-10338  01

Continuous wave detector has wide
frequency range
M-FS-249  B65-10146  01

Unique frequency-shift-keyed demodulation
system
GSFC-217  B67-10668  01

Improved phase-shift-keyed detector
M-FS-20064  B67-10101  01

Multichannel analyzers at high rates of
input
ABG-10355  B67-10214  02

SIGNAL DISTORTION
Frequency offset in linear FM/CW transponder
eliminates clutter
M-FS-249  B65-10146  01

Detector circuit compensates for vidicon beam
current variations
GSFC-310  B65-10212  01

Microphone multiplex system provides multiple
outlets from single source
GSFC-426  B66-10308  01

TV synchronization system features
stability and noise immunity
JPL-915  B67-10118  01

Harmonic distortion analyzer speeds setup of
magnetic tape recorders
GSFC-10198  B68-10254  01

Improved communication system for large
operations center
M-FS-15016  B68-10529  01

Millivolt signal limiter
LEWIS-9257  B69-10015  01

SIGNAL ENCODING
Optical output enhances flowmeter accuracy
M-FS-482  B65-10395  02

SIGNAL FADING
Lightweight coaxial cable connector reduces
signal loss
JPL-720  B65-10294  01

Video signal processing system uses gated
current mode switches to perform high speed
multiplication and digital-to-analog
conversion
HSC-781  B66-10429  01

SIGNAL GENERATORS
Transducer senses displacements of panels
subjected to vibration
ABC-37  B65-10085  01

Pressure transducers dynamically tested with
sinusoidal pressure generator
LEWIS-268  B66-10031  01

Circuit operates as sine function generator
HSC-255  B66-10038  01

Parallel line raster eliminates ambiguities in
reading timing of pulses less than 500
microseconds apart
JPL-805  B66-10386  01

Logic circuitry used to automatically test
shielded cables
EQ-60  B66-10659  01

FM carrier deviation measured by
differential probability method
M-FS-2166  B67-10213  01

A calibration means for spectrum analyzers
MBC-10987  B67-10254  01
Electronic test instrument generates extremely small current signals
Electronic test instrument generates extremely small current signals

Signal generator converts direct current to multichannel supplies
Signal generator converts direct current to multichannel supplies

Circuit automatically calibrates flowmeter against liquid-level gage reference
Circuit automatically calibrates flowmeter against liquid-level gage reference

Ultrasonics used to measure residual stress
Ultrasonics used to measure residual stress

Digital voltage-controlled oscillator
Digital voltage-controlled oscillator

Hydraulic servo system increases accuracy in fatigue testing
Hydraulic servo system increases accuracy in fatigue testing

Reflectometer for receiver input system
Reflectometer for receiver input system

Technique increases storage capacity in camera tube target
Technique increases storage capacity in camera tube target

Harmonic distortion analyzer speeds setup of magnetic tape recorders
Harmonic distortion analyzer speeds setup of magnetic tape recorders

Acquisition of pseudonoise signals by sequential estimation
Acquisition of pseudonoise signals by sequential estimation

High-speed camera synchronization
High-speed camera synchronization

Dynamic linearity measurement technique
Dynamic linearity measurement technique

A 35 GHz solid state transmitter/driver
A 35 GHz solid state transmitter/driver

Technique for tuning antenna systems producing negligible signal radiation
Technique for tuning antenna systems producing negligible signal radiation

Optimum FM pre-emphasis
Optimum FM pre-emphasis

Automatic frequency control of voltage-controlled oscillators
Automatic frequency control of voltage-controlled oscillators

Range recording technique enables four-way polarization measurements
Range recording technique enables four-way polarization measurements

Linear signal noise summer accurately determines and controls S/N ratio
Linear signal noise summer accurately determines and controls S/N ratio

Electronic frequency discriminator
Electronic frequency discriminator

Voltage regulator/amplifier is self-regulated
Voltage regulator/amplifier is self-regulated

Solid state phase detector replaces bulky transformer circuit
Solid state phase detector replaces bulky transformer circuit

Interference effects eliminated in random oriented space station antenna system
Interference effects eliminated in random oriented space station antenna system

Improved communication system for large operations center
Improved communication system for large operations center

Long range holographic contour mapping concept
Long range holographic contour mapping concept
Parametric up-converter increases flexibility of maser
KSC-67-98  B67-10104  01

TV synchronization system features stability and noise immunity
JPL-915  B67-10118  01

Personal communication system combines high performance with miniaturization
MSC-720  B67-10119  01

Edge-type connectors evaluated by electrical noise measurement
N-PS-2243  B67-10125  01

Environmental study of miniature slip rings
N-PS-2443  B67-10210  05

Glow discharge density sensor probe life is extended
N-PS-1707  B67-10229  01

Improved television signal processing system
NPO-10140  B67-10246  01

Infrared radiometer
N-PS-1373  B67-10422  01

Video synchronization processor overcomes poor signal-to-noise ratio
KSC-10002  B67-10515  01

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems
NPO-306  B67-10552  01

Improved phase locked loop receiver
GSFC-09561  B67-10008  01

Harmonic distortion analyzer speeds setup of magnetic tape recorders
GSFC-10198  B67-10254  01

Acquisition of pseudonoise signals by sequential estimation
N-PS-13898  B67-10256  01

Laser-Doppler gas-velocity instrument
N-PS-20339  B67-10349  02

Readout system for radiation detector
MSC-90180  B67-10501  01

Simple demodulator for telemetry phase-shift keyed subcarriers
NPO-11003  B67-10095  01

RF noise suppression using the photodielectric effect in semiconductors
MSC-12259  B67-10225  01

Survey of man-made electrical noise affecting radio broadcasting
HQ-10290  B67-10308  01

New passive telemetry system
HQ-10214  B67-10312  01

Combination ranging system and mapping radar
NPO-11003  B67-10325  01

Optical FM pre-emphasis
KSC-1051  B67-10359  01

A compact rotary vane attenuator
NPO-10562  B67-10427  01

Estimation of signal-to-noise ratios
IMP-05254  B67-10557  01

Electrooptical scanning of film
NPO-11104  B67-10568  01

Data processing method for a weak, moving telemetry signal
NPO-11003  B67-10639  01
Pulse-code-modulation baseline correction for low signal-to-noise ratios B69-10750 01

Digital system accurately controls velocity of electromechanical drive GSFC-287 B65-10096 01

Variable word length encoder reduces TV bandwidth requirements LANGLY-67 B65-10345 01

Rotational fluid coupling eliminates hose entanglements MSC-312 B66-10565 05

Monitor assures availability and quality of communication channels KSC-66-38 B67-10202 01

Optically induced free carrier light modulator GSFC-10216 B69-10114 01

Alloy brazes titanium to stainless steel JPL-728 B66-10231 02

Selenium bond decreases ON resistance of light-activated switch JPL-SC-101 B65-10324 01

Silphenylene elastomers have high thermal entanglement and tensile strength B66-10580 03

Silicon-dioxide computer circuit will fit on single silicon chip JPL-513 B63-10514 01

Dielectric prisms would improve performance of quasi-optical microwave components B67-10416 01

Self-shielding printed circuit boards for high frequency amplifiers and transmitters HQ-10433 B69-10314 01

Preferred-orientation analysis of polycrystalline materials FPO-1060a B69-10336 02

Pocket-sized tone-modulated FM transmitter NPO-11180 B69-10725 01

Camera shutter is actuated by electric signal ARC-20 B63-10560 05

Phase shift frequency synthesizer is efficient, small in size FFS-250 B65-10169 01

Solid state annunciator facilitates complex system troubleshooting B66-10505 01

High voltage pulse generator MSC-12178 B69-10540 01

SILICON

Computer circuit will fit on single silicon chip JPL-513 B63-10514 01

Minature stress transducer has directional capability JPL-591 B65-10023 01

SILICON-oxide computer circuit will fit on single silicon chip JPL-513 B63-10514 01
Alpha particle backscattering measurements used for chemical analysis of surfaces NPG-116 E67-10186 03
Method of improving contact bonds in silicon integrated circuits N-FS-1753 E67-10335 01
Blood pressure reprogramming adapter assists signal recording BER-265 E67-10475 01
Areas of irregular, discontinuous patterns rapidly and accurately measured GSPC-10184 E67-10674 01
Small, low power analog-to-digital converter N-FS-13954 E68-10016 01
Silicon solar cell monitors high temperature furnace operation NUC-10163 E68-10148 01
Silicon strain sensors enable pressure measurement at cryogenic temperatures N-FS-14703 E68-10262 01
Temperature or pressure controller LEWIS-10297 E68-10337 01
Improved process for epitaxial deposition of silicon on prediffused substrates N-FS-14910 E68-10390 03
Electron beam recrystallization of amorphous semiconductor materials LEWIS-10483 E69-10556 02
Improved high-temperature silicid coating LEWIS-10817 E69-10266 03
An integrated circuit switch NEC-11073 E69-10326 01
An electronic circuit for sensing malfunctions in test instrumentation JSC-10209 E69-10392 01
A new method for producing optical mirrors HQ-10227 E69-10529 02
Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces ERC-10254 E69-10689 01
SILICON ALLOYS
Brazing process using Al-Si filler alloy reliably bonds aluminum parts NRC-419 B66-10241 05
Brazing process provides high-strength bond between aluminum and stainless steel N-FS-603 B66-10352 05
Gage of 6.5 per cent Si-Fe sheet is chemically reduced NRC-537 B66-10454 03
Preforced stiffeners used to fabricate structural components for pressurized tanks N-FS-1796 B66-10688 05
Study made of ductility limitations of aluminosilicon alloys N-FS-12524 B67-10392 03
Weld microstructure in Inconel 718 sensitized by minor elements N-FS-18185 B68-10251 03
SILICON CARBIDES
Metal sheath improves thermocouple using graphite in one leg NU-0011 B65-10051 01
Thermoelectric elements diffusion-bonded to tungsten electrodes

SILICON CONTROLLED RECTIFIERS
GSPC-346 E65-10309 01
Improved thermal insulation materials made of foamed refractory oxides N-FS-735 E66-10288 03
Thin film process forms effective electrical contacts on semiconductor crystals N-FS-2343 E67-10142 01
Process facilitates photore sist mask alignment on SiC crystals N-FS-1079 E67-10149 01
SiC/Si diode trigger circuit provides automatic range switching for log amplifier N-FS-10187 E67-10262 01
UV detector monitors organic contamination of optical surfaces N-FS-20246 E68-10413 01
Ambient temperature catalyst for hydrogen ignition LEWIS-10551 E68-10520 03
Silicon carbide diode for increased light output N-FS-20063 E69-10996 01
SILICON COMPOUNDS
Multiple-mask chemical etching BSC-13114 B69-10221 01
Sealed SiGe-PbTe couples GSPC-10746 B69-10233 01
SILICON CONTROLLED RECTIFIERS
Circuit switches latching relay in response to signals of different polarity WGO-005 B63-10508 01
Circuit controls transient in SCR inverters GSPC-120 B63-10600 01
Digital cardiometer computes and displays heartbeat rate MSC-93 B64-10258 01
Digital-output cardiachometer measures rapid changes in heartbeat rate MFC-133 B65-10143 01
Simple circuit reduces transistor switching time GSPC-314 B65-10234 01
Solid-state laser transmitter is amplitude modulated MSC-121 B65-10238 01
Compact SCR trigger circuit for ignition switch operates efficiently N-FS-371 B65-10347 01
Pulse generator using transistors and silicon controlled rectifiers produces high current pulses with fast rise and fall times MSC-405 B66-10456 01
Solid state circuit controls direction, speed, and braking of dc motor JPL-757 B66-10486 01
Solid state annunciator facilitates complex system troubleshooting N-FS-1250 B66-10505 01
Instrument sequentially samples ac signals from several accelerometers JPL-884 B67-10209 01
Heater control circuit provides both fast and proportional control N-FS-906 B67-10097 01
Long time constant timer requires no recovery time GSPC-10091 B67-10487 01

X-595
SILICOB DIOXIDE

Teleprinter uses thermal printing technique
MSC-11327 B67-10572 01

Ferromagnetic core valve gives rapid action
on minimum energy
LEVIS-10-135 B67-10623 05

Low cost SCR leap driver indicates contents
of digital computer registers
GSFC-10221 B67-10656 01

High voltage pulse generator
MSC-12178 B69-10548 01

SILICON DIOXIDE

Refractory ceramic has wide usage, low
fabrication cost
K-FS-67 B63-10481 03

Refractory thermal insulation for smooth
metal surfaces
K-FS-160 B64-10099 03

Lead oxide ceramic makes excellent
high-temperature lubricant
LEVIS-104 B64-10116 03

Adhesive for vacuum environments resists shock
and vibration
MSC-56 B65-10016 03

Flexible curtain shields equipment from
intense heat fluxes
K-FS-48 B65-10044 03

Impurity diffusion process for silicon
semiconductors is fast and precise
GSFC-397 B65-10300 01

Thin-film resistors used in functional
electronic blocks
GSFC-380 B65-10305 01

Air-cured ceramic coating insulates against
high heat fluxes
K-FS-150 B65-10357 03

Reflective insulator layers separated by
bonded silica beads
MSC-215 B66-10070 03

Vapor grown silicon dioxide improves
transistor base-collector junctions
GSFC-389 B66-10091 01

Optically driven switch turn-off time reduced
by opaque coatings
JFL-3C-107 B66-10141 01

Fibers of newly developed refractory ceramics
produced by improved process
KASS-165 B66-10196 03

Standards for electron probe microanalysis of
silicates prepared by convenient method
GSFC-469 B66-10234 03

Improved thermal insulation materials made of
foamed refractory oxides
K-FS-735 B66-10288 03

Special treatment reduces helium permeation of
glass in vacuum systems
EQ-25 B66-10372 02

Process facilitates photosresist mask
alignment on SiC crystals
K-FS-2394 B67-10144 01

A ceramic composite thermal insulation
K-FS-13991 B67-10608 03

Study of behavior of sterols at interfaces
KASS-10085 B68-10281 03

Miniaturized King furnace permits
absorption spectroscopy of small samples
KASS-10177 B68-10418 02

SILICON FILMS

Thin-film resistors used in functional
electronic blocks
GSFC-380 B65-10305 01

Silicon oxide films grown in microwave
discharge
K-FS-14634 B68-10171 01

SILICON JUNCTIONS

Impurity diffusion process for silicon
semiconductors is fast and precise
GSFC-397 B65-10300 01

Simplified method introduces drift fields
into cells
GSFC-572 B67-10102 03

Process facilitates photosresist mask
alignment on SiC crystals
K-FS-2394 B67-10144 01

Thermal and bias cycling stabilizes planar
silicon devices
RE-48 B67-10176 01

Fused diode provides visual indication of
free condition
KASC-67-16 B67-10230 01

Development of reliability prediction
technique for semiconductor diodes
GSFC-10231 B67-10551 06

Remotely-actuated biomedical switch
ARC-10105 B69-10117 01

SILICON NITRIDES

Radiation tolerant silicon nitride insulated
gate field effect transistors
GSFC-10581 B69-10253 01

SILICON OXIDES

Improved sensor counts micrometeoroid
penetrations
LEVIS-76 B63-10443 01

Special coatings control temperature of
structures
GSFC-484 B65-10337 03

Glass formulation has high coefficient of
thermal expansion
NO-0084 B66-10705 03

Silicon oxide films grown in microwave
discharge
K-FS-14634 B68-10171 01

Graphite cloth facilitates vacuum
evaporation of silicon monoxide
K-FS-14764 B68-10256 03

Radiation tolerant silicon nitride insulated
gate field effect transistors
GSFC-10581 B69-10253 01

Improved method of fabricating planar gallium
arsenide diodes
XFR-04235 B69-10271 01

Dielectric materials for use in thin-film
capacitors
K-GS-520 B69-10387 02

SILICON POLYMERs

Flexible protective coatings made from
silicon-nitrogen materials
K-FS-528 B66-10027 03

Silazane polymers show promise for high-
Temperature application

Substituted silane-diol polymers have improved thermal stability

Silicon radiation detectors
Silicon surface barrier detectors used for liquid hydrogen density measurement

Silicon tetrachloride
Impurity diffusion process for silicon semiconductors is fast and precise

Silicon transistors
Zener diode is starter for transistor regulated power supply

Temperature transducer has high output, is time stable

Vapor grown silicon dioxide improves transistor base-collector junctions

Transistor circuit increases range of logarithmic current amplifier

Metal oxide silicon / MOS/ transistors protected from destructive damage by wire

Miniature electrometer preamplifier effectively compensates for input capacitance

New microelectronic power amplifier

Failure rates for accelerated acceptance testing of silicon transistors

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor

Accurate nine-decade temperature-compensated logarithmic amplifier

Highly stable high-rate discriminator for nuclear counting

Silicone resins
Special coatings control temperature of structures

Silicone rubber
Thermally conductive metal wool-silicone rubber material can be used as shock and vibration damper

Pressure molding of powdered materials improved by rubber mold insert

Shock mount isolates pressure transducers from vibration

High-intensity flashing beacon powered by mercury cells

Copper foil provides uniform heat sink path

Capacitive system detects and locates fluid leaks

Split glass tube assures quality in electron beam brazing

Circular, explosion-proof lamp provides uniform illumination

Rubber-coated bellows improves vibration damping in vacuum lines

Rubber and alumina gaskets retain vacuum seal in high temperature RF cell

Encapsulation technique eliminates thermal stresses in welded electronic modules

Battery-package design provides for cell cooling and constraint

Tools made of ice facilitate forming of soft, sticky materials

Glass fabric fire barrier for silicone rubber parts

Improved electrode gives high-quality biological recordings

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures

Flexible curtain shields equipment from intense heat fluxes

Lightweight load support serves as vibration damper

Organic reactants rapidly produce plastic foam

Coating permits use of strain gage in water and liquid hydrogen

Damping technique gives accelerometer flat frequency response

Electrical cabling withstands severe environmental conditions

Improved method of edge coating flat ribbon wire

Self-sealing closure enables access to several fluid containers

Process controls introduction of selected impurities into semiconductor wafers

Study made of dielectric properties of promising materials for cryogenic capacitors

Composite solar cell matrix is reliable,
lightweight and flexible H6-10503 01
Polyurethane cryostat facilitates testing of tensile specimens under liquid nitrogen H6-10613 02
Effects of surface preparation on quality of aluminum alloy weldments H6-10302 03
Compressible sleeve provides automatic centering for grinding or turning of cylinders H6-10318 05
Evaluation of magnetic materials for static inverter and converters H6-10306 01
SILK
Scribable coating for plastic films H6-10409 03
Stiloaxes
arylenesiloxane copolymers H6-10021 03
SILVER
Improved molybdenum disulfide-silver motor brushes have extended life H6-10479 03
Connector for thermocouple leads saves costly wire, makes reliable connections H6-10529 01
Metals plated on fluorocarbon polymers H6-10612 03
Improves conductive paste secures biomedical electrodes H6-10015 03
New alloy brazes titanium to stainless steel H6-10060 05
Carbon-arc rod holder has long life, reduces arc splatter H6-10095 03
Rugged pressed disk electrode has low contact potential H6-10320 01
Plated nickel wire mesh makes superior catalyst bed H6-10321 03
Regenerative fuel cell combines high efficiency with low cost H6-10363 01
Gelatin coated electrodes allow prolonged bioelectronic measurements H6-10088 01
Teleoscopy of instrumentation tubing eliminates swaging H6-10116 05
Compound improves thermal interface between thermocouple and sensed surface H6-10121 02
Submicron metal powders produced by ball milling with grinding aids H6-10221 03
Brassing process using Al-Si filler alloy reliably bonds aluminum parts H6-10241 05
Differential expansion provides pressure for diffusion bonding of large diameter rings H6-10269 05
Copper wire plated with nickel and silver resists corrosion H6-10421 03
Rotating magnetic poles used to pump mercury H6-10434 05
Helmet system broadcasts electroencephalograms of wearer H6-10536 01
Silver plating technique seals leaks in thin wall tubing joints H6-10703 05
Plasma jet electrode has longer operating life H6-10024 02
Undercoat prevents blistering of silver plating at elevated temperatures H6-10096 05
Evaluation of high temperature stranded hookup wire H6-10122 03
Silver plating ensures reliable diffusion bonding of dissimilar metals H6-10124 03
Technique eliminates high voltage arcing at electrode-insulator contact area H6-10133 01
Improved cavity-type absolute total-radiation radiometer H6-10557 01
High-voltage pulse generator developed for wide-gap spark chambers H6-10283 01
Electroactive series established for metals used in aerospace technology H6-10385 03
Electrolytic silver ion cell sterilizes water supply H6-10555 01
Mass transport mechanism in porous fuel cell electrodes H6-10383 01
Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid H6-10277 05
Metallurgical diffusion measured by a modified Kundsen technique H6-10309 03
SILVER ALLOYS
New brazing alloy eliminates metal-stress cracking H6-10397 03
Silver-base ternary alloy proves superior for slip ring lead wires H6-10580 03
Silver-palladium alloy recovered from masking materials H6-10645 03
Cryogenic seal remains leaktight during thermal displacement H6-10134 02
Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique H6-10277 03
Device for obtaining separation of oxygen H6-10477 01
SUBJECT INDEX

Device separates hydrogen from solution in water at ambient temperatures
MSC-13335 E69-10635 03

SILVER CADMIUM BATTERIES
Auxiliary silver electrode eliminates two-step voltage discharge characteristic of silver-zinc cells
GSFC-169 B64-10114 01
Hermetically sealed cells protected from internal gas pressure
GSFC-555 B66-10692 01

SILVER CHLORIDES
Cesium iodide crystals fused to vacuum tube faceplates
GSFC-67 B63-10476 03

SILVER CEMENTS
Improved electrode gives high-quality biological recordings
MSC-158 B65-10320 01

Ion exchange determines iodine-131 concentration in aqueous samples
ARG-208 B67-10129 04

SILVER COMPOUNDS
New energy storage concept uses tapes
LEWIS-239 B66-10098 02
Preparation of silver-activated zinc sulfide thin films
GSFC-10687 B68-10271 03

SILVER NITRATES
Preparation of silver-activated zinc sulfide thin films
GSFC-10687 B68-10271 03

SILVER IODIDES
Ion exchange determines iodine-131 concentration in aqueous samples
ARG-208 B67-10129 04

SILVER ZINC BATTERIES
Auxiliary silver electrode eliminates two-step voltage discharge characteristic of silver-zinc cells
GSFC-169 B64-10114 01
Device removes hydrogen gas from enclosed spaces
GSFC-495 B66-10340 03
Hermetically sealed cells protected from internal gas pressure
GSFC-555 B66-10692 01
Separator for alkaline batteries
GSFC-10173 B68-10557 03
High-energy, high-power, long-life battery
LEWIS-10724 B69-10131 01

SILVER ZINC OXIDES
Auxiliary silver electrode eliminates two-step voltage discharge characteristic of silver-zinc cells
GSFC-169 B64-10114 01

SIMPLIFICATION
Subroutines GEORGE and DRASTC simplify operation of automatic digital plotter
NUC-10044 B67-10222 06

A simplified PERT system
M-PS-2267 B67-10241 05
Simplified method measures changes in tensile yield strength using least number of specimens
NUC-10075 B67-10266 03

Tool simplifies machining of pipe ends for precision welding
KSC-10361 B69-10231 05

SIMULATION
Optical projectors simulate human eyes to establish operator's field of view
WOO-250 B66-10010 02
GERMINY-A new management training concept
GSFC-574 B67-10092 01

Computer program uses Monte Carlo techniques for statistical system performance analysis
M-PS-2234 B67-10306 06

Experiments to investigate particulate materials in reduced gravity fields
M-PS-13308 B67-10398 02

Torque meter aids study of hysteresis motor rings
M-PS-12219 B67-10412 01

Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors
M-PS-1887 B67-10438 01

Simulated hailstone fabrication and use in testing weatherability of structures
MUF-10783 B68-10552 03

Electronic visualization of gas bearing behavior
LEWIS-10711 B69-10073 01

SIMULATORS
Analog device simulates physiological waveforms
MSC-51 B64-10109 01

Electronic device simulates respiration rate and depth
MSC-89 B64-10255 01

Simulator produces physiological waveforms
MSC-94 B65-10091 01

Antenna simulator permits preinstallation system checkout
GSFC-522 B66-10518 01

Pump simulator provides variable pressure-flow characteristics
LEWIS-10122 B67-10453 05

Fully automatic telemetry data processor
GSFC-10576 B68-10336 01

Exploding bridgewire detonator simulator
M-PS-02191 B69-10782 01

SINWAR
Computer program simulates physical systems by solving the simultaneous differential equations describing the systems
WRO-10019 B67-10193 06

CINDA-Chrysler Improved Numerical Differentiating Analyzer computer program
M-PS-2298 B67-10278 06

Computer program provides linear sampled-data analysis for high order systems
M-PS-12821 B67-10782 01

Computer subroutine ISUDS accurately solves large system of simultaneous linear algebraic equations
NUC-10051 B67-10344 06

SINE SERIES
Measurement technique for the determination of antenna directivity
M-PS-12799 B69-10677 01
SINE WAVES

Metal diaphragm used to calibrate miniature transducers
H-PS-207  B65-10059  01

Field effect transistor presents high input impedance in ac amplifier
JFZ-500  B65-10232  01

Pressure transducers dynamically tested with sinusoidal pressure generator
LWIS-268  B66-10031  01

Circuit operates as sine function generator
MSC-255  B66-10038  01

Feedback loop compensates for rectifier nonlinearity
H-PS-384  B66-10382  01

Edge-type connectors evaluated by electrical noise measurement
H-PS-2243  B67-10125  01

A modal combination computer program for dynamic analysis of structures
MHO-10129  B67-10217  06

Glow discharge density sensor probe life is extended
H-PS-1707  B67-10229  01

System precisely controls oscillation of vibrating mass
H-PS-1875  B67-10276  01

Improved circuit for measuring capacitive and inductive reactances
H-PS-13063  B67-10513  01

Circuit measures hysteresis loop areas at 30 Hz
H-PS-13069  B67-10519  01

Analysis of dynamic systems with DAP8 computer program
H-PS-13999  B67-10523  06

Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLEY-10093  B67-10531  06

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers
NWC-10024  B67-10664  05

Vibration testing and dynamic studies of relays
H-PS-14542  B68-10268  01

Modified sine bar device measures small angles with high accuracy
GSFC-438  B68-10322  02

Flow angle sensor and readout system
LWIS-90239  B69-10050  01

An unconventional magnetically-coupled multivibrator
HQ-10226  B69-10480  01

Conditioning of pulses from aerosol-particle detectors
ERC-10250  B69-10691  01

SINGLE CRYSTALS

Single-crystal semiconductor films grown on foreign substrates
WOO-076  B66-10225  01

Indium adhesion provides quantitative measure of surface cleanliness
SAN-10024  B66-10342  01

Improved method of dicing integrated circuit wafers into chips
ESC-10138  B69-10441  01

SINGLE SIDEBAND TRANSMISSION

Single-sideband modulator accurately reproduces phase information in 2-Mc signals
H-PS-664  B66-10437  01

SINKING

Wall-thickness changes predicted in hollow-drawn tubing
ARG-10425  B69-10428  02

SINS

Circuit detects errors in address currents for magnetic core arrays
H-PS-234  B65-10047  01

Improved compression molding process
LANGLEY-10227  B67-10302  03

SINTERING

Improved polybenaum disulfide-silver motor brushes have extended life
H-PS-64  B63-10047  03

New sintering process adjusts magnetic value of ferrite cores
GSFC-129  B63-10066  01

Electron beam seals outer surfaces of porous bodies
H-PS-562  B66-10033  03

Process reduces pore diameters to produce superior filters
WCO-693  B66-10307  03

Fibers of newly developed refractory ceramics produced by improved process
WOO-169  B66-10196  03

Fiber length and orientation prevent migration in fluid filters
H-PS-541  B66-10319  05

Concept for passive system to control gas flow independently of temperature
H-PS-982  B66-10343  05

Combustion chamber struts can be effectively transpiration cooled
H-PS-1830  B66-10643  03

Porous mandrels provide uniform deformations in hydrostatic powder metallurgy
H-PS-1972  B67-10209  03

Fuel cell life improved by metallic sinter activation after electrode assembly welding
MSC-10965  B67-10436  03

Electron beam selectively seals porous metal filters
LANGLEY-10162  B68-10331  05

Grain growth inhibitor for porous tungsten materials
LANGLEY-10035  B68-10527  03

Improved high-temperature silicide coatings
LANGLEY-10139  B68-10528  03

Sintering characteristics and properties of PuS and PuP are determined
ARG-10228  B69-10058  03

Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid
GSFC-10764  B69-10227  05

Improved incorganic ion exchange membranes
LANGLEY-10137  B69-10266  03

Improved retort for cleaning metal powders
LANGLEY-10137  B69-10451  03

X-600
SUBJECT INDEX

with hydrogen
LEWIS-10718 B69-10468 03

Niobium-uranium alloys with voids of
predetermined size and total volume
ARG-10490 B69-10641 03

Adding calcium improves lithium ferrite core
HEC-10036 B69-10686 06

SITES
Site survey for optimum location of Optical
Communication Experimental Facility
N-FS-13155 B68-10050 06

SIZE (DIMENSIONS)
Packaging of electronic modules
JPL-801 B66-10664 01

High-torque power wrench, a concept
N-FS-18194 B68-10299 05

SIZE DETERMINATION
Apparatus of small size can be extended into
long, rigid boom
JPL-305 B63-10200 05

System enables dimensional inspection of
very large structures
N-FS-2477 B67-10083 05

Flare angles measured with ball gage
N-FS-14690 B68-10030 01

Direct indication of particle size in
fluidized beds
ARG-10130 B69-10083 05

Integrated circuit with multiple collector
current source
N-FS-20177 B69-10126 01

Ion-retarding lens improves the abundance
sensitivity of tandem mass spectrometers
ARG-10365 B69-10166 02

Hydraulic calipers
N-FS-18052 B69-10359 05

SIZE SEPARATION
A comparison of two methods of measuring
particle size of Al2O3 produced by a small
rocket motor
HEO-11198 B69-10572 03

SIZING (SHAPEING)
Hand tool permits shrink sizing of assembled
tubing
MSC-504 B66-10239 05

SIZING (SURFACE TREATMENT)
Degreasing of titanium to minimize stress
corrosion
LENF-382 B67-10147 03

SIZING SCREENS
Fiber length and orientation prevent migration
in fluid filters
N-FS-541 B66-10319 05

Electroformed screens with uniform hole
diameter length
LENF-10117 B68-10107 05

SEKN (ANALOG)
Improved electrodes give high-quality
biological recordings
MSC-17 B64-10025 04

Improved conductive paste secures biomedical
electrodes
MSC-107 B65-10015 03

Gelatin coated electrodes allow prolonged
bioelectronic measurements
MSC-153 B66-10088 01

Integral skin electrode for
electrocardiography is expendable

MSC-299 B66-10118 04
Spray-on electrodes enable EKG monitoring
of physically active subjects
FRC-36 B66-10649 04

SEKN (STRUCTURAL MEMBER)
Flexible fastener allows thermal expansion
LANGLET-40 B68-10185 05

Application of distorted models in
developing scaled structural models
N-FS-2540 B67-10321 05

SEKN RESISTANCE
Improved electrode paste provides reliable
measurement of galvanic skin response
MSC-146 B66-10049 04

SLABS
Computer simulation of high-frequency
combustion instability and its suppression
NEQ-10391 B69-10368 06

SLEEVES
Self sealing disconnect for tubing forms metal
seal after breakaway
JPL-354 B63-10226 05

Sleeve and cutter simplify disconnecting
welded joint in tubing
JPL-384 B63-10240 05

New coupling compensates for shaft
misalignment
HEQ-0013 B65-10077 05

New nut and sleeve improve flared connections
N-FS-194 B65-10180 05

Electrical probe ensures reliable contact in
socket
N-FS-315 B65-10015 01

Shrinkable sleeve eliminates shielding gap
in RF cable
W00-207 B65-10387 01

Noncontacting transducer measures shaft torque
N-FS-874 B66-10048 01

Single connector provides safety fuses for
multiple lines
MSC-199 B66-10050 01

Tool provides constant purge during tube
welding
N-FS-547 B66-10093 05

Hand drill adapter limits holes to desired
depth
MSC-346 B66-10123 05

Expandable insert serves as screw anchor
MSC-301 B66-10132 05

Mounting facilitates removal and installation
of flame-detector rods
N-FS-555 B66-10150 05

Special tool seals conductors with combination
of plastic sleeves
N-FS-579 B66-10209 05

Insert sleeve prevents tube soldering
contamination
MSC-552 B66-10238 05

Tool separates sleeve-type unions without heat
MSC-497 B66-10253 05

High pressure tube coupling requires no
threads or flares
MSC-600 B66-10285 05

Pipe joints reinforced in place with fitted
aluminum sleeves
MSC-1109 B67-10271 05
Braze joint quality tested electromagnetically
\( \text{M-PS-12795} \) E67-10333 01

Ultrasound wrench produces leaktightly connections
\( \text{M-PS-12561} \) E67-10353 05

Extrusion of small-diameter, thin-wall tungsten tubing
\( \text{LWIS-90335} \) E67-10355 05

Use of color-coded sleeve shutters accelerates oscillograph channel selection
\( \text{KSC-10092} \) E67-10362 01

Combined actuator and latch for cartridge powered actuator
\( \text{MSC-11242} \) E67-10488 05

Eutectic fuse provides current and thermal protection under high vibration
\( \text{LEWIS-90335} \) B67-10535 01

Tube swaging device uses explosive force
\( \text{LANGLEY-10092} \) E67-10535 01

Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line
\( \text{NU-0077} \) B66-10702 05

Carriage system remotely moves drawer over extended distance
\( \text{NU-0092} \) B66-10711 05

Milled profiler machines soft materials accurately
\( \text{B66-10023} \) 05

SLIDING FRICTION
Fluoride coatings make effective lubricants in molten sodium environment
\( \text{LEWIS-229} \) B66-10005 03

Solid-film lubricant is effective at high temperatures in vacuum
\( \text{LEWIS-229} \) B66-10087 03

Polynomial deformation gauge measures thickness change in tensile tests
\( \text{JPL-745} \) B66-10147 01

Gallium alloy films investigated for use as boundary lubricants
\( \text{LEWIS-245} \) B66-10165 03

Dry film lubricant is effective at extreme loads
\( \text{M-PS-628} \) B66-10256 03

Environmental study of miniature slip rings
\( \text{M-PS-2443} \) B67-10210 05

Machine tests slow-speed sliding friction in high vacuum
\( \text{M-PS-12341} \) B67-10379 05

Solenoid valve design minimizes vibration and sliding wear problem
\( \text{M-PS-14079} \) B67-10667 05

Capacitance-coupled wiper increases potentiometer life
\( \text{MSC-10060} \) B68-10175 01

A new solid lubricant
\( \text{LEWIS-10812} \) B69-10250 03

Breakaway electrical connector
\( \text{NPO-11140} \) B69-10474 01

SLIP CASTING
Refractory ceramic has wide usage, low fabrication cost
\( \text{M-PS-67} \) B63-10481 03

Tungsten fiber-reinforced nickel superalloy
\( \text{LEWIS-10424} \) B68-10369 03

SLITS
Slit feeds reduce unbalanced torques in gas-lubricated bearings
\( \text{JPL-264} \) B65-10099 05

Electron beam parallel X-ray generator
\( \text{MSC-11022} \) B67-10372 02

Improved circularly polarized planar-array antenna
\( \text{NPO-10301} \) B69-10382 01

SLOPPERS
Composite filter steepens rejection slopes in microwave application
\( \text{GSPC-480} \) B66-10393 01

Simplified system displays complex curves corresponding to input data
\( \text{EQ-10073} \) B69-10247 01

Improved first order interpolator
\( \text{MSC-11085} \) B69-10291 02

Maximum RMS error comparison of several redundancy techniques
\( \text{M-PS-15075} \) B69-10297 01

Simple quasi-exponential slope generator
\( \text{NPO-11130} \) B69-10439 01

SLOTS
V-slotted screw head and matching driving tool facilitate insertion and removal of screw fasteners
\( \text{FRC-16} \) B63-10023 05

Notes:
SODIUM

SUBJECT INDEX

SLUDGE

SLURRIES

SOAPS

SOAKING

Soil diffuser facilitates withdrawal of cryogenic liquids from tanks

Versatile machine mills, saws light materials

Mechanism facilitates coating of inner surfaces of metal cylinders

Tensile testing grips ensure uniform loading of bimetal tubing specimens

Global angle sensor

Adjustable wrench for electronic connectors

High-temperature bearing lubricants

Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons

Storage-stable foamable polyurethane is activated by heat

Freon provides heat transfer for solid CO₂ calibration standard

Process produces chlorinated aromatic isocyanate in high yield

Valve effectively controls amount of contaminant in flow stream

Coating protects magnesium-lithium alloys against corrosion

Tungsten fiber-reinforced nickel superalloy

Hydrostatic testing of porous assemblies

Improved high-temperature silicate coatings

Study of hydrogen slush-hydrogen gel utilization

Concept for modifying drafting instruments to minimize smearing

Device spot-laps spheres to very close tolerances

Improved method facilitates debulking and curing of phenolic impregnated asbestos

A method for precision anodize stripping

Instrument calibrates low gas-rate flowmeters

Scribable coating for plastic films

Metals plated on fluorocarbon polymers

Scribable coating for plastic films

Proposed gas generation assembly would recover deeply submerged objects

Technical report on galvanic cells with fused-salt electrolytes

Separation of traces of metal ions from sodium matrices

Thermophysical properties of sodium

Zone purification of potassium chloride

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte

New bimetallic EMF cell shows promise in direct energy conversion

Process produces chlorinated aromatic isocyanate in high yield

Study of stress corrosion in aluminum alloys

Preparation of silver-activated zinc sulfide thin films

Electromotive series established for metals used in aerospace technology

A rapid stress-corrosion test for aluminum alloys

Production of metals and compounds by radiation chemistry

Calibration of a resistance thermometer down to 0.04 degrees K

Vibration damping composition has flush-away feature

Crack detection method is safe in presence of liquid oxygen

Submicron metal powders produced by ball milling with grinding aids

Chemical milling solution produces smooth surface finish on aluminum
Sea dye marker provides visibility for 20 hours
MCC-714 B66-10313 03
Dispersion of borax in plastic is excellent fire-retardant heat insulator
ARG-5 B67-10016 03
Improved chlorate candle provides concentrated oxygen source
MSC-1137 B67-10095 03
Self-balancing line-reversal pyrometer automatically measures gas temperatures
LEWIS-348 B67-10268 01
Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination
ARG-262 B67-10421
Spectrophotometric technique quantitatively determines NaMBT inhibitor in ethylene glycol-water solutions
MSC-11496 B67-10573 03
Improved process for making thin-film sodium niobate capacitors
MCC-11231 B68-10163 03
Detection sensitivities in 3-8 MeV neutron activation
ARG-10270 B68-10298 02
Improved pH buffering agent for sodium hypochlorite
MSC-15443 B69-10084 03
Self-discharge in bimetallic cells containing alkali metal
ARG-3047 B69-10631 01
Pure xenon hexafluoride prepared for thermal properties studies
ARG-10056 B67-10577 03
Quantitative determination of flavin nucleotide using the bacterial bioluminescent reaction
GSFC-10565 B69-10715 04
Radioactive method enables determination of surface areas rapidly and accurately
NW-0088 B66-10710 03
Plastic scintillator converts standard photomultiplier to ultraviolet range
ERK-9 B66-10108 02
Performance of low-pressure thermionic converters is evaluated
ARG-10276 B69-10090 01
Adjustable knife cuts honeycomb material to specified depth
MCC-475 B66-10237 05
Mill profiler machines soft materials accurately
N-F5-692 B66-10254 05
Environmental study of miniature slip rings
N-F5-2443 B67-10210 05
Extendible column can be stowed on drum
JPL-666 B65-10191 05
Extendible mast used in one shot soil penetrometer
JPL-685 B66-10146 05
Sampling and handling of desert soils
NPO-11206 B69-10571 04
Environmental study of miniature slip rings
N-FS-2443 B67-10210 05
Extendible mast used in one shot soil penetrometer
JPL-685 B66-10146 05
Extendible column can be stowed on drum
JPL-666 B65-10191 05
Silicon solar cell monitors high temperature furnace operation
BSC-10163 B68-10148 01
Automatic solar lamp intensity control
B69-10077 03
SUBJECT INDEX

SOLDERED JOINTS

- Structural thermal-control coatings
  NPO-10785 B68-10533 03
- Dewpoint temperature inversions analyzed
  NPO-10316 B69-10057 02

SOLAR SENSORS
- Solar-angle sensor has no moving parts
  JPL-418 B63-10260 02
- Telescope dome control system automatically tracks sun
  MSC-10966 B68-10521 02
- A polar graphic method for determining the attitude of rocket vehicles
  GSFC-10860 B69-10591 02

SOLAR SIMULATION
- Water cooled anode increases life of high temperature arc lamp
  NPO-10180 B67-10247 02

SOLAR SIMULATORS
- Ellipsoidal optical reflectors reproduced by electroforming
  GSFC-22 B63-10547 05
- Automatic solar lamp intensity control system
  XGS-10017 B68-10399 01

SOLAR SPECTRA
- Airborne Fraunhofer Line Discriminator
  MSC-13146 B69-10594 02

SOLAR SYSTEM
- Analog solar system model relates celestial bodies spatially
  JPL-195 B66-10413 01
- Electronic shutter gates image orthicon on and off
  HQ-96 B67-10270 01

SOLAR WIND
- Miniaturized high-resolution mass/charge spectrometer design study
  MSC-13279 B69-10554 02

SOLAR X-RAYS
- Solar X-ray spectrum reproduced in vacuum
  NPO-228 B67-10164 02

SOLDERED JOINTS
- Improved solderless connector is easily disconnected
  JPL-SC-060 B65-10197 01
- Soldering tool heats workpieces and applies solder in one operation
  LEWIS-247 B66-10116 05
- Telescoping of instrumentation tubing eliminates swaging
  NPO-246 B66-10115 05
- Bismuth alloy potting seals aluminum connector in cryogenic application
  WOO-260 B66-10138 03
- Solar cell subassembly design facilitates assembly of lightweight arrays
  JPL-728 B66-10231 02
- Insert sleeve prevents tube soldering contamination
  MSC-252 B67-10238 05
- Pipe joints reinforced in place with fitted aluminum sleeves
  MSC-11109 B67-10271 05
- Repairable, high-density microelectronic module provides effective heat sink
  NPO-13075 B67-10356 01
- Inspection criteria ensure quality control of parallel gap soldering
SOLDERING

Breakaway electrical connector
NPO-11140 B69-10474 01
Investigation of the development of cracks in solder joints
N-PS-20444 B69-10807 01

SOLDERING
Improved variable-reluctance transducer
measures transient pressures
LANGLEY-10 B63-10321 01
Flexible honeycomb structure can bend to fit compound curves
N-PS-13 B63-10385 05
Cesium iodide crystals fused to vacuum tube faceplates
GSFC-67 B63-10476 03
Hot-air soldering technique prevents overheating of electrical components
GSFC-91 B63-10536 01
Metals plated on fluorocarbons polymers
JPL-544 B63-10612 03
Circuit reliability boosted by soldering pins of disconnect plugs to sockets
JPL-447 B64-10022 01
Modified RF coaxial connector ends vacuum chamber wiring problem
GSFC-150 B64-10010 01
Compact coaxial connector for printed circuit adds reliability
MSC-57 B64-10016 01
Molded elastomer provides compact ferrite-core holder, simplifies assembly
JPL-584 B64-10084 05
High-pass RF coaxial filter rejects dc and low frequency signals
GSFC-73 B64-10173 01
Solder flux leaves corrosion-resistant coating on metal
JPL-611 B64-10206 03
Mounting for diodes provides efficient heat sink
N-PS-197 B64-10283 01
Optical arrangement increases useful light output of semiconductor diodes
JPL-SC-064 B65-10020 05
Thermistor connector assembly increases accuracy of measurements
LANGLEY-62 B65-10045 01
Feed-through has polyterminal feature
N-PS-25 B65-10057 01
Probe tests microweld strength
W00-118 B65-10111 05
High permeability semiconductors permit close-tolerance soldering
GSFC-319 B65-10134 05
Assembly jig assures reliable solar cell modules
GSFC-455 B66-10040 05
Soldering tool heats workpieces and applies solder in one operation
LEWIS-247 B66-10115 05
Fixture aids soldering of electronic components on circuit board
ARC-56 B66-10162 01
Soldering iron temperature is automatically reduced

SUBJECT INDEX

Tool permits damage-free removal of solar cell
GSFC-467 B66-10219 05
Insert sleeve prevents tube soldering contamination
MSC-552 B66-10238 05
Modified soldering iron speeds cutting of synthetic materials
N-PS-725 B66-10246 05
Copper wire plated with nickel and silver resists corrosion
N-PS-761 B66-10421 03
Substituting gold for silver improves electrical connections
N-PS-2390 B67-10228 03
Polarized light reveals stress in machined laminated plastics
LEWIS-10016 B67-10383 03
Composite solar cell matrix is reliable, lightweight and flexible
NPO-10821 B67-10503 01
Thermal resistances of solder-boss/potting compound combinations
MSC-12074 B66-10157 01
Miniature pressure transducer for stressed member application
MSC-11865 B66-10246 01
Inspection criteria ensure quality control of parallel gap soldering
N-PS-14530 B66-10257 05
Standards for compatibility of printed circuit and component lead materials
N-PS-14531 B66-10310 01
Fixture facilitates soldering operations
N-PS-14456 B66-10573 05
Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-10495 B66-10236 04
Novel terminal strips for transformers
NPO-10842 B66-10246 01
Welding, brazing, and soldering handbook
N-PS-20504 B66-10264 05

SOLDER
Modular thermoelectric cell is easily packaged in various arrays
GSFC-339 B65-10199 01
Telescoping of instrumentation tubing eliminates swaging
N-PS-546 B66-10116 05
Brass alloys used as temperature indicators
NU-0063 B66-10274 01
Solubility data are compiled for metals in liquid zinc
ARG-149 B67-10191 03
Device for reflowing electrodeposited solder on terminals
N-PS-13821 B66-10670 01

SOLENOID VALVES
Circuit exhibits power efficiency greater than 75 percent
MSC-254 B66-10034 01
High-pressure, low temperature electrical connector makes no-leak seal
MSC-276 B66-10079 02
Radioactive tracer system detects oil contaminants in fluid lines
SUBJECT INDEX

System proportions fluid-flow in response to demand signals
GSPC-457  B66-10094  01

Economical and maintenance-free gas system operates railroad switches
W0-0045  B66-10124  05

Flow ring valve is simple, quick-acting
N-FS-752  B66-10255  05

Modified hydraulic braking system limits angular deceleration to safe values
GSPC-476  B66-10310  05

Automatic protective vent has fail-safe feature
LANGLEY-218  B66-10369  05

Monitoring circuit accurately measures movement of solenoid valve
M-FS-1829  B66-10568  01

Cryogenic fluid sampling device permits testing under hazardous conditions
M-FS-1927  B66-10654  02

Variable-pulse switching circuit accurately controls solenoid-valve actuations
M-FS-1895  B67-10022  01

High speed blowdown system provides rapid pressure loss
LEWIS-375  B67-10043  05

Solenoid valve design has one moving part
WPO-10039  B67-10219  05

Dual photochemical replenisher system reduces chemical losses
KSC-67-111  B67-10485  02

Automatic transducer switching provides accurate wide range measurement of pressure differential
MSC-1001  B67-10540  01

Continuous microbial cultures maintained by electronically-controlled device
ARG-177  B67-10556  04

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures
NUC-10521  B67-10617  02

Environmental control system for cryogenic testing of tensile specimens
NUC-10523  B67-10618  02

Fire extinguisher control system provides reliable cold weather operation
M-FS-13031  B67-10622  05

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135  B67-10623  05

Solenoid hammer valve developed for quick-opening requirements
LEWIS-10134  B67-10639  05

Solenoid valve design minimizes vibration and sliding wear problem
M-FS-14079  B67-10667  05

Calibratable solid-state pressure switch
M-FS-20474  B67-10437  05

SOLENOMDS

Solenoid permits remote control of stop watch and assures restarting
FRC-17  B63-10024  01

Stepping switch with simple actuator provides many contacts in small space
JFL-122  B63-10118  01

Electromechanically operated camera shutter provides uniform exposure
JPL-357  B63-10227  01

Camera shutter is actuated by electric signal
ARC-20  B63-10560  05

Improved magnetometer uses toroidal gating coil
GSPC-249  B65-10103  01

System measures unidirectional forces, excludes extraneous forces
LEWIS-170  B65-10154  05

Device disconnects several couplings simultaneously
JPL-226  B65-10163  05

Force controlled solenoid drives microweld tester
W00-125  B65-10182  01

Gapped toroid provides infinite resolution of delay-line pickup
GSPC-370  B65-10258  01

Multiple test chamber exposes materials to various environments
MSC-179  B65-10268  01

Optical output enhances flowmeter accuracy
M-FS-882  B65-10395  02

Pneumatic binary encoder replaces multiple solenoid system
M-FS-665  B66-10374  01

Solenoid magnetic fields calculated from superposed semi-infinite solenoids
LEWIS-184  B66-10490  01

A continuously operating source of vacuum ultraviolet below 500 angstrom
GSPC-545  B66-10576  01

Power arc welder touch-started with consumable electrode
M-FS-1485  B66-10641  05

Fuel and oxidizer valve assembly employs single solenoid actuator
MSC-1046  B66-10648  05

Simple technique determines ac properties of hard superconductive materials
M-FS-1918  B66-10657  02

Logic circuitry used to automatically test shielded cables
HQ-60  B66-10659  01

Residual magnetism holds solenoid armature in desired position
LEWIS-343  B67-10038  01

Simple pump maintains liquid helium level in cryostat
M-FS-1763  B67-10039  05

High-torque power wrench, a concept
M-FS-18194  B68-10299  05

High-speed pulse camera
MSC-13453  B68-10329  02

Temperature or pressure controller
LEWIS-10297  B68-10337  01

Propagation of density disturbances in high-speed air-water flow
ARS-10260  B69-10043  02

Continuous analysis of nitrogen dioxide in gas streams of plants
ARG-1026  B69-10254  03

Separation simulator
KSC-67-15  B69-10315  01

X-607
SOLID LUBRICANTS

Automatic filter-blowback systems used with sintered-metal filters
ABG-10324 B69-10342 05

Testing the flammability of materials exposed to arcs
MSC-15225 B69-10531 03

Improved solenoid valve design
GSFC-10607 B69-10704 05

SOLID LUBRICANTS

Fluoride coatings make effective lubricants in molten sodium environment
LEWIS-229 B66-10005 03

Friction device damps linear motion of rotating shaft
WOO-214 B66-10030 05

Polytetrafluoroethylene lubricates ball bearings in vacuum environment
H-PS-379 B66-10081 03

Solid-film lubricant is effective at high temperatures in vacuum
LEWIS-228 B66-10087 03

Dry film lubricant is effective at extreme loads
H-PS-628 B66-10256 03

Composites of porous metal and solid lubricants increase bearing life
LEWIS-307 B67-10007 03

Environmental study of miniature slip rings
H-PS-2443 B67-10210 05

Development of lunar drill to take core samples to 100-foot depths
H-PS-13016 B67-10529 05

Bearings use dry self-lubricating cage materials
LEWIS-10432 B68-10165 05

Application of the solid lubricant molybdenum disulfide by sputtering
LEWIS-10544 B68-10340 03

Evaluation of lubricants for ball bearings at high temperatures
LEWIS-10578 B69-10025 03

Self-lubricating gear
H-PS-10971 B69-10408 05

SOLID PHASES

Solubility data are compiled for metals in liquid zinc
ARG-149 B67-10191 03

SOLID PROPELLANT ROCKET ENGINES

Study of vortex valve for medium temperature solid propellants
LANGLEY-204 B66-10524 01

Cold solid propellant motor has stop-restart capability
JPL-836 B66-10673 03

SOLID SOLUTIONS

Brass method produces solid-solution bond between refractory metals
LEWIS-212 B65-10370 05

Brass alloy holds bonding strength over wide temperature range
LEWIS-337 B66-10519 03

New tungsten alloy has high strength at elevated temperatures
LEWIS-336 B66-10551 03

Tantalum alloys resist creep deformation at elevated temperatures
LEWIS-350 B66-10558 03

Study of actinide chemistry in saturated potassium fluoride solution
ARG-10204 B69-10004 03

Flow properties of suspensions rich in solids
ARG-10481 B69-10622 02

Thoriated nickel bonded by solid-state diffusion method
LAUGLEY-115 B65-10220 03

Primary cells utilize halogen-organic charge transfer complex
JPL-926 B66-10682 02

Electronic aperture control devised for solid state imaging system
H-PS-12426 B66-10028 01

Testing the flammability of materials exposed to arcs
HSC-15225 B69-10531 03

Plow properties of suspensions rich in solids
HSC-15225 B69-10622 03

Improved solenoid valve design
GSFC-10607 B69-10704 05

SOLID STATE

Friction device damps linear motion of rotating shaft
WOO-214 B66-10030 05

Electronic aperture control devised for solid state imaging system
I-FS-12426 B68-10028 03

Polytetrafluoroethylene lubricates ball bearings in vacuum environment
LEWIS-228 B66-10087 03

Welding, brazing, and soldering handbook
I-FS-20504 B66-10081 03

Hetallic diffusion measured by a modified Knudsen technique
BQ-10145 B66-10309 03

Composites of porous metal and solid lubricants increase bearing life
LEWIS-307 B67-10007 03

High efficient square-wave oscillator operator at high power levels
GSFC-112 B69-10554 01

Digital cardiometer computes and displays heartbeat rate
MSC-93 B69-10258 01

Logarithmic amplifier uses field effect transistors
JPL-509 B65-10145 01

Analog-to-digital converter has increased reliability and reduced power consumption
GSFC-246 B65-10194 01

Tiny biomedical amplifier combines high performance, low power drain
ARC-81 B65-10203 01

Thin-film resistors used in functional electronic blocks
GSFC-380 B66-10305 01

Electronic meter-hour integrator is accurate to one percent
GSFC-203 B65-10308 01

Threshold detector produces narrow pulses at high repetition rates
GSFC-383 B65-10310 01

Hybrid circuit achieves pulse regeneration with low power drain
GSFC-382 B65-10314 01

Instrument performs nondestructive chemical analysis, data can be telemetered
JPL-SC-278 B65-10317 01

Ring counter circuit switches multiphase motor direction of rotation
JPL-SC-166 B66-10101 01

Optical gyro pickup operates at cryogenic temperatures
H-PS-407 B66-10128 01

Solid state thermostat has integral probe and circuitry
H-PS-434 B66-10193 01

Circuit provides accurate four-quadrant multiplication
WOO-272 B66-10331 02
Solid-state switch increases switching speed
WGO-298 B66-10430 01

Single-sideband modulator accurately
reproduces phase information in 2-8c signals
M-FS-1264 B66-10347 01

Instrument automatically selects peak
acceleration signal from several
cellocosimeters
JPL-616 B66-10462 01

Solid state circuit switches ac load
JPL-798 B66-10465 01

Solid state circuit controls direction, speed,
and braking of dc motor
JPL-757 B66-10486 01

Solid state annunciator facilitates complex
system troubleshooting
M-FS-1258 B66-10505 01

A fast-neutron spectrometer of advanced
design
M-FS-1664 B66-10555 01

Miniature telemetry system accurately
measures pressure
ARC-74 B66-10624 01

Solid-state recoverable fuse functions as
circuit breaker
GSFC-560 B66-10691 01

Variable-pulse switching circuit accurately
controls solenoid-valve actuations
M-FS-1895 B67-10022 01

Solid-state time-to-pulse-height converter
developed
ARC-170 B67-10053 01

Hybrid solid state switch replaces motor-
driven power switch
JPL-931 B67-10165 01

Low speed, long term tracking electric
drive system has zero backlash
WFO-10173 B67-10220 01

Laboratory pulse modulator uses minority
carrier storage diodes
M-FS-2462 B67-10226 01

Solid state circuit averages multiple signals
and rejects those varying significantly
from the average
ASC-10066 B67-10262 01

Primary cell uses neither liquid nor fused
electrolytes
WFO-10061 B67-10275 01

Solid state single-ended switching
dc-to-dc converter
M-FS-13598 B67-10558 01

Solid state zero-bias bilateral switch
GSFC-532 B67-10559 01

Teleprinter uses thermal printing technique
MSC-11327 B67-10572 01

Cardiotachometer with linear beat-to-beat
frequency response
ARC-10033 B67-10598 01

Concept for sleeve induction motor with
7-msec mechanical time constant
ARG-10124 B68-10185 01

Solid state high-voltage pulser operates
with low supply voltage
M-FS-14034 B68-10308 01

Temperature or pressure controller
LEWIS-10297 B68-10337 01

A 35 GHz solid state transmitter/driver
M-FS-20152 B68-10545 01

Isolated, multiple-output voltage dc-to-dc
converter
M-FS-14976 B69-10014 01

Linear-log counting-rate meter uses
transconductance characteristics of a
silicon planar transistor
ARG-10158 B69-10191 01

Radiation tolerant silicon nitride insulated
gate field effect transistors
GSFC-10581 B69-10253 01

Semiautomatic inspection of microfilm
records
M-FS-20240 B69-10301 02

Foot-operated cell-counter
ARG-10315 01

Improved dc voltage regulator
IXS-06467 B69-10369 01

Technique for improving solid state
mosaic images
M-FS-20532 B69-10676 01

SOLID STATE LASERS
Solid-state laser transmitter is amplitude
modulated
MSC-121 B65-10238 01

SOLID SURFACES
Electron beam seals outer surfaces of porous
bodies
WFO-562 B66-10033 03

Surface profilometer for examining
grain-boundary grooves
ARG-10290 01

Colloidal suspension simulates linear
dynamic pressure profile
WGO-266 B66-10214 05

Standards for electron probe microanalysis of
silicates prepared by convenient method
GSFC-469 B66-10234 03

Flow properties of suspensions rich in
solids
ARG-10481 B69-10622 02

SOLIDIFICATION
Single-crystal semiconductor films grown on
foreign substrates
WGO-076 B66-10225 01

Study made of ductility limitations of
aluminum-silicon alloys
M-FS-12524 B67-10392 01

Nickel-base superalloys excellent
properties promote its service to 2200
degrees F
LEWIS-10355 B68-10380 01

Levitation-melting technique for metals
and alloys
ARG-10240 B69-10006 01

Improved high-temperature-strength
nickel-base superalloy
LEWIS-10874 B69-10352 03

SOLIDIFIED GASES
Development of dual solid cryogens for
high reliability refrigeration system
GSFC-10188 B67-10644 02

SOLIDS
Computer program calculates steady-state
temperature distribution within plane or
axisymmetric solids
NGC-10049 B67-10224 01
Computer program ICAP-TOSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid
NUC-10042 B67-10056 06

Computer program ICAP provides for steady-state thermal and flow analysis of multiple parallel channels in heat generating solid
NUC-10043 B67-10457 06

Bi-metal sensor averages temperature of non-uniform profile
LEWIS-10362 B66-10007 01

Thermal conductivity and dielectric constant of silicate materials
I-FS-14856 B66-10351 03

A new solid lubricant
LERIS-10812 B66-10250 03

Spiral-flow apparatus for measuring permeation of solids by gases
I-FS-16517 B66-10357 03

Self-sealing closure enables access to several fluid containers
NFO-19123 B67-10207 04

Trace hydrazines in aqueous solutions accurately determined by gas chromatography
MSC-11222 B67-10290 03

Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions
ARG-197 B67-10298 01

Chemical milling solution reveals stress corrosion cracks in titanium alloy
LARGLEST-10077 B67-10322 03

Large volume continuous counterflow dialyzer has high efficiency
H0-10055 B67-10395 04

Study of stress corrosion in aluminum alloys
M-FS-13906 B67-10533 03

Electromotive series established for metals used in aerospace technology
M-FS-18327 B68-10385 03

Primary radical yields in pulse irradiated alkaline aqueous solution
ARG-10322 B69-10167 02

Method for copper staining of germanium crystals
ARG-10403 B69-10257 03

A method for precision anodize stripping
MSC-15040 B69-10581 03

SOLVENTS

Solution of differential equations by application of transformation groups
I-FS-14802 B68-10276 02

SOLUTIONS

Solubility data are compiled for metals in liquid zinc
ARG-149 B67-10191 03

Electrolytic separation of crystals of transition metal oxides
ABG-10506 B66-10642 03

SOLUBLE

Silver-palladium braze alloy recovered from masking materials
M-FS-1845 B66-10631 03

SOLVENTS

Method of welding joint in closed vessel improves quality of seam
JPL-190 B63-10139 05

Fine-mesh screen made by simplified method
WGC-194 B64-10282 03

Modification increases light output of injection-luminescent diodes
I-FS-192 B65-10006 01

Miniature bearings lubricated by sonic dispersion method
M-FS-202 B65-10106 03

Soluble undercoating facilitates removal of foamed-in-place insulation
LEWIS-193 B65-10344 03

Surfactant for dye-penetrant inspection is insensitive to liquid oxygen
M-FS-875 B66-10131 03

Solvent residue content measured by light scattering technique
M-FS-850 B66-10320 01

Sprayable birefringent coating enables strain measurements on large surfaces
M-FS-1484 B66-10578 03

Use of steel and tantalum apparatus for molten Cd-Mg-Zn alloys
ARG-199 B66-10594 03

Degreasing of titanium to minimize stress corrosion
LEWIS-382 B67-10147 03

Liquid oxygen dictating cleaned by falling film method
M-FS-11016 B67-10299 03
SUBJECT INDEX

Adhesives for laminating polyimide insulated flat conductor cable
I-FS-12066  B67-10429  03

Solvent permits solid curing agents to be used at room temperatures
I-FS-13434  B67-10593  03

Effects of surface preparation on quality of aluminum alloy weldments
I-FS-13152  B68-10302  03

Welded repairs of punctured thin-walled aluminum pressure vessels
I-FS-18836  B68-10501  05

Induction probe determines levels of liquid metals.
ARG-10245  B69-10256  03

Apparatus automatically measures soluble residue content of volatile solvents
SAB-10032  B69-10292  03

Coordination chemistry in fused-salt solutions
ARG-10465  B69-10423  03

Freon, T-B1 cutting fluid
MSC-11466  B69-10465  05

Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers
MSC-15611  B69-10552  03

SONAR
System locates randomly placed remote objects
LANGLEY-209  B66-10315  01

SONIC BOOMS
Computer program calculates sonic-boom pressure signatures
LANGLEY-10096  B69-10489  06

Sonic boom propagation in stratified atmosphere
LANGLEY-10480  B69-10391  06

SORPTION
Comparative chromatography of chloroplast pigment
ARG-10645  B69-10425  03

SOUND AMPLIFICATION
Noise figure measurement concept for acoustic amplifiers
GSFC-10066  B68-10272  01

Power consumption in acoustic amplifiers under conditions of maximum stable gain
GSFC-10067  B68-10327  01

SOUND FIELDS
Study made of interaction between sound fields and structural vibrations
EQ-26  B67-10068  02

SOUND GENERATORS
Device detects unbonded areas in plastic laminates
NFO-206  B65-10380  01

System enables more complete calibrations of dynamic-pressure transducers
I-FS-2063  B67-10099  01

SOUND INTENSITY
Device enables calibration of microphones at high sound pressure levels
I-FS-11690  B67-10336  01

SOUND PRESSURE
Electronic dummy for acoustical testing
MSC-206  B67-10298  01

SOUND TRANSMISSION
Flow tube used to cool solar-pumped laser
I-FS-14296  B68-10033  06

SPACE EXPLORATION

MSC-11026  E66-10010  02

SOUND WAVES
Small foamed polystyrene shield protects low-frequency microphones from wind noise
I-FS-123  B66-10579  01

Ultrasonic emission method enables testing of adhesive bonds
I-FS-799  B66-10341  01

Study of random process theory aids digital data processing
I-FS-1475  B67-10309  06

Noise study of single stage compressor rotor-stator interaction
LANGLEY-137  B67-10516  02

Acoustic wave analysis
I-FS-18076  B68-10265  02

An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10167  B65-10082  02

Experimental design for research on shock-turbulence interaction
I-FS-2093  B69-10604  02

SOUNDING
Tracker of electrical conduit or pipes
MSC-15223  B69-10347  01

SOUNDING ROCKETS
Rocket sonde measurements of ozone in the upper atmosphere
GSC-10580  B66-10077  02

SOURCES
Circuit detects errors in address currents for magnetic core arrays
I-FS-233  B66-10047  01

SPACE CHARGE
Potassium plasma cell facilitates thersonic energy conversion process
ARG-10010  B67-10399  01

Thin film thermal detector
JEL-943  B67-10505  01

SPACE COMMUNICATION
Personal communication system combines high performance with miniaturization
MSC-720  B67-10119  01

Deep space FM system, a concept
MSC-11825  B68-10289  01

A positive taper traveling-wave tube
LANGLEY-10263  B69-10407  01

Estimation of signal-to-noise ratios
XRF-05254  B69-10557  01

SPACE DETECTION AND TRACKING SYSTEM
An investigation of phase-lock loop swept-frequency synchronization
I-FS-656  B66-10423  01

SPACE ENVIRONMENT SIMULATION
Mechanical properties of wire insulation automatically determined
MSC-10963  B67-10370  01

Concept for cryogenic liquid reclamation system
NFO-10322  B68-10420  02

SPACE EXPLORATION
Solid-state switching used to speed up capacitive integrator
LANGLEY-104  B65-10159  01

Computer program for interplanetary conic patching
I-FS-14296  B68-10033  06
SPACE FLIGHT
Advanced mission analysis programs
GSPC-10575

SPACE FLIGHT FEEDING
Food products for space applications
MSC-11697

SPACE MECHANICS
Channel-wall limitations in the magnetohydrodynamic induction generator
ARG-10128

SPACE MISSIONS
Conceptual nonorthogonal gyro configuration for guidance and navigation
MSC-11363

SPACE NAVIGATION
Special purpose reflectometer uses modified ultraviolet sphere
MSC-1135

SPACE MOBILIZATION
Hydrogen maser as a highly stable frequency reference
N-PS-2437

SPACE PERCEPTION
Instrument transmits vanishing point to illustration point
MSC-267A

SPACE PHOTONS
Space trajectories program for IBM 7090
NPO-10125

SPACE PROGRAMS
Studies of cycles for liquid-metal magnetohydrodynamic generation of power
ARG-10250

SPACE RATINGS
Food products for space applications
MSC-11697

SPACE SIMULATORS
Star/horizon simulator used to test space guidance system
MSC-407

SPACE STATIONS
Study of dynamic response of elastic space stations
NPO-10124

SPACE STORAGE
One-dimensional reacting gas nonequilibrium performance program
MSC-11777

SPACE SUITS
Flexible fastener effects airtight material closure
JPL-684

SUBJECT INDEX
Integrated mobility measurement and notation
system
MSC-726

Personal communication system combines high performance with miniaturization
MSC-720

Astronaut space suit communication antenna
MSC-12101

SPACE TOOLS
Electrical cable connector-clamp has smooth exterior surface
MSC-154

High-strength tungsten alloy with improved ductility
LEWIS-10257

SPACE VEHICLE CHECKOUT PROGRAM
Automatic telemetry checkout system
N-PS-12580

SPACECRAFT
High purity electroforming yields superior metal models
ARC-6

Ultra-sensitive transducer advances micro-measurement range
ARC-26

Control of component differential hardness increases bearing life
LEWIS-190

Plastic bags in evacuated chamber make lightweight gas sampling system
FRC-31

Special coatings control temperature of structures
MSC-948

Sensors measure surface ablation rate of reentry vehicle heat shield
LANGLEY-287

Crystal microbalance measures condensable molecular fluxes
JPL-945

Advances in light-gas gun technology
N-PS-14270

Study of optimum discrete estimators in measurement analysis
N-PS-14915

Advances in aluminum anodizing
N-PS-14600

Four-bar linkage for thermal compensation in test mounts for structures
NPO-11059

Automatic star-horizon angle measurement system
MSC-11585

SPACECRAFT ANTENNAS
Sheet metal strip unrolls to form circular boom
GSPC-423

SPACECRAFT CABINs
Mechanical properties of wire insulation automatically determined
MSC-10983

SPACECRAFT COMMUNICATION
Parametric up-converter increases flexibility of maser
MSC-67-98

Hydrogen maser as a highly stable frequency reference
N-PS-2437

I-612
SUBJECT INDEX

SPACERIGHT CRAFT COMPONENTS

Development of dual solid cryogens for high reliability refrigeration system
GSFC-10188 B67-10644 02

Improved phase-shift-keyed detector
M-FS-20064 B69-10101 01

SPACERIGHT CRAFT CONFIGURATIONS

Improved sensor counts micrometeoroid penetrations
LEWIS-76 E63-10443 01

Apparatus alters position of objects to facilitate demagnetization
GSFC-238 B64-10277 05

Titanium treatment improves brazed joints
MSC-127 B65-10153 05

Computer program uses Monte Carlo techniques for statistical system performance analysis
M-FS-2234 E67-10306 06

Tube swaging device uses explosive force
LANLEY-10092 B68-10235 05

IR lookangle program
MSC-13179 B69-10370 06

SPACERIGHT CRAFT CONSTRUCTION MATERIALS

Investigation of spacecraft coatings
M-FS-20458 B69-10181 06

Replacement of fluid-filter elements without interruption of flow
MSC-15690 B69-10245 05

Improved high-temperature silicide coatings
LEWIS-10617 B69-10266 03

Handbook for design of containers of fluids and gases for spacecraft
M-FS-20502 B69-10279 05

SPACERIGHT CRAFT CONTROL

Knob linkage permits one-hand control of several operations
MSC-30 B65-10022 05

Plated nickel wire mesh makes superior catalyst bed
MSC-216 B65-10321 03

A nodal combination computer program for dynamic analysis of structures
NPO-10129 B67-10217 06

Control jet placement on spacecraft
MSC-1365 B69-10671 01

SPACERIGHT CRAFT DESIGN

Technique for measuring magnetic tape interlayer adhesion
NFO-10031 B67-10417 03

A new method for fabrication of flexible vacuum purge jackets
M-FS-12646 B69-10564 03

SPACERIGHT CRAFT DOCKING

Visual attitude orientation and alignment system
MSC-647 B67-10120 02

Fuel transfer system permits rapid coupling
M-FS-91326 B68-10039 05

SPACERIGHT CRAFT ELECTRONIC EQUIPMENT

Modular Porous Plate Sublimator /NPS/ requires only water supply for coolant
M-FS-1374 E66-10409 01

Evaluation of high temperature stranded hookup wire
M-FS-2478 B67-10122 03

Hybrid solid state switch replaces motor-driven power switch
JPL-931 B67-10165 01

Beta-estremic conformal coating for electronic components
GSFC-10007 B67-10599 03

Gas radiation characteristics of plutonium dioxide
NPO-11220 B69-10733 02

SPACERIGHT CRAFT ENVIRONMENTS

Liquid switch is remotely operated by low dc voltage
GSFC-119 B63-10599 01

Phonocardiograph system monitors heart sounds
MSC-185 B66-10154 04

Method for X-ray study under extreme temperature and pressure conditions
MSC-11232 B67-10474 02

Food products for space applications
MSC-11697 B68-10324 04

Relic recorder
GSFC-10614 B69-10340 01

Spacecraft Thermal Radiation Environment Computer Program
M-FS-15054 B69-10574 06

SPACERIGHT CRAFT GUIDANCE

Star/horizon simulator used to test space guidance system
MSC-467 B67-10110 02

Hydrogen maser as a highly stable frequency reference
M-FS-2437 B67-10146 01

Study indicates fluid digital computation systems are feasible
M-FS-520 B67-10181 01

Advanced mission analysis programs
GSFC-10575 B69-10171 06

SPACERIGHT CRAFT INSTRUMENTS

Rectilinear display gives acceleration load factor and velocity information
MSC-1045 B67-10248 01

IR vidicon scanner monitors many test points
M-FS-1937 B67-10277 01

Improved calorimeter provides accurate thermal measurements of space batteries
GSFC-10003A B67-10615 01

SPACERIGHT CRAFT LANDING

Break-up of metal tube makes one-time shock absorber, bars rebound
LANLEY-1A B63-10304 05

Kinetic-energy absorber employs frictional force between mating cylinders
LEWIS-75 B63-10442 05

Land landing couch dynamics computer program
MSC-1270 B67-10233 06

A sterilizable high-impact antenna
NPO-10231 B69-10697 01

SPACERIGHT CRAFT LUBRICATION

Unique gear design provides self-lubrication
JPL-SC-075 B65-10366 03

SPACERIGHT CRAFT MAINTENANCE

Stable ac phase and amplitude comparator
M-FS-13086 B67-10459 01

I-613
SPACER CRAFT MODELS

Midcourse maneuver operations program
NPO-10735 B69-10105 06

SPACER CRAFT MODELS
High-torque precision stepping drive
N-PS-14772 B68-10549 05

SPACER CRAFT ORBITS
Oceanborne transponder platform has good stability
N-PS-177 B65-10035 05

Sextant measures spacecraft altitude without gravitational reference
MSC-200 B66-10143 02

Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
N-PS-12916 B67-10307 06

SPACER CRAFT POSITION INDICATORS
Improved electro-optical tracking system
N-PS-14791 B68-10311 01

SPACER CRAFT POWER SUPPLIES
Modular Porous Plate Sublimator /MPPS/
requires only water supply for coolant
N-PS-1374 B66-10409 01

Zinc-oxygen primary cell yields high energy density
N-PS-14661 B68-10218 01

Spiral-grooved shaft seals substantially reduce leakage and wear
LEWIS-10397 B68-10270 05

SPACER CRAFT PROPULSION
Segmented electrode increases operating pressure of MHD accelerator
LANGLEY-95 B65-10356 02

High temperature alloy
LEWIS-10377 B68-10253 03

SPACER CRAFT RADIAIORS
A design procedure for the weight optimization of straight finned radiators
GSFC-547 B66-10610 05

SPACER CRAFT RECOVERY
Threading hook facilitates safe recovery of heavy loads
MSC-46 B64-10185 05

System locates randomly placed remote objects
LANGLEY-209 B66-10315 01

SPACER CRAFT RELIABILITY
New method for critical failure prediction of complex systems
N-PS-14133 B68-10252 02

SPACER CRAFT SHIELDING
Fire retardant foams developed to suppress fuel fires
ARC-10096 B68-10358 03

SPACER CRAFT STABILITY
Land landing couch dynamics computer program
MSC-1210 B67-10233 06

Electronic analog equalization for vibrational testing
NPO-10544 B69-10472 01

SPACER CRAFT STERILIZATION
SPAN C - Terminal sterilization process
analysis program
NPO-10805 B69-10039 06

SPAN - Terminal sterilization process
analysis program
NPO-10804 B69-10104 06

Sterilization training manual
N-PS-20437 B69-10277 04

SUBJECT INDEX

Microbiological aspects of sterilization development laboratories
NPO-11197 B69-10593 04

SPACER CRAFT STRUCTURES
Automatic fluid separator supplies own driving power
WGO-085 B66-10008 02

System automatically provides dynamic launch decision criteria
NPS-13063 B67-10363 01

Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLEY-10093 B67-10531 06

SPACER CRAFT TELEVISION
Computer program for Video Data Processing System /VDPs/
NPO-10042 B67-10630 06

Isolated, multiple-output voltage dc-to-ac converter
N-PS-14976 B69-10014 01

SPACER CRAFT TRACKING
Oceanborne transponder platform has good stability
N-PS-171 B65-10035 05

Frequency offset in linear FM/CW transponder eliminates clutter
N-PS-249 B65-10146 01

Hydrogen maser as a highly stable frequency reference
N-PS-2437 B67-10146 01

Low speed, long term tracking electric drive system has zero backlash
NPO-10173 B67-10220 01

Communication system features dual mode range acquisition plus time delay measurement
NPS-1423 B68-10306 01

ABBAJ on-site tracking prediction program
NPO-10836 B69-10103 06

Midcourse maneuver operations program
NPO-10735 B69-10105 06

SPACER CRAFT TRAJECTORIES
Internal velocity factors
MSC-15002 B68-10403 06

Midcourse maneuver operations program
NPO-10735 B69-10105 06

Combination ranging system and mapping radar
NPO-11001 B69-10325 01

Fast Fourier Transform Spectral Analysis Program
N-PS-15062 B69-10434 06

SPACER CRAFT THERMAL
Thermally conductive metal wool-silicone rubber material can be used as shock and vibration damper
JPL-321 B63-10207 03

Modular thermoelectric cell is easily packaged in various arrays
GSFC-339 B65-10199 01

Electropneumatic rheostat regulates high current
ARC-44 B65-10299 01

Insulator-holder protects transistors in dense electronic assemblies
MSC-214 B65-10389 01
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminized fiberglass insulation conforms to curved surfaces</td>
<td>H-PS-1177</td>
</tr>
<tr>
<td>Rectilinear accelerometer possesses self-calibration feature</td>
<td>H-PS-1840</td>
</tr>
<tr>
<td>Combination spacer and gasket provides effective static seal</td>
<td>H-PS-1397</td>
</tr>
<tr>
<td>Gas leak detector is simple and inexpensive</td>
<td>H-PS-1206</td>
</tr>
<tr>
<td>Liquid surgery chamber and microsyringe designs allow more efficient micromanipulations</td>
<td>ARG-251</td>
</tr>
<tr>
<td>Large volume continuous countercflow dialyzer has high efficiency</td>
<td>HU-10055</td>
</tr>
<tr>
<td>Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board</td>
<td>H-PS-13663</td>
</tr>
<tr>
<td>Tube-to-header joint for bimetallic construction</td>
<td>LEWIS-10282</td>
</tr>
<tr>
<td>Thermal radiation shields for piping in vacuum environments</td>
<td>LEWIS-10099</td>
</tr>
<tr>
<td>Flexible rivet-set</td>
<td>M-PS-20317</td>
</tr>
<tr>
<td>Glass fabric fire barrier for silicone rubber parts</td>
<td>M-SC-15555</td>
</tr>
<tr>
<td>SPACING</td>
<td></td>
</tr>
<tr>
<td>Modified interelement spacing improves Yagi antenna array</td>
<td>LANGLEY-130</td>
</tr>
<tr>
<td>Mounting method improves electrical and vibrational characteristics of screen electrodes</td>
<td>H-PS-20169</td>
</tr>
<tr>
<td>Active frequency control system for argon FM laser</td>
<td>H-PS-14508</td>
</tr>
<tr>
<td>Novel terminal strips for transformers</td>
<td>HDF-1064</td>
</tr>
<tr>
<td>Design of a strain-gage probe</td>
<td>ARG-10358</td>
</tr>
<tr>
<td>Checking flat conductor cable spacing by means of a moire pattern</td>
<td>H-PS-20826</td>
</tr>
<tr>
<td>SPALLING</td>
<td></td>
</tr>
<tr>
<td>Testing the flammability of materials exposed to arcs</td>
<td>M-SC-15225</td>
</tr>
<tr>
<td>SPARK CHAMBERS</td>
<td></td>
</tr>
<tr>
<td>Detecting hydrogen-containing contaminants on metal surfaces</td>
<td>H-PS-20856</td>
</tr>
<tr>
<td>SPARK GAPS</td>
<td></td>
</tr>
<tr>
<td>Triphosphate spark gap actuates overvoltage relay</td>
<td>ARG-68</td>
</tr>
<tr>
<td>Ultrasonic wrench produces leak-tight connections</td>
<td>H-PS-12561</td>
</tr>
<tr>
<td>High-voltage pulse generator developed for wide-gap spark chambers</td>
<td>ARG-10136</td>
</tr>
<tr>
<td>Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time</td>
<td>ARG-10110</td>
</tr>
<tr>
<td>Burn-rate testing apparatus</td>
<td>MSC-10947</td>
</tr>
<tr>
<td>Exploding bridgewire detonator simulator</td>
<td>E-PS-02191</td>
</tr>
<tr>
<td>SPARK IGNITION</td>
<td></td>
</tr>
<tr>
<td>Oxygen-hydrogen torch is a small-scale steam generator</td>
<td>HQ-0042</td>
</tr>
<tr>
<td>Electric arc heater is self starting</td>
<td>LANGLEY-208</td>
</tr>
<tr>
<td>Evaluation of ignition mechanisms in selected nonmetallic materials</td>
<td>BSC-11645</td>
</tr>
<tr>
<td>Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation</td>
<td>ARG-10288</td>
</tr>
<tr>
<td>SPARK MACHINING</td>
<td></td>
</tr>
<tr>
<td>Vibration improves spark erosion cutting process</td>
<td>HQ-0071</td>
</tr>
<tr>
<td>Traveling wire electrode increases productivity of Electrical Discharge Machining /EDM/ equipment</td>
<td>ARG-136</td>
</tr>
<tr>
<td>SPATIAL DISTRIBUTION</td>
<td></td>
</tr>
<tr>
<td>System for measuring spatial distribution of ejected droplets, a concept</td>
<td>BSC-1085</td>
</tr>
<tr>
<td>Laser microprobe facility used in the elemental analysis of small feature of a sample</td>
<td>ARG-10359</td>
</tr>
<tr>
<td>SPECIFIC HEAT</td>
<td></td>
</tr>
<tr>
<td>Pure xenon hexafluoride prepared for thermal properties studies</td>
<td>ARG-10056</td>
</tr>
<tr>
<td>Real fluid properties of normal and parahydrogen</td>
<td>LEWIS-10458</td>
</tr>
<tr>
<td>Computer program calculates the effective temperature for a crystalline solid /DETS/ NUC-10161</td>
<td>B69-10036 06</td>
</tr>
<tr>
<td>Calibration of a resistance thermometer down to 0.04 degrees K</td>
<td>ARG-10316</td>
</tr>
<tr>
<td>SPECIFIC IMPULSE</td>
<td></td>
</tr>
<tr>
<td>Addition of solid oxidizer increases liquid fuel specific impulse</td>
<td>JPL-861</td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td></td>
</tr>
<tr>
<td>Stainless-steel elbows formed by spin forging</td>
<td>M-PS-122</td>
</tr>
<tr>
<td>Workmanship standards for fusion welding</td>
<td>NUC-10050</td>
</tr>
<tr>
<td>Structural thermal-control coatings</td>
<td></td>
</tr>
<tr>
<td>SPECIMENS</td>
<td>B68-10553</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Programmed schedule holds for improving launch vehicle holds</td>
<td>B69-10602</td>
</tr>
<tr>
<td>SPECTRA</td>
<td></td>
</tr>
<tr>
<td>Detection sensitivities in 3-8 MeV neutron activation</td>
<td>B68-10298</td>
</tr>
<tr>
<td>Silicon carbide diode for increased light output</td>
<td>B69-10096</td>
</tr>
<tr>
<td>Recent development in organic scintillators</td>
<td>B69-10198</td>
</tr>
<tr>
<td>A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voight line profile</td>
<td>B69-10232</td>
</tr>
<tr>
<td>Multichannel spectroscopy guide</td>
<td>B69-10550</td>
</tr>
<tr>
<td>SPECULAR RAYS</td>
<td></td>
</tr>
<tr>
<td>On the bound of first excursion probability</td>
<td>B69-10334</td>
</tr>
<tr>
<td>SPECULAR RESISTANCE</td>
<td></td>
</tr>
<tr>
<td>Electrodeless discharge lamp is easily started, has high stability</td>
<td>B66-10015</td>
</tr>
<tr>
<td>Multichannel analyzers at high rates of input</td>
<td>B69-10214</td>
</tr>
<tr>
<td>Multilayer infrared beamsplitter film system</td>
<td>B69-10260</td>
</tr>
<tr>
<td>Airborne Fraunhofer Line Discriminator</td>
<td>B69-10594</td>
</tr>
</tbody>
</table>

**SUBJECT INDEX**

| Investment of spacecraft coatings                                       | B69-10181 | 06 |
| SPECTRAL RESOLUTION                                                     |           |    |
| Electrodeless discharge lamp is easily started, has high stability       | B66-10015 | 01 |
| Multichannel analyzers at high rates of input                           | B69-10214 | 02 |
| Multilayer infrared beamsplitter film system                             | B69-10260 | 02 |
| Airborne Fraunhofer Line Discriminator                                   | B69-10594 | 02 |
| Simple optical system used to align spectograph                         | B65-10071 | 02 |
| System selects framing rate for spectrograph camera                      | B65-10086 | 01 |
| Multiple test chamber exposes materials to various environments          | B65-10269 | 01 |
| Trace levels of metallic corrosion in water determined by emission spectrograph | B66-10701 | 03 |
| An improved nuclear magnetic resonance spectrometer                      | B67-10234 | 01 |
| Analytical technique characterizes all trace contaminants in water       | B67-10243 | 03 |
| Self-balancing line-reversal pyrometer automatically measures gas temperatures | B67-10268 | 01 |
| Electronic shutter gates image orthicon on and off                       | B67-10270 | 01 |
| Portable spectrometer monitors inert gas shield in welding process       | B67-10326 | 02 |
| Modified blackbody device emits high-density radiation                   | B67-10388 | 02 |
| Control apparatus for spectral energy source                             | B68-10174 | 01 |
| Low scatter lightweight fission spectrometer constructed for biological research | B68-10040 | 01 |
| High resolution Ge/Li/ spectrometer reduces rate-dependent distortions at high counting rates | B68-10420 | 01 |
| Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods | B68-10425 | 03 |
| Imaging slitless spectrometer for X-ray astronomy                        | B68-10546 | 02 |
| Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectroscopy | B69-10005 | 02 |

**SPECTRAL ENERGY DISTRIBUTION**

| Imaging slitless spectrometer for X-ray astronomy                        | B68-10546 | 02 |

**SPECTRAL REFLECTANCE**

| Cone and column solar energy concentrator                                 | B67-10517 | 01 |
| Effects of surface preparation on quality of aluminum alloy weldments   | B68-10302 | 03 |

I-616
SUBJECT INDEX

Nonius vibration calibration systems evaluated
M-FS-20014 B69-10125 01

Preparation of high purity copper fluoride by fractionalizing copper hydroxylfluoride
LWIS-10794 B69-10136 03

Calibration of a resistance thermometer down to 0.04 degrees K
ARG-10318 B69-10149 01

Detection of molecular infrared spectra
HQ-10377 B69-10172 02

Magnetically coupled emission regulator
GSPC-10056 B69-10213 01

Multichannel analyzers at high rates of input
ARG-10355 B69-10214 02

A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt line profile
ABC-10221 B69-10232 06

Multilayer infrared beamsplitter film system
XGS-11036 B69-10260 02

New shield for gamma-ray spectrometry
ARG-10388 B69-10344 02

Separation of the rare earths by ion-exchange in the presence of lactic acid
ARG-10436 B69-10377 03

Miniaturized high-resolution mass/charge spectrophotograph/design study/
MSc-13279 B69-10554 02

Pulse-height defect due to electron interaction in dead layers of Ge/Li/gamma-ray detectors
ARG-10362 B69-10767 02

SPECTROPHOTOMETERS

Microaching produces optical apertures to micron dimensions
GSPC-206 B64-10211 05

Improved sample capsule for determination of oxygen in hemolyzed blood
MSc-11017 B67-10408 04

High-speed pulse camera
MSc-11353 B68-10329 02

Rapid and precise analysis for calcium in blood serum
ARG-10246 B69-10160 04

Continuous analysis of nitrogen dioxide in gas streams of plants
ARG-10356 B69-10259 03

Coordination chemistry in fused-salt solutions
ARG-10469 B69-10423 03

A comparison of two methods of measuring particle size of Al2O3 produced by a small rocket motor
EPO-11198 B69-10572 03

Discrimination of fish oil and mineral oil slicks on sea water
EQ-10412 B69-10673 01

SPECTROPHOTOMETRY

Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry
ARG-210 B67-10236 03

Analytical technique characterizes all trace contaminants in water
MSc-11032 B67-10243 03

Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples
MSc-11018 B67-10252 04

Sodium peroxide permits rapid oxidation of manganese for easy spectrophotometric determination
ARG-262 B67-10621 03

Spectrophotometric technique quantitatively determines NaNH2 inhibitor in ethylene glycol-water solutions
MSc-11496 B67-10573 03

Reduction by monovalent zinc, cadmium, and nickel cations
ARG-10328 B69-10170 03

SPECTROMETERS

A radiometer-pyrometer
LEWIS-2084 B66-10606 01

Improved relay optical element for spectroradiometer using cryogenically cooled detector
MSc-11688 B68-10245 02

SPECTROSCOPIC ANALYSIS

Highly sensitive solids mass spectrometer uses inert-gas ion source
MRC-11 B66-10114 02

Thin-film ferrites vapor deposited by one-step process in vacuum
MSc-259 B66-10398 03

Neutron activation analysis traces copper artifacts to geographical point of origin
ARG-119 B67-10036 02

Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation
ARG-10288 B69-10081 03

Mass spectograph analysis
MSc-13239 B69-10134 06

Laser microprobe facility used in the elemental analysis of small feature of a sample
ARG-10359 B69-10165 02

Detecting hydrogen-containing contaminants on metal surfaces
M-FS-20456 B69-10192 03

SPECTROSCOPY

Beam splitter used in dual filming technique
M-FS-501 B66-10072 02

Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Hydrogen maser as a highly stable frequency reference
M-FS-2437 B67-10146 01

Analytical technique characterizes all trace contaminants in water
MSc-11032 B67-10243 03

Numerical least-square method for resolving complex pulse height spectra
GSPC-10142 B67-10480 06

Miniaturized King furnace permits absorption spectroscopy of small samples
ARG-10177 B68-10418 02

Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectroscopy
ARG-10190 B69-10005 02
The response of monoenergetic gamma rays in finite media are investigated.

SPBCTBUI  ABALISIS  SUBJECT

IBDEX

The response of monoenergetic gamma rays in finite media are investigated.

ARG-10295  B69-10080  02

Conditioning of pulses from aerosol-particle detectors

SBC-10250  B69-10691  01

SPECTRUM ANALYSIS

Highly sensitive solids mass spectrometer uses inert-gas ion source

ERC-  11  B66-10114  02

Computer programs perform spectral analyses of up to seven time series

K-FS-1133  B66-10539  01

Parametric up-converter increases flexibility of maser

KSC-67-98  B67-10104  01

A calibration means for spectrum analyzers

MSC-10987  B67-10254  01

New technique for determination of cross-power spectral density with damped oscillators

K-FS-14022  B67-10602  02

Improved optical diffractometer

MSC-12055  B68-10071  02

Procedure developed for reporting fast-neutron exposure

ABS-10035  B68-10150  02

Improved relay optical element for spectroradiometer using cryogenically cooled detector

MSC-11688  B68-10245  02

Laser-Doppler gas-velocity instrument

K-FS-20039  B68-10349  02

Nondispersive X-ray emission analysis for geochemical exploration

GSFC-10568  B69-10011  02

Selective vignetting of Type 1 X-ray telescopes

GSFC-10682  B69-10075  02

Sweep frequency detector

HPO-10669  B69-10289  01

Fast Fourier Transform Spectral Analysis Program

K-FS-15062  B69-10434  06

Nondestructive determination of cohesive strength of adhesive-bonded composites

K-FS-14027  B69-10464  03

Data processing method for a weak, moving telemetry signal

WPO-11003  B69-10639  01

SPEED CONTROL

Speed-sensing device aids crane operators

WS-4  B68-10006  05

Compact cartridge drives coded tape at constant readout speed

JPL-472  B64-10222  01

Electronic phase-locked-loop speed control system in stable

JPL-SC-084  B66-10232  01

Solid state circuit controls direction, speed, and braking of dc motor

JPL-757  B66-10486  01

Design concept to decrease relative speed of ball bearings

K-FS-2003  B67-10212  05

Conceptual servo technique for controlling tape drivers

SUBJECT INDEX

K-FS-12955  B67-10595  01

Automatic contour welder incorporates speed control system

K-FS-14574  B68-10091  01

SPEED INDICATORS

Speed-sensing device aids crane operators

WS-4  B68-10006  05

SPHERES

Fresnel cup reflector directs maximum energy from light source

JPL-424  B63-10263  03

Spherical model provides visual aid for cubic crystal study

LEWIS-108  B65-10065  03

Device spotlight spheres to very close tolerances

JPL-SC-119  B66-10175  05

Submicron holes in thin films increase sampling range of mass spectrometers

K-FS-14248  B68-10126  02

Optical integrating sphere operates at visible and infrared wavelengths

K-FS-14248  B68-10126  02

LM lookangle program

MSC-13179  B69-10370  06

SPHERICAL SHELLS

Modified gas bearing is adjustable to optimum stiffness ratio

K-FS-185  B66-10050  05

Pneumatic power is transmitted through air bearing

KSC-8  B68-10141  05

Segmented ball valve is easy to open and close

WCO-248  B66-10195  05

Hollow spherical rotors fabricated by electroplating

JPL-SC-117  B66-10366  05

One-piece transparent shell improves design of helmet assembly

MSC-109  B66-10390  05

Computer program for determination of natural frequencies of closed spherical sandwich shells

MSC-1246  B67-10279  06

SPICE POTENTIALS

Inductor flyback characteristic gives voltage regulator fast response

GSFC-361  B65-10257  01

SPIN DYNAMICS

Study of dynamic response of elastic space stations

JNO-11024  B67-10169  06

SPIN STABILIZATION

Interference effects eliminated in random oriented space station antenna systems

MSC-11004  B67-10435  01

SPINDLES

Machine heavy plastic sections

K-FS-12720  B67-10381  03

An improved magnetic tape recorder

GSFC-08259  B67-10646  01

Insertion device for pressure testing

X-618
SUBJECT INDEX

MSC-15185 B69-10061 03

Technique for abrasive cutting of thick-film conductors for hybrid circuits
MSC-13242 B69-10235 03

SPRAL WRAPPING
Spiral heater coils hand-formed with fixture
LEWIS-208 B65-10192 05

SPRAYS
Suspended pressure transducer made as small as 1/8th-inch in diameter
ARC-11 B66-10429 03

Insulated weld tooling permits uniform, high quality weld
MSC-42 B64-10058 05

Welding procedures improves quality of welds, offers other advantages
K-FS-32 B64-10309 01

Insulator-holder protects transistors in dense electronic assemblies
MSC-214 B68-10513 05

SPLINE FUNCTIONS
Indexing device ensures proper mating of electrical connectors
MSC-155 B65-10263 01

SPLINES
New coupling compensates for shaft misalignment
NU-0013 B65-10077 05

Flexible coiled spline securely joins mating cylinders
NU-270 B66-10172 05

SPOCKES (MATERIALS)
Two systems developed for purifying inert atmospheres
ARG-10234 B69-10026 03

SPONTANEOUS CORROSION
Evaluation of ignition mechanisms in selected nonmetallic materials
MSC-11645 B68-10167 03

Saran film is fire-retardant in oxygen atmosphere
MSC-11604 B68-10177 03

SPSOOLS
Flow control valve is independent of pressure drop
JPL-N00-039 B65-10121 05

Pneumatic shutoff and time-delay valve operates at controlled rate
K-FS-602 B66-10189 05

Rotary valve controls multiple hydraulic leveling cylinders
M-FS-361 B66-10402 05

REACTORY OPERATED HIGH PRESSURE VALVE
Protects test personnel
MSC-1010 B67-10291 05

SPRAYED COATINGS
Gate valve with ceramic-coated base operates at high temperatures
ARC-23 B63-10562 03

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54 B66-10471 05

Miniature paint-spray gun for recessed areas
MSC-13060 B68-10387 05

RENEWAL OF CORROSION PROTECTION OF COATED ALUMINUM AFTER WELDING
K-FS-20367 B68-10150 05

Improved primer for bonding polyurethane adhesives to metals
KSC-06786 B69-10275 02

SPOT WELDS
Welded pressure transducer made as small as 1/8th-inch in diameter
ARC-11 B66-10429 03

Insulated weld tooling permits uniform, high quality weld
MSC-42 B64-10058 05

Welding procedures improves quality of welds, offers other advantages
K-FS-32 B64-10309 01

Insulator-holder protects transistors in dense electronic assemblies
MSC-214 B68-10513 05

Spray-on technique simplifies fabrication of complex thermal insulation blanket
MSC-10242 B69-10026 03

Shoulder adapter simplifies fabrication of complex thermal insulation blanket
K-FS-877 B66-10438 05

Insulator-holder protects transistors in dense electronic assemblies
MSC-214 B68-10513 05

Spray-on technique simplifies fabrication of complex thermal insulation blanket
MSC-10242 B69-10026 03

Ultrasonic hand tool allows convenient scanning of spot welds
MSC-10242 B69-10026 03

Quality control criteria for acceptance testing of cross-wire welds
MSC-10242 B69-10026 03

Power arc welder touch-started with consumable electrode
K-FS-1485 B66-10164 05

Micromanipulation tool is easily adapted to many uses
JPL-129 B67-10004 01

Metal flame spray coating protects electrical cables in extreme environment
MSC-10077 B67-10351 03

Miniature pressure transducer for stressed member application
MSC-11869 B68-10246 01

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401 B68-10370 01

SPRAY NOZZLES
Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application
LANGLEY-6A B63-10318 03

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LEWIS-263 B66-10104 03

Dispenser leak-tests and sterilizes rubber gloves
MSC-205 B66-10166 03

Miniature paint-spray gun for recessed areas
MSC-13060 B68-10387 05

SPRAYED COATINGS
Gate valve with ceramic-coated base operates at high temperatures
ARC-23 B63-10562 03

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54 B66-10471 05

Miniature paint-spray gun for recessed areas
MSC-13060 B68-10387 05

Renewal of corrosion protection of coated aluminum after welding
K-FS-20367 B68-10150 05

Improved primer for bonding polyurethane adhesives to metals
KSC-06786 B69-10275 02

I-619
Inert gas spraying device aids in repair of hazardous systems

Bidirectional torque filter eliminates backlash

Lead oxide ceramic makes excellent high-temperature lubricant

Extenedible column can be stowed on drum

Spray-on electrodes enable EKG monitoring of physically active subjects

Discrimination of fish oil and mineral oil slicks on sea water

Solenoid permits remote control of stop watch and assures restarting

New package for Belleville spring permits rate change, easy disassembly

Leaf-spring suspension provides accurate parallel displacements

Collapsible truss structure is automatically expandable

Cylindrical claw clamp has quick release feature

Lathe chuck key incorporates safety feature

Seal surfaces protected during assembly

Device facilitates centering of workpieces in lathe chuck

Subject Index

Extended column can be stowed on drum

Bidirectional torque filter eliminates backlash

Lead oxide ceramic makes excellent high-temperature lubricant

Extenedible column can be stowed on drum

Spray-on electrodes enable EKG monitoring of physically active subjects

Discrimination of fish oil and mineral oil slicks on sea water

Solenoid permits remote control of stop watch and assures restarting

New package for Belleville spring permits rate change, easy disassembly

Leaf-spring suspension provides accurate parallel displacements

Collapsible truss structure is automatically expandable

Cylindrical claw clamp has quick release feature

Lathe chuck key incorporates safety feature

Seal surfaces protected during assembly

Device facilitates centering of workpieces in lathe chuck
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>SPUTTERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extensometer automatically measures elongation in elastomers</td>
<td>GSFC-08259 SB6-10846 01</td>
</tr>
<tr>
<td>Diaphragm spring gives clutch over-center toggle effect</td>
<td>Sleeved damper limits spring surging SB6-10111 05</td>
</tr>
<tr>
<td>Tool pre-tensions covers prior to lacing</td>
<td>Dual rate pressure relief valve SB6-10237 05</td>
</tr>
<tr>
<td>Modified hydraulic braking system limits angular deceleration to safe values</td>
<td>Dynamically stable check valve concept for wide flow range SB6-10247 05</td>
</tr>
<tr>
<td>Bellows joint absorbs torsional deflections in duct system</td>
<td>Quick-attach clamp XFR-05421</td>
</tr>
<tr>
<td>Shock-operated valve would automatically protect fluid systems</td>
<td>Vibration testing and dynamic studies of relays SB6-10442 01</td>
</tr>
<tr>
<td>Braking mechanism is self actuating and bidirectional</td>
<td>Contact-spring forming machine for flat conductor cable receptacles SB6-10550 05</td>
</tr>
<tr>
<td>Spiral spring/strain gage combination accurately measures shock induced deflection</td>
<td>Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing SB6-10034 06</td>
</tr>
<tr>
<td>Hole saw drill attachment has zero force reaction</td>
<td>Countersunk headscrew retainer SB6-10282 05</td>
</tr>
<tr>
<td>Friction brake cushions acceleration and vibration loads</td>
<td>Precision mounting for instrument optical elements provided by polyimide bonding SB6-10310 05</td>
</tr>
<tr>
<td>Fuel and oxidizer valve assembly employs single solenoid actuator</td>
<td>Shock-absorbent mountings for bearings SB6-10626 01</td>
</tr>
<tr>
<td>Resonant frequency can be adjusted on vibration mount</td>
<td>Helical recorder SB6-10614 01</td>
</tr>
<tr>
<td>Gage accurately controls force for placing chips on substrates</td>
<td>Design of a strain-gage probe SB6-10635 01</td>
</tr>
<tr>
<td>Actuator device schedules rate of valve closure</td>
<td>Removal of retaining washers of the waffle-spring type SB6-10635 05</td>
</tr>
<tr>
<td>Combination double door high-vacuum valve provides access to vacuum chamber</td>
<td>Calibratable solid-state pressure switch SB6-20474 05</td>
</tr>
<tr>
<td>Elastic guides reduce hysteresis effect in Belleville spring package</td>
<td>Temperature-controlled resistor SB6-10713 01</td>
</tr>
<tr>
<td>Aspirator increases relief valve poppet stroke</td>
<td>A new method for fabrication of flexible vacuum purge jackets SB6-10564 03</td>
</tr>
<tr>
<td>Solenoid valve design has one moving part</td>
<td>An electrical connector pin protector SB6-10742 01</td>
</tr>
<tr>
<td>Line adapter provides quick disconnect under moderate side loading</td>
<td></td>
</tr>
<tr>
<td>Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures</td>
<td></td>
</tr>
<tr>
<td>Test device prevents weld joint damage by eliminating axial pin forces on unsplotted modules</td>
<td></td>
</tr>
<tr>
<td>Coaxial cable stripping device facilitates RF cabling fabrication</td>
<td></td>
</tr>
<tr>
<td>An improved magnetic tape recorder</td>
<td></td>
</tr>
</tbody>
</table>

I-621
SQUARE WAVES

Pulsed high-voltage dc RF sputtering LEWIS-10920 B69-10699 01

SQUARE WAVES

Frequency-shift-keyer circuit improves PCM conversion for radio transmission GSPC-80 B63-10511 01

High efficient square-wave oscillator operator at high power levels GSFC-112 B63-10554 01

Transistorized converter provides non dissipative regulation GSPC-238 B64-10305 01

Inexpensive, stable circuit measures heart rate MSC-95 B65-10010 01

Stepping motor drive circuit designed for low power drain GSFC-198 B65-10026 01

Simulator produces physiological waveforms MSC-94 B65-10091 01

Simple circuit functions as frequency discriminator for PPM signals GSPC-267 B65-10102 01

Variable frequency magnetic multivibrator generates stable square-wave output GSPC-AB-21 B65-10124 01

Instrument calibrates low gas-rate flowmeters MSC-134 B65-10137 01

High-speed square-wave current limiter operates efficiently JPL-SC-073 B65-10233 01

Inductor flyback characteristic gives voltage regulator fast response GSFC-361 B65-10257 01

Electronic ohmmeter provides direct digital output GSPC-363 B65-10274 01

Electronic ampere-hour integrator is accurate to one percent GSPC-203 B65-10308 01

PCM magnetic tape system efficiently records and reproduces data GSFC-375 B65-10311 01

Linear signal noise summer accurately determines and controls S/N ratio JPL-SC-152 B66-10433 01

Glow discharge density sensor probe life is extended M-PF-1707 B67-10229 01

A phonocardiogram simulator KSC-67-94 B67-10239 01

Oscilloscope used as X-Y plotter or two-dimensional analyzer LEWIS-311 B67-10269 01

Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions ARG-147 B67-10294 01

Improved circuit for measuring capacitive and inductive reactances M-PF-13083 B67-10513 01

Simple, accurate automatic frequency control circuit KSC-10393 B69-10323 01

Phase-locked-loop phase modulator with high modulation index, low distortion MSC-12247 B69-10887 01

SUBJECT INDEX

SQUARES (MATHEMATICS)

Root-cubing and general root-powering methods for finding the zeros of polynomials ARG-10444 B69-10424 02

SQUARES

Quick-closing valve is actuated by explosive discharge ARG-55 B66-10233 05

STABILITY

Computer determines high-frequency phase stability GSPC-113 B63-10555 01

Irradiation improves properties of an aromatic polyester LANGL-115 B65-10164 03

Refractory oxides evaluated for high-temperature use LANGL-121 B65-10167 03

Electroosmeter has automatic zero bias control GSPC-350 B66-10242 01

Caprous selenide and sulfide form improved photovoltaic barriers WOO-212 B66-10025 01

Binary fluid amplifier solves stability and load problems EBC-15 B66-10177 01

Remote preamplifier circuit maintains stability over wide temperature range WOO-276 B66-10432 01

Electronic circuit delivers pulse of high interval stability MSC-673 B66-10501 01

Electron multiplier has improved performance and stability GSPC-546 B67-10060 01

Computer program uses Monte Carlo techniques for statistical system performance analysis M-PS-2234 B67-10306 06

Precision capacitor has improved temperature and operational stability ARG-189 B67-10313 01

Field effect transistors improve buffer amplifier M-PF-196 B67-10334 01

Analysis of stability-critical orthotropic cylinders subjected to axial compression M-PF-12869 B67-10375 03

Stabilizing stainless steel components for cryogenic service M-PF-13127 B67-10377 05

Real fluid properties of normal and parahydrogen LEWIS-10458 B68-10361 06

Instabilitys encountered during heat transfer to a supercritical fluid ARG-10266 B69-10042 02

Analysis of magnetically-controlled processes in pulse-modulation systems GSPC-10241 B69-10070 01

Tunable bandpass filter with variable selectivity ARG-10191 B69-10130 01

Mixing weld gases offers advantages M-PF-16413 B69-10145 05

Substitution of stable isotopes in chloroarea ARG-10258 B69-10197 04
SUBJECT INDEX

COMMISSION OF PULSE-REBALANCED INERTIAL INSTRUMENTS
MSC-13098 B69-10216 01

METHOD FOR DETERMINING PROPERTIES OF MICROINSTABILITIES OF A MAGNETIZED PLASMA
EQ-10447 B69-10462 02

A NEW METHOD FOR PRODUCING OPTICAL MIRRORS
EQ-10227 B69-10529 02

CRYOGENIC FLUID FLOW INSTABILITIES IN HEAT EXCHANGERS
N-PS-20438 B69-10541 02

MINIATURE BACKWARD-DIODE PRESSURE SENSOR
FEATURES STABILITY AND LOW POWER CONSUMPTION
ZMC-10229 B69-10690 01

STABILITY DERIVATIVES
Computer program determines system stability
DIGSTA/LEWIS-10395 B68-10216 06

STABILITY TESTS
Elastic orifice automatically regulates gas bearings
JPL-135 B63-10123 05

Emission tester for high-power vacuum tubes
JPL-628 B64-10158 01

Control apparatus for spectral energy source
LEWIS-391 B67-10404 01

Computer program analyzes buckling of shells of revolution with various wall construction, BOSOR
LANGLEY-10290 B68-10226 06

Report on a cryogenic gyroscope
NPO-11200 B69-10504 02

STABILIZATION
Thermal and bias cycling stabilizes plasmas.
Silicon devices
ZMC-48 B67-10176 01

An improved nuclear magnetic resonance spectrometer
JPL-762 B67-10234 01

SiC/si diode trigger circuit provides automatic range switching for log amplifier
N-PS-1879 B67-10314 01

ELIS - A general purpose computer program for the equilibrium problems of linear structures
NPO-10598 B68-10187 06

Active frequency control system for argon F2 laser
N-PS-14988 B69-10099 02

STABILIZERS (FLUID DYNAMICS)
Improved gyro-flotation/damping/fluids
MSC-13217 B69-10360 03

STABLE OSCILLATIONS
Electronic phase-locked-loop speed control system is stable
JPL-SC-084 B66-10232 01

Oscillator circuit operates as digitally controlled frequency synthesizer
GSFC-570 B67-10447 01

Digital voltage-controlled oscillator
GSFC-512 B67-10449 01

STACKS
Resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05

Adjustable cutting guide aligns and positions

STAINLESS STEELS
Stacks of material
MSC-321 B66-10210 05

Temperature-controlled resistor
NPO-10713 B69-10440 01

STAGE SEPARATION
Self sealing disconnect for tubing forms metal seal after breakup
JPL-354 B63-10226 05

Computer program uses Monte Carlo techniques for statistical system performance analysis
N-PS-2234 B67-10306 06

Separation simulator
MSC-67-15 B69-10315 01

STAGGERING
Superconductor magnets used for stagger-tuning travelling wave maser
GSFC-292 B65-10165 01

STAGNATION FLOW
Computer program determines gas flow rates in piping systems
N-PS-443 B66-10300 01

STAGNATION POINT
Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
LANGLEY-10390 B67-10509 06

STAGNATION PRESSURE
Computer program determines gas flow rates in piping systems
N-PS-443 B66-10300 01

STAINING
Method for copper staining of germanium crystals
ARG-10403 B69-10257 03

STAINLESS STEELS
Method of welding joint in closed vessel, improves quality of seam
JPL-170 B63-10139 05

Improved variable-reluctance transducer measures transient pressures
LANGLEY-10 C63-10321 01

Apparatus facilitates high-temperature tensile testing in vacuum
LEWIS-62 B63-10345 03

Connector for vacuum-jacketed lines cuts tubing system cost
LEWIS-66 B63-10367 05

Novel clamps align large rocket cases, eliminate back-up bars
N-PS-1 B63-10376 05

Vacuum-type backup bar prevents weld repairs
N-PS-12 B63-10384 05

Flexible honeycomb structure can bend to fit compound curves
N-PS-13 B63-10385 05

Ellipsoidal optical reflectors reproduced by electroforming
GSFC-92 B63-10547 05

Lathe converted for grinding aspheric surfaces
GSFC-115 B63-10556 05

New inflatable life raft is nontippable
MSC-4A B64-10001 05

Improved technique for localizing electropolishing features novel nozzles
WOO-101 B64-10271 01

Screening technique makes reliable bond at room temperature

I-623
NEW ALLOYS BRAZES TITANIUM TO STAINLESS STEEL

OCEANBORNE TRANSPONDER PLATFORM HAS GOOD STABILITY

NEW NUT AND SLEEVE IMPROVE FLARED CONNECTIONS

AUTOMATIC THERMAL SWITCH ACCELERATES COOLING-DOWN OF CRYOGENIC SYSTEM

LOW-COST SEAL COMPENSATES FOR SURFACE IRREGULARITIES

NEW BRAZING ALLOY ELIMINATES METAL-STRESS CRACKING

COATING METHOD ENABLES LOW-TEMPERATURE BRAZING OF STAINLESS STEEL

PLATED NICKEL WIRE MESH MAKES SUPERIOR CATALYST BED

PLASTIC PLUS STAINLESS-STEEL FIBERS MAKE REMIlient, IMPERMEABLE MATERIAL

NEW BRAZING ALLOY ELIMINATES METAL-STRESS CRACKING

FLEXIBLE PROTECTIVE COATINGS MADE FROM SILICON-NITROGEN MATERIALS

COLD CATHODE IONIZATION GAGE HAS RIGID METAL HOUSING

POLYTETRAFLUROETHYLENE LUBRICATES BALL BEARINGS IN VACUUM ENVIRONMENT

CRYOSTAT MODIFIED TO AID ROTATING BEAM FATIGUE TEST

SOLDERING TOOL HEATS WORKPIECES AND APPLIES SOLDER IN ONE OPERATION

TELESCOPING OF INSTRUMENTATION TUBING ELIMINATES SWAGING

SMALL, HIGH-INTENSITY FLASHER PERMITS CONTINUOUS CLOSE-IN PHOTOGRAPHY

OXYGEN-HYDROGEN TORCH IS A SMALL-SCALE STEAM GENERATOR

IMPROVED SYSTEM MEASURES OUTPUT ENERGY OF PYROTECHNIC DEVICES

GALLIUM ALLOY FILMS INVESTIGATED FOR USE AS BOUNDARY LUBRICANTS

MULTISURFACE FIXTURE PERMITS EASY GRINDING OF TOOL HOLE ANGLES

WIDE-RANGE INSTRUMENT MONITORS FLOW RATES OF CHEMICALLY ACTIVE FLUIDS

SOFT-SEAL VALVE HOLDS HAZARDOUS FLUIDS SAFELY

SUBMICRON METAL POWDERS PRODUCED BY BALL MILLING WITH GRINDING AIDS

ELECTRIC ARC HEATER IS SELF STARTING

MODIFIED SOLDERING IRON SPEEDS CUTTING OF SYNTHETIC MATERIALS

PRESSURE-WELDED FLANGE ASSEMBLY PROVIDES LEAKTIGHT SEAL AT REDUCED BOLT LOADS

DIFFERENTIAL EXPANSION PROVIDES PRESSURE FOR DIFFUSION BONDING OF LARGE DIAMETER RINGS

ELECTROLYTIC ETCHING PROCESS PRODUCES EFFECTIVE BONDING SURFACE ON STAINLESS STEEL

SYSTEM LOCATES RANDOMLY PLACED REMOTE OBJECTS

FIBER LENGTH AND ORIENTATION PREVENT MIGRATION IN FLUID FILTERS

BIMETALLIC DEVICES HELP MAINTAIN CONSTANT SEALING FORCES DOWN TO CRYOGENIC TEMPERATURES

INSPECTION OF FINE WIRES SIMPLIFIED BY CAPILLARY TUBE WIRE HOLDER

NONHARMONIC ACID ETCHES WELD SAMPLES

ELECTROLESS NICKEL PLATING ON STAINLESS STEELS AND ALUMINUM

BRAZING PROCESS PROVIDES HIGH-STRENGTH Bonds BETWEEN ALUMINUM AND STAINLESS STEEL

ELECTROCHEMICAL MILLING REMOVES BURRS AND SOLDER FROM TUBING ENDS

NONHARMONIC ACID ETCHES WELD SAMPLES

ELECTROLESS NICKEL PLATING ON STAINLESS STEELS AND ALUMINUM

BRAZING PROCESS PROVIDES HIGH-STRENGTH BONDS BETWEEN ALUMINUM AND STAINLESS STEEL

ELECTROCHEMICAL MILLING REMOVES BURRS AND SOLDER FROM TUBING ENDS

SUBMICRON METAL POWDERS PRODUCED BY BALL MILLING WITH GRINDING AIDS
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>STAINLESS STEELS CONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>stainless steel alloy 301</td>
<td>B67-10089 03</td>
</tr>
<tr>
<td>Ultrasonics permits brazing complex stainless steel assembly without flux BU-0115</td>
<td>B67-10094 05</td>
</tr>
<tr>
<td>Silver plating ensures reliable diffusion bonding of dissimilar metals N-PS-1975</td>
<td>B67-10124 03</td>
</tr>
<tr>
<td>Clamp provides efficient connection for high-density currents N-PS-2417</td>
<td>B67-10140 01</td>
</tr>
<tr>
<td>Closed circuit TV system monitors welding operations BSC-11002</td>
<td>B67-10162 01</td>
</tr>
<tr>
<td>Liquid microsurgery chamber and microsyringe designs allow more efficient microsurgical manipulations ARG-251</td>
<td>B67-10305 04</td>
</tr>
<tr>
<td>Jacketed cryogenic piping is stress relieved N-PS-595</td>
<td>B67-10308 05</td>
</tr>
<tr>
<td>Hand-held instrument should relieve hematoma pressure BSC-599</td>
<td>B67-10332 04</td>
</tr>
<tr>
<td>Low-energy gamma ray inspection of brazed aluminum joints KSC-1189</td>
<td>B67-10337 02</td>
</tr>
<tr>
<td>Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment ISG-10083</td>
<td>B67-10350 03</td>
</tr>
<tr>
<td>Steel test panel helps control additives in pyrophosphate copper plating LEWIS-10101</td>
<td>B67-10358 05</td>
</tr>
<tr>
<td>Transducer measures embedment stresses in electronic modules N-PS-1348</td>
<td>B67-10367 01</td>
</tr>
<tr>
<td>Electrons beam parallel X-ray generator KSC-11022</td>
<td>B67-10372 02</td>
</tr>
<tr>
<td>Stabilizing stainless steel components for cryogenic service N-PS-13127</td>
<td>B67-10377 05</td>
</tr>
<tr>
<td>Crack growth measured on flat and curved surfaces at cryogenic temperatures LEWIS-389</td>
<td>B67-10384 01</td>
</tr>
<tr>
<td>Standard surface grinder for precision machining of thin-wall tubing ARG-10012</td>
<td>B67-10400 05</td>
</tr>
<tr>
<td>Metal tube reducer is inexpensive and simple to operate ABG-49</td>
<td>B67-10401 05</td>
</tr>
<tr>
<td>Protected, high-temperature connecting cable LEWIS-10149</td>
<td>B67-10461 01</td>
</tr>
<tr>
<td>Tube-to-header joint for bimetallic construction LEWIS-10282</td>
<td>B67-10464 05</td>
</tr>
<tr>
<td>Aluminum and stainless steel tubes joined by simple ring and welding process N-PS-13120</td>
<td>B67-10472 05</td>
</tr>
<tr>
<td>Tool samples subsurface soil free of surface contaminants KSC-10988</td>
<td>B67-10473 05</td>
</tr>
<tr>
<td>Method for X-ray study under extreme temperature and pressure conditions KSC-11233</td>
<td>B67-10474 02</td>
</tr>
<tr>
<td>Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing</td>
<td></td>
</tr>
</tbody>
</table>

I-625
Possible correlation between work-hardening and fatigue-failure

Placed-tube fittings with replaceable seat inserts

Liquid oxygen-compatible insulation system

Explosive bonding of metal-matrix composites

Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns

Computer program reduces calculation time of normal response functions

Estimation of signal-to-noise ratios

Electrometer has automatic zero bias control

Standards for electron probe microanalysis of silicates prepared by convenient method

Structural Analysis and Matrix Interpretive System / SAMIS /

Multiple port pressure scanner valve features greater accuracy, quicker data

Analytical technique characterizes all trace contaminants in water

Checking flat conductor cable spacing by means of a moire pattern

System converts slow-scan TV signals

Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique

Electronic shutter gates image orthicon on and off

Instrument quickly transposes ground reference target to eye level

Point-source light sensor circuit is insensitive to background light

Special purpose reflectometer uses iodine

Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns

Computer program reduces calculation time of normal response functions

Estimation of signal-to-noise ratios

Electrometer has automatic zero bias control

Standards for electron probe microanalysis of silicates prepared by convenient method

Structural Analysis and Matrix Interpretive System / SAMIS/

Multiple port pressure scanner valve features greater accuracy, quicker data

Analytical technique characterizes all trace contaminants in water

Checking flat conductor cable spacing by means of a moire pattern

System converts slow-scan TV signals

Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique

Electronic shutter gates image orthicon on and off

Instrument quickly transposes ground reference target to eye level

Point-source light sensor circuit is insensitive to background light

Special purpose reflectometer uses iodine
### SUBJECT INDEX

#### STATIC LOADS
- Lightweight load support serves as vibration damper
  - JPL-661 865-10144 05
- Refractory oxides evaluated for high-temperature use
  - LANGLY-121 865-10167 03
- Pressure responsive seal handles static and dynamic loads
  - GSFC-4N1 865-10327 05
- Mechanism continuously measures static and dynamic cable loads
  - NSC-217 866-10107 05

#### STATIC PRESSURE
- Averaging probe reduces static-pressure sensing errors
  - LANGLY-36 865-10114 05
- Computer program determines gas flow rates in piping systems
  - N-PS-6N3 866-10300 01
- Combination spacer and gasket provides effective static seal
  - N-PS-1397 866-10485 05
- Pressure probe compensates for dimensional tolerance variations
  - LWIS-302 869-10599 01

#### STATIC TESTS
- Materials physically tested in variable-environment chamber
  - JPL-789 866-10130 01
- Effects of high frequency current in welding aluminum alloy 6061
  - N-PS-18337 868-10383 05

#### STATICS
- Static seal concept to accommodate seat tolerances
  - N-PS-4854 867-10285 05
- Cryogenic seal concept for static and dynamic conditions
  - N-PS-12986 867-10673 05

#### STATISTICAL ANALYSIS
- Computer program performs statistical analysis for random processes
  - N-PS-723 866-10525 01
- Computer program performs spectral analyses of up to seven time series
  - N-PS-1133 866-10539 01
- Welding of AH350 and AH355 steel
  - N-PS-2316 867-10292 05
- Computer program uses Monte Carlo techniques for statistical systems performance analysis
  - N-PS-2234 867-10306 06
- Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors
  - N-PS-1887 867-10430 01

#### STATISTICAL DISTRIBUTIONS
- Design reliability goal developed from small sample
  - N-PS-403 866-10405 05
- Computer program calculates monotonic maximum likelihood estimates using method of reversals
  - N-PS-1516 867-10136 01
- Probabilistic approach to long range planning of manpower
  - NSC-11524 867-10510 06
- Study made of mechanics of deformation and fracture of fibrous composites
  - EQ-10035 867-10660 03

#### STATISTICAL MECHANICS
- Computer program for calculation of ideal gas thermodynamic data
  - LWIS-10224 866-10025 06

#### STATISTICS
- GERT EXCLUSIVE-OR combining paths and loops of electrical networks
  - EBC-10206 866-10435 06
- GERT simulation program for GERT network analysis
  - EBC-10209 866-10457 06
- Failure rates for accelerated acceptance testing of silicon transistors
  - EBC-10198 866-10541 01

#### STATORS
- Brushless dc motor uses electron beam switching tube as commutator

---

**STATORS**

- Study of thin-walled pipe response to turbulent fluids
  - N-PS-1321 867-10518 05
- New method for critical failure prediction of complex systems
  - N-PS-14133 868-10252 02
- Study of optimum discrete estimators in measurement analysis
  - N-PS-14915 868-10348 02
- Performance analysis of electrical circuits
  - EBC-15001 868-10448 06
- Micrometers and computers combined for analysis of chromosomes
  - N-PS-10256 869-10088 04
- Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices
  - N-PS-10445 869-10415 02
- A theoretical study of radar backscatter from distributed targets with emphasis on polarization dependence
  - N-PS-13775 869-10560 02
- Live-timer method of automatic dead-time correction for precision counting
  - N-PS-10478 869-10612 01

**STATISTICAL CORRELATION**

- The X square statistic and goodness of fit test
  - GSFC-10547 868-10136 02

**STATISTICAL DISTRIBUTIONS**

- Design reliability goal developed from small sample
  - N-PS-403 866-10405 05
- Computer program calculates monotonic maximum likelihood estimates using method of reversals
  - N-PS-1516 867-10136 01
- Probabilistic approach to long range planning of manpower
  - NSC-11524 867-10510 06
- Study made of mechanics of deformation and fracture of fibrous composites
  - EQ-10035 867-10660 03

**STATISTICAL MECHANICS**

- Computer program for calculation of ideal gas thermodynamic data
  - LWIS-10224 866-10025 06

**STATISTICS**

- GERT EXCLUSIVE-OR combining paths and loops of electrical networks
  - EBC-10206 866-10435 06
- GERT simulation program for GERT network analysis
  - EBC-10209 866-10457 06
- Failure rates for accelerated acceptance testing of silicon transistors
  - EBC-10198 866-10541 01

**STATOR BLADES**

- Noise study of single stage compressor rotor-stator interaction
  - LANGLY-137 867-10516 02
- Acoustic wave analysis
  - N-PS-18076 866-10265 02
- Computer programs for axial flow compressor design
  - LWIS-10765 869-10174 06

**STATORS**

- Brushless dc motor uses electron beam switching tube as commutator

---

**X-627**
Flexible magnetic planning boards are easily transported

GSFC-340 B65-10219 05

Computer program simplifies selection of structural steel columns

BU-0044 B66-10097 01

Combination spacer and gasket provides effective static seal

PS-1397 B66-10645 05

Nondestructive test method accurately sorts mixed bolts

PS-1426 B66-10574 01

Effects of heat input rates on T-1 and T-1A steel welds

PS-2475 B67-10163 03

Modified sine bar device measures small angles with high accuracy

LEWIS-1083 C66-10322 02

Helical tape forming device

LEWIS-1083 C66-10322 02

A magnifying scratch-gage force transducer

LEWLEY-10496 B66-10212 01

Improved table for cutting and welding

IEC-15537 B69-10357 05

STEELS

Gallium useful bearing lubricant in high-vacuum environment

LEWIS-12 B63-10337 03

Pressure molding of powdered materials improved by rubber mold insert

WCO-100 B64-10270 03

Forming blocks speed production of strain gage grids

LEWIS-182 B65-10009 05

Spring loaded beaded cable makes efficient wire puller

WCO-108 B65-10311 05

Etching process mills Fe 14-8 Mo alloy to precise tolerances

BSC-270 B66-10110 03

Critical parts are stored and shipped in environmentally controlled reusable container

P-PS-703 B66-10258 05

Friction loading device enables accurate testing of brittle materials

BU-0051 B66-10345 05

Impact and puncture resistant material protects parts from damage

BSC-747 B66-10375 05

Use of steel and tantalum apparatus for molten Cd-Bi-Ge alloy

BSC-199 B66-10594 03

Grit blasting nozzle fabricated from mild tool steel proves satisfactory

P-PS-1420 B66-10597 05

Controlled ferrite content improves weldability of corrosion-resistant steel

P-PS-568 B67-10099 05

Effects of heat input rates on T-1 and T-1A steel welds

PS-2475 B67-10163 03

High-strength braze joints between copper and steel

PS-2519 B67-10211 05

Welding of AM350 and AM355 steel

PS-2314 B67-10292 05

STEEL STRUCTURES

Frictional wedge shock mount in inexpensive, has good damping characteristics

JPL-PZ-1001 B63-10289 05
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>STIFFNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel test panel helps control additives in pyrophosphate copper plating</td>
<td>Compensation of pulse-rebalanced inertial instruments KSC-13098 869-10216 01</td>
</tr>
<tr>
<td>Flowmeter determines mix ratio for viscos adhesives M-PS-2308</td>
<td>Maximum RMS error comparison of several redundancy techniques M-PS-15075 869-10297 01</td>
</tr>
<tr>
<td>Study made of pneumatic high pressure piping materials /10,000 psi/ KSC-10133</td>
<td>STEREOSElection</td>
</tr>
<tr>
<td>Development of helical seal for high temperature /2000 degrees F/ application M-PS-13304</td>
<td>Camera mount for close-up stereo photographs LANGLEY-10442 869-10226 02</td>
</tr>
<tr>
<td>High-temperature bearing-cage materials LEWIS-10403</td>
<td>STEREO TELEVISION</td>
</tr>
<tr>
<td>Susceptibility of irradiated steels to hydrogen embrittlement ARG-10115</td>
<td>Fiber optic filter for high-pressure gases has easy take-down, assembly JPL-373 863-10234 03</td>
</tr>
<tr>
<td>Astronaut space suit communication antenna KSC-12101</td>
<td>Encapsulation process sterilizes and preserves surgical instruments JPL-484 866-10066 05</td>
</tr>
<tr>
<td>High-temperature bearing lubricants LEWIS-10408</td>
<td>Dispenser leak-tests and sterilizes rubber gloves BSC-265 866-10166 03</td>
</tr>
<tr>
<td>Hydrodynamics of a new concept of primary containment by energy absorption ARG-10242</td>
<td>Fiberglass container shells form contamination-free storage units MOC-275 866-10217 05</td>
</tr>
<tr>
<td>Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings M-PS-18453</td>
<td>Hand-held instrument should relieve hematoma pressure BSC-599 867-10332 04</td>
</tr>
<tr>
<td>Diffusion bond method of joining steel and a TPE-bronze composite M-PS-20482</td>
<td>Electrolytic silver ion cell sterilizes water supply MSC-11827 866-10555 01</td>
</tr>
<tr>
<td>Evaluation of magnetic materials for static inverters and converters LEWIS-10343</td>
<td>Internal and ancestral controls of cell-generation times ARG-10326 869-10205 04</td>
</tr>
<tr>
<td>One-handed hammer-spanner for chucks M-PS-18581</td>
<td>Technique for highly efficient recovery of microbiological contaminants ARG-13250 869-10273 04</td>
</tr>
<tr>
<td>Self-lubricating gear M-PS-14971</td>
<td>Sterilization training manual M-PS-20437 869-10277 04</td>
</tr>
<tr>
<td>Literature review on pickling inhibitors and cadmium electroplating processes M-PS-14421</td>
<td>Sampling and handling of desert soils NFO-11171 869-10304 04</td>
</tr>
<tr>
<td>Retention of ductility in high-strength steels ARG-10497</td>
<td>Effects of sterilization on the energy-dissipating properties of balsa wood NFO-11207 865-10592 03</td>
</tr>
<tr>
<td>Effects of high-pressure hydrogen on storage vessel materials M-PS-18605</td>
<td>Microbiological aspects of sterilization development laboratories NFO-11197 869-10593 04</td>
</tr>
<tr>
<td>STEERING DESCRIPT METHOD</td>
<td>A sterilizable high-impact antenna NFO-10231 869-10697 01</td>
</tr>
<tr>
<td>Computer program for mass optional solutions of some endpoint trajectory problems N-PS-12976</td>
<td>STEELLAR RADIATION</td>
</tr>
<tr>
<td>STEERING</td>
<td>Transistorized circuit clamps voltage with 0.1 percent error GSPC-196</td>
</tr>
<tr>
<td>CURRENT steering commutator offers versatility JPL-812</td>
<td>Computer program provides linear sampled-data analysis for high order systems M-PS-12821 867-10287 06</td>
</tr>
<tr>
<td>STELLAR RADIATION</td>
<td>Alpha particle backscattering measurements used for chemical analysis of surfaces ARG-116 867-10186 03</td>
</tr>
<tr>
<td>STEP FUNCTIONS</td>
<td>Computer program provides linear sampled-data analysis for high order systems M-PS-12821 867-10287 06</td>
</tr>
<tr>
<td>Transistorized circuit clamps voltage with 0.1 percent error GSPC-196</td>
<td>Alpha particle backscattering measurements used for chemical analysis of surfaces ARG-116 867-10186 03</td>
</tr>
<tr>
<td>Computer program provides linear sampled-data analysis for high order systems M-PS-12821 867-10287 06</td>
<td></td>
</tr>
</tbody>
</table>

I-629
<table>
<thead>
<tr>
<th>STIlli</th>
<th>Subject Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber-coated bellows improves vibration damping in vacuum lines</td>
<td>JPL-686</td>
</tr>
<tr>
<td>Preformed stiffeners used to fabricate structural components for pressurized tanks</td>
<td>B66-10048</td>
</tr>
<tr>
<td>Improved computer program for elastic analysis of highly redundant structural configurations</td>
<td>M-PS-1796</td>
</tr>
<tr>
<td>Analysis of stability-critical orthotropic cylinders subjected to axial compression</td>
<td>M-PS-12869</td>
</tr>
<tr>
<td>Heavy-gage bonded honeycomb sandwich as primary load-bearing structure</td>
<td>M-PS-12060</td>
</tr>
<tr>
<td>Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles</td>
<td>LANGLEY-10093</td>
</tr>
<tr>
<td>Computer program performs stiffness matrix structural analysis</td>
<td>B65-10502</td>
</tr>
<tr>
<td>Subminiature biotelemetry unit permits remote physiological investigations</td>
<td>ABC-39</td>
</tr>
<tr>
<td>Improved cryogenic refrigeration system</td>
<td>JPL-731</td>
</tr>
<tr>
<td>Multiple test tubes stirred mechanically</td>
<td>ABC-62</td>
</tr>
<tr>
<td>Design techniques - Stochastic controllers</td>
<td>B68-1023a</td>
</tr>
<tr>
<td>Improved fuel-cell-type hydrogen sensor</td>
<td>B66-10263</td>
</tr>
<tr>
<td>Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide</td>
<td>ARG-10154</td>
</tr>
<tr>
<td>The thermodynamic properties of the wustite phase are studied</td>
<td>ARG-10200</td>
</tr>
<tr>
<td>Niobium-uranium alloys with voids of predetermined size and total volume</td>
<td>ARG-10490</td>
</tr>
<tr>
<td>Electrolytic separation of crystals of transition-metal oxides</td>
<td>ARG-10506</td>
</tr>
<tr>
<td>Combined actuator and latch for cartridge powered actuator</td>
<td>NPS-12242</td>
</tr>
<tr>
<td>Electromechanical rotary actuator operates over wide temperature range</td>
<td>M-PS-18402</td>
</tr>
<tr>
<td>Metal strip forms 21 foot boom, rolls up for compact storage</td>
<td>GSPC-151</td>
</tr>
<tr>
<td>Dispensing system eliminates torsion in deployed hoses</td>
<td>GSPC-60</td>
</tr>
<tr>
<td>Extensible column can be stowed on drum</td>
<td></td>
</tr>
</tbody>
</table>

**STORAGE BATTERIES**

Primary cells use neither liquid nor fused electrolytes | B66-10001 | B67-10275 | 01 |

**STORAGE STABILITY**

Storage-stable foamy polyurethane is activated by heat | LANGLEY-167 | B66-10111 | 03 |

**STORAGE TANKS**

Helium tube separates nitrogen gas from liquid nitrogen | JPL-398 | B63-10251 | 05 |

Integral coolant channels supply made by melt-out method | M-PS-91 | B63-10497 | 05 |

Control system maintains selected liquid level | M-PS-470 | B66-10039 | 01 |

Gas diffuser facilitates withdrawal of cryogenic liquids from tanks | M-PS-915 | B66-10342 | 05 |

Closed loop operation eliminates need for auxiliary gas in high pressure pumping station | M-PS-893 | B66-10408 | 05 |

Large diameter metal ring seal prevents gas leakage at 5000 psi | | | |
Calibrated water tank facilitates pressure testing of instrumentation fittings

Test instrumentation evaluates electrostatic hazards in fluid system

Glass bead shot peening retards stress corrosion failure of titanium tanks

Computer program provides steady state analysis for liquid propellant propulsion systems

Study made of pneumatic high pressure piping materials /10,000 psi/

Calibrated water tank facilitates proof-loading of cranes and derricks

Effects of hydrogen on metals

Control for maintaining constant level of a cryogenic liquid

Analysis of stability-critical orthotropic cylinders subjected to axial compression

Angular acceleration measured by deflection in sensing ring

New anemometer has fast response, measures dynamic pressure directly

Rapid helium-air analyzer can measure other binary gas mixtures

Forcing blocks speed production of strain gage grids

Interferometer combines laser light source and digital counting system

Differential pressure gauge has fast response

Improved strain-wire flowmeter has fast response time

Direct force-measuring transducer used in blood pressure research

Mechanism continuously measures static and dynamic cable loads

Bismuth alloy potting seals aluminum connector in cryogenic application

Improved system measures output energy of pyrotechnic devices

Transducer measures force in vacuum environment

Radiation used to temperature compensate semiconductor strain gages

Coating permits use of strain gage in water and liquid hydrogen

Colloidal suspension simulates linear dynamic pressure profile

Improved system measures output energy of pyrotechnic devices

Device measures static friction of magnetic tape

Improved control system power unit for large parachutes

Miniature pressure transducer for stressed member application

Silicon strain sensors enable pressure measurement

SUBJECT INDEX

M-FS-1064  B66-10422  05

Interior servicing platform simplifies maintenance of storage tanks

Preforced stiffeners used to fabricate structural components for pressurized tanks

Nonwoven glass fiber mat reinforces polyurethane adhesive

Portable fixture facilitates pressure testing of instrumentation fittings

Test instrumentation evaluates electrostatic hazards in fluid system

Glass bead shot peening retards stress corrosion failure of titanium tanks

Computer program provides steady state analysis for liquid propellant propulsion systems

Study made of pneumatic high pressure piping materials /10,000 psi/

Calibrated water tank facilitates proof-loading of cranes and derricks

Effects of hydrogen on metals

Control for maintaining constant level of a cryogenic liquid

Analysis of stability-critical orthotropic cylinders subjected to axial compression

Angular acceleration measured by deflection in sensing ring

New anemometer has fast response, measures dynamic pressure directly

Rapid helium-air analyzer can measure other binary gas mixtures

Forcing blocks speed production of strain gage grids

Interferometer combines laser light source and digital counting system

Differential pressure gauge has fast response

Improved strain-wire flowmeter has fast response time

Direct force-measuring transducer used in blood pressure research

Mechanism continuously measures static and dynamic cable loads

Bismuth alloy potting seals aluminum connector in cryogenic application

Improved system measures output energy of pyrotechnic devices

Transducer measures force in vacuum environment

Radiation used to temperature compensate semiconductor strain gages

Coating permits use of strain gage in water and liquid hydrogen

Colloidal suspension simulates linear dynamic pressure profile

Improved system measures output energy of pyrotechnic devices

Device measures static friction of magnetic tape

Improved control system power unit for large parachutes

Miniature pressure transducer for stressed member application

Silicon strain sensors enable pressure measurement

STRAIN GAGES

B66-10138  03

B66-10159  01

B66-10161  01

B66-10186  02

B66-10192  01

B66-10214  05

B66-10280  01

B66-10397  01

B66-10488  01

B66-10624  01

B66-10704  05

B67-10108  01

B67-10406  01

B67-10114  01

B67-10100  01

B67-10182  03

B67-10242  01

B67-10367  01

B67-10378  01

B67-10379  05

B67-10428  02

B67-10586  03

B67-10677  05

B66-10246  01

I-631
Indium adhesion provides quantitative measure of surface cleanliness

Temperature controlled strain gaged extensometer

Ratio matching of half-bridge weldable strain gages, computer program

Pressure transducer

Possible correlation between work-hardening and fatigue-failure

Retention of ductility in high-strength steels

Mechanical properties of plastics predetermined by empirical method

Tensile-strength apparatus applies high strain-rate loading with minimum shock

Study made of ductility limitations of aluminum-silicon alloys

Study of stress corrosion in aluminum alloys

Evaluation of a fluorocarbon plastic used in cryogenic valve seals

Testers automatically checks insulation of individual conductors in multiple-strand cables

Coaxial cable stripping device facilitates RF cabling fabrication

Buckle joins web straps quickly, adjusts easily

Web belt load measuring instrument has excellent stability

Improved compression molding process

Stratification of centrifuged amoeba nuclei investigated by electron microscopy

Ultra-high-flux heat exchanger

Rocket sonde measurements of ozone in the upper atmosphere

NEWHY - Program for calculating velocities in supersonic region of turbomachines

FORTRAN 4 program calculates velocities and streamlines in a tandem blade turbine

Computer program performs flow analysis through turbines

Compact coaxial connector for printed circuit adds reliability

Upsetting butt edge increases weld-joint strength

Tests show that aluminum welds are improved by bead removal

Weld microstructure in Inconel 718 minimized by minor elements

Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing

Improved method of producing oxide-dispersion-strengthened alloys

Helmet system broadcasts electroencephalograms of wearer

Servo system facilitates photoelastic strain measurements on resins

Computer program simplifies selection of structural steel columns

Equations provide tubular information on effects of uniform and variable loads on thin, flat, circular plates

Stress calculator speedily converts strain data

A modal combination computer program for dynamic analysis of structures

Computer program calculates steady-state temperature distribution within plane or axisymmetric solids

Computer program simplifies design of rotating components of turbomachinery

Simplified method measures changes in tensile yield strength using least number of specimens

Improved computer program for elastic analysis of highly redundant structural
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>STRESS CORROSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>configurations</td>
<td>Study made of mechanics of deformation and fracture of fibrous composites</td>
</tr>
<tr>
<td>St-PS-13067</td>
<td>B67-10330 06</td>
</tr>
<tr>
<td>Analysis of stability-critical orthotropic cylinders subjected to axial</td>
<td>Tentile testing grips ensure uniform loading of biomeal tubing specimens</td>
</tr>
<tr>
<td>compression</td>
<td>LEWIS-10267 B68-10248 05</td>
</tr>
<tr>
<td>St-PS-12869</td>
<td></td>
</tr>
<tr>
<td>Torque meter aids study of hysteresis</td>
<td></td>
</tr>
<tr>
<td>motor rings</td>
<td></td>
</tr>
<tr>
<td>St-PS-12219</td>
<td></td>
</tr>
<tr>
<td>Circuit measures hysteresis loop areas at 30 Hz</td>
<td></td>
</tr>
<tr>
<td>St-PS-13069</td>
<td></td>
</tr>
<tr>
<td>Computer program performs rectangular fitting stress analysis</td>
<td></td>
</tr>
<tr>
<td>St-PS-13010</td>
<td></td>
</tr>
<tr>
<td>Digital computer program predicts effects of local pressure transients on</td>
<td></td>
</tr>
<tr>
<td>deformation and stresses in cylindrical ducts</td>
<td></td>
</tr>
<tr>
<td>St-PS-13058</td>
<td></td>
</tr>
<tr>
<td>Development of biaxial test fixture</td>
<td></td>
</tr>
<tr>
<td>includes cryogenic application</td>
<td></td>
</tr>
<tr>
<td>St-PS-14185</td>
<td></td>
</tr>
<tr>
<td>Experiments with ceramic coatings</td>
<td></td>
</tr>
<tr>
<td>St-PS-18150</td>
<td></td>
</tr>
<tr>
<td>Nondestructive method for measuring residual stresses in metals, a concept</td>
<td></td>
</tr>
<tr>
<td>KSC-10237</td>
<td></td>
</tr>
<tr>
<td>General series solution technique for bending of irregular laterally loaded</td>
<td></td>
</tr>
<tr>
<td>flat plates</td>
<td></td>
</tr>
<tr>
<td>WOC-10170</td>
<td></td>
</tr>
<tr>
<td>Torsion system for creep testing with multiple stress reversals</td>
<td></td>
</tr>
<tr>
<td>H-10039</td>
<td></td>
</tr>
<tr>
<td>Stress-testing of the throat of a rocket's nozzle</td>
<td></td>
</tr>
<tr>
<td>WOC-10311</td>
<td></td>
</tr>
<tr>
<td>Root-cubing and general root-powering methods for finding the zeros of</td>
<td></td>
</tr>
<tr>
<td>polynomials</td>
<td></td>
</tr>
<tr>
<td>ARC-10444</td>
<td></td>
</tr>
<tr>
<td>Determination of permissible applied load stress in structural elements</td>
<td></td>
</tr>
<tr>
<td>H-PS-16556</td>
<td></td>
</tr>
<tr>
<td>STRESS CONCENTRATION</td>
<td></td>
</tr>
<tr>
<td>Lightweight hinged bellows restraint has high load capacity</td>
<td></td>
</tr>
<tr>
<td>WOO-151</td>
<td></td>
</tr>
<tr>
<td>Fastener distributes stress evenly from sandwich-panel-hung items</td>
<td></td>
</tr>
<tr>
<td>KSC-236</td>
<td></td>
</tr>
<tr>
<td>Resilient clamp holds fuel cell stack through resilient clamp holds fuel</td>
<td></td>
</tr>
<tr>
<td>cell stack through thermal cycle</td>
<td></td>
</tr>
<tr>
<td>KSC-313</td>
<td></td>
</tr>
<tr>
<td>Determination of permissible applied load stress in structural elements</td>
<td></td>
</tr>
<tr>
<td>H-PS-16556</td>
<td></td>
</tr>
<tr>
<td>Aluminum/steel wire composite plates exhibit high tensile strength</td>
<td></td>
</tr>
<tr>
<td>H-PS-401</td>
<td></td>
</tr>
<tr>
<td>Torus elements used in effective shock absorber</td>
<td></td>
</tr>
<tr>
<td>WOO-114</td>
<td></td>
</tr>
<tr>
<td>Post-stressed concrete foundation may reduce machinery vibration</td>
<td></td>
</tr>
<tr>
<td>ARC-130</td>
<td></td>
</tr>
<tr>
<td>Analysis of stability-critical orthotropic cylinders subjected to axial</td>
<td></td>
</tr>
<tr>
<td>compression</td>
<td></td>
</tr>
<tr>
<td>St-PS-12869</td>
<td></td>
</tr>
<tr>
<td>Heavy-gage bonded honeycomb sandwich as primary load-bearing structure</td>
<td></td>
</tr>
<tr>
<td>H-PS-12060</td>
<td></td>
</tr>
<tr>
<td>I-633</td>
<td></td>
</tr>
</tbody>
</table>
STRESS FUNCTIONS

M-PS-20175  B68-10536  03
Stress-corrosion-induced property changes in aluminum alloys

STRESS FUNCTIONS

M-PS-20209  B68-10568  03
Finite element analysis of compressible solids with nonlinear material properties

STRESS MEASUREMENT

JPL-591   B65-10023  01
Miniature stress transducer has directional capability

Angular acceleration measured by deflection in sensing ring

MSC-250   B66-10105  01
Polymer deformation gage measures thickness change in tensile tests

Colloidal suspension simulates linear dynamic pressure profile

UOC-266   B66-10214  05
Ultrasonic emission method enables testing of adhesive bonds

JPL-745   B66-10341  01
Stress calculator speedily converts strain data

Simple test for physical stability of cryogenic tank insulation

STRESS RATIO

JPL-616   B65-10189  03
Testing device subjects elastic materials to biaxial deformations

STRESS RELAXATION

M-PS-12547 B66-10448  03
Thermal stress-relief treatments for 2219 aluminum alloy are evaluated

JPL-12720 B67-10381  03
Machining heavy plastic sections

STRESS RELIEVING

B65-10185  05
Dispensing system eliminates torsion in deployed hoses

MSC-80    B66-10230  05
Insert sleeve prevents tube soldering contamination

Large sheets fabricated from small segments reduce procurement lead time

M-PS-1117 B66-10464  05
Process yield Co-Fe alloys with superior high temperature magnetic properties

B66-10535  03
Heat-treatment of metal parts facilitated by sand embedment

M-PS-1543 B66-10616  03
Jacketed cryogenic piping is stress relieved

M-PS-985   B67-10308  05
Warpage eliminated in copper-clad microwave circuit laminates

M-PS-13692 B67-10454  03
STRESS-STRAIN DIAGRAMS

M-PS-517   B66-10284  05
Strain gage measures changes in tensile yield strength using least number of specimens

NUC-10075 B67-10266  03
Study made of mechanics of deformation and fracture of fibrous composites

Eq-10035 B67-10660  03
Possible correlation between work-hardening and fatigue-failure

ARG-10371 B69-10414  03
STRESS-STRAIN-TIME RELATIONS

B67-10519  01
Circuit measures hysteresis loop areas at

M-PS-13069 B67-10519  01
Stress waves increase sensitivity in nondestructive testing

M-PS-280 B65-10098  05
Gage measures total radiation, including vacuum UV, from ionized high-temperature gases

B66-10028  02
STRESSES

B66-10068  03
Mechanical properties of plastics predetermined by empirical method

B65-10098  05
Contact stresses calculated for miniature slip rings

B65-10141  05
Integral ribs formed in metal panels by cold-press extrusion

B65-10295  02
Improved fluid control valve extends diaphragm life

B65-10147  05
Unique construction makes interferometer insensitive to mechanical stresses

JPL-725 B65-10295  02
Universal transloader moves delicate equipment without stress

M-PS-654 B66-10384  05
Biniature pressure transducer for stressed member application

B66-10383  03
Polarized light reveals stress in machined laminated plastics

B67-10651  06
Development of reliability prediction technique for semiconductor diodes

MSC-11869 B68-10246  01
Miniature pressure transducer for stressed member application

LEWIS-333 B66-10531  05
Development of technology for hot-drape forming of large torus sections

LEWIS-333 B66-10535  03
Heat-treatment of metal parts facilitated by sand embedment

B66-10616  03
Jacketed cryogenic piping is stress relieved

M-PS-1543 B66-10616  03
Warpage eliminated in copper-clad microwave circuit laminates

M-PS-13692 B67-10454  03
STRETCHERS

B65-10019  05
Orthopedic stretcher with average-sized person can pass through 18-inch opening

M-PS-517 B65-10019  05
Orthopedic stretcher with average-sized person can pass through 18-inch opening

M-PS-654 B66-10019  05
Development of technology for hot-drape forming of large torus sections

B66-10384  05
Polarized light reveals stress in machined laminated plastics

Development of reliability prediction technique for semiconductor diodes

M-PS-11869 B66-10301  05
Miniature pressure transducer for stressed member application

B66-10314  05
Development of technology for hot-drape forming of large torus sections

B66-10573  05
STRIPPING
Cutter and stripper reduces coaxial cable connection time
M-AP-40 B65-10094 05
Technique for stripping Teflon insulated wire
M-FS-1774 B67-10048 05
Tools for applying lead tape to flat conductor cabling for chemical stripping
M-FS-20429 B69-10190 05
STROBOSCOPES
Multicolor stroboscope pinpoints resonances in vibrating components
JPL-0033 B66-10223 01
STROBOSCOPE 90
Silicon surface barrier detectors used for liquid hydrogen density measurement
M-FS-14115 B68-10166 01
STRUCTURAL ANALYSIS
Computer program simplifies transient and steady-state temperature prediction for complex body shapes
M-AP-289 B66-10619 01
Neutron diffractometer allows both magnetic and crystallographic analyses
ANQ-191 B67-10131 02
Structural Analysis and Matrix Interpretive System /SAMIS/
NPO-10130 B67-10171 01
Improved computer program for elastic analysis of highly redundant structural configurations
M-FS-13067 B67-10330 06
Survey made of refractory metals
LEWIS-10380 B68-10032 03
Computer program performs stiffness matrix structural analysis
NPO-10502 B68-10096 06
Fatigue of reinforced concrete beams under dynamic loading
M-FS-14946 B68-10515 05
Fractography can be used to analyze failure modes in polytetrafluoroethylene
M-FS-20294 B69-10066 03
Fatigue failure in metal bellows due to flow-induced vibrations
M-FS-18363 B69-10071 05
Structural Analysis and Matrix Interpretive System /SAMIS/
NPO-10839 B69-10093 01
Mechanical properties of a lap joint under uniform clamping pressure
M-FS-14530 B69-10141 05
STRUCTURAL DESIGN
A conceptual design for squeeze film bearings
M-FS-573 B66-10226 05
Solar cell submodule design facilitates assembly of lightweight arrays
JPL-728 B66-10231 02
Integrated mobility measurement and notation system
MSC-726 B67-10114 04
Land landing cushion dynamical computer program
MSC-1210 B67-10233 06
Computer program simplifies design of rotating components of turbomachinery
NUC-10046 B67-10235 06
Application of distorted models in developing scaled structural models
N-PS-2540 B67-10321 05
Study made of large amplitude fuel sloshing
M-FS-12381 B67-10439 03
Computer programs for antenna feed system design and analysis
NPO-10359 B67-10504 06
Study of crack initiation phenomena associated with stress corrosion of aluminum alloys
M-FS-14283 B68-10153 03
Improved traveling wave maser amplifier
NPO-10548 B68-10244 01
Design of fluid-duct bends with low pressure loss
M-FS-20176 B68-10395 05
Analysis of filament reinforced metal-shell pressure vessels
LEWIS-10352 B68-10405 06
Improved mouse cage provides versatility and ease in handling laboratory mice
M-SC-12250 B69-10124 04
Optimum structural design based on reliability and proof-load testing
NPO-11228 B69-10723 31
Determination of permissible applied load stress in structural elements
M-FS-16556 B69-10823 02
STRUCTURAL ENGINEERING
Computer program simplifies selection of structural steel columns
NPO-10044 B66-10097 01
STRUCTURAL FAILURE
Refractory oxides evaluated for high-temperature use
LANGLEY-121 B65-10167 03
Plugged hollow shaft makes fatigue-resistant shear pin
LANGLEY-195 B66-10077 05
Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 B66-10187 02
Fluid damping reduces bellows seal fatigue failures
M-FS-565 B66-10249 05
Study to minimize hydrogen embrittlement of ultra-high-strength steels
M-PS-2455 B67-10141 03
Glass bead shot peening retards stress corrosion failure of titanium tanks
LANGLEY-319 B67-10198 05
Computer program simplifies design of rotating components of turbomachinery
NUC-10046 B67-10235 06
Buckling strength of filament-wound cylinders under axial compression is investigated
EQ-10032 B67-10659 03
Study made of mechanics of deformation and fracture of fibrous composites
EQ-10035 B67-10660 03
Predicting fatigue life of metal bellows
M-FS-14096 B68-10249 05
Fractography can be used to analyze failure modes in polytetrafluoroethylene
M-FS-20294 B69-10066 03
Techniques for controlling warpage and
residual stresses in welded structures
M-PS-20307 B66-10086 05

Threaded split ring connector separates structural sections
LANGLEY-145 B66-10086 05

Epoxy blanket protects milled part during explosive forming
M-PS-307 B66-10029 03

Lifting clamp positively grips structural shapes
M-PS-593 B66-10176 05

Aluminum/steel wire composite plates exhibit high tensile strength
M-PS-401 B66-10242 05

Instrument calculates moments of inertia of complex plane figures
MSC-628 B66-10306 01

Modified hydraulic braking system limits angular deceleration to safe values
GSFC-476 B66-10310 05

Metal tube can be folded for compact stowage, is self-ejecting
LEWIS-288 B66-10450 05

Preformed stiffeners used to fabricate structural components for pressurized tanks
M-PS-1796 B66-10668 05

Proposed method of rotary dynamic balancing by laser
M-PS-12422 B67-10452 02

Miniature pressure transducer for stressed member application
MSC-11869 B68-10246 01

A magnifying scratch-gage force transducer
LANGLEY-10496 B69-10212 01

Boron fiber-reinforced aluminum alloy tubing /experimental/
MSC-15633 B69-10509 05

Lightweight universal joint transmits both torque and thrust
JPL-375 B63-10236 05

New method used to fabricate light-weight heat exchanger for rocket motor
LEWIS-43 B63-10346 02

High efficient square-wave oscillator operating at high power levels
GSFC-112 B63-10554 01

New method forms bond line free of voids
LANGLEY-20 B63-10558 05

Leaf-spring suspension provides accurate parallel displacements
JPL-480 B65-10104 05

Low-cost tool minimizes damage to O-rings during installation
MSC-140 B65-10116 05

Intermediate rotating ring improves reliability of dynamic shaft seal
M-PS-575 B66-10197 05

Brazing process using Al-Si filler alloy reliably bonds aluminum parts
MSC-448 B66-10241 05

Design reliability goal developed from small sample
M-PS-403 B66-10405 05

Warpage eliminated in copper-clad

microwave circuit laminates
M-PS-13892 B67-10454 03

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures
M-PS-18192 B69-10068 03

Adhesive for cryogenic temperature applications
LEWIS-10264 B69-10074 03

Seismographic recording of large rocket engine operation
M-PS-20545 B69-10756 01

Modular chassis simplifies packaging and interconnecting of circuit boards
JPL-236A B63-10174 01

Radiant heater for vacuum furnaces offers high structural rigidity, low heat loss
LEWIS-39 B63-10342 01

Flexible honeycomb structure can bend to fit compound curves
M-PS-13 B63-10385 05

New inflatable life raft is non-tippable
MSC-4A B64-10001 05

Spring loaded beaded cable makes efficient wire puller
NOO-108 B65-10031 05

Nonresonant support facilitates vibration testing of structures
M-PS-224 B65-10339 05

Modular thermoelectric cell is easily packaged in various arrays
GSFC-339 B65-10199 01

Sheet metal strip unrolls to form circular booms
GSFC-423 B66-10032 05

Bellows design features low spring rate and long life
MSC-521 B66-10190 05

Heat treatment stabilizes welded aluminum jigs and tool structures
MSC-800 B66-10458 03

Reparable, high-density microelectronic module provides effective heat sink
M-PS-13075 B67-10356 01

Heavy-gage bonded honeycomb sandwich as primary load-bearing structure
M-PS-12060 B67-10427 05

Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLEY-10093 B67-10531 06

High temperature alloy
LEWIS-10377 B68-10253 03

Nickel-base superalloy's excellent properties promote its service to 2200 degrees F
LEWIS-10355 B68-10380 03

Electronic analog equalization for vibrational testing
MDO-10545 B69-10472 01

Strain gage network distinguishes between thermal and mechanical deformations
GSFC-478 B66-10280 01

Torsion elements used in effective shock absorber
NOO-114 B66-10318 05

X-636
Universal transloader moves delicate equipment without stress MSC-654 B66-10384 05
IR vidicon scanner monitors many test points M-PS-1937 E67-10277 01
Analysis of stability-critical orthotropic cylinders subjected to axial compression M-PS-12665 B67-10375 03
Ratio matching of half-bridge weldable strain gages, computer program PNC-10032 B69-10040 06
Four-bar linkage for thermal compensation in test mounts for structures FKO-11059 B69-10298 05

STRUCTURAL VIBRATION
Viscous-pendulum damper suppresses structural vibrations
LANGLEY-45 B64-10272 05
Seismic transducer measures small horizontal displacements M-PS-81 E65-10029 05
Noncontacting vibration transducer has constant sensitivity LANGLEY-99 B65-10392 01
Tensile-strength apparatus applies high strain-rate loading with minimum shock JPL-26 B66-10063 05
Mechanism isolates load weighing cell during lifting of load MFC-297 B66-10071 05
Multicolor stroboscope pinpoints resonances in vibrating components JPL-0033 B66-10223 01
Rugged microelectronic module supports circuitry on heat sink MSC-61A B66-10245 01
Fluid damping reduces bellows seal fatigue failures M-PS-565 B66-10249 05
Study made of interaction between sound fields and structural vibrations SQ-26 B67-10068 02
Post-stressed concrete foundation may reduce machinery vibration MRC-130 B67-10237 05

STRUCTURAL WEIGHT
Pneumatic separator gives quick release to heavy loads KSC-66-10 B66-10298 05
Lightweight heater generates high temperatures from low current DSM-10004 B68-10223 01
Weight Control System M-PS-15628 B69-10041 06

STRUCTURES
Air-cured ceramic coating insulates against high heat fluxes M-PS-150 B65-10357 03

STURTS
Lightweight load support serves as vibration damper JPL-661 B65-10144 05
Combustion chamber struts can be effectively transpiration cooled M-PS-1830 B66-10643 03
Land landing couch dynamics computer program MSC-1210 B67-10233 06

Fiber glass reinforced structural materials for aerospace application M-PS-1806 B66-10360 03
Air-cushion lift pad M-PS-14685 B69-10448 05
STUDS (STRUCTURAL MEMBERS)
Gun facilitates adhesive bonding of studs to surfaces M-PS-20299 B69-10099 05
Repair of honeycomb panels with welded breakout studs M-PS-15046 B69-10261 05

STRENGTH
Warpage eliminated in copper-clad microwave circuit laminates M-PS-13692 B67-10454 03
STYROFOAM (TRADEMARK)
Mill profiler machines soft materials accurately M-PS-692 B66-10254 05
Fixed vacuum plate clamps styrofoam for machining M-PS-683 B66-10283 05

SUBASSEMBLIES
Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning MUC-10073 B67-10348 06
Replacement of fluid-filter elements without interruption of flow RSC-15499 B69-10245 05

SUBDIVISIONS
Simple scale interpolator facilitates reading of graphs LEWIS-92 B66-10302 05

SUBHARMONIC GENERATORS
Experimental coherent fractional frequency multiplier at S-band M-PS-2427 B66-10250 01

SUBLIMATION
Pfco provides heat transfer for solid C02 calibration standard M-PS-644 B66-10257 02
Auxiliary titanium sublimation pump produces ultrahigh 10^-10 torr vacuum LANGLEY-2 B66-10388 02
Modular Porous Plate Sublimator /WPS/ requires only water supply for coolant M-PS-1374 B66-10409 01
Chemical regeneration of emitter surface increases thermionic diode life LEWIS-17 B66-10435 02
Radioactive method enables determination of surface areas rapidly and accurately RU-0088 B66-10710 03
Development of dual solid cryogens for high reliability refrigeration system GSPC-1018e B67-10644 02
Measurement of gas flow at extremely low pressures MSC-13261 B69-10522 03

SUBMERGED BODIES
System locates randomly placed remote objects LANGLEY-209 B66-10315 01
Ballast barge concept for underwater structures KSC-10919 B68-10168 05
Proposed gas generation assembly would recover deeply submerged objects
Internal cooling increases range of immersion-type temperature probe

Coating permits use of strain gage in water and liquid hydrogen

Sea dye marker provides visibility for 20 hours

Perioelectric bolometer measures RF absolute power at millimeter wavelengths

Subminiature biotelemetry unit permits remote physiological investigations

Subminiatureized gas chromatograph gives fast, efficient analysis

Shortened horn-reflector antenna

Computer programs for antenna feed system design and analysis

Computer program calculates gammaray source strengths of materials exposed to neutron fluxes

Computer programs simplify optical system analysis

Subroutine allows easy computation in extended precision arithmetic

Computer routine adds plotting capabilities to existing programs

Computer program simulates design, test, and analysis phases of sensitivity experiments

A power-spectral-density computer program

Subroutines GEODE and DEASTC simplify operation of automatic digital plotter

Computer program utilizes FORTRAN 4 subroutines for contour plotting

Computer subroutine ISUDS accurately solves large system of simultaneous linear algebraic equations

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning

Saturn S-2 Automatic Software System /SASS/ E-PS-1741

Computer program generates averaged value data tapes E-PS-12728

SUBJECB IDBI

SUBIEB6IBG

SUBIBILLIIBZER

SUBIIRIATUBIZATIOR

SUBBOUPIBE

SUBBOOUTIIBS

SUBSOBIC PLOW

SUBSOBIC SPBBD

SUBSTITUTBS

SUBSTRATBS
SUBJECT INDEX

Protective coating withstands high temperature in oxidizing atmosphere B66-10044 03

Storage-stable foamy polyurethane is activated by heat LANGLEY-187 B66-10111 03

Niobium thin films are superconductive in strong magnetic fields at low temperatures JPL-SC-174 B66-10122 02

Nylon bit removes cork insulation without damage to substrate MSC-381 B66-10152 05

Tool permits damage-free removal of solar cell GSPC-467 B66-10219 05

Single-crystal semiconductor films grown on foreign substrates WO0-076 B66-10225 01

Dry film lubricant is effective at extreme loads M-PS-628 B66-10256 03

Dot patterns provide reproducible flaw areas for study of adhesive bonds M-PS-862 B66-10367 05

Self-supported aluminum thin films produced by vacuum deposition process ARC-58 B66-10387 03

Thin-film ferrites vapor deposited by one-step process in vacuum MSC-259 B66-10398 03

Uniform reflective films deposited on large surfaces GSPC-507 B66-10483 02

Detector measures power in 50 to 30,000 cps radiation band EBC-26 B66-10581 01

Oxide film on metal substrate reduced to form metal-oxide-metal layer structure ARG-48 B67-10187 03

Substituting gold for silver improves electrical connections M-PS-2390 B67-10228 03

Ion plating technique improves thin film deposition SAI-1006 B68-10212 03

Graphite cloth facilitates vacuum evaporation of silicon monoxide M-PS-14764 B68-10256 03

Improved radiographic image amplifier panel M-PS-14852 B68-10363 02

High-emittance coatings on metal substrates LEWIS-10325 B68-10381 03

Improved process for epitaxial deposition of silicon on prediffused substrates M-PS-14910 B68-10390 03

Evaluation of superconducting magnets, a study M-PS-14968 B68-10396 02

High dielectric thick films for screened circuit capacitors LANGLEY-10294 B68-10542 01

Electron beam recrystallization of amorphous semiconductor materials LEWIS-10443 B68-10556 02

Detection of molecular infrared spectra B0-10377 B69-10172 02

Parititication and characterization of two fully deuterated enzymes ARG-10314 B69-10207 04

Automated microorganism Sample Collection Module EQ-10421 B69-10223 04

Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid GSPC-10764 B69-10227 05

Technique for abrasive cutting of thick-film conductors for hybrid circuits MSC-13246 B69-10235 03

Imprinting of confining sites for cell cultures on thermoplastic substrates LANGLEY-10495 B69-10236 04

Conceptual techniques for reducing parasitic current gain of lateral pnp transistors MSC-13199 B69-10244 01

Radiation tolerant silicon nitride insulated gate field effect transistors GSPC-10581 B69-10253 01

Multilayer infrared beamsplitter film system XGS-11036 B69-10260 02

Pressure transducer NFO-10853 B69-10364 01

Improved vacuum deposition apparatus NFO-11009 B69-10365 02

Epitaxial crystalline growth upon cold substrates MSC-11196 B69-10494 01

Modification to improve self-isolating transistor array M-PS-20495 B69-10578 01

SUCTION

Magnetic field controls carbon arc tail flame MSC-139 B65-10108 01

Calibrated clamp facilitates pressure application MSC-298 B66-10059 05

Concept for cryogenic liquid reclamation system NPC-10322 B67-10420 02

SUITS

Rate of heat extraction controller for environmental control EQ-10318 B69-10516 01
SULFONATES

Etching process mills PB 14-8 Ni alloy steel to precise tolerances
MSC-270 B66-10110 03

Surfactant for dye-penetrant inspection is insensitive to liquid oxygen
N-PS-475 B66-10331 03

Uranyl phthalocyanines show promise in the treatment of brain tumors
ARG-100 B67-10188 04

Heparin insolubilized with crosslinking agent
NPO-10834 B69-10299 03

SULFUR

Chemical milling solution produces smooth surface finish on aluminum
MSC-549 B66-10312 03

Development of low temperature battery
LEWIS-10326 B67-10546 01

SULFUR COMPOUNDS

Sintering characteristics and properties of PUS and PUP are determined
ARG-10228 B69-10058 03

Inhibition of browning in foodstuffs
HQ-10177 B69-10493 04

SULFURIC ACID

Fuel cell serves as oxygen level detector
JPL-SC-072 B65-10066 01

Electrochemical milling removes burrs and solder from tubing ends
N-PS-714 B66-10358 03

Method for removing surface-damaged layers from nickel alloys
N-PS-18151 B68-10522 03

Corrosion protection of aluminum alloys in contact with other metals
N-PS-18526 B69-10098 03

SURFACES

Method for F-ray study under extreme temperature and pressure conditions
MSC-11232 B67-10474 02

SUNLIGHT

Special coatings control temperature of structures
GSFC-444 B65-10337 03

Pigmented coating resists thermal shock
JPL-SC-083 B65-10354 03

SUPEROXIDES

Solar activity history model
N-PS-20529 B69-10776 01

SUPERCONDUCTING MAGNETS

Superconductor magnets used for stagger-tuning traveling-wave maser
GSFC-292 B65-10165 01

Mechanisms of superconductivity investigated by nuclear radiation
N-PS-1944 B67-10057 02

Evaluation of superconducting magnets, a study
N-PS-14800 B68-10396 02

SUPERCONDUCTIVITY

Simple technique determines ac properties of hard superconductive materials
N-PS-1818 B66-10657 02

Simple pump maintains liquid helium level in cryostat
N-PS-1763 B67-10039 05

Superconducting switch permits measurement of small voltages at cryogenic temperatures
ARG-90260 B68-10087 01

SUPERCONDUCTORS

Superconductive thin film makes convenient liquid helium level sensor
LANLST-10269 B68-10341 01

Superconductivity in zirconium-rhodium alloys
ARG-10223 B69-10010 03

Report on a cryogenic gyroscope
NPO-11200 B69-10504 02

SUPERCOOLING

Supercold technique duplicates magnetic field in second superconductor
JPL-376 B63-10237 05

Shaped superconductor cylinder retains intense magnetic field
JPL-381 B63-10238 01

Superconductor magnets used for stagger-tuning traveling-wave maser
GSFC-292 B65-10165 01

Superconductor shields test chamber from ambient magnetic fields
JPL-627 B65-10297 02

Compound improves thermal interface between thermocouple and sensed surface
H-00228 B66-10121 02

Niobium thin films are superconductive in strong magnetic fields at low temperatures
JPL-SC-174 B66-10122 02

Rectangular configuration improves superconducting cable
ARG-90088 B68-10098 02

One hundred angstrom niobium wire
LEWIS-10128 B69-10279 03

Evaluation of superconducting magnets, a study
M-PS-14608 B68-10396 02

Experimental prediction of performance by superconducting cables
ARG-10215 B69-10161 01

RF noise suppression using the photodielectric effect in semiconductors
MSC-12259 B69-10225 01

Preparation of superconducting thin films of transition-metal interstitial compounds
HQ-10145 B69-10470 01

SUPERCRITICAL

Supercold technique duplicates magnetic field in second superconductor
JPL-376 B63-10237 05

Complementary system vaporizes subcooled liquid, improves transformer efficiency
N-PS-558 B66-10045 02

Study of hydrogen slush-hydrogen gel utilization
N-PS-13065 B67-10413 02

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
ARG-10461 B69-10620 02

SUPERCRITICAL FLOW

Variable-mesh method of solving differential equations
NPO-10515 B69-10017 02

SUPERCRITICAL PRESSURES

Instabilities encountered during heat transfer to a supercritical fluid
ARG-10266 B69-10042 02

I-640
Cryogenic fluid flow instabilities in heat exchangers N-FS-20430 B69-10541 02

SUPERFLUIDITY
Cryogenic filter method produces super-pure helium and helium isotopes JPL-374 B63-10235 03

SUPERHEATING
Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam ARC-226 B67-10050 03

Study made of corrosion resistance of stainless steel and nickel alloys in nuclear reactor superheaters ARC-230 B67-10051 03

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop ARG-10461 B69-10620 02

SUPERHETERODYNE RECEIVERS
Optical superheterodyne receiver uses laser for local oscillator M-FS-1605 B66-10584 01

SUPERHIGH FREQUENCIES
Modified filter prevents conduction of microwave signals along high-voltage power supply leads JPL-63 B63-10091 01

Study of yttrium iron garnet rods reveals new magnetostatic echo mode NRC-37 B67-10153 01

Experimental coherent fractional frequency multiplier at S-band M-FS-2427 B67-10250 01

Reflectometer for receiver input system NPO-10883 B67-10657 01

Improved traveling wave maser amplifier NPO-10548 B68-10248 01

A positive taper traveling-wave tube LANGLEY-10263 B69-10407 01

A sterilizable high-impact antenna NPO-10231 B69-10697 01

SUPERPOSITION (MATHMATICS)
Use of photographs speeds inspection of printed-circuit boards MSC-72 B64-10116 01

SUPERSONIC AERONAUTICS
Computer program analyzes and designs supersonic wing-body combinations ARC-10141 B68-10335 06

New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability LEWIS-10576 B69-10118 03

Sonic boom propagation is stratified atmosphere LANGLEY-10480 B69-10391 06

SUPERSONIC FLOW
Study of hot wire techniques in low density flows with high turbulence levels M-FS-1269 B66-10687 01

Profiles of oscillating core in supersonic flow is solved by small perturbation techniques M-FS-969 B66-10700 02

Laser-Doppler gas-velocity instrument M-FS-20439 B68-10349 02

A mass flux probe for measurement in a supersonic stream LEWIS-10655 B68-10533 02

Bell nozzle kernel analysis program M-FS-18456 B69-10146 06

Aerodynamic forces of fluttering cylindrical and/or planar structures M-FS-20497 B69-10781 02

SUPERSONIC INLETS
Performances in jet engine supersonic inlet increase shock stability NEQ-8 B66-10530 05

SUPERSONIC SPEEDS
Pneumatic power is transmitted through air bearing M-8 B64-10141 05

SUPERSONIC TEST APPARATUS
Noise study of single stage compressor rotor-stator interaction LANGLEY-137 B67-10516 02

SUPERSONIC TRANSPORTS
Conceptual nonorthogonal gyro configuration for guidance and navigation N-11363 B67-10433 01

Computer program calculates sonic-boom pressure signatures LANGLEY-10096 B67-10489 06

SUPPORT SYSTEMS
Resonant support facilitates vibration testing of structures M-FS-224 B65-10039 05

Flexure support system protects thermally and dynamically loaded models LANGLEY-35 B65-10042 05

Lightweight load support serves as vibration dumper JPL-661 B65-10144 05

Heat exchanger tubes supported in high vibration environment M-FS-1401 B66-10567 05

Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipeline RU-0077 B66-10702 05

Air bearing provides friction-free support for shaker system slip table RU-0086 B66-10708 05

Detection of hydrogen-containing contaminants on metal surfaces M-FS-20456 B69-10192 03

Four-bar linkage for thermal compensation in test stands for structures NPO-11059 B69-10290 05

SUPPORTS
Novel shock absorber features varying yield strengths MSC-63A B64-10138 03

Leaf-spring suspension provides accurate parallel displacements JPL-480 B65-10104 05

Shock mount isolates pressure transducers from vibration JPL-631 B65-10113 05

Extendible column can be stowed on drum JPL-686 B65-10191 05

Spiral heater coils hard-formed with fixture LEWIS-208 B65-10192 05

Vacuum chamber provides improved insulation and support for cryostat
<table>
<thead>
<tr>
<th>SUPPRESSORS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-PS-415</td>
<td>B65-10368</td>
</tr>
<tr>
<td>Extendable mast used in one shot soil penetrometer</td>
<td>JPL-685</td>
</tr>
<tr>
<td>Mount enables precision adjustment of optical-instrum. mirror</td>
<td>MSC-184</td>
</tr>
<tr>
<td>Rugged microelectronic module package supports circuitry on heat sink</td>
<td>MSC-814</td>
</tr>
<tr>
<td>Compact actuator converts rotary to linear motion</td>
<td>JPL-786</td>
</tr>
<tr>
<td>Inspection of fine wires simplified by capillary tube wire holder</td>
<td>MSC-358</td>
</tr>
<tr>
<td>Simulator effects partial gravity conditions</td>
<td>MSC-152</td>
</tr>
<tr>
<td>Submicron holes in thin films increase sampling range of mass spectrometers</td>
<td>JPL-SC-097</td>
</tr>
<tr>
<td>Universal transloader moves delicate equipment without stress</td>
<td>MSC-654</td>
</tr>
<tr>
<td>Interior servicing platform simplifies maintenance of storage tanks</td>
<td>M-PS-1300</td>
</tr>
<tr>
<td>Heat-treatment of metal parts facilitated by sand embedment</td>
<td>M-PS-1943</td>
</tr>
<tr>
<td>Device measures reaction engine thrust vector deviations</td>
<td>JPL-SC-163</td>
</tr>
<tr>
<td>Packaging of electronic modules</td>
<td>JPL-001</td>
</tr>
<tr>
<td>Work platform is supported by self-locking blades</td>
<td>M-PS-2297</td>
</tr>
<tr>
<td>Transducer measures embedment stresses in electronic modules</td>
<td>M-PS-13486</td>
</tr>
<tr>
<td>Camera lens adapter magnifies image</td>
<td>M-PS-11955</td>
</tr>
<tr>
<td>Vibration damping composition has flush-away feature</td>
<td>M-PS-597</td>
</tr>
<tr>
<td>Telescope mount with azimuth-only primary</td>
<td>MNO-10466</td>
</tr>
<tr>
<td>Broadband choke suppresses spurious currents in antenna structure</td>
<td>MSC-10013</td>
</tr>
<tr>
<td>Clamp for detonating fuse</td>
<td>M-PS-13399</td>
</tr>
<tr>
<td>R-wave power meter mount</td>
<td>MNO-10348</td>
</tr>
<tr>
<td>Compressible sleeve provides automatic centering for grinding or turning of cylinders</td>
<td>SAM-10201</td>
</tr>
<tr>
<td>Fiber glass reinforced structural materials for aerospace application</td>
<td>M-PS-14806</td>
</tr>
<tr>
<td>Cooled miniature pressure transducers effective at high temperatures</td>
<td>LBW5-10401</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal gas bearing for curved surfaces</td>
<td>M-PS-20423</td>
</tr>
<tr>
<td>Camera mount for close-up stereo photographs</td>
<td>LANGL-10442</td>
</tr>
<tr>
<td>Automatic leveling and equalizing hoist device</td>
<td>M-PS-16545</td>
</tr>
<tr>
<td>Hermetically sealed vibration dumper</td>
<td>MSC-10595</td>
</tr>
<tr>
<td>Precisely repeatable rotary mechanism</td>
<td>NPO-10679</td>
</tr>
<tr>
<td>Burn-rate testing apparatus</td>
<td>MSC-10947</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUPPRESSORS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppressor plate eliminates undesired arcing during electron beam welding</td>
<td>M-PS-1126</td>
</tr>
<tr>
<td>Simulator effects partial gravity conditions</td>
<td>MSC-152</td>
</tr>
<tr>
<td>Submicron holes in thin films increase sampling range of mass spectrometers</td>
<td>JPL-SC-097</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum alloys protected against stress-corrosion cracking</td>
<td>M-PS-235</td>
</tr>
<tr>
<td>Surface-crack detection by microwave methods</td>
<td>AEC-10009</td>
</tr>
<tr>
<td>Chemical milling solution reveals stress corrosion cracks in titanium alloy</td>
<td>LANGL-10077</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects of high frequency current in welding</td>
<td>M-PS-10337</td>
</tr>
<tr>
<td>Simple test indicates degree of cure of polyimide coatings</td>
<td>MSC-15487</td>
</tr>
<tr>
<td>Radiographic threshold detection levels of aluminum weld defects</td>
<td>M-PS-20487</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects of high-pressure hydrogen on storage vessel materials</td>
<td>M-PS-18605</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-cost seal compensates for surface irregularities</td>
<td>BU-0016</td>
</tr>
<tr>
<td>Surface for dye-penetrant inspection is insensible to liquid oxygen</td>
<td>M-PS-2475</td>
</tr>
<tr>
<td>Device spot-laps spheres to very close tolerances</td>
<td>JPL-SC-119</td>
</tr>
<tr>
<td>Dot patterns provide reproducible flaw areas for study of adhesive bonds</td>
<td>M-PS-962</td>
</tr>
<tr>
<td>Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals</td>
<td>ABS-54</td>
</tr>
</tbody>
</table>
Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique

Technique eliminates high voltage arcing at electrode-insulator contact area

Effect of surface irregularities on bellows fatigue life

Detecting hydrogen-containing contaminants on metal surfaces

High temperature coatings for gas bearings

Camera mount for close-up stereo photographs

Electromagnetic hammer removes weld distortions from aluminum tanks

Study of behavior of sterols at interfaces

Insulated weld tooling permits uniform, high quality welds

Rotating holder permits accurate grinding of metallurgical microsamples

Electron beam seals outer surfaces of porous bodies

Run-in with chemical additive protects gear surfaces

Etching process mills PH 14-6 Mo alloy steel to precise tolerances

Device spot-laps spheres to very close tolerances

Portable sandblaster cleans small areas

Dry film lubricant is effective at extreme loads

Seal surfaces protected during assembly

Electrolytic etching process provides effective bonding surface on stainless steel

Chemical milling solution produces smooth surface finish on aluminum

Valve seat pores sealed with thermosetting monomer

Cork is used to make tooling patterns and molds

Strippable grid facilitates removal of grid-surfaced conical workpiece from die

System for etching thick aluminum layers minimizes bridging and undercutting

Electrolytic etching process provides effective bonding surface on stainless steel

Chemical milling solution produces smooth surface finish on aluminum

Valve seat pores sealed with thermosetting monomer

Cork is used to make tooling patterns and molds

Strippable grid facilitates removal of grid-surfaced conical workpiece from die

System for etching thick aluminum layers minimizes bridging and undercutting
SURFACE REACTIONS

<table>
<thead>
<tr>
<th>Subject Index</th>
<th>B66-10610 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special purpose reflectometer uses modified ulbricht sphere MSC-1135</td>
<td>B67-10109 02</td>
</tr>
<tr>
<td>Measuring coplanarity of surfaces MSC-12044</td>
<td>B67-10371 02</td>
</tr>
<tr>
<td>Wear studies made of slip rings and gas bearing components N-PF-12002</td>
<td>B67-10403 05</td>
</tr>
<tr>
<td>Study made of large amplitude fuel sloshing N-PF-12361</td>
<td>B67-10439 03</td>
</tr>
<tr>
<td>Tool samples subsurface soil free of surface contaminants MSC-10988</td>
<td>B67-10473 05</td>
</tr>
<tr>
<td>Damage in rolling element bearings may be detected early Hq-10031</td>
<td>B67-10658 01</td>
</tr>
<tr>
<td>Effects of surface preparation on quality of aluminum alloy weldments N-PF-13152</td>
<td>B68-10302 03</td>
</tr>
<tr>
<td>Indium adhesion provides quantitative measure of surface cleanliness SAM-10024</td>
<td>B68-10342 01</td>
</tr>
<tr>
<td>Non-dispersive X-ray emission analysis for geochemical exploration GSFC-10568</td>
<td>B69-10011 02</td>
</tr>
</tbody>
</table>

SURFACE ROUGHNESS

<table>
<thead>
<tr>
<th>Subject Index</th>
<th>B66-10610 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device measures curved surface finish on gear teeth WQO-112</td>
<td>B65-10064 05</td>
</tr>
<tr>
<td>Rough surface improves stability of air-sounding balloons N-PF-320</td>
<td>B65-10326 05</td>
</tr>
<tr>
<td>Etching process mills FE 14-8 Mo alloy steel to precise tolerances MSC-270</td>
<td>B66-10110 03</td>
</tr>
<tr>
<td>Inflatable O-ring seal would ease closing of hatch cover plate MSC-740</td>
<td>B66-10385 05</td>
</tr>
<tr>
<td>Lateral ring metal elastic wheel absorbs shock loading N-PF-1312</td>
<td>B66-10663 05</td>
</tr>
<tr>
<td>Ronchi test applied to measurement of surface roughness N-PF-12583</td>
<td>B67-10636 02</td>
</tr>
<tr>
<td>Surface irregularities detected by flare inspection instrument N-PF-20157</td>
<td>B69-10152 01</td>
</tr>
<tr>
<td>Air-cushion lift pad N-PF-14685</td>
<td>B69-10448 05</td>
</tr>
<tr>
<td>Gas Metal Arc/GMA/ weld torch proximity control N-PF-16327</td>
<td>B69-10533 01</td>
</tr>
</tbody>
</table>

SURFACE ROUGHNESS EFFECTS

<table>
<thead>
<tr>
<th>Subject Index</th>
<th>B66-10610 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal transloader moves delicate equipment without stress MSC-654</td>
<td>B66-10384 05</td>
</tr>
<tr>
<td>Selective tube roughening increases heat transfer capability N-PF-559</td>
<td>B66-10610 05</td>
</tr>
</tbody>
</table>

SURFACE STABILITY

<table>
<thead>
<tr>
<th>Subject Index</th>
<th>B66-10370 03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nondestructive method for measuring residual stresses in metals, a concept KSC-10237</td>
<td>B66-10384 05</td>
</tr>
<tr>
<td>Improved process for epitaxial deposition of silicon on prediffused substrates N-PF-14910</td>
<td>B68-10390 03</td>
</tr>
</tbody>
</table>

SURFACE TEMPERATURE

<table>
<thead>
<tr>
<th>Subject Index</th>
<th>B66-10440 01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photoelectric scanner makes detailed work function maps of metal surface JPL-SC-176</td>
<td>B66-10440 01</td>
</tr>
<tr>
<td>Pyrometry handbook describes practical aspects of surface temperature measurements of opaque materials LEMIS-349</td>
<td>B66-10520 01</td>
</tr>
<tr>
<td>Instrument accurately measures small temperature changes on test surface LEMIS-174</td>
<td>B66-10637 01</td>
</tr>
<tr>
<td>Computer program determines thermal environment and temperature history of lunar orbiting space vehicles N-PF-12916</td>
<td>B67-10307 06</td>
</tr>
<tr>
<td>Liquid crystal calibrator N-PF-14151</td>
<td>B68-10221 03</td>
</tr>
<tr>
<td>Surface temperature mapping with infrared photographic pyrometry LEMIS-10763</td>
<td>B69-10113 01</td>
</tr>
</tbody>
</table>

SURFACE WAVES

<table>
<thead>
<tr>
<th>Subject Index</th>
<th>B67-10426 02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasounds used to measure residual stress N-PF-12449</td>
<td>B67-10426 02</td>
</tr>
<tr>
<td>Study of stress corrosion in aluminum alloys N-PF-13906</td>
<td>B67-10533 03</td>
</tr>
</tbody>
</table>

SURFACES

<table>
<thead>
<tr>
<th>Subject Index</th>
<th>B63-10387 05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portable flooring protects finished surfaces, is easily moved N-PF-15</td>
<td>B63-10387 05</td>
</tr>
<tr>
<td>Device measures curved surface finish on gear teeth WOO-112</td>
<td>B65-10064 05</td>
</tr>
<tr>
<td>Averaging probe reduces static-pressure sensing errors LANGLEY-36</td>
<td>B65-10114 05</td>
</tr>
<tr>
<td>Portable tool cleans pipes and tubing MSC-238</td>
<td>B65-10375 05</td>
</tr>
<tr>
<td>Aluminized fiberglass insulation conforms to curved surfaces N-PF-477</td>
<td>B66-10024 03</td>
</tr>
<tr>
<td>Specimen holder design improves accuracy of X-ray powder analysis JPL-SM-165</td>
<td>B66-10075 02</td>
</tr>
<tr>
<td>Alignment tool facilitates pin placement on irregular horizontal surfaces LANGLEY-219</td>
<td>B66-10140 05</td>
</tr>
<tr>
<td>Chemical regeneration of emitter surface increases thermionic diode life LEMIS-17</td>
<td>B66-10435 02</td>
</tr>
<tr>
<td>Vacuum probe sampler removes micron-sized particles from surfaces SAM-10003</td>
<td>B68-10231 04</td>
</tr>
<tr>
<td>Monte Carlo direct view factor and</td>
<td></td>
</tr>
</tbody>
</table>
generalized radiative heat transfer programs
Spacecraft Thermal Radiation Environment Computer Program
Surfactants Surfactant for dye-penetrant inspection is insensitive to liquid oxygen
Submicron metal powders produced by ball milling with grinding aids
Improved thermal insulation materials made of foamed refractory oxides
Ultrasonic cleaning restores depth-type filters
Chemical milling solution produces smooth surface finish on aluminum

SURGERY Means for improving apparent resolution of television
Automatic patient respiration failure detection system with wireless transmission

SURGICAL INSTRUMENTS Encapsulation process sterilizes and preserves surgical instruments
Hand-held instrument should relieve hematoma pressure
Optical frequency waveguide and ion transmission system

SURVIVOR PROJECT An overview of electromagnetic interference problems in spacecraft.
Improved circularly polarized planar-array antennas

SUBVBPOR PROJECT An overview of electromagnetic interference problems in spacecraft.
Improved circularly polarized planar-array antennas

SURVEY Vis-A-Plan /visualize a plan/ management technique provides performance-time scale
Site survey for optimum location of Optical Communication Experimental Facility

SWAGING Telescoping of instrumentation tubing eliminates swaging
High temperature thermocouple operates in reduction atmosphere
Low power heating element provides thermal control during swaging operations
Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area

SURVIVAL SPAN C - Terminal sterilization process analysis program
SPAN - Terminal sterilization process analysis program
SURVIVAL EQUIPMENT New inflatable liferaft is nontippable
Modular thermoelectric cell is easily packaged in various arrays
Emergency solar still desalts seawater
Self-inflating lifevest stores in small package
Portable lightweight cell provides controlled environment

SUSPENDING (HANGING) Mechanism isolates load weighing cell during lifting of load
Proposed method of rotary dynamic balancing by laser
Adaptive control circuit prevents amplifier saturation

SUSPENDING (MIXING) Multiple test tubes stirred mechanically
Aluminum core structures brazed without use of flux

SUSPENSION SYSTEMS (VEHICLES) Lateral ring metal elastic wheel absorbs shock loading
Leaf-spring suspension provides accurate parallel displacements
Vacuum chamber provides improved insulation and support for cryostat
Levitation-melting technique for metals and alloys

SUSPENSIONS Leaf-spring suspension provides accurate parallel displacements
Vacuum chamber provides improved insulation and support for cryostat
Levitation-melting technique for metals and alloys

SWARMING Telescoping of instrumentation tubing eliminates swaging
Tube swaging device uses explosive force
LANGLEY-10692 B66-10235 05

Shock-absorbent mountings for bearings
NPO-10626 B66-10331 05

Magnetic forming of resistive materials
M-FS-20417 B66-10397 03

SWBAT COOLING
Combustion chamber struts can be effectively transpiration cooled
M-FS-1890 B66-10543 03

SWEEP CIRCUITS
Subminiature deflection circuit operates integrated sweep circuits in TV camera
MSC-1263 B67-10155 01

Oscilloscope used as X-Y plotter or two-dimensional analyzer
LEWIS-311 B67-10269 01

SWEEP FREQUENCY
Frequency offset in linear FM/CW transponder eliminates clutter
M-FS-249 B65-10146 01

Circuit operates as sine function generator
ISC-255 B66-10038 01

Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart
JPL-605 B66-10386 01

An investigation of phase-lock loop swept-frequency synchronization
M-FS-656 B66-10423 01

Plotter design simplifies determination of image sensor transfer characteristic
NPO-10164 B67-10206 01

Concept for automatic Doppler compensation in two-way communication systems
GSPC-10213 B67-10545 01

Sweep frequency detector
NPO-10669 B66-10289 01

SWELLING
Apparatus measures swelling of membranes in electrochemical cells
GSPC-280 B65-10087 01

SWITCHES
Camera shutter is actuated by electric signal
ABC-20 B63-10560 05

Photoelectric semiconductor switch operates with low level inputs
JPL-SC-068 B65-10033 01

Automatic thermal switch accelerates cooling-down of cryogenic system
JPL-605 B65-10060 01

Rotor position sensor switches currents in brushless dc motors
GSPC-315 B65-10151 01

Electron-beam deflection controlled by digital signals
GSPC-385 B65-10283 02

Selenium bond decreases ON resistance of light-activated switch
JPL-SC-101 B65-10324 01

Three-position rocker switch actuator has positive centering
M-SC-261 B65-10376 01

Economical and maintenance-free gas system operates railroad switches
NO-0045 B66-10124 05

Optically driven switch turn-off time reduced

High voltage potential divider calibrated by simple device
ARG-83 B66-10497 01

Apparatus enables automatic microanalysis of body fluids
JPL-962 B66-10515 04

Preregulator feedback circuit utilizes Light Actuated Switch
M-FS-1180 B66-10542 01

Sensors measure surface ablation rate of reentry vehicle heat shield
LANGLEY-287 B66-10592 01

MOSFET analog memory circuit achieves long duration signal storage
M-FS-360 B66-10603 01

Electrical continuity scanner facilitates identification of wires for soldering to connectors
MSC-626 B66-10605 01

High transients suppressed in electromagnetic devices
KES-66-13 B67-10031 01

Circuit automatically calibrates flowmeter against liquid-level gage reference
M-FS-2194 B67-10376 01

Continuous wave detector has wide frequency range
M-FS-1849 B67-10386 01

Rugged switch responds to minute pressure differentials
M-FS-12704 B67-10389 01

Saturn S-2 Automatic Software System
JPL-500 B67-10405 06

Stable ac phase and amplitude comparator
M-FS-13086 B67-10459 01

Series transistors isolate amplifier from flyback voltage
MSC-11023 B66-10468 01

Multipulse current source offers low power losses and high reliability
LANGLEY-68 B66-10603 01

Hydraulic servo system increases accuracy in fatigue testing
LANGLEY-217 B67-10637 01

Semiconductor ac static power switch
LEWIS-10349 B66-10224 01

Superconductive thin film makes convenient liquid helium level sensor
LANGLEY-10289 B68-10341 01

An integrated circuit switch
NPO-11073 B69-10326 01

Foot-operated cell-counter
ARG-10315 B69-10351 01

Novel multipurpose timer for laboratories
ARG-10147 B69-10410 01

An interferometer tracking radar system
M-FS-10556 B69-10523 01

Integral valve provides automatic relief and remote venting
M-FS-12134 B69-10545 05

High voltage pulse generator
M-S-12178 B69-10548 01
A simple electrometer for measuring small photoelectric currents
GSPC-10603 B69-10734 01

SWITCHING

Bandwidth switching is transient-free, avoids loss of loop lock
WOD-054 B64-10349 01

Knob linkage permits one-hand control of several operations
MSC-30 B65-10022 05

Magnetic-shift-register circuit controls step motor operation
GSPC-340 B65-10226 01

Zener diode controls switching of large direct currents
MSC-188 B65-10350 01

Lamp automatically switches to new filament on burnout
M-FS-498 B66-10046 01

Ring counter circuit switches multiphase motor direction of rotation
JPL-SC-166 B66-10101 01

Omnidirectional antennas transmit and receive over large bandwidth
GSFC-436 B66-10133 01

Switching mechanism senses angular acceleration
GSPC-462 B66-10158 01

Multiple temperatures sampled using only one reference junction
GSPC-485 B66-10260 01

Exclusive-or logic circuit has useful properties
LANGLEY-214 B66-10272 01

Circuit provides accurate four-quadrant multiplication
WOD-272 B66-10331 02

Brushless dc motor has high efficiency, long life
GSPC-181 B66-10355 01

Simple, one transistor circuit boosts pulse amplitude
GSPC-501 B66-10480 01

Nine tube display unit employs time-shared logic
ARG-117 B66-10512 01

Design concept for pressure switch calibrator
EQ-36 B66-10598 01

Automatic channel switching device
MSC-832 B67-10086 01

Simplified technique demonstrates magnetic domain switching
M-FS-13153 B67-10342 02

Review of research and development in fluid logic elements
M-FS-620 B67-10438 01

Optically exciting a magnetic memory - A feasibility study
M-FS-74054 B67-10438 01

A prototype high power portable lamp
M-FS-20229 B69-10060 02

Time-shared Cathode Ray Tube
MSC-12238 B69-10243 06

An unconventional magnetically-coupled multivibrator
EQ-10226 B69-10480 01

Phase-locked-loop phase modulator with high modulation index, low distortion
MSC-12247 B69-10487 01

Simplified, reliable circuit sorts binary numbers in order of magnitude
NPO-10112 B69-10503 01

SWITCHING CIRCUITS

Coincident switch closing reduces error in motor-driven timer
JPL-182 B63-10143 05

Double-throw microwave device switches two lines quickly
JPL-410 B63-10258 01

Digital logic elements provide additional functions from analog input
MSC-64 B64-10064 01

Electronic device simulates respiration rate and depth
MSC-99 B64-10255 01

Variable frequency transistor inverter's use multiple core transformers
GSPC-183 B65-10119 01

Solid-state switching used to speed up capacitive integrator
LANGLEY-104 B65-10159 01

DC to AC converter operates efficiently at low input voltages
GSPC-130 B65-10178 01

Logic circuit exhibits optimum performance
LANGLEY-129 B65-10193 01

Simple circuit reduces transistor switching time
GSPC-314 B65-10234 01

Improved circuit minimizes generation time of pseudonoise check bits
JPL-698 B65-10275 01

Case-operated limit switch features safe fuse replacement
MSC-216 B65-10322 01

New television camera eliminates vidicon tube
M-FS-472 B66-10112 01

Tester periodically registers dc amplifier characteristics
MSC-190 B66-10148 01

Efficient dc to dc converter eliminates large stray magnetic fields
GSPC-463 B66-10376 01

Junction connectors permit strategic placement of television cameras
MSC-66-22 B66-10391 01

Electrically controlled optical latch and switch requires less current
JPL-SC-111 B66-10414 01

Electronic bidirectional valve circuit prevents crossover distortion and threshold effect
MSC-193 B66-10420 01

Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
MSC-781 B66-10429 01

Solid-state switch increases switching speed
WOD-298 B66-10430 01

Basic suppression techniques are evaluated
M-FS-067 B66-10449 01

Solid state circuit switches ac load
<table>
<thead>
<tr>
<th>SWIVELS</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPL-798</td>
<td>B66-10465 01</td>
</tr>
<tr>
<td>Pulse stretcher has improved dynamic range and linearity</td>
<td>B66-10509 01</td>
</tr>
<tr>
<td>ABG-82</td>
<td>B66-10564 01</td>
</tr>
<tr>
<td>Photocell shadowing technique improves light source detector JPL-609</td>
<td>B66-10591 01</td>
</tr>
<tr>
<td>Electronic circuit provides accurate sensing and control of dc voltage</td>
<td>B66-10636 01</td>
</tr>
<tr>
<td>Low rate flow switch can be used for gas or liquid JPL-067</td>
<td>B66-10696 01</td>
</tr>
<tr>
<td>Computer program detects transient malfunctions in switching circuits</td>
<td>B67-10002 01</td>
</tr>
<tr>
<td>Variable-pulse switching circuit accurately controls molocule-valve actuators</td>
<td>B67-10022 01</td>
</tr>
<tr>
<td>Integrator can easily be set and reset with an electronic switch ARC-10002</td>
<td>B67-10135 01</td>
</tr>
<tr>
<td>Voltage regulator/amplifier is self-regulated MSC-1240</td>
<td>B67-10156 01</td>
</tr>
<tr>
<td>Hybrid solid state switch replaces motor-drives power switch JFL-933</td>
<td>B67-10165 01</td>
</tr>
<tr>
<td>Switching-type regulator circuit has increased efficiency MSC-1068</td>
<td>B67-10190 01</td>
</tr>
<tr>
<td>Solid state phase detector replaces bulky transformer circuit M-PS-11007</td>
<td>B67-10253 01</td>
</tr>
<tr>
<td>SIC/Si diode trigger circuit provides automatic range switching for log amplifier</td>
<td>B67-10314 01</td>
</tr>
<tr>
<td>Current steering commutator offers versatility JFL-812</td>
<td>B67-10410 01</td>
</tr>
<tr>
<td>Converter provides constant electrical power at various output voltages</td>
<td>B67-10481 01</td>
</tr>
<tr>
<td>Automatic transducer switching provides accurate wide range measurement of pressure differential MSC-10001</td>
<td>B67-10540 01</td>
</tr>
<tr>
<td>Solid state single-ended switching dc-to-dc converter M-PS-13598</td>
<td>B67-10558 01</td>
</tr>
<tr>
<td>Solid state zero-bias bilateral switch GSPC-532</td>
<td>B67-10559 01</td>
</tr>
<tr>
<td>Thermionic diode switching has high temperature application NPO-10404</td>
<td>B67-10672 01</td>
</tr>
<tr>
<td>Bilateral, zero-impedance static semiconductor switch LEWIS-10129</td>
<td>B69-10110 01</td>
</tr>
<tr>
<td>Analysis and design of a class-D amplifier M-PS-14803</td>
<td>B68-10313 01</td>
</tr>
<tr>
<td>High-efficiency step-up regulator M-PS-20049</td>
<td>B68-10432 01</td>
</tr>
<tr>
<td>Isolated, multiple-output voltage dc-to-dc converter M-PS-14976</td>
<td>B69-10016 01</td>
</tr>
<tr>
<td>Remotely-actuated biomedical switch ABC-10105</td>
<td>B69-10117 01</td>
</tr>
</tbody>
</table>

SYMBOLIC PROGRAMMING
Assembly processor program converts symbolic programming language to machine language M-PS-13262 B67-10493 06
Symbolic reduction of block diagrams using FORMAC LEWIS-10409 B68-10423 06

SYMBOLS
Density trace made with computer printout GSPC-322 B65-10200 01
Uppercase and lowercase computer printout increases readability HQ-12 B65-10286 01
Automated drafting system uses computer techniques M-PS-788 B66-10362 01
Computer program utilizes FORTRAN 4 subroutines for contour plotting NPO-10127 B67-10323 06
Computer grading of examinations ARC-10269 B69-10159 06

STRENGTHRICAL ROBES
Presnel cup reflector directs maximum energy from light source JFL-424 B63-10263 03
Automatic system determines moments of inertia of asymmetrical objects M-PS-1769 B66-10636 01
Conceptual nonorthogonal gyro configuration for guidance and navigation MSC-11363 B67-10433 01

STRENGTHES
Modified interelele spacing improves Yagi antenna array LANGLEY-130 B65-10103 01
Friction loading device enables accurate
testing of brittle materials

B66-10345 05

Computer program calculates steady-state
temperature distribution within plane or
axi-symmetric solids

B67-10244 06

Computer program calculates peripheral
water injection cooling of axi-symmetric
subsonic diffuser

B67-10543 06

Schmitt trigger multivibrator

B69-10143 01

Ion-retarding lens improves the abundance
sensitivity of tandem mass spectrometers

B69-10166 02

SYNCHRONOUS MOTORS

Coincident switch closing reduces error in
motor-driven timer

JPL-182 B63-10143 05

Scanning photometer system automatically
determines atmospheric layer height

MSC-245 B66-10170 01

Multicolor stroboscope pinpoints resonances in
vibrating components

JPL-0033 B66-10223 01

Developmental instrument supplies accurate
attitude and attitude-rate data

B66-10607 01

Circuit increases capability of hysteresis
synchronous motor

B67-10084 01

Portable machine welding head automatically
controls arc

B67-10362 05

Sweep frequency detector

B69-10289 01

SYNCHRONOUS SATTELLITES

Design for a rapid automatic sync
acquisition system

B69-10214 01

SYNCHROHROMS

Beam profiles measured with
thermoluminescent dosimeters

ARG-10223 02

SYNTAX

JPLIP-JPL FORTRAN language with interval
pre-processor

B69-10187 06

SYNTHESIS

Synthesis of perbromates

ARG-10459 03

SYNTHETIC FIBERS

Modified soldering iron speeds cutting of
synthetic materials

M-PS-725 B66-10246 05

Study made of dielectric properties of
promising materials for cryogenic
capacitors

M-PS-13902 B67-10336 03

SYRINGES

Automated micropipette is highly accurate
and reliable

M-PS-725 B66-10423 01

Liquid micropipette chamber and micropipette
designs allow more efficient
micromanipulations

ARG-251 B67-10305 08

Improved sample capsule for determination
of oxygen in hemolyzed blood

M-PS-13902 B67-10408 04

Sealed container sampling device

GSPC-10690 02

SYRINGE SYSTEMS

Safety switch permits emergency bridge crane
shutdown

M-PS-589 B66-10168 05

Polarizing keys prevent mismatch of connector
plugs and receptacles

MSC-443 B66-10251 01

Simplified circuit corrects faults in parallel
binary information channels

JPL-5C-090 B66-10261 01

Program computes single-point failures in
critical system designs

I-649
Analysis of space vehicle structures using the transfer-function concept
NPO-11162 B69-10337 06

Exact minimal-state system reliability analysis
N-P-19651 B69-10409 06

Determination of quadric equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas
N-P-19543 B69-10435 06

Improved system for documenting measurement data
N-P-19269 B69-10513 01

Frequency domain analysis and synthesis of lumped parameter systems using nonlinear least squares techniques
N-P-15033 B69-10577 02

Design reliability goal developed from small sample
N-P-403 B66-10405 01

Program computes single-point failures in critical system designs
N-P-306 B67-10093 01

Integrated mobility measurement and notation system
N-P-1137 B67-10503 04

Solid state annunciator facilitates complex system troubleshooting
N-P-1137 B67-10505 01

Integrated mobility measurement and notation system
N-P-726 B67-10114 04

Computer programs simplify optical system analysis
GRRC-306 B65-10093 01

Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379 01

Computer program determines performance efficiency of remote measuring systems
N-P-1137 B66-10503 01

Computer program uses Monte Carlo techniques for statistical system performance analysis
N-P-2234 B67-10306 06

Computer program analyzes generalized environmental control and life support systems
N-P-1157 B67-10415 06

Analysis of dynamic systems with DAP4E computer program
N-P-13999 B67-10523 06

DYNAMA - An advanced programming system for large classes of dynamic and equivalent systems
N-P-12084 B67-10524 06

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
N-P-10126 B67-10536 06

Phase plane displays detect incipient failures in servo system testing
H-Q-1018 B67-10662 01

Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing
N-P-10308 B69-10334 06

Analysis of static and dynamic systems using the transfer-function concept
NPO-11162 B69-10337 06

Exact minimal-state system reliability analysis
N-P-19651 B69-10409 06

Determination of quadric equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas
N-P-19543 B69-10435 06

Improved system for documenting measurement data
N-P-19269 B69-10513 01

Frequency domain analysis and synthesis of lumped parameter systems using nonlinear least squares techniques
N-P-15033 B69-10577 02

Design reliability goal developed from small sample
N-P-403 B66-10405 01

Program computes single-point failures in critical system designs
N-P-306 B67-10093 01

Integrated mobility measurement and notation system
N-P-1137 B67-10503 04

Solid state annunciator facilitates complex system troubleshooting
N-P-1137 B67-10505 01

Integrated mobility measurement and notation system
N-P-726 B67-10114 04

Computer programs simplify optical system analysis
GRRC-306 B65-10093 01

Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379 01

Computer program determines performance efficiency of remote measuring systems
N-P-1137 B66-10503 01

Computer program uses Monte Carlo techniques for statistical system performance analysis
N-P-2234 B67-10306 06

Computer program analyzes generalized environmental control and life support systems
N-P-1157 B67-10415 06

Analysis of dynamic systems with DAP4E computer program
N-P-13999 B67-10523 06

DYNAMA - An advanced programming system for large classes of dynamic and equivalent systems
N-P-12084 B67-10524 06

N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program
N-P-10126 B67-10536 06

Phase plane displays detect incipient failures in servo system testing
H-Q-1018 B67-10662 01

Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing
N-P-10308 B69-10334 06

Analysis of space vehicle structures using the transfer-function concept
NPO-11162 B69-10337 06

Exact minimal-state system reliability analysis
N-P-19651 B69-10409 06

Determination of quadric equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas
N-P-19543 B69-10435 06

Improved system for documenting measurement data
N-P-19269 B69-10513 01

Frequency domain analysis and synthesis of lumped parameter systems using nonlinear least squares techniques
N-P-15033 B69-10577 02

Design reliability goal developed from small sample
N-P-403 B66-10405 01

Program computes single-point failures in critical system designs
N-P-306 B67-10093 01

Integrated mobility measurement and notation system
N-P-726 B67-10114 04

Data retrieval system provides unlimited hardware design information
N-P-1137 B67-10170 01

Land landing couch dynamics computer program
N-P-1210 B67-10233 06

Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning
N-P-10073 B67-10348 06

Reaction of steam with molybdenum is studied
N-P-295 B67-10502 03

Computer program for antenna feed system design and analysis
N-P-10355 B67-10504 06

Review of biological mechanisms for application to instrument design
N-P-33 B67-10663 04

Hydrogen safety manual
LEWIS-10487 B68-10323 01

Radial inflow turbine design charts
LEWIS-10720 B68-10567 05

Tunable bandpass turbine filter with variable selectivity
LEWIS-10394 B68-10144 01

Spacecraft Thermal Radiation Environment Computer Program
N-P-15054 B69-10574 06

Frequency domain analysis and synthesis of lumped parameter systems using nonlinear least squares techniques
N-P-15033 B69-10577 02

Monte Carlo simulation by computer for life-cycle costing
N-P-15754 B69-10590 05

Microelectronic device data handbook
LEWIS-10394 B69-10687 01

Cardiac R-wave detector
LEWIS-10394 B68-10144 01
Temperature-coupled cryogenic bleed maintains liquid state in transfer line.  
Subject Index

T SHAPE
Temperature-coupled cryogenic bleed maintains liquid state in transfer line.  
M-FS-12681  B67-10428  01

TABLES (DATA)
Computer program simplifies selection of structural steel columns.  
NU-0044  B66-10097  01
System monitors discrete computer inputs.  
M-FS-1021  B66-10389  01
An orthonormalization procedure for multivariable function approximation.  
M-FS-1313  B66-10579  01
Equations provide tabular information on effects of uniform and variable loads on thin, flat, circular plates.  
ABG-151  B66-10601  05
Three-axis attitude and direction reference instrument has only one moving part.  
M-FS-1819  B66-10644  01
Recommended values of the thermophysical properties of eight alloys, their major constituents and oxides.  
NU-0095  B67-10062  03
Solubility data are compiled for metals in liquid zinc.  
ABG-149  B67-10191  03
A simplified PERT system.  
M-FS-2267  B66-10241  05
Analytical drafting curves provide exact equations for plotted data.  
LANGLEY-265  B67-10601  02
Solving nonlinear heat transfer constant area fin problems.  
M-FS-14851  B68-10504  02
Failure rates for accelerated acceptance testing of silicon transistors.  
ZRC-10198  B68-10541  01
Thermal expansion properties of aerospace materials.  
M-FS-18335  B69-10055  03
Electron interaction in matter.  
M-FS-14086  B69-10674  02

TABS (CONTROL SURFACES)
Colored spring makes self-locking device for threaded fasteners.  
MSC-149  B65-10135  05
Steel test panel helps control additives in pyrophosphate copper plating.  
LEWIS-10101  B67-10358  05

TABULATION
Analysis of dynamic systems with DAP68 computer program.  
M-FS-13999  B67-10523  06
Ratio matching of half-bridge weldable strain gages, computer program.  
PBC-10032  B69-10040  06

TABULATION PROCESSES
Data retrieval system provides unlimited hardware design information.  
MSC-1144  B67-10170  01

TACHOMETERS
Noncontacting vibration transducer has constant sensitivity.  
LANGLEY-99  B65-10392  01
Variable-capacitance tachometer eliminates troublesome magnetic fields.  
GSPC-435  B66-10126  01
Automatic system determines moments of inertia of asymmetrical objects.  
M-FS-1769  B66-10636  01
Conceptual servo technique for controlling tape drivers.  
M-FS-12955  B67-10595  01
High- and low-pressure pneumotachometers measure respiration rates accurately in adverse environments.  
PBC-10012  B68-10186  01
TAKOFF
New anemometer has fast response, measures dynamic pressure directly.  
LANGLEY-28  B63-10530  05
TANGENTS
Combustion chamber inlet manifold separates vapor from liquid.  
M-FS-531  B66-10052  01
Thermal conductivity and dielectric constant of silicate materials.  
M-FS-14856  B68-10351  01
TANK GEOMETRY
System for measuring roundness and concentricity of large tanks.  
M-FS-13362  B68-10099  05
TANKS (CONTAINERS)
Two-part valve acts as quick coupling.  
JPL-478  B64-10223  01
Oscillator circuit measures liquid level in tanks.  
M-FS-285  B65-10209  01
Weld leak rapidly and safely detected.  
M-FS-362  B65-10265  01
Economical and maintenance-free gas system operates railroad switches.  
NU-0045  B66-10124  01
Device without electrical connections in tank measures liquid level.  
WOO-235  B66-10198  01
Study made to establish parameters and limitations of explosive welding.  
M-FS-13006  B67-10393  05
Computer program performs rectangular fitting stress analysis.  
M-FS-13501  B67-10520  06
Variable-speed, portable routing skate.  
M-FS-13772  B67-10525  05
Portable, high intensity isotopic neutron source provides increased experimental accuracy.  
ABG-90250  B68-10243  02
High-torque power wrench, a concept.  
M-FS-18194  B68-10299  05
Renewal of corrosion protection of coated aluminum after welding.  
M-FS-20361  B69-10150  05
Space-saving hoist for tank manholes.  
M-FS-16508  B69-10180  05
Handbook for design of containers of fluids and gases for spacecraft.  
M-FS-20502  B69-10279  05
Instrumentation for nondestructive testing of composite honeycomb materials.  
M-FS-20405  B69-10366  03
Integral valve provides automatic relief
and remote venting
M-FS-12134 B69-10545 05

A comparison of two methods of measuring particle size of Al2O3 produced by a small rocket motor
FPO-11198 B69-10572 03

Sealed container sampling device
GSFC-10690 B69-10682 03

TANTALUM
Apparatus facilitates high-temperature tensile testing in vacuous
LEWIS-42 B63-10345 03

Wire winding increases lifetime of oxide coated cathodes
LEWIS-154 B65-10032 03

Ceramic-coated boat is chemically inert, provides good heat transfer
LANGLEY-90 B65-10063 05

Cantilever springs maintain tension in thermally expanded wires
LEWIS-136 B65-10149 05

Tantalum cathode improves electron-beam evaporation of tantalum
JPL-MO-002 B65-10175 03

Thermoelectric elements diffusion-bonded to tungsten electrodes
GSPC-346 B65-10309 01

Wire bundle formed into grids with minute interstices
WOO-089 B65-10372 03

Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures
N-FS-600 B66-10325 02

Nonelectrolytic tantalum capacitors developed
N-FS-1546 B66-10552 01

Use of steel and tantalum apparatus for molten Cd-Mg-Zn alloys
ARG-199 B66-10594 03

Thin film process forms effective electrical contacts on semiconductor crystals
M-FS-2343 B67-10142 01

Modified blackbody device emits high-density radiation
M-FS-12744 B67-10388 02

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10010 B67-10399 01

Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide
ARG-10154 B68-10293 02

Nickel base alloy with improved stress rupture properties
LEWIS-10283 B68-10344 03

Nickel-base superalloy's excellent properties promote its service to 2200 degrees F
LEWIS-10355 B68-10380 03

Miniaturized King furnace permits absorption spectroscopy of small samples
ARG-10177 B68-10418 02

Refractory oxide insulated thermocouple designed and analyzed for high temperature applications
ARG-10202 B69-10053 03

Preparation of thorium magnesium-zinc reduction
ARG-10245 B69-10079 03

TAPES
Metal strip forms 21 foot boon, rolls up for compact storage
GSPC-151 B64-10011 05

New energy storage concept uses tapes
LEWIS-239 B66-10098 02

Capacitive system detects and locates fluid leaks
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>TELECOMMUNICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-PS-478</td>
<td>B66-10099 01</td>
</tr>
<tr>
<td>Inexpensive insulation is effective for cryogenic transfer lines</td>
<td></td>
</tr>
<tr>
<td>M-SC-618</td>
<td></td>
</tr>
<tr>
<td>Developmental instrument supplies accurate attitude and attitude-rate data</td>
<td>B66-10607 01</td>
</tr>
<tr>
<td>HQ-57</td>
<td></td>
</tr>
<tr>
<td>Gas leak detector is simple and inexpensive</td>
<td>B66-10669 01</td>
</tr>
<tr>
<td>M-PS-1206</td>
<td></td>
</tr>
<tr>
<td>Proposed method of rotary dynamic balancing by laser</td>
<td>B67-10452 02</td>
</tr>
<tr>
<td>M-PS-12922</td>
<td></td>
</tr>
<tr>
<td>Tape reading fixture</td>
<td>B69-10008 05</td>
</tr>
<tr>
<td>M-PS-1494</td>
<td></td>
</tr>
<tr>
<td>Tools for applying lead tape to flat conductor cabling for chemical stripping</td>
<td></td>
</tr>
<tr>
<td>M-PS-20429</td>
<td></td>
</tr>
<tr>
<td>A mechanically extendible boom</td>
<td>B69-10328 05</td>
</tr>
<tr>
<td>NPO-11118</td>
<td></td>
</tr>
<tr>
<td>Circuit board hole coordinate locator concept</td>
<td>B69-10539 01</td>
</tr>
<tr>
<td>M-PS-14737</td>
<td></td>
</tr>
<tr>
<td>TAPS</td>
<td>B65-10283 02</td>
</tr>
<tr>
<td>Electron-beam deflection controlled by digital signals</td>
<td></td>
</tr>
<tr>
<td>GSFC-385</td>
<td></td>
</tr>
<tr>
<td>TARGET ACQUISITION</td>
<td></td>
</tr>
<tr>
<td>Communication system features dual mode range acquisition plus time delay</td>
<td></td>
</tr>
<tr>
<td>measurement</td>
<td>B66-10306 01</td>
</tr>
<tr>
<td>M-PS-1822</td>
<td></td>
</tr>
<tr>
<td>Improved electro-optical tracking system</td>
<td>B68-10311 01</td>
</tr>
<tr>
<td>M-PS-14791</td>
<td></td>
</tr>
<tr>
<td>Single degree of freedom antenna pointing program / antenna</td>
<td>B68-10449 06</td>
</tr>
<tr>
<td>NPO-10756</td>
<td></td>
</tr>
<tr>
<td>TARGET RECOGNITION</td>
<td></td>
</tr>
<tr>
<td>Point-source detection system rejects spatially extended radiation sources</td>
<td>B66-10622 01</td>
</tr>
<tr>
<td>GSFC-486</td>
<td></td>
</tr>
<tr>
<td>TARGET THICKNESS</td>
<td>B69-10674 02</td>
</tr>
<tr>
<td>Electron interaction in matter</td>
<td></td>
</tr>
<tr>
<td>M-PS-14886</td>
<td></td>
</tr>
<tr>
<td>TARGETS</td>
<td>B66-10061 05</td>
</tr>
<tr>
<td>Instrument quickly transposes ground reference target to eye level</td>
<td></td>
</tr>
<tr>
<td>M-SC-272</td>
<td></td>
</tr>
<tr>
<td>Simplified fixture permits precision alignment of an optical target</td>
<td>B66-10556 01</td>
</tr>
<tr>
<td>M-PS-1181</td>
<td></td>
</tr>
<tr>
<td>Electron beam parallel X-ray generator</td>
<td>B67-10372 02</td>
</tr>
<tr>
<td>MSC-11022</td>
<td></td>
</tr>
<tr>
<td>Earth orbit rendezvous evaluation program</td>
<td>B67-10407 06</td>
</tr>
<tr>
<td>M-PS-13016</td>
<td></td>
</tr>
<tr>
<td>Fortran 4 program for two-impulse rendezvous analysis</td>
<td>B67-10479 06</td>
</tr>
<tr>
<td>M-PS-13971</td>
<td></td>
</tr>
<tr>
<td>A theoretical study of radar backscatter from distributed targets with emphasis on polarization dependence</td>
<td>B69-10560 02</td>
</tr>
<tr>
<td>M-PS-13775</td>
<td></td>
</tr>
<tr>
<td>Long range holographic contour mapping concept</td>
<td>B69-10700 02</td>
</tr>
<tr>
<td>HQ-10350</td>
<td></td>
</tr>
<tr>
<td>TRACING</td>
<td></td>
</tr>
<tr>
<td>Basal-plane metallography of deformed</td>
<td></td>
</tr>
<tr>
<td>pyrolytic carbon</td>
<td>B69-10488 03</td>
</tr>
<tr>
<td>ESO-11196</td>
<td></td>
</tr>
<tr>
<td>TECHNICAL WRITING</td>
<td></td>
</tr>
<tr>
<td>Review of research and development is fluid logic elements</td>
<td>B67-10438 01</td>
</tr>
<tr>
<td>M-PS-420</td>
<td></td>
</tr>
<tr>
<td>Review of biological mechanisms for application to instrument design</td>
<td>B67-10663 04</td>
</tr>
<tr>
<td>HQ-33</td>
<td></td>
</tr>
<tr>
<td>TEFLOW (TRADEMARK)</td>
<td></td>
</tr>
<tr>
<td>Coating permits use of strain gage in water and liquid hydrogen</td>
<td>B66-10192 01</td>
</tr>
<tr>
<td>M-PS-594</td>
<td></td>
</tr>
<tr>
<td>Insert sleeve prevents tube soldering contamination</td>
<td>B66-10238 05</td>
</tr>
<tr>
<td>M-SC-552</td>
<td></td>
</tr>
<tr>
<td>Low rate flow switch can be used for gas or liquid</td>
<td>B67-10696 01</td>
</tr>
<tr>
<td>JPL-867</td>
<td></td>
</tr>
<tr>
<td>Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line</td>
<td>B69-0077</td>
</tr>
<tr>
<td>M-PS-20482</td>
<td></td>
</tr>
<tr>
<td>Evaluation of high temperature stranded hookup wire</td>
<td>B67-10122 03</td>
</tr>
<tr>
<td>M-PS-2478</td>
<td></td>
</tr>
<tr>
<td>Connector shorting cap provides pin alignment, inspection, and stray voltage protection</td>
<td>B67-10635 01</td>
</tr>
<tr>
<td>M-PS-13114</td>
<td></td>
</tr>
<tr>
<td>Vacuum probe sampler removes micron-sized particles from surfaces</td>
<td>B68-10231 04</td>
</tr>
<tr>
<td>SAN-10003</td>
<td></td>
</tr>
<tr>
<td>Abrasion and resistant discharge valve developed</td>
<td>B69-10044 05</td>
</tr>
<tr>
<td>NK-10219</td>
<td></td>
</tr>
<tr>
<td>Diffusion bond method of joining steel and a TFE-bronze composite</td>
<td>B65-10237 03</td>
</tr>
<tr>
<td>M-PS-20482</td>
<td></td>
</tr>
<tr>
<td>TELECOMMUNICATION</td>
<td></td>
</tr>
<tr>
<td>Flange on microwave antenna subreflector cuts ground noise</td>
<td>B63-10229 01</td>
</tr>
<tr>
<td>JPL-362</td>
<td></td>
</tr>
<tr>
<td>Economical fabrication process produces high quality junction transistors</td>
<td>B64-10330 01</td>
</tr>
<tr>
<td>JPL-95-045</td>
<td></td>
</tr>
<tr>
<td>Travelling-wave tube circuit simplifies microwave relay</td>
<td>B65-10127 01</td>
</tr>
<tr>
<td>GSFC-299</td>
<td></td>
</tr>
<tr>
<td>Superconductor magnets used for stagger-tuning travelling-wave maser</td>
<td>B65-10165 01</td>
</tr>
<tr>
<td>GSFC-292</td>
<td></td>
</tr>
<tr>
<td>Lightweight coaxial cable connector reduces signal loss</td>
<td>B65-10244 01</td>
</tr>
<tr>
<td>JPL-720</td>
<td></td>
</tr>
<tr>
<td>Communication system uses modulated laser beam</td>
<td>B65-10333 01</td>
</tr>
<tr>
<td>GSFC-377</td>
<td></td>
</tr>
<tr>
<td>An investigation of phase-lock loop swept-frequency synchronizer</td>
<td>B65-10423 01</td>
</tr>
<tr>
<td>M-PS-656</td>
<td></td>
</tr>
<tr>
<td>Monitor assures availability and quality of communication channels</td>
<td>B67-10028 01</td>
</tr>
<tr>
<td>KSC-66-38</td>
<td></td>
</tr>
<tr>
<td>Multiplexing control device enables handling of wide variations in sampling rates</td>
<td></td>
</tr>
</tbody>
</table>
SUBJECT INDEX

Circuit reduces distortion of FM modulator
GSFC-257  B65-10152  01

Logic circuit exhibits optimum performance
LANGLEY-129 B65-10193  01

Device measures fluid drag on test vehicles
LANGLEY-34  B65-10195  01

Field-effect transistor replaces bulky transformer in analog-gate circuit
GSFC-351  B65-10284  01

Instrument performs nondestructive chemical analysis, data can be telemetered
JPL-SC-078  B65-10317  01

Temperature transducer has high output, is time stable
GSFC-046  B65-10362  01

Miniature bioelectric device accurately measures and telemeters temperature
ARC-52  B66-10057  01

Selsnometer designed for remote operation in random orientation
JPL-320  B66-10065  01

Phonocardiograph system monitors heart sounds
MSC-185  B66-10154  04

Solid state thermostat has integral probe and circuitry
M-PS-634  B66-10193  01

FM acquisition demodulator achieves automatic synchronization of a telemetry channel
JPL-612  B66-10271  01

Thin-film ferrites vapor deposited by one-step process in vacuum
MSC-259  B66-10398  03

Single-sideband modulator accurately reproduces phase information in 2-Mc signals
M-PS-664  B66-10437  01

Miniature capacitive accelerometer is especially applicable to telemetry
ARC-72  B66-10491  01

Digital system detects binary code patterns containing errors
GSFC-541  B66-10516  01

Miniature capacitor functions as pressure sensor
JPL-903  B67-10020  01

Multiplexing control device enables handling of wide variations in sampling rates
M-PS-1871  B67-10251  01

Numerical data frame readout system used in testing telemetry systems
GSFC-551  B67-10175  01

A conceptual, parallel operating data compression processor
M-PS-1068  B67-10204  01

Improved television signal processing system
M-PS-10140  B67-10246  01

An efficient, temperature-compensated subcarrier oscillator
JPL-SC-091  B67-10251  01

A calibration means for spectrum analyzers
MSC-10987  B67-10254  01

Multichannel pulse height analyzer is inexpensive, features low power requirements
HQ-10020  B67-10258  01

Multiplexer uses insulated gate-field effect transistors
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>TELEVISION CAMERAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic telemetry checkout system</td>
<td>determines atmospheric layer height</td>
</tr>
<tr>
<td>Range recording technique enables four-way polarization measurements</td>
<td>Infrared radiometer</td>
</tr>
<tr>
<td>Blood pressure reprogramming adapter assists signal recording</td>
<td>Measuring thermal expansion of multiple specimens at high temperature</td>
</tr>
<tr>
<td>Computer program for Video Data Processing System /VDDS/</td>
<td>Telescope dome control system automatically tracks sun</td>
</tr>
<tr>
<td>Simultaneous message framing and error detection</td>
<td>Training manual on optical alignment instruments</td>
</tr>
<tr>
<td>Fully automatic telemetry data processor</td>
<td>Improved method of optical design</td>
</tr>
<tr>
<td>Automatic calibration apparatus for telemetry systems</td>
<td>Method of directing a laser beam with very high accuracy</td>
</tr>
<tr>
<td>Simple decoder for telemetry phase-shift keyed subcarriers</td>
<td>A new method for producing optical mirrors</td>
</tr>
<tr>
<td>Remotely-actuated biomedical switch</td>
<td>A simple electrometer for measuring small photoelectric currents</td>
</tr>
<tr>
<td>One hundred MHz voltage-controlled oscillator</td>
<td>New television camera eliminates vidicon tube</td>
</tr>
<tr>
<td>Automatic bird watcher</td>
<td>New television camera eliminates vidicon tube</td>
</tr>
<tr>
<td>New passive telemetry system</td>
<td>Electronic shutter gates image orthicon on and off</td>
</tr>
<tr>
<td>Wide-band doubler and sine wave quadrature generator</td>
<td>Subminiature television camera</td>
</tr>
<tr>
<td>Fast Fourier Transform Spectral Analysis Program</td>
<td>Design for a rapid automatic sync acquisition system</td>
</tr>
<tr>
<td>Design for a rapid automatic sync acquisition system</td>
<td>Estimation of signal-to-noise ratios</td>
</tr>
<tr>
<td>Data processing method for a weak, moving telemetry signal</td>
<td>PCB synchronization by word stuffing</td>
</tr>
<tr>
<td>Past Fourier Transform Spectral Analysis Program</td>
<td>TELEPHONES</td>
</tr>
<tr>
<td>Estimation of signal-to-noise ratios</td>
<td>Electrocardiograph transmitted by RF and telephone links in emergency situations</td>
</tr>
<tr>
<td>Data processing method for a weak, moving telemetry signal</td>
<td>TELEPRINTERS</td>
</tr>
<tr>
<td>PCB synchronization by word stuffing</td>
<td>Teleprinter uses thermal printing technique</td>
</tr>
<tr>
<td>TELESCOPES</td>
<td>Dewpoint temperature inversions analyzed</td>
</tr>
<tr>
<td>Attachment converts microscope to point source autocollimator</td>
<td>Subminiature deflection circuit operates integrated sweep circuits in TV camera</td>
</tr>
<tr>
<td>Sextant measures spacecraft altitude without gravitational reference</td>
<td>Design concept for improved photo-scan tube</td>
</tr>
<tr>
<td>Scanning photometer system automatically operates</td>
<td>Electronic shutter gates image orthicon on and off</td>
</tr>
</tbody>
</table>

**I-655**
TELEVISION EQUIPMENT

Improved combustion chamber optical probe
RSC-10953, B66-10142 02

Tie-shared Cathode Ray Tube
RSC-12238, B69-10243 06

Multipurpose binocular scanning apparatus
RPO-11002, B66-10311 02

TELEVISION EQUIPMENT

Uniunction frequency divider is free of backward loading
JPL-WO0-010, B67-10112 01

Optical automatic gain channel
K-PS-1500, B66-10596 02

Improved digital TV encoding and decoding system
KSC-11147, B67-10562 01

Isolated, multiple-output voltage dc-to-dc converter
K-PS-14976, B69-10014 01

TELEVISION RECEIVERS

Concept for a multifunctional oscilloscope probe
K-PS-16390, B69-10129 01

TELEVISION RECEPTION

Means for improving apparent resolution of television
KRC-65, B67-10152 01

Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique
ABC-203, B67-10295 02

Video synchronization processor overcomes poor signal-to-noise ratio
KSC-10002, B67-10515 01

System converts slow-scan to standard fast-scan TV signals
KSC-90534, B69-10748 01

TELEVISION SYSTEMS

TV synchronization system features stability and noise immunity
JPL-915, B67-10118 01

Closed circuit TV system monitors welding operations
KSC-11002, B67-10162 01

Improved head-controlled TV system produces high-quality remote image
ABC-128, B67-10317 01

An infrared television system for hydrogen flame detection
KSC-10368, B69-10354 01

TELEVISION TRANSMISSION

Variable word length encoder reduces TV bandwidth requirements
LANGLEY-87, B65-10345 01

TV synchronization system features stability and noise immunity
JPL-915, B67-10118 01

Multiplex television transmission system
MSC-11595, B67-10576 01

Scan rate converter for tape recording and playback of TV pictures
RPO-10166, B67-10676 01

System converts slow-scan to standard fast-scan TV signals
KSC-90534, B69-10748 01

TELELURUM

Technological survey of tellurium and its compounds
ARG-10119, B68-10201 03

Lithium-tellurium bimetallic cell has increased voltage
ARG-10141, B68-10400 01

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
ARG-10452, B69-10613 01

TELELURUM COMPOUNDS

In-transmission glasses formed from oxides of bismuth and tellurium
M-PS-279, B65-10190 03

Technological survey of tellurium and its compounds
ARG-10119, B68-10201 03

Segmented SiGe-PbTe couples
GSC-10746, B69-10233 01

TELELURUM ISOTOPES

An economical method for the continuous production of iodine-123
LEWIS-10518, B68-10433 03

TECHER (METALLURGY)

New weldable high strength aluminum alloy developed for cryogenic service
M-PS-737, B66-10613 05

Retention of ductility in high-strength steels
ARG-10497, B69-10616 03

TEMPERATURE

Hydrated multivalent cations are new class of molten salt mixtures
ARG-211, B67-10033 03

Method of measuring thermal conductivity of high performance insulation
M-PS-14088, B68-10013 02

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401, B68-10370 01

TEMPERATURE COMPENSATION

New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation
ABC-2, B63-10003 04

Simple circuit provides adjustable voltage with linear temperature variation
JPL-WO0-029, B63-10537 01

Variable frequency magnetic multivibrator generates stable square-wave output
GSC-10746, B65-10124 01

Logarithmic amplifier uses field effect transistors
JPL-509, B65-10145 01

Calorimeter accurately measures thermal radiation energy
LANGLEY-173, B66-10058 02

Radiation used to temperature compensate semiconductor strain gages
LANGLEY-207, B66-10186 02

Transistor circuit increases range of logarithmic current amplifier
NU-0018, B66-10350 01

An efficient, temperature-compensated subcarrier oscillator
JPL-SC-091, B67-10251 01

MOSFET improves performance of power supply regulator
GSC-10022, B67-10569 01

Current-limiting voltage regulator
MSC-11824, B68-10305 01

I-656
SUBJECT INDEX

Acceleration insensitive fluid expansion compensator
EHC-10152 B68-10559 01
Linear voltage-to-frequency converter
GSFC-10546 B69-10220 01
Highly linear, sensitive analog-to-digital converter
MSC-13110 B69-10230 01

TEMPERATURE CONTROL
Improved sensor counts microeteoroid penetrations
LWIS-76 B63-10443 01
Multiple test tubes stirred mechanically
ARC-42 B65-10112 01
Closed fluid system without moving parts controls temperature
LWIS-222 B65-10331 02
Special coatings control temperature of structures
GSFC-448 B65-10337 03
Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01
Thermal motor positions magnetometer sensors
ARC-51 B66-10078 05
Control system maintains compartment at constant temperature
JPL-SC-145 B66-10188 05

Soldering iron temperature is automatically reduced
ARC-57 B66-10203 01
Low power heating element provides thermal control during swaging operations
N-PS-457 B66-10206 05
High-speed furnace uses infrared radiation for controlled brazing
NU-0047 B66-10268 02

Mixer conditions temperature of liquified gas streams
N-PS-1784 B66-10565 02
Rotational fluid coupling eliminates hose entanglements
MSC-312 B66-10585 05

Design concept for pressure switch calculator
HQ-36 B66-10598 01
Technique for measuring absorptance and emissivity by using cyclic incident radiation
LWIS-321 B66-10630 02

Computer program determines chemical composition of physical system at equilibrium
MSC-1119 B66-10670 01
Heater control circuit provides both fast and proportional control
N-PS-906 B67-10097 01
Temperature responsive valve withstands high impact loading
NPO-10186 B67-10225 05

Computer program determines thermal environment and temperature history of

lunar orbiting space vehicles
N-PS-12916 B67-10307 06
Precision capacitor has improved temperature and operational stability
ARC-169 B67-10313 01
Hand-held instrument should relieve hemostatic pressure
MSC-589 B67-10332 04
Development of technology for hot-drape forming of large torus sections
N-PS-12141 B67-10341 05
Simplified technique demonstrates magnetic domain switching
N-PS-13153 B67-10342 02

Method for X-ray study under extreme temperature and pressure conditions
MSC-1232 B67-10474 02

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures
NWC-10521 B67-10617 02

Environmental control system for cryogenic testing of tensile specimens
NWC-10523 B67-10618 02

Pyrotechnic device provides one-shot heat source
LWIS-10131 B68-10062 03

Viscosity and density of methanol/water mixtures at low temperatures
N-PS-14991 B68-10274 03
Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide
ARC-10154 B68-10293 02

Temperature or pressure controller
LWIS-10297 B68-10337 01

Fluidic-thermochronic display device
EHC-10031 B68-10350 01

Battery-package design provides for cell cooling and constraint
MSC-11839 B68-10398 05

Temperature controlled strain gaged extensometer
LWIS-10353 B68-10543 01

Structural thermal-control coatings
NPO-10785 B68-10553 03

Thermal calibration target
XGS-11144 B69-10419 01

Temperature-controlled resistor
NPO-10713 B69-10440 01

Freon, T-81 cutting fluid
MSC-11486 B69-10485 05

Rate of heat extraction controller for environmental control
HQ-10318 B69-10516 01

Measurement of gas flow at extremely low pressures
MSC-13261 B69-10522 03

Balloon batteries, charged and heated by solar energy
GSFC-10769 B69-10585 01

TEMPERATURE DISTRIBUTION
Variable-temperature wall regulates temperatures of structures
LANGLEY-24 B63-10528 03

Hot-air soldering technique prevents overheating of electrical components
**Subject Index**

**Temperature Effects**

- **Thermal Network Analyzer Program**
  - NUC-10540
  - B69-10239
  - 06

- **Technique for predicting temperature distribution in gases**
  - LEWIS-10916
  - B69-10329
  - 01

- **Improved retort for cleaning metal powders with hydrogen**
  - LEWIS-10718
  - B69-10468
  - 03

- **Modified cryogenic storage tank subsystem**
  - KSC-10380
  - B69-10556
  - 02

- **Light ray modulation controls optical system alignment**
  - GSFC-171
  - B69-10211
  - 02

- **Feed-through connector withstands high temperatures in vacuum environment**
  - GSFC-442
  - B66-10055
  - 03

- **Coiled sheet metal strip opens into tubular configuration**
  - GSFC-425
  - B66-10019
  - 03

- **Improved retort for cleaning metal powders with hydrogen**
  - LEWIS-10918
  - B69-10468
  - 03

- **Remote preamplifier circuit maintains stability over wide temperature range**
  - WCO-278
  - B66-10032
  - 01

- **Computer program simplifies transient and steady-state temperature prediction for complex body shapes**
  - NUC-989
  - B66-10619
  - 01

- **Computer program calculates steady-state temperature distribution within plane or axisymmetric solids**
  - NUC-10049
  - B67-10224
  - 06

- **Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident**
  - NUC-10054
  - B67-10281
  - 06

- **Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries**
  - M-PS-1912
  - B67-10329
  - 06

- **Thermodynamic properties of saturated liquid parahydrogen charted for important temperature range**
  - NUC-10018
  - B67-10336
  - 03

- **Computer program MCP-TOSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid**
  - NUC-10042
  - B67-10456
  - 06

- **Computer program MCP provides for steady state thermal and flow analysis of multiple parallel channels in heat generating solid**
  - NUC-10043
  - B67-10457
  - 06

- **Stable ac phase and amplitude comparator**
  - N-PS-T3086
  - B67-10459
  - 01

- **Graphite cloth facilitates vacuum evaporation of silicon monoxide**
  - M-PS-14764
  - B68-10256
  - 03

- **Dynamics of moving bubbles in single and binary component systems**
  - N-PS-16885
  - B68-10339
  - 02

- **Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction**
  - NUC-10189
  - B68-10450
  - 06

- **Solving nonlinear heat transfer constant area fin problems**
  - N-PS-14851
  - B68-10504
  - 02

- **Surface temperature mapping with infrared photographic pyrometry**
  - N-PS-14851
  - B68-10504
  - 02

**Subject Index**

- **Light ray modulation controls optical system alignment**
  - GSFC-171
  - B69-10211
  - 02

- **Remote preamplifier circuit maintains stability over wide temperature range**
  - WCO-278
  - B66-10032
  - 01

- **Coiled sheet metal strip opens into tubular configuration**
  - GSFC-425
  - B66-10019
  - 03

- **Improved retort for cleaning metal powders with hydrogen**
  - LEWIS-10918
  - B69-10468
  - 03

- **Remote preamplifier circuit maintains stability over wide temperature range**
  - WCO-278
  - B66-10032
  - 01

- **Graphite cloth facilitates vacuum evaporation of silicon monoxide**
  - M-PS-14764
  - B68-10256
  - 03

- **Dynamics of moving bubbles in single and binary component systems**
  - N-PS-16885
  - B68-10339
  - 02

- **Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction**
  - NUC-10189
  - B68-10450
  - 06

- **Solving nonlinear heat transfer constant area fin problems**
  - N-PS-14851
  - B68-10504
  - 02

- **Surface temperature mapping with infrared photographic pyrometry**
  - N-PS-14851
  - B68-10504
  - 02

**Temperature Effects**

- **Light ray modulation controls optical system alignment**
  - GSFC-171
  - B69-10211
  - 02

- **Remote preamplifier circuit maintains stability over wide temperature range**
  - WCO-278
  - B66-10032
  - 01

- **Coiled sheet metal strip opens into tubular configuration**
  - GSFC-425
  - B66-10019
  - 03

- **Improved retort for cleaning metal powders with hydrogen**
  - LEWIS-10918
  - B69-10468
  - 03

- **Remote preamplifier circuit maintains stability over wide temperature range**
  - WCO-278
  - B66-10032
  - 01

- **Graphite cloth facilitates vacuum evaporation of silicon monoxide**
  - M-PS-14764
  - B68-10256
  - 03

- **Dynamics of moving bubbles in single and binary component systems**
  - N-PS-16885
  - B68-10339
  - 02

- **Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction**
  - NUC-10189
  - B68-10450
  - 06

- **Solving nonlinear heat transfer constant area fin problems**
  - N-PS-14851
  - B68-10504
  - 02

- **Surface temperature mapping with infrared photographic pyrometry**
  - N-PS-14851
  - B68-10504
  - 02
SUBJECT INDEX

Silicon strain sensors enable pressure measurement at cryogenic temperatures N-PS-14703 868-10262 01

Spiral-grooved shaft seals substantially reduce leakage and wear LWIS-10397 868-10270 05

Fiber glass reinforced structural materials for aerospace application N-PS-14806 868-10360 03

Effects of high frequency current in welding aluminum alloy 6061 N-PS-18337 868-10383 05

Grain-boundary migration in KCl bicrystals ARG-10181 868-10455 03

Heat transfer coefficients for liquid hydrogen turbines N-PS-18345 868-10517 02

Evaluation of a fluorocarbon plastic used in cryogenic valve seals N-PS-18189 868-10523 03

Investigation of temperature dependence of development and aging ARG-10145 869-10022 04

Instabilities encountered during heat transfer to a supercritical fluid ARG-10266 869-10042 02

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures N-PS-18192 869-10068 03

Active frequency control system for argon PI laser N-PS-16988 869-10099 02

Electromechanical rotary actuator operates over wide temperature range N-PS-18402 869-10100 05

Purification and characterization of two fully deuterated enzymes ARG-10314 869-10207 04

Precision mounting for instrument optical elements provided by polyimide bonding N-PS-20293 869-10310 05

Conversion of continuous-direct-current TIG welder to pulse-arc operation N-PS-16411 869-10393 05

Accurate nine-decade temperature-compensated logarithmic amplifier ARG-10480 869-10429 01

A new method for producing optical mirrors HQ-10227 869-10529 02

Foil bearing support for high-speed rotor HQ-10315 869-10661 05

Determination of permissible applied load stress in structural elements N-PS-16556 869-10823 02

TEMPERATURE GRADIENTS

Packless valve with all-metal seal handles wide temperature, pressure range JPL-361 863-10228 05

New sintering process adjusts magnetic value of ferrite cores GSFC-129 863-10606 01

Plastic films for reflective surfaces reproduced from masters GSFC-198 866-10151 03

Temperature-compensation circuit stabilizes performance of vidicons JPL-486 866-10226 01

Electronic device simulates respiration rate and depth MSC-89 864-10255 01

Fastener provides cooling and compensates for thermal expansion NU-0003 865-10038 05

Flexure support system protects thermally and dynamically loaded models LANGLEY-39 865-10042 05

Seal allows blind assembly and thermal expansion of components NU-0005 865-10053 05

Transducer measures temperature differentials in presence of strong electromagnetic fields ARG-27 865-10089 01

Rotating filters permit wide range of optical pyrometry LANGLEY-33 865-10100 02

Materials physically tested in variable-environment chamber JPL-789 866-10130 01

Bellows design features low spring rate and long life MSC-521 866-10190 05

Device without electrical connections in tank measures liquid level WOO-235 866-10198 01

Pressure seal ring may be effective over wide temperature range N-PS-486 866-10211 05

Strain gage network distinguishes between thermal and mechanical deformations GSFC-478 866-10280 01

Bimetallic devices help maintain constant scaling forces down to cryogenic temperatures N-PS-800 866-10303 05

Sensors measure surface ablation rate of reentry vehicle heat shield LANGLEY-267 866-10325 02

Feed-thru flange is useful in vacuum applications to cryogenic temperatures JPL-646 866-10615 02

Combustion chamber struts can be effectively transpiration cooled N-PS-1830 866-10643 03

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment LEWIS-359 866-10678 05

System maintains constant penetration during fusion welding N-PS-937 867-10091 01

Fixture tests bellows reliability through repetitive pressure/temperature cycling MSC-1176 867-10111 01

Cryogenic seal remains leaktight during thermal displacement ARG-96 867-10134 02

Effects of heat input rates on T-1 and T-11 steel welds N-PS-2475 867-10163 03

Materials data handbook, Inconel alloy 718 N-PS-2348 867-10282 03

Jacketed cryogenic piping is stress.
nulling pyrometer uses Kerr cell shutter for fast responses N0-0010 B65-10050 01
rotating filters permit wide range of optical pyrometry langley-33 B65-10100 02
microwave technique measures plasma characteristics langley-133 B65-10122 02
infrared shield facilitates optical pyrometer measurements langley-133 B65-10272 02
multiple temperatures sampled using only one reference junction gspc-485 B66-10260 01
braze alloys used as temperature indicators n0-0063 B66-10274 01
strain gage network distinguishes between thermal and mechanical deformations gspc-878 B66-10280 01
semi-automatic device tests components with biaxial leads msc-596 B66-10337 03
pyrometry handbook describes practical aspects of surface temperature measurements of opaque materials lewis-349 B66-10520 01
a radiometer-pyrometer lewis-284 B66-10606 01
accurate depth control provided for thermocouple junction locations langley-289 B66-10632 01
study of fast response thermocouple measurement of temperatures in cryogenic gases m-s-1659 B66-10661 01
quartz crystals detect gas contaminants during vacuum chamber evacuation npo-10144 B67-10205 01
self-balancing line-reversal pyrometer automatically measures gas temperatures lewis-346 B67-10268 01
ii vidicon scanner monitors many test points m-s-1937 B67-10277 01
vapor deposition process provides new method for fabricating high temperature thermocouples gspc-10152 B67-0616 01
measuring thermal expansion of multiple specimens at high temperature m-uc-10153 B68-10122 05
silicon solar cell monitors high temperature furnace operation m-uc-10163 B68-10148 01
real fluid properties of normal and parahydrogen lewis-10458 B68-10361 06
detection of effect of deposits on optical windows of pyrometer measurements lewis-10366 B68-10367 01
method for making small pointed thermocouples san-10014 B68-10389 01
non-destructive testing of brazed rocket engine components m-ps-18191 B68-10394 03
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>TEMPERATURE SENSORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imaging slitless spectrometer for X-ray astronomy</td>
<td>Thin-film heat transfer gage is stable at higher temperatures</td>
</tr>
<tr>
<td>N-PS-14309</td>
<td>B66-10051</td>
</tr>
<tr>
<td>Superconductivity in zirconium-rhodium alloys</td>
<td>Tungsten-rhenium alloy thermocouples effective for high-temperature measurements</td>
</tr>
<tr>
<td>AEG-10223</td>
<td>B66-10049</td>
</tr>
<tr>
<td>Computer program calculates the effective temperature for a crystalline solid</td>
<td>Ultrasonic temperature measuring device</td>
</tr>
<tr>
<td>NUC-10161</td>
<td>B69-10036</td>
</tr>
<tr>
<td>SPAN C - Terminal sterilization process analysis program</td>
<td>Millimeter-wave atmospheric loss prediction method</td>
</tr>
<tr>
<td>NPO-10805</td>
<td>B69-10039</td>
</tr>
<tr>
<td>Refractory oxide insulated thermocouple designed and analyzed for high temperature applications</td>
<td></td>
</tr>
<tr>
<td>AEG-10202</td>
<td>B69-10053</td>
</tr>
<tr>
<td>Dewpoint temperature inversions analyzed</td>
<td></td>
</tr>
<tr>
<td>AEG-10316</td>
<td>B69-10057</td>
</tr>
<tr>
<td>Techniques for controlling warpage and residual stresses in welded structures</td>
<td></td>
</tr>
<tr>
<td>N-PS-20307</td>
<td>B69-10086</td>
</tr>
<tr>
<td>Liquid-metal heat transfer in a co-current-flow, double-pipe heat exchanger investigated</td>
<td></td>
</tr>
<tr>
<td>AEG-10261</td>
<td>B69-10091</td>
</tr>
<tr>
<td>SPAN - Terminal sterilization process analysis program</td>
<td></td>
</tr>
<tr>
<td>NPO-10804</td>
<td>B69-10104</td>
</tr>
<tr>
<td>Surface temperature mapping with infrared photographic pyrometry</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10763</td>
<td>B69-10113</td>
</tr>
<tr>
<td>The effect of mismatched components on microwave noise-temperature calibrations</td>
<td></td>
</tr>
<tr>
<td>NPO-11163</td>
<td>B69-10039</td>
</tr>
<tr>
<td>TEMPERATURE MEASURING INSTRUMENTS</td>
<td></td>
</tr>
<tr>
<td>Transducer measures temperature differentials in presence of strong electromagnetic fields</td>
<td></td>
</tr>
<tr>
<td>ARC-27</td>
<td>B66-10089</td>
</tr>
<tr>
<td>Miniature bioelectric device accurately measures and telemeters temperature</td>
<td></td>
</tr>
<tr>
<td>AEG-52</td>
<td>B66-10057</td>
</tr>
<tr>
<td>Calorimeter accurately measures thermal radiation energy</td>
<td></td>
</tr>
<tr>
<td>LANL-173</td>
<td>B66-10058</td>
</tr>
<tr>
<td>Apparatus measures thermal conductivity of honeycomb-core panels</td>
<td></td>
</tr>
<tr>
<td>LANL-202</td>
<td>B66-10127</td>
</tr>
<tr>
<td>Bismuth alloy potting seals aluminum connector in cryogenic application</td>
<td></td>
</tr>
<tr>
<td>WOO-260</td>
<td>B66-10138</td>
</tr>
<tr>
<td>Thin-film gage measures low heat-transfer rates</td>
<td></td>
</tr>
<tr>
<td>LANL-205</td>
<td>B66-10180</td>
</tr>
<tr>
<td>Electrically conductive fibers thermally isolate temperature sensor</td>
<td></td>
</tr>
<tr>
<td>GSPC-456</td>
<td>B66-10349</td>
</tr>
<tr>
<td>Micro-miniature thermocouple monitors own installation</td>
<td></td>
</tr>
<tr>
<td>N-PS-1111</td>
<td>B66-10463</td>
</tr>
<tr>
<td>Study of theory and application of long duration heat flux transducers</td>
<td></td>
</tr>
<tr>
<td>N-PS-1265</td>
<td>B66-10614</td>
</tr>
<tr>
<td>Instrument accurately measures small temperature changes on test surface</td>
<td></td>
</tr>
<tr>
<td>LANL-174</td>
<td>B66-10637</td>
</tr>
<tr>
<td>Bimetal sensor averages temperature of nonuniform profile</td>
<td></td>
</tr>
<tr>
<td>LEWIS-10362</td>
<td>B66-10007</td>
</tr>
<tr>
<td>TEMPERING</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Torsion system for creep testing with multiple stress reversals</td>
<td>B66-10537 05</td>
</tr>
<tr>
<td>Automatic calorimetry system monitors RF power</td>
<td>B69-10384 01</td>
</tr>
<tr>
<td>Thermal conductivity probe</td>
<td>B69-10780 03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEMPERING</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>High permeability semiconductors permit close-tolerance soldering</td>
<td>B65-10134 05</td>
<td></td>
</tr>
<tr>
<td>Improved thermal treatment of aluminum alloy 7075</td>
<td>B68-10534 05</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEMPLATES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Built-in templates speed up process for making accurate models</td>
<td>B63-10526 05</td>
<td></td>
</tr>
<tr>
<td>Lathe converted for grinding aspheric surfaces</td>
<td>B63-10556 05</td>
<td></td>
</tr>
<tr>
<td>Reusable neoprene jacket protects parts for chemical milling</td>
<td>B65-10179 03</td>
<td></td>
</tr>
<tr>
<td>Nylon bit removes cork insulation without damage to substrate</td>
<td>B66-10152 05</td>
<td></td>
</tr>
<tr>
<td>Machining technique prevents undercutting in tensile specimens</td>
<td>B68-10352 05</td>
<td></td>
</tr>
<tr>
<td>Calibration standard for dynamic evaluation of a profile-plotter</td>
<td>B69-10458 05</td>
<td></td>
</tr>
<tr>
<td>A method for precision anodize stripping</td>
<td>B69-10581 03</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TENSILE PROPERTIES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymer deformation gage measures thickness change in tensile tests</td>
<td>B66-10147 01</td>
<td></td>
</tr>
<tr>
<td>Study made of procedures for externally loading and corrosion testing</td>
<td>B67-10451 03</td>
<td></td>
</tr>
<tr>
<td>Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures</td>
<td>B67-10617 02</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TENSILE STRENGTH</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lightweight magnesium-lithium alloys show promise</td>
<td>B63-10389 03</td>
<td></td>
</tr>
<tr>
<td>New alloy brazes titanium to stainless steel</td>
<td>B65-10060 05</td>
<td></td>
</tr>
<tr>
<td>Lightweight aluminum casting alloy is useful at cryogenic temperatures</td>
<td>B65-10092 03</td>
<td></td>
</tr>
<tr>
<td>Irradiation improves properties of an aromatic polymer</td>
<td>B65-10164 03</td>
<td></td>
</tr>
<tr>
<td>Tensile-strength apparatus applied high strain-rate loading with minimum shock</td>
<td>B66-10063 05</td>
<td></td>
</tr>
<tr>
<td>Mechanical continuously measures static and dynamic cable loads</td>
<td>B66-10107 05</td>
<td></td>
</tr>
<tr>
<td>Materials physically tested is variable-environment chamber</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUBJECT INDEX**

- Improved adhesive for cryogenic applications cures at room temperature
  - B66-10185 03
- Fibers of newly developed refractory ceramics produced by improved process
  - B66-10196 03
- Nickel-base superalloys developed for high-temperature applications
  - B66-10222 03
- Aluminum/Steel wire composite plates exhibit high tensile strength
  - B66-10262 05
- Boron-deoxidized copper withstands brazing temperatures
  - B66-10273 03
- Friction loading device enables accurate testing of brittle materials
  - B66-10345 05
- New backup-bar groove configuration improves heliarc welding of 2014-T6 aluminum
  - B66-10443 03
- Weldable aluminum alloy has improved mechanical properties
  - B66-10445 03
- Thermoplastic rubberlike material produced at low cost
  - B66-10453 03
- New tungsten alloy has high strength at elevated temperatures
  - B66-10551 03
- Tungsten fiber-reinforced copper composites form high strength electrical conductors
  - B66-10572 03
- Study made to control depth of potting compound for honeycomb sandwich fasteners
  - B66-10677 05
- Cryogenic fatigue data developed for Inconel 718
  - B67-10049 03
- Evaluation of high temperature stranded hookup wire
  - B67-10122 03
- Heat treatment study of aluminum casting alloy
  - B67-10159 03
- Aluminum-titanium hydride-boron carbide composite provides lightweight neutron shield material
  - B67-10265 03
- Simplified method measures changes in tensile yield strength using least number of specimens
  - B67-10266 03
- High-strength tungsten alloy with improved ductility
  - B67-10340 03
- Extrusion of small-diameter, thin-wall tungsten tubing
  - B67-10355 05
- Magnesium-lithium alloys developed for low temperature use
  - B67-10365 03
- Transducer measures embedment stresses in electronic modules
  - B67-10367 01
Study made of pneumatic high pressure piping materials /10,000 psi/ KSC-10133 B67-10437 03

Aluminum and stainless steel tubes joined by simple ring and welding process M-PS-13120 B67-10472 05

Synthesis of pure aromatic glycidyl esters for use as adhesives M-PS-12705 B67-10647 03

Study made of mechanics of deformation and fracture of fibrous composites HQ-10035 B67-10660 03

Improved soldering process ensures plastic parts of higher tensile strength LANGLEY-10033 B68-10132 05

Magnetic forming studies M-PS-14217 B68-10186 02

Susceptibility of irradiated steels to hydrogen embrittlement ABG-10115 B68-10194 03

Nickel base alloy with improved stress rupture properties LEWIS-10108 B68-10344 03

Nickel-base superalloys excellent properties promote its service to 2200 degrees F LEWIS-10355 B68-10380 03

Evaluation of a fluorocarbon plastic used in cryogenic valve seals M-PS-18169 B68-10523 03

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures M-PS-18192 B69-10068 03

Techniques for controlling warpage and residual stresses in welded structures M-PS-20307 B69-10086 05

High strength, superplastic superalloy LANGLEY-10108 B69-10293 03

Improved high-temperature-strength nickel-base superalloy LEWIS-10874 B69-10352 03

Stress-testing of the throat of a rocket's nozzle NPO-10131 B69-10358 05

Development of improved potting and conformal coating compounds M-PS-20219 B69-10559 03

Silphenylene elastomers have high thermal stability and tensile strength M-PS-20250 B69-10580 03

Strain-age cracking in Rene 41 alloy M-PS-18650 B69-10605 03

Explosive bonding of metal-matrix composites M-PS-20657 B69-10804 05

TENSILE STRESS

Chain friction system gives positive, reversible drive ARB-8 B63-10009 05

Infrared shield facilitates optical pyrometer measurements LANGLEY-133 B65-10272 02

Torus elements used in effective shock absorber W00-114 B66-10318 05

Ultrasonic emission method enables testing of adhesive bonds M-PS-799 B66-10341 01

Study to minimize hydrogen embrittlement of ultrahigh-strength steels M-PS-2455 B67-10141 03

Glass bead shot peening retards stress corrosion failure of titanium tanks LANGLEY-319 B67-10198 05

Pipe joints reinforced in place with fitted aluminum sleeves KSC-11109 B67-10271 05

Circuit measures hysteresis loop areas at 30 Hz M-PS-13069 B68-10472 05

Buckling strength of filament-wound cylinders under axial compression is investigated AQ-10032 B67-10660 03

Tensile testing grips ensure uniform loading of bimetal tubing specimens LEWIS-10267 B68-10198 05

Analysis of problems related to slingshot shock machine high-velocity shock testing NPO-11193 B69-10506 05

Apparatus facilitates high-temperature tensile testing in vacuum LEWIS-42 B68-10345 03

Peel resistance of adhesive bonds accurately measured GSPC-320 B65-10173 03

Force controlled solenoid drives microweld tester W00-125 B65-10182 01

Testing device subjects elastic materials to biaxial deformations JPL-616 B65-10186 03

Tensile-strength apparatus applies high strain-rate loading with minimum shock JPL-28 B66-10660 05

Mechanism continuously measures static and dynamic cable loads BSAC-217 B66-10107 05

Polymer deformation gage measures thickness change in tensile tests JPL-745 B66-10147 01

Boron-deoxidized copper withstands brazing temperatures M-PS-762 B66-10273 03

Extensometer automatically measures elongation in elastomers M-PS-517 B66-10284 05

Ultrasonic emission method enables testing of adhesive bonds M-PS-799 B66-10341 01

Friction loading device enables accurate testing of brittle materials NPO-10051 B66-10345 05

Composite weld rod corrects individual filler weaknesses M-PS-1923 B67-10107 05

Self-aligning rod prevents eccentric loading of tensile specimens NDC-10525 B67-10594 05

Polystyrene cryostat facilitates testing tensile specimens under liquid nitrogen NUC-10522 B67-10613 02

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures

I-663
Environmental control system for cryogenic testing of tensile specimens
NUC-10521 B67-10617 02

Tensile testing grips are easily assembled under liquid nitrogen
NUC-10524 B67-10628 05

Buckling strength of filament-wound cylinders under axial compression is investigated
SO-10032 B67-10659 03

Tensile testing grips ensure uniform loading of bimetal tubing specimens
LEWIS-10267 B68-10248 05

One hundred angstrom niobium wire
LEWIS-10128 B68-10279 03

Machining technique prevents undercutting in tensile specimens
LANGLEY-10261 B68-10352 05

Fractography can be used to analyze failure modes in polytetrafluoroethylene
K-FS-20294 B69-10066 03

Abrasion and fracture testing in a high-pressure hydrogen environment
K-FS-18480 B69-10457 03

Heat-shrinkable jacket holds fluid in contact with tensile test specimen
SSC-13195 B69-10495 05

Literature review on pickling inhibitors and cadmium electroplating processes
K-FS-18421 B69-10606 03

Effects of high-pressure hydrogen on storage vessel materials
K-FS-18605 B69-10730 03

TENSION

Tension is servo controlled in film advance system
LANGLEY-54 B65-10075 05

Cantilever springs maintain tension in thermally expanded wires
LEWIS-136 B65-10149 05

Automatic reel controls filler wire in welding machines
SSC-416 B66-10236 05

Sole saw drill attachment has zero force reaction
SSC-543 B66-10604 05

Single-source mechanical loading system produces biaxial stresses in cylinders
K-FS-12530 B67-10380 05

Two-functional seal for hose connection
K-FS-14062 B69-10588 05

TERRIUM

Liquid laser cavities
GSFC-10592 B69-10234 02

Mass culture of photobacteria to obtain luciferase
GSFC-10563 B69-10294 04

Laser action from a terbium beta-ketocarbonate at room temperature
GSFC-10593 B69-10324 02

TERRIUM ISOTOPE

Optically exciting a magnetic memory - A feasibility study
K-FS-14064 B69-10060 02

TERMINALS

Auxiliary silver electrode eliminates two-step
Reliable method for testing gross leaks in semiconductor component packages
EFC-10150  B68-10562  01
Stress-testing of the throat of a rocket nozzle
NPO-10311  B69-10358  05
Calibratable solid-state pressure switch
H-FS-20474  B69-10437  05
Adjustable thermal "tree"
MSC-15556  B69-10484  01
Testing the flammability of materials exposed to arc
MSC-15225  B69-10531  03
Vacuum gage calibration system for 10 to the minus 8th power to 10 torr
LEWIS-11032  B69-10713  01
Burn-rate testing apparatus
MSC-10947  B69-10740  03

TEST EQUIPMENT
Test device prevents molecular bounce-back
GSFC-62  B63-10546  03
Continuity tester screens out faulty socket connections
JPL-596  B64-10065  01
Emission tester for high-power vacuum tubes
JPL-628  B64-10156  01
Machine tests crease durability of sheet materials
JPL-604  B64-10178  05
Master linearity of video cameras calibrated with precision tester
GSFC-200  B64-10209  01
Circuit converts AM signals to FM for magnetic recording
GSFC-227  B65-10001  01
Fluid pressure used to test turbopump bearings
N-0001  B65-10024  03
Circuit detects errors in address currents for magnetic core arrays
H-FS-234  B65-10047  01
Piezoresistive gage tests pin-connector sockets
JPL-675  B65-10128  01
Testing device subjects elastic materials to biaxial deformations
JPL-616  B65-10189  03
Novel probe simplifies electronic component testing
GSFC-342  B65-10243  01
Simple device produces accelerometer calibration pulse
H-FS-363  B65-10269  01
Air brake-dynamometer accurately measures torque
LEWIS-163  B65-10312  05
Noncontacting vibration transducer has constant sensitivity
LANGLY-99  B65-10392  01
Tensile-strength apparatus applies high strain-rate loading with minimum shock
JPL-28  B66-10063  05
Dispenser leak-tests and sterilizes rubber gloves
MSC-285  B66-10166  03
Matching flow characteristics of standard shutoff valves eliminates need for custom fabricated valves
H-FS-1069  B66-10416  05
Semiconductors can be tested without removing them from circuitry
N-PS-1163  B66-10447  01
Modified thermocouple is effective from minus 250 deg to 5000 deg F
MSC-420  B66-10461  01
Low level accelerometer test methods are investigated
H-FS-908  B66-10510  01
Antenna simulator permits preinstallation system checkout
LEWIS-10351  B66-10659  01
Tester for study of rolling element bearings
LEWIS-305  B67-10050  01
Flow-test device fits into restricted access passages
MSC-1078  B67-10074  01
Tester automatically checks paper tape punch and reader after maintenance
ARC-66  B67-10267  01
Electronic test instrument generates extremely small current signals
ARG-276  B67-10318  01
Low-energy gamma ray inspection of brazed aluminum joints
MSC-1189  B67-10337  02
Practical new method of measuring thermal-neutron fluence
NUC-10086  B67-10352  02
Steel test panel helps control additives in pyrophosphate copper plating
LEWIS-10101  B67-10358  05
Automatic telemetry checkout system
H-FS-12580  B67-10402  01
Jet engine powers large, high-temperature wind tunnel
H-FS-12584  B67-10621  02
Pneumatic pressure wave generator provides economical, simple testing of pressure transducers
NUC-10024  B67-10664  05
Harmonic distortion analyzer speeds setup of magnetic tape recorders
GSFC-10198  B68-10254  01
Conceptual dead weight device to provide pressure calibration
H-FS-14672  B68-10264  01
Environmental test planning, selection and standardization aids available
SAM-10028  B68-10445  06
Insertion device for pressure testing
MSC-15185  B69-10061  03
One hundred MHz voltage-controlled oscillator
NPO-11004  B69-10133  01
Leakage tester for flat conductor cable connector
H-FS-20427  B69-10268  05
Radiographic threshold detection levels of aluminum weld defects
H-FS-20487  B69-10418  01
Checking flat conductor cable spacing by means of a moire pattern  
H-FS-20426  B69-10456  05

Analysis of problems related to slinghot shock machine high-velocity shock testing  
NPO-11193  B69-10506  05

TEST FACILITIES

A technique for making animal restraints  
ARC-25  B63-10564  05

Complementary system vaporizes subcooled liquid, improves transformer efficiency  
H-FS-550  B66-10045  02

Infrared television used to detect hydrogen fires  
H-FS-654  B66-10363  01

Monitoring circuit accurately measures movement of solenoid valve  
H-FS-1829  B66-10568  01

Workmanship standards for fusion welding  
NUC-10050  B67-10200  05

Pressure levels and pulsation frequencies can be varied on high pressure/frequency testing device  
LEWIS-10205  B67-10360  05

Saturn S-2 Automatic Software System  
/SASS/  H-FS-1741  B67-10405  06

Pump simulator provides variable pressure-flow characteristics  
LEWIS-10122  B67-10453  05

Technique eliminates high voltage arcing at electrode-insulator contact area  
LEWIS-10133  B67-10470  01

Continuous analysis of nitrogen dioxide in gas streams of plants  
ARG-10356  B69-10254  03

Improved dc voltage regulator  
KS-06467  B69-10369  01

TEST PILOTS

High- and low-pressure pneumotachometers measure respiration rates accurately in adverse environments  
FRC-10012  B68-10188  01

TEST STANDS

High pressure tube coupling requires no threads or flares  
HSC-600  B66-10285  05

Four-bar linkage for thermal compensation in test mounts for structures  
HPO-11059  B69-10298  05

TEST VEHICLES

Interference effects eliminated in randol oriented space station antenna system  
NSC-11004  B67-10435  01

TESTING TIME

Novel probe simplifies electronic component testing  
GSFC-342  B65-10243  01

TESTS

Built-in templates speed up process for making accurate models  
LANGLEY-23  B63-10526  05

Apparatus facilitates pressure-testing of metal tubing  
LEWIS-174  B65-10131  05

Weld leaks rapidly and safely detected  
H-FS-362  B65-10265  01

Test strips detect different CO2 concentrations in closed compartments  
MSC-270  B65-10390  03

Rectilinear accelerometer possesses self-calibration feature  
H-FS-1480  B66-10452  01

Low level accelerometer test methods are investigated  
H-FS-908  B66-10510  01

Method for predicting frictional loss in metal bellows and flexible hose  
H-FS-883  B66-10662  05

Multiple correlation computer program determines relationships between several independent and dependent variables  
H-FS-13024  B67-10327  06

Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures  
NUC-10084  B67-10349  03

Cut-through tester accurately measures insulation failure rates  
H-FS-12506  B67-10354  03

Review of research and development in fluid logic elements  
H-FS-420  B67-10438  01

Beryllium fastener technology  
H-FS-20306  B69-10019  05

Techniques for controlling warpage and residual stresses in welded structures  
H-FS-20307  B65-10086  05

Integrated sequence display device  
KSC-10381  B69-10316  01

Simple test indicates degree of cure of polyimide coatings  
MSC-15487  B69-10330  03

Application of cryptanalytic techniques to the analysis of NiCd space batteries  
GSPC-10565  B69-10731  01

TETHERLINES

Body-fitted harness provides safe and easy component handling  
H-FS-533  B66-10202  05

TETRACHLORIDES

Process produces chlorinated aromatic isocyanate in high yield  
I-FS-1658  B66-10646  03

TETRODES

FH oscillator uses tetrode transistor  
JPL-82  B65-10055  01

TEXTBOOKS

Handbooks for nondestructive testing using ultrasonics  
H-FS-20405  B69-10108  03

THERMOLINES

Instruction manuals for liquid penetrant nondestructive testing  
H-FS-14010  B69-10278  05

THERMOMETERS

Optical automatic gain channel  
H-FS-1550  B66-10596  02

Training manual on optical alignment instruments  
H-FS-20292  B68-10574  02

THERORE PROVING

COGENT programming manual  
ARG-10463  B69-10656  06

THEORETICAL PHYSICS

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow system...
boiling loop
ARG-10461 B69-10620 02

Storage of electric and magnetic energy
in passive nonreciprocal networks
ARG-10360 B69-10630 01

Self-discharge in bimetallic cells
containing alkali metal
ARG-10347 B69-10631 01

THERAPY
Simulator effects partial gravity conditions
MSC-152 B66-10339 05

THERMAL CONDUCTIVITY
Indium foil with beryllia washer improves
transistor heat dissipation
GSFC-42 B63-10033 01

Method of welding joint in closed vessel
improves quality of seam
JPL-170 B63-10139 05

Thermally conductive metal wool-silicone
rubber material can be used as shock and
vibration damper
JPL-321 B63-10207 03

New sintering process adjusts magnetic value
of ferrite cores
GSFC-129 B63-10606 03

Simple transducer measures low heat-transfer
rates
JPL-466 B64-10122 01

Ceramic-coated boat is chemically inert, provides good heat transfer
LANGLY-90 B65-10063 05

Carbon-arc rod holder has long life, reduces arc splatter
MSC-144 B65-10095 03

Insulation accelerates rate of cooling with
cryogenic fluid
MSC-161 B65-10240 02

Boron nitride housing cool? transistors
WOO-079 B65-10289 01

Copper foil provides uniform heat sink path
MSC-262 B66-10004 02

Aluminized fiber glass insulation conforms
to curved surfaces
N-PS-477 B66-10024 03

Calorimeter accurately measures thermal
radiation energy
LANGLY-173 B66-10055 02

Mount makes liquid nitrogen-cooled gama ray
detector portable
LEWIS-259 B66-10103 01

Compound improves thermal interface between
thermocouple and sensed surface
NO-0028 B66-10121 02

Apparatus measures thermal conductivity of
honeycomb-core panels
LANGLY-202 B66-10127 01

Mounting improves heat-sink contact with
beryllia washer
MSC-194 B66-10144 01

Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735 B66-10182 01

Insulation for cryogenic tanks has reduced
thickness and weight
N-PS-326 B66-10183 02

Control system maintains compartment at constant temperature

THERMAL CYCLING TESTS

Wide-range instrument monitors flow rates
of chemically active fluids
MSC-186 B66-10205 01

Rugged microelectronic module package supports circuitry on heat sink
MSC-81A B66-10245 01

Boron-deoxidized copper withstands brazing temperatures
N-PS-762 B66-10273 03

Portable detector set discloses helium leak rates
N-PS-1733 B66-10065 01

Aluminum-titanium hydride-boron carbide composite provides lightweight neutron shield material
MSC-10069 B67-10265 03

Development of dual solid cryogens for high reliability refrigeration system
GSFC-10188 B67-10644 02

Method of measuring thermal conductivity of high performance insulation
N-PS-14088 B68-10103 02

Thermal conductivity and dielectric constant of silicate materials
N-PS-14856 B68-10351 03

Fiber glass reinforced structural materials for aerospace application
N-PS-14806 B68-10360 03

Consolidation and fabrication techniques for vanadium-29 w/o titanium /V-29/
ARG-10148 B68-10368 03

High condutance vapor thermal switch
GSFC-10109 B68-10519 02

Automated measurement of thermal conductivity
N-PS-20454 B69-10283 03

A method for predicting interfacial freezing of a liquid flowing over a cold surface
LEWIS-10813 B69-10321 02

Thermally conducting electron transfer polymers
GSFC-10703 B69-10511 03

Thermal conductivity probe
N-PS-20566 B69-10780 03

THERMAL CONDUCTORS
Cooling method prolongs life of hot-wire transducer
LEWIS-41 B63-10344 02

Mounting for diodes provides efficient heat sink
N-PS-197 B64-10283 01

Automatic thermal switch accelerates cooling down of cryogenic system
JPL-655 B65-10068 01

Study made of anodized aluminum circuit boards
N-PS-13580 B67-10425 01

THERMAL CYCLING TESTS
Brazing process provides high-strength bond between aluminum and stainless steel
N-PS-803 B66-10352 05

Fixture tests bellows reliability through repetitive pressure/temperature cycling
MSC-1176 B67-10111 01

Thermal and bias cycling stabilizes planar
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transducer measures embedment stresses in electronic modules</td>
<td>B67-10367 01</td>
</tr>
<tr>
<td>Porous sprayed dielectric coatings improve heat dissipation in electronic packaging</td>
<td>B67-10534 01</td>
</tr>
<tr>
<td>Development of improved potting and conformal coating compounds</td>
<td>B69-10559 03</td>
</tr>
<tr>
<td>Nickel/tin coating protects threaded fasteners in corrosive environment</td>
<td>B65-10398 03</td>
</tr>
<tr>
<td>Wide-angle sensor measures radiant heat energy in corrosive atmospheres</td>
<td>B65-10019 05</td>
</tr>
<tr>
<td>Polyurethane film exhibits thermal and radiation stability</td>
<td>B66-10043 03</td>
</tr>
<tr>
<td>Calorimeter accurately measures thermal radiation energy</td>
<td>B66-10058 02</td>
</tr>
<tr>
<td>Thermal protective visor for entering high temperature areas</td>
<td>B68-10277 05</td>
</tr>
<tr>
<td>Technical report on galvanic cells with fused-salt electrolytes</td>
<td>B69-10155 01</td>
</tr>
<tr>
<td>Magneto-hydrodynamic generators using two-phase liquid-metal flows</td>
<td>B69-10166 01</td>
</tr>
<tr>
<td>Studies of cycles for liquid-metal magneto-hydrodynamic generation of power</td>
<td>B69-10194 02</td>
</tr>
<tr>
<td>Technique for assessing potential fire hazards</td>
<td>B69-10287 03</td>
</tr>
<tr>
<td>Epitaxial crystalline growth upon cold substrates</td>
<td>B69-10494 01</td>
</tr>
<tr>
<td>Electrically conductive fibers thermally isolate temperature sensor</td>
<td>B66-10349 01</td>
</tr>
<tr>
<td>Computer program determines thermal environment and temperature history of lunar orbiting space vehicles</td>
<td>B67-10307 06</td>
</tr>
<tr>
<td>High-strength tungsten alloy with improved ductility</td>
<td>B67-10325 03</td>
</tr>
<tr>
<td>Ratio matching of half-bridge weldable strain gages, computer program</td>
<td>B69-10040 06</td>
</tr>
<tr>
<td>Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes</td>
<td>B69-10047 02</td>
</tr>
<tr>
<td>Fractography can be used to analyze failure modes in polytetrafluoroethylene</td>
<td>B69-10066 03</td>
</tr>
<tr>
<td>Remote control thermal actuator</td>
<td>B69-10307 01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THERMAL DIFFUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon devices</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THERMAL ENERGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flame sprayed dielectric coatings improve heat dissipation in electronic packaging</td>
</tr>
<tr>
<td>Development of improved potting and conformal coating compounds</td>
</tr>
<tr>
<td>Nickel/tin coating protects threaded fasteners in corrosive environment</td>
</tr>
<tr>
<td>Wide-angle sensor measures radiant heat energy in corrosive atmospheres</td>
</tr>
<tr>
<td>Polyurethane film exhibits thermal and radiation stability</td>
</tr>
<tr>
<td>Calorimeter accurately measures thermal radiation energy</td>
</tr>
<tr>
<td>Thermal protective visor for entering high temperature areas</td>
</tr>
<tr>
<td>Technical report on galvanic cells with fused-salt electrolytes</td>
</tr>
<tr>
<td>Magneto-hydrodynamic generators using two-phase liquid-metal flows</td>
</tr>
<tr>
<td>Studies of cycles for liquid-metal magneto-hydrodynamic generation of power</td>
</tr>
<tr>
<td>Technique for assessing potential fire hazards</td>
</tr>
<tr>
<td>Epitaxial crystalline growth upon cold substrates</td>
</tr>
<tr>
<td>Electrically conductive fibers thermally isolate temperature sensor</td>
</tr>
<tr>
<td>Computer program determines thermal environment and temperature history of lunar orbiting space vehicles</td>
</tr>
<tr>
<td>High-strength tungsten alloy with improved ductility</td>
</tr>
<tr>
<td>Ratio matching of half-bridge weldable strain gages, computer program</td>
</tr>
<tr>
<td>Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes</td>
</tr>
<tr>
<td>Fractography can be used to analyze failure modes in polytetrafluoroethylene</td>
</tr>
<tr>
<td>Remote control thermal actuator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THERMAL ENVIRONMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible fastener allows thermal expansion</td>
</tr>
<tr>
<td>Connector seals fluid lines at cryogenic temperatures and high vacuums</td>
</tr>
<tr>
<td>Fastener provides cooling and compensates for thermal expansion</td>
</tr>
<tr>
<td>Flexure support system protects thermally and dynamically loaded models</td>
</tr>
<tr>
<td>Seal allows blind assembly and thermal expansion of components</td>
</tr>
<tr>
<td>Magnetic field test coils are temperature compensated</td>
</tr>
<tr>
<td>Cantilever springs maintain tension in thermally expanded wires</td>
</tr>
<tr>
<td>Titanium diaphragm makes excellent anodized cathode support</td>
</tr>
<tr>
<td>Solid-film lubricant is effective at high temperatures in vacuum</td>
</tr>
<tr>
<td>Pressure seal ring may be effective over wide temperature range</td>
</tr>
<tr>
<td>Differential expansion provides pressure for diffusion bonding of large diameter rings</td>
</tr>
<tr>
<td>Strain gauge network distinguishes between thermal and mechanical deformations</td>
</tr>
<tr>
<td>Improved thermal insulation materials made of fused refractory oxides</td>
</tr>
<tr>
<td>Bismetallic devices help maintain constant sealing forces down to cryogenic temperatures</td>
</tr>
<tr>
<td>Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line</td>
</tr>
<tr>
<td>Glass formulation has high coefficient of thermal expansion</td>
</tr>
<tr>
<td>Cryogenic seal remains leaktight during thermal displacement</td>
</tr>
<tr>
<td>Design concept to decrease relative speed of ball bearings</td>
</tr>
<tr>
<td>Temperature responsive valve withstands high impact loading</td>
</tr>
<tr>
<td>Thermal neutron image intensifier tube provides brightly visible radiographic pattern</td>
</tr>
<tr>
<td>Precision metal molding</td>
</tr>
<tr>
<td>Dynamic valve seal is reliable at cryogenic temperatures</td>
</tr>
</tbody>
</table>
Measuring thermal expansion of multiple specimens at high temperature
NUC-10153 B68-10122 05

Design eliminates radial thermal expansion in turbine stator components
M-PS-16146 B68-10531 05

Device for diode tuning in a stripline varactor harmonic multiplier
M-PS-20153 B69-10013 01

Thermal expansion properties of aerospace materials
M-PS-18335 B69-10055 03

Segmented SiTe-PbTe couples
GSFC-10746 B69-10233 01

Induction probe determines levels of liquid metals
ARG-10348 B69-10256 03

An improved atomic hydrogen frequency and time standard
GSFC-10706 B69-10341 02

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys
NUC-10554 B69-10707 02

THERMAL INSULATION
Refractory thermal insulation for smooth metal surfaces
M-PS-158-160 B69-10099 03

Automatic thermal switch accelerates cooling-down of cryogenic system
JPL-655 B65-10068 01

Heater decomposes oil backstreaming from high-vacuum pumps
GSFC-356 B65-10224 02

Aluminized fiberglass insulation conforms to curved surfaces
M-PS-477 B66-10024 03

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSFC-422 B66-10051 01

Spray-on technique simplifies fabrication of complex thermal insulation blanket
M-PS-497 B66-10053 03

Capacitive system detects and locates fluid leaks
M-PS-478 B66-10099 01

Mount makes liquid nitrogen-cooled gamma ray detector portable
LEWIS-259 B66-10103 01

Insulation for cryogenic tanks has reduced thickness and weight
M-PS-326 B66-10183 02

Control system maintains compartment at constant temperature
JPL-SC-145 B66-10188 05

Improved thermal insulation materials made of foamed refractory oxides
M-PS-735 B66-10288 03

Inexpensive insulation is effective for cryogenic transfer lines
MSC-618 B66-10348 02

Acceleration-compensated pressure transducer has fast response
LANGLEY-113 B66-10353 01

Dispersion of borax in plastic is excellent fire-retardant heat insulator
ARG-5 B67-10016 03

Tool facilitates installation of Marmon clamps
M-PS-2039 B67-10105 05

Inexpensive cryogenic insulation replaces vacuum jacketed line
NUC-10061 B67-10264 02

Development of technology for hot-drape forming of large torus sections
M-PS-12744 B67-10394 05

Experiments to investigate particulate materials in reduced gravity fields
M-PS-13308 B67-10934 02

Concept for cryogenic liquid reclamation system
NUC-10322 B67-10420 02

Newly developed foam ceramic body shows promise as thermal insulation material at 3000 deg F
M-PS-13268 B67-10448 01

A ceramic composite thermal insulation
M-PS-1399 B67-10608 03

Feed-thru conduit minimizes heat pickup
JPL-947 B67-10619 05

Multichip packaging with thermal insulation
M-PS-14076 B67-10119 02

Temperature or pressure controller
LEWIS-10297 B66-10337 01

Fire retardant foams developed to suppress fuel fires
ARG-10098 B66-10358 03

Structural thermal-control coatings
M-PS-10785 B66-10553 03

Channel-wall limitations in the magnetohydrodynamic induction generator
ARG-10128 B69-10255 02

Automated measurement of thermal conductivity
M-PS-20454 B69-10283 03

Thermal conductivity probe
M-PS-20566 B69-10780 03

THERMAL NEUTRONS
Nondestructive test method accurately sorts mixed bolts
M-PS-1926 B66-10574 01

Detection of entrapped moisture in honeycomb sandwich structures
MSC-1403 B67-10116 01

Thermal neutron image intensifier tube provides brightly visible radiographic pattern
ARG-120 B67-10296 02

Practical new method of measuring thermal-neutron fluence
NUC-10086 B67-10352 02

Glancing-incidence telescope for far ultraviolet and soft X-rays
GSFC-10052 B67-10508 02

Compilation of detection sensitivities in thermal-neutron activation
ARG-10568 B67-10641 03

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes
NUC-10143 B67-10665 06
**TEBBIAL BOISE SUBJECT INDEX**

| Computer program /PI-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas | B67-10678 | 06 |
| Computer program calculates the effective temperature for a crystalline solid /DETS/ | B69-10161 | 06 |
| Neutron therapy of cancer | B69-10203 | 04 |
| Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons | B69-10211 | 02 |
| Dual-mode operation of a neutron source, a concept | B69-10246 | 02 |
| Tungsten thermal neutron dosimeter | B69-10249 | 02 |
| GAMBIT program | B69-10433 | 06 |
| THERMAL NOISE | | |
| Thermal short improves sensitivity of cryogenically cooled maser | B69-10059 | 01 |
| THERMAL FLASMAS | | |
| Microwave technique measures plasma characteristics | B65-10122 | 02 |
| THERMAL PROTECTION | | |
| Predicting surface heating rates and pressures resulting from hot exhaust gases | B66-10633 | 05 |
| Study of fast response thermocouple measurement of temperatures in cryogenic gases | B66-10661 | 01 |
| Extrusion of small-diameter, thin-wall tungsten tubing | B67-10355 | 05 |
| Eutectic fuse provides current and thermal protection under high vibration | B67-10535 | 01 |
| Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area | B67-10530 | 01 |
| Development of dual solid cryogens for high reliability refrigeration system | B67-10644 | 02 |
| Thermal protective visor for entering high temperature areas | B66-10277 | 05 |
| Two-fluid, impinging-sheet injector | B68-10338 | 05 |
| THERMAL RADIATION | | |
| Variable-transparency wall regulates temperatures of structures | B63-10528 | 03 |
| Thermistor connector assembly increases accuracy of measurements | B65-10045 | 01 |
| Refractory metal shielding /insulation/ increases operating range of induction furnace | B65-10198 | 02 |
| Air-cured ceramic coating insulates against high heat fluxes | B65-10357 | 03 |

**SUBJECT INDEX**

| Calorimeter accurately measures thermal radiation energy | B66-10058 | 02 |
| Ultraviolet photographic pyrometer used in rocket exhaust analysis | B66-10095 | 02 |
| Chromium oxide coatings improve thermal emissivity of alumina | B66-10227 | 03 |
| Calculation of infrared spectral transmittance of inhomogeneous gases | B66-10554 | 02 |
| Computer program determines thermal environment and temperature history of lunar orbiting space vehicles | B67-10307 | 06 |
| Electron beam parallel X-ray generator | B67-10372 | 02 |
| Infrared radiometer | B67-10422 | 01 |
| Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area | B67-10538 | 01 |
| Monte Carlo direct view factor and generalized radiative heat transfer programs | B69-10038 | 01 |
| Detection of molecular infrared spectra | B69-10172 | 02 |
| Prediction of thermal radiation from a rocket exhaust plume | B69-10371 | 02 |
| Spacecraft Thermal Radiation Environment Computer Program | B69-10574 | 06 |
| Production of crystalline polymers via liquid crystal monomers | B69-10744 | 03 |
| THERMAL RESISTANCE | | |
| Indium foil with beryllia washer improves transistor heat dissipation | B63-10033 | 01 |
| Removable preheater elements improve oxide induction furnace | B63-10193 | 01 |
| Thermally conductive metal wool-silicone rubber material can be used as shock and vibration damper | B63-10207 | 03 |
| Refractory ceramic has wide usage, low fabrication cost | B63-10481 | 03 |
| PTC thermistor protects multiloaded power supplies | B64-10281 | 01 |
| Pigmented coating resists thermal shock | B65-10356 | 03 |
| Split glass tube assures quality in electron beam brazing | B66-10151 | 05 |
| Thin-film gage measures low heat-transfer rates | B66-10180 | 01 |
| Radiation used to temperature compensate semiconductor strain gages | B66-10186 | 02 |

**X-670**
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>THERMAL STRESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibers of newly developed refractory ceramics produced by improved process</td>
<td>Polymeric films exhibit thermal and radiation stability</td>
</tr>
<tr>
<td>WO-169</td>
<td>LS-10493</td>
</tr>
<tr>
<td>Copper wire plated with nickel and silver resists corrosion</td>
<td>Auxiliary coil controls temperature of RF induction heater</td>
</tr>
<tr>
<td>M-FS-761</td>
<td>B66-10043</td>
</tr>
<tr>
<td>Electrical cabling withstands severe environmental conditions</td>
<td>PET comparator detects analog signal levels without loading analog device</td>
</tr>
<tr>
<td>M-FS-1308</td>
<td>B66-10224</td>
</tr>
<tr>
<td>Intergranular metal phase increases thermal shock resistance of ceramic coating</td>
<td>Substituted silane-diol polymers have improved thermal stability</td>
</tr>
<tr>
<td>M-FS-1862</td>
<td>B66-10259</td>
</tr>
<tr>
<td>Fixture tests bellows reliability through repetitive pressure/temperature cycling</td>
<td>Silphenylene elastomers have high thermal stability and tensile strength</td>
</tr>
<tr>
<td>MSC-1176</td>
<td>M-FS-1144</td>
</tr>
<tr>
<td>Fused diode provides visual indication of fuse condition</td>
<td>Tiny diode provides visual indication of fuse condition</td>
</tr>
<tr>
<td>KSC-67-16</td>
<td>B67-10230</td>
</tr>
<tr>
<td>Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries</td>
<td>RF inductor has high Q, is stable at higher temperatures</td>
</tr>
<tr>
<td>M-FS-1910</td>
<td>B67-1019</td>
</tr>
<tr>
<td>Experiments to investigate particulate materials in reduced gravity fields</td>
<td>Sensing disks for slug-type calorimeters have higher temperature stability</td>
</tr>
<tr>
<td>M-FS-1308</td>
<td>B67-10161</td>
</tr>
<tr>
<td>Thermal resistances of solder-boss/potting compound combinations</td>
<td>New class of compounds have very low vapor pressures</td>
</tr>
<tr>
<td>MSC-12074</td>
<td>AN-115</td>
</tr>
<tr>
<td>Nickel base alloy with improved stress rupture properties</td>
<td>New class of thermosetting plastics has improved strength, thermal and chemical stability</td>
</tr>
<tr>
<td>LEWIS-10203</td>
<td>LEWIS-10197</td>
</tr>
<tr>
<td>THERMAL SHOCK</td>
<td>An efficient, temperature-compensated subcarrier oscillator</td>
</tr>
<tr>
<td>Refractory ceramic has wide usage, low fabrication cost</td>
<td>JPL-SC-091</td>
</tr>
<tr>
<td>M-FS-67</td>
<td>03</td>
</tr>
<tr>
<td>Refractory oxides evaluated for high-temperature use</td>
<td>Adhesives for laminating polyimide insulated flat conductor cable</td>
</tr>
<tr>
<td>LEWLT-121</td>
<td>M-FS-12066</td>
</tr>
<tr>
<td>Pigmented coating resists thermal shock</td>
<td>High-temperature bearing-cage materials</td>
</tr>
<tr>
<td>JPL-2C-083</td>
<td>LEWIS-10463</td>
</tr>
<tr>
<td>Impact and puncture resistant material protects parts from damage</td>
<td>High-temperature bearing lubricants</td>
</tr>
<tr>
<td>MSC-247</td>
<td>LEWIS-10468</td>
</tr>
<tr>
<td>Crucible cast from beryllium oxide and refractory cement is impervious to flux and solute metal</td>
<td>New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability</td>
</tr>
<tr>
<td>ABG-22</td>
<td>LEWIS-10576</td>
</tr>
<tr>
<td>Multilayer refractory nozzles produced by plasma-spray process</td>
<td>Purification and characterization of two fully deuterated enzymes</td>
</tr>
<tr>
<td>W00-310</td>
<td>AN-10314</td>
</tr>
<tr>
<td>Intergranular metal phase increases thermal shock resistance of ceramic coating</td>
<td>Improved pulse shape discriminator for fast neutron-gamma ray detection system</td>
</tr>
<tr>
<td>M-FS-1862</td>
<td>NQ-10517</td>
</tr>
<tr>
<td>Photosensitive filler minimizes internal stresses in epoxy resins</td>
<td>Silphenylene elastomers have high thermal stability and tensile strength</td>
</tr>
<tr>
<td>M-FS-1880</td>
<td>M-FS-20250</td>
</tr>
<tr>
<td>Newly developed foam ceramic body shows promise as thermal insulation material at 3000 deg F</td>
<td>THERMAL STRESSES</td>
</tr>
<tr>
<td>M-FS-11960</td>
<td>B65-10014</td>
</tr>
<tr>
<td>Simple test for physical stability of cryogenic tank insulation</td>
<td>Lightweight door seals cryogenic container against diaphragm type loading</td>
</tr>
<tr>
<td>M-FS-12547</td>
<td>M-FS-476</td>
</tr>
<tr>
<td>Reinforced thermal-shock resistant ceramics</td>
<td>Strain gage network distinguishes between thermal and mechanical deformations</td>
</tr>
<tr>
<td>LEWIS-10376</td>
<td>GSFC-478</td>
</tr>
<tr>
<td>THERMAL STABILITY</td>
<td>Thermal stress-relief treatments for 2219 aluminum alloy are evaluated</td>
</tr>
<tr>
<td>Two-stage emitter follower is temperature stabilized</td>
<td>EFS-1213</td>
</tr>
<tr>
<td>Plasma jet electrode has longer operating life</td>
<td>I-671</td>
</tr>
</tbody>
</table>
### THERMAL VACUUM TESTS

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weld procedure produces quality welds for thick sections of Hastelloy-I</td>
<td>B67-10024</td>
<td>02</td>
</tr>
<tr>
<td>Encapsulation technique eliminates thermal stresses in welded electronic modules</td>
<td>B68-10307</td>
<td>01</td>
</tr>
<tr>
<td>Ratio matching of half-bridge weldable strain gages, computer program</td>
<td>B69-10040</td>
<td>06</td>
</tr>
<tr>
<td>Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes</td>
<td>B69-10047</td>
<td>02</td>
</tr>
<tr>
<td>Four-bar linkage for thermal compensation in test mounts for structures</td>
<td>B69-10298</td>
<td>05</td>
</tr>
<tr>
<td>Investigation of the development of cracks in weld joints</td>
<td>B69-10807</td>
<td>01</td>
</tr>
<tr>
<td>Determination of permissible applied load stresses in structural elements</td>
<td>B69-10823</td>
<td>02</td>
</tr>
</tbody>
</table>

### THERMAL VACUUM ETCHING PROCESSES

<table>
<thead>
<tr>
<th>Process Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrolytic etching process provides effective bonding surface on stainless steel</td>
<td>B66-10299</td>
</tr>
</tbody>
</table>

### THERMIONIC CATHODES

<table>
<thead>
<tr>
<th>cathode type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application of the solid lubricant molybdenum disulfide by sputtering</td>
<td>B68-10340</td>
</tr>
</tbody>
</table>

### THERMIONIC CONVERTERS

<table>
<thead>
<tr>
<th>converter type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector/collector guard ring balancing circuit eliminates edge effects</td>
<td>B66-10563</td>
</tr>
<tr>
<td>Potassium plasma cell facilitates thermionic energy conversion process</td>
<td>B67-10399</td>
</tr>
<tr>
<td>Thermonic diode switching has high temperature application</td>
<td>B67-10672</td>
</tr>
<tr>
<td>Performance of low-pressure thermionic converters is evaluated</td>
<td>B69-10090</td>
</tr>
</tbody>
</table>

### THERMIONIC DIODES

<table>
<thead>
<tr>
<th>diode type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bypass rod transfers heat developed in thermionic diode</td>
<td>B66-10303</td>
</tr>
<tr>
<td>Chemical regeneration of emitter surface increases thermionic diode life</td>
<td>B66-10435</td>
</tr>
<tr>
<td>Low input voltage converter/regulator minimizes external disturbances</td>
<td>B66-10689</td>
</tr>
<tr>
<td>Design for high-temperature /1800 deg F/ liquid metal pressure transducer</td>
<td>B67-10458</td>
</tr>
<tr>
<td>Feasibility study of wireless power transmission systems</td>
<td>B68-10309</td>
</tr>
<tr>
<td>Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor</td>
<td>B69-10191</td>
</tr>
</tbody>
</table>

### THERMIONIC EMISSION

<table>
<thead>
<tr>
<th>emission type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical regeneration of emitter surface increases thermionic diode life</td>
<td>B66-10435</td>
</tr>
</tbody>
</table>

### SUBJECT INDEX

<table>
<thead>
<tr>
<th>Index词</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermonic scanner pinpoints work function of emitter surfaces</td>
<td>B66-10444</td>
</tr>
<tr>
<td>Study shows effect of surface preparations on improving thermionic emission</td>
<td>B66-10493</td>
</tr>
<tr>
<td>High-temperature thermionic emission microscope</td>
<td>B68-10516</td>
</tr>
<tr>
<td>Preparation of thorium magnesium-zinc reduction</td>
<td>B69-10079</td>
</tr>
<tr>
<td>Tiny sensor-transmitter can withstand extreme acceleration, gives digital output</td>
<td>B63-10561</td>
</tr>
<tr>
<td>Temperature-compensation circuit stabilizes performance of vidicons</td>
<td>B64-10226</td>
</tr>
<tr>
<td>Electronic device simulates respiration rate and depth</td>
<td>B64-10255</td>
</tr>
<tr>
<td>PTC thermistor protects multiloaded power supplies</td>
<td>B64-10281</td>
</tr>
<tr>
<td>Thermonic diode switchina has high temperature application</td>
<td>B67-10399</td>
</tr>
<tr>
<td>Complementary monostable circuits achieve low power drain and high reliability</td>
<td>B66-10179</td>
</tr>
<tr>
<td>Miniature bioelectric device accurately measures and telemeters temperature</td>
<td>B66-10330</td>
</tr>
<tr>
<td>Wide-range instrument monitors flow rates of chemically active fluids</td>
<td>B66-10205</td>
</tr>
<tr>
<td>Brake alloys used as temperature indicators</td>
<td>B66-10274</td>
</tr>
<tr>
<td>Electrically conductive fibers thermally isolate temperature sensor</td>
<td>B66-10389</td>
</tr>
<tr>
<td>Apparatus enables automatic microanalysis of body fluids</td>
<td>B66-10515</td>
</tr>
<tr>
<td>Detector measures power in 50 to 30,000 Gs radiation band</td>
<td>B66-10581</td>
</tr>
<tr>
<td>Portable detector set discloses helium leak rates</td>
<td>B66-10065</td>
</tr>
<tr>
<td>K-6 wave power meter mount</td>
<td>B68-10152</td>
</tr>
<tr>
<td>Automatic patient respiration failure detection system with wireless transmission</td>
<td>B68-10365</td>
</tr>
<tr>
<td>Nosepiece respiration monitor</td>
<td>B68-10438</td>
</tr>
</tbody>
</table>
SUBJECT INDEX

Radiometric temperature reference
MSC-13276 B69-10507 01

THERMOCOUPLE PYROMETERS

High temperature thermocouple operates in reduction atmosphere
NU-0046 B66-10134 01

THERMOCOUPLES

Apparatus facilitates high-temperature tensile testing in vacuum
LEWIS-42 B63-10345 03

Connector for thermocouple leads saves costly wire, makes reliable connectors
LANGLEY-26 B63-10529 01

Simple circuit continuously monitors thermocouple sensor
M-FS-51 B63-10567 01

Simple transducer measures low heat-transfer rates
JPL-66 B64-10122 01

Apparatus measures concentration of suspended droplets in gas streams
LANGLEY-31 B64-10237 01

Wide-angle sensor measures radiant heat energy in corrosive atmospheres
M-FS-228 B65-10019 05

Metal sheath improves thermocouple using graphite in one leg
NU-0041 B65-10051 01

Transducer measures temperature differentials in presence of strong electromagnetic fields
ARC-27 B65-10089 01

Apparatus facilitates pressure-testing of metal tubing
LEWIS-174 B65-10131 05

Vapor pressure measured with inflatable plastic bag
GSFC-281 B65-10136 03

Internal cooling increases range of immersion-type temperature probe
LEWIS-171 B65-10157 02

Thermocouple-to-instrumentation connector features quick assembly
NU-0022 B65-10246 05

Servo calorimeter measures material heating rate
NU-0024 B65-10247 01

Hollow plastic hoops protect thermocouple in storage and handling
NU-0023 B65-10256 05

Protective coating withstands high temperature in oxidizing atmosphere
M-FS-529 B66-10044 03

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSFC-422 B66-10051 01

Calorimeter accurately measures thermal radiation energy
LANGLEY-173 B66-10058 02

Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01

Composil improves thermal interface between thermocouple and sensed surface
NU-0028 B66-10121 02

Materials physically tested in variable-environment chamber
JPL-789 B66-10130 01

Liquid trap seals thermocouple leads
M-FS-688 B66-10212 05

Multiple temperatures sampled using only one reference junction
GSFC-485 B66-10260 01

High-speed furnace uses infrared radiation for controlled brazing
NU-0047 B66-10268 02

Braze alloys used as temperature indicators
NU-0063 B66-10274 01

Modified thermocouple is effective from minus 250 deg to 5000 deg F
MSC-420 B66-10461 01

Microthermocouple sensors own installation
M-FS-1111 B66-10463 05

Heat flux sensor design reduces extraneous source effects
MSC-400 B66-10531 01

Thermocouples electrically checked while connected to data system
LANGLEY-182 B66-10623 01

Accurate depth control provided for thermocouple junction locations
LANGLEY-289 B66-10632 01

Instrument accurately measures small temperature changes on test surface
LANGLEY-174 B66-10637 01

Thermocouples easily installed in hard-to-get-to places
M-FS-1946 B66-10653 01

Study of fast response thermocouple measurement of temperatures in cryogenic gases
M-FS-1659 B66-10661 01

Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables
NU-0083 B66-10704 05

Thermocouple-flexible cable connector insulator is highly reliable
NU-0082 B66-10709 01

Tester for study of rolling element bearings
LEWIS-305 B66-10709 01

Multipurpose instrumentation cable provides integral thermocouple circuit
NU-0104 B66-10709 01

Sensing disks for slug-type calorimeters have higher temperature stability
M-FS-1867 B67-10161 01

Development of technology for hot-drape forming of large torus sections
M-FS-12141 B67-10341 05

Poll radiometer accessory improves measurements
M-FS-12684 B67-10448 01

High temperature thermocouple design provides gas cooling without increasing overall size of unit
MSFC-10515 B67-10497 01

Calibration technique for electromagnetic flowmeters
LEWIS-10328 B67-10554 01

Improved cavity-type absolute total-radiation radiometer
JPL-807 B67-10557 01

Vapor deposition process provides new
method for fabricating high temperature thermocouples
NUC-10152 B67-10616 01

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures
NUC-10521 B67-10617 02

Environmental control system for cryogenic testing of tensile specimens
NUC-10523 B67-10618 02

Thoriated tungsten tube provides improved high temperature thermocouple sheath
NUC-10145 B67-10627 03

Development of dual solid cryogens for high reliability refrigeration system
GSFC-10188 B67-10644 02

Tungsten-rhenium alloy thermocouples effective for high-temperature measurement
ARG-10059 B68-10109

Ultrasonic temperature measuring device
LEWIS-10446 B68-10319

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401 B68-10370

Method for making small pointed thermocouples
SAN-10014 B68-10389

Heat-load simulator for heat sink design
MSC-15170 B68-10510

Temperature controlled strain gaged extensometer
LEWIS-10353 B68-10530

Combination probe for airflow measurements
LEWIS-10202 B69-10053

Thermodynamic Cycles

THERMODYNAMIC CYCLES

Closed fluid system without moving parts controls temperature
LEWIS-222 B65-10331 02

Resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05

Protective coating withstands high temperature

SUBJECT INDEX

in oxidizing atmosphere
M-FS-529 B66-10044 03

Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055 05

Improved cryogenic refrigeration system
JPL-731 B67-10128 02

Sensing disks for slug-type calorimeters have higher temperature stability
M-FS-1867 B67-10161 01

THERMODYNAMIC EFFICIENCY

Multidimensional reaction kinetic ablation program /ERAP/ MSC-10079 B67-10495 06

THERMODYNAMIC EQUILIBRIUM

Special mount improves remote transducer accuracy
LEWIS-269 B66-10021 01

Computer program determines chemical composition of physical system at equilibrium
MSC-1119 B66-10670 01

Computer program calculates steady-state temperature distribution within plane or axisymmetric solids
NUC-10049 B67-10224 06

Self-balancing line-reversal pyrometer automatically measures gas temperatures
LEWIS-348 B67-10268 01

ELAS - A general purpose computer program for the equilibrium problems of linear structures
MPC-10956 B68-10187 06

Dynamics of moving bubbles in single and binary component systems
M-FS-14845 B68-10339 02

A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voight line profile
ARC-10221 B69-10232 06

THERMODYNAMIC PROPERTIES

Assembly jig assures reliable solar cell modules
GSFC-455 B66-10040 05

Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer
MSC-924 B67-10083 03

Thermodynamic properties related to expansion of two-component gas
MSC-1133 B67-10112 03

Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique
ARC-277 B67-10324 03

Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries
M-FS-1910 B67-10329 06

Thermodynamic properties of saturated liquid parahydrogen charted for important temperature range
NUC-10018 B67-10346 03

Experiments to investigate particulate materials in reduced gravity fields
M-FS-13308 B67-10394 02

Study of hydrogen slush-hydrogen gel utilization
M-FS-13068 B67-10413 02

THERMODYNAMIC CYCLES

Closed fluid system without moving parts controls temperature
LEWIS-222 B65-10331 02

Resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05

Protective coating withstands high temperature
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Thermophysical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure xenon hexafluoride prepared for thermal properties studies</td>
<td>Recommend values of the thermophysical properties of eight alloys, their major constituents and oxides</td>
</tr>
<tr>
<td>ABG-10056</td>
<td>NBS-0099</td>
</tr>
<tr>
<td>Computer program for calculation of ideal gas thermodynamic data</td>
<td>Therophysical properties of sodium</td>
</tr>
<tr>
<td>LEWIS-10234</td>
<td>ABG-10363</td>
</tr>
<tr>
<td>Computer programs for thermodynamic and transport properties of hydrogen</td>
<td>THERMOELECTRIC MATERIALS</td>
</tr>
<tr>
<td>NDC-10537</td>
<td>Thermaxic elements diffusion-bonded to tungsten electrodes</td>
</tr>
<tr>
<td>Tube swaging device uses explosive force</td>
<td>GSPC-346</td>
</tr>
<tr>
<td>LANGLEY-10092</td>
<td>Solid-state recoverable fuse functions as circuit breaker</td>
</tr>
<tr>
<td>The thermodynamic properties of the wustite phase are studied</td>
<td>GSPC-560</td>
</tr>
<tr>
<td>ABG-10200</td>
<td>THERMOELECTRIC POWER GENERATION</td>
</tr>
<tr>
<td>Levitation-melting technique for metals and alloys</td>
<td>Modular thermoelectric cell is easily packaged in various arrays</td>
</tr>
<tr>
<td>E-69-10006</td>
<td>GSPC-339</td>
</tr>
<tr>
<td>Thermal expansion properties of aerospace materials</td>
<td>Measurements of thermoelectric power in annealed and quenched gold-platinum alloys</td>
</tr>
<tr>
<td>E-69-10555</td>
<td>ABG-10303</td>
</tr>
<tr>
<td>Computer program for high pressure real gas effects</td>
<td>THERMOELECTRICITY</td>
</tr>
<tr>
<td>LEWIS-10620</td>
<td>Identification of thermocouple material</td>
</tr>
<tr>
<td>Water-glycol system volume calculation</td>
<td>MFS-18540</td>
</tr>
<tr>
<td>MSC-15193</td>
<td>THERMOELASTICITY</td>
</tr>
<tr>
<td>Self-discharge in bimetallic cells containing alkali metal</td>
<td>Readout system for radiation detector</td>
</tr>
<tr>
<td>ABG-10347</td>
<td>B68-10501</td>
</tr>
<tr>
<td>Mass-spectrometric study of the rhodium-oxygen system</td>
<td>Beam profiles measured with thermoluminescent dosimeters</td>
</tr>
<tr>
<td>ARGC-10421</td>
<td>B69-10026</td>
</tr>
<tr>
<td>Properties of air and combustion products of fuels with air</td>
<td>THERMOELASTICITY</td>
</tr>
<tr>
<td>LEWIS-11030</td>
<td>Viscosity and density of methanol/water mixtures at low temperatures</td>
</tr>
<tr>
<td>E-69-10631</td>
<td>B68-10274</td>
</tr>
<tr>
<td>THERMODYNAMICS</td>
<td>Ultrasonic temperature measuring device</td>
</tr>
<tr>
<td>Study of cryogenic container thermodynamics during propellant transfer</td>
<td>GSPC-10003A</td>
</tr>
<tr>
<td>MFS-14310</td>
<td>The Quantasyn, an improved quantum detector</td>
</tr>
<tr>
<td>Reaction studied of steel with niobium and tantalum</td>
<td>B69-10148</td>
</tr>
<tr>
<td>ABG-10051</td>
<td>THERMOELECTRIC COOLING</td>
</tr>
<tr>
<td>Real fluid properties of normal and parahydrogen</td>
<td>Rate of heat extraction controller for environmental control</td>
</tr>
<tr>
<td>LEWIS-10458</td>
<td>NQ-10318</td>
</tr>
<tr>
<td>Study of lattice defect vibration</td>
<td>E-69-10516</td>
</tr>
<tr>
<td>ABG-10221</td>
<td>THERMOELECTRIC GENERATORS</td>
</tr>
<tr>
<td>Method for predicting pump cavitation performance</td>
<td>Low input voltage converter/regulator minimizes external disturbances</td>
</tr>
<tr>
<td>LEWIS-10916</td>
<td>GSPC-527</td>
</tr>
<tr>
<td>THERMOELECTRICITY</td>
<td>Superconducting switch permits measurements of small voltages at cryogenic temperatures</td>
</tr>
<tr>
<td>Damping of thermoelectric structures</td>
<td>ABG-90260</td>
</tr>
<tr>
<td>THERMOELECTRIC COOLING</td>
<td>THERMOELECTRIC RESINS</td>
</tr>
<tr>
<td>Rate of heat extraction controller for environmental control</td>
<td>Vacuun forming of thermoplastic sheet results in low-cost investment casting patterns</td>
</tr>
<tr>
<td>NQ-10318</td>
<td>ARS-7</td>
</tr>
<tr>
<td>THERMOELECTRIC GENERATORS</td>
<td>Thermoplastic rubberlike material produced at low cost</td>
</tr>
<tr>
<td>Low input voltage converter/regulator minimizes external disturbances</td>
<td>JPL-793</td>
</tr>
<tr>
<td>GSPC-527</td>
<td>THERMOELECTRIC RESINS</td>
</tr>
<tr>
<td>Superconducting switch permits measurements of small voltages at cryogenic</td>
<td>Imprinting of confining sites for cell cultures on thermoplastic substrates</td>
</tr>
<tr>
<td>temperatures</td>
<td>LANGLEY-10495</td>
</tr>
<tr>
<td>New bimetallic EMF cell shows promise in direct energy conversion</td>
<td>THERMOSETTING RESINS</td>
</tr>
<tr>
<td>ABG-10183</td>
<td>Valve seat pores sealed with thermosetting monomer</td>
</tr>
<tr>
<td>Gamma radiation characteristics of plutonium dioxide fuel</td>
<td>MFS-9007</td>
</tr>
<tr>
<td></td>
<td>B67-10577</td>
</tr>
<tr>
<td></td>
<td>THERMOELECTRIC MATERIALS</td>
</tr>
<tr>
<td></td>
<td>THERMOELECTRIC COOLING</td>
</tr>
<tr>
<td></td>
<td>THERMOELECTRIC GENERATORS</td>
</tr>
<tr>
<td></td>
<td>THERMOELECTRIC RESINS</td>
</tr>
<tr>
<td></td>
<td>THERMOSETTING RESINS</td>
</tr>
</tbody>
</table>
New class of thermosetting plastics has improved strength, thermal and chemical stability
LEWIS-10108 B67-10197 03

Improved compression molding process
LANGLEY-10227 B67-10302 03

Solid state thermostat has integral probe and circuitry
I-PS-434 B66-10193 01

Conductance vapor thermal switch
GSPC-10109 B68-10519 02

Finite element formulation for linear thermoviscoelastic materials
BPO-11229 B69-10660 43

Wall-thickness changes predicted in hollow-drawn tubing
ABG-10425 B69-10428 02

Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures
I-PS-800 B66-10325 02

System for etching thick aluminum layers minimizes bridging and undercutting
JPL-33-1366 B66-10400 03

Thin film heating element takes minimum space
GSPC-289 B65-10123 01

High permeability semiconductors permit close-tolerance soldering
GSPC-319 B65-10134 05

Modified developer increases line resolution in photosensitive resist
GSPC-386 B65-10278 01

Thin-film resistors used in functional electronic blocks
GSPC-380 B65-10305 01

Improved wire memory matrix uses very little power
JPL-SC-167 B65-10359 01

Fluoride coatings make effective lubricants in molten sodium environment
LEWIS-229 B66-10005 03

Thin-film semiconductor rectifier has improved properties
MSC-207 B66-10012 01

Cold cathode ionization gage has rigid metal housing
GSPC-445 B66-10041 01

Thin carbon film serves as UV bandpass filter
ERC-8 B66-10060 02

Polytetrafluoroethylene lubricates ball bearings in vacuum environment
M-FS-379 B66-10081 03

Niobium thin films are superconductive in strong magnetic fields at low temperatures
JPL-SC-174 B66-10122 02

Thin-film gage measures low heat-transfer rates
LANGLEY 205 B66-10180 01

Single-crystal semiconductor films grown on foreign substrates
MCU-076 B66-10225 01

Rugged microelectronic module package supports circuitry on heat sink
MSC-81A B66-10245 01

Extensometer automatically measures elongation in elastomers
M-FS-517 B66-10284 05

Valve seat pores sealed with thermosetting monomer
M-FS-900 B66-10322 03

Submicron holes in thin films increase sampling range of mass spectrometers
JPL-SC-097 B66-10380 03

Self-supported aluminum thin films produced by vacuum deposition process
ABC-58 B66-10387 03

Thin-film ferrites vapor deposited by one-step process in vacuum
MSC-259 B66-10398 03

System for etching thick aluminum layers minimizes bridging and undercutting
M-FS-1366 B66-10400 03

Thin plastic sheet eliminates need for expensive plating
M-FS-1896 B66-10681 03

Mechanism facilitates coating of inner surfaces of metal cylinders
GSPC-515 B66-10698 05

Air bearing provides friction-free support
Complex surfaces plated by thin-film deposition in one operation

Thin film process forms effective electrical contacts on semiconductor crystals

Process facilitates photoresist mask alignment on SIC crystals

Substituting gold for silver improves electrical connections

Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment

Thin film thermal detector

Development of Curie point switching for thin film, random access, memory device

Thin film heat transfer gage is stable at higher temperatures

Ion plating technique improves thin film deposition

Graphite cloth facilitates vacuum evaporation of silicon monoxide

Preparation of silver-activated zinc sulfide thin film

Standards for compatibility of printed circuit and component lead materials

Superconductive thin film makes convenient liquid helium level sensor

Separator for alkaline batteries

Microelectronic oscillator

A new solid lubricant

Multilayer infrared beasplitter film system

Dielectric materials for use in thin-film capacitors

A compact rotary vane attenuator

Preparation of superconducting thin films of transition-metal interstitial compounds

Epitaxial crystalline growth upon cold substrates

Pulsed high-voltage dc RF sputtering

Deposition monitor and control

Subject Index

Thin layer chromatography

Thin plates

Thin walls

Thinotropy

Sprayable birefringent coating enables...
SUBJECT INDEX

THRESHOLDS (PERCEPTION)
- Modified algemeister provides accurate depth measurements
  MSC-616 B66-10647 04
- Computer program reduces calculation time of normal response functions
  N-FS-1517 B67-10108 01
- Oscillating-filter method for obtaining flashing-light visibility data
  MSC-13097 B69-10107 02

THROATS
- Bell nozzle kernel analysis program
  NPO-1031 B69-10358 05
- Stress-testing of the throat of a rocket nozzle
  NPO-10547 B68-10338 05
- Semi-toroidal-diaphragm cavit sting valve designed for bipropellant flow control
  XNP-09704 B69-10016 05
- Multiple-orifice throttle valve
  XNP-09698 B69-10030 05

THRUST
- Lightweight universal joint transmits both torque and thrust
  JPL-375 B63-10236 05
- Elimination of rocket engine asymmetric loads during tests at sea level
  N-FS-1730 B66-10674 05
- Computer program for mass optional solutions of some endpoint trajectory problems
  N-FS-12976 B67-10310 06
- Earth orbit rendezvous evaluation program
  N-FS-13016 B67-10407 06
- Computer program provides steady state analysis for liquid propellant propulsion systems
  MSC-10064 B67-10414 06
- Fortran 4 program for two-impulse rendezvous analysis
  N-FS-13571 B67-10479 06
- Electrothermal linear actuator
  NPO-10637 B69-10296 05
- Elimination of dissolved gases in hypergolic engine propellants
  N-FS-16179 B69-10692 03

THRUST BEARINGS
- Torque wrench designed for restricted areas
  LEWIS-246 B66-10011 05
- Hermetically sealed pump
  LEWIS-10837 B69-10320 05

THRUST CHAMBERS
- Plated nickel wire mesh makes superior catalyst bed
  MSC-216 B65-10321 03
- New brazing alloy eliminates metal-stress cracking
  WOO-249 B65-10397 03
- Special mount improves remote transducer accuracy
  LEWIS-269 B66-10021 01
- Beam splitter used in dual filming technique
  N-FS-501 B66-10072 02
- Microminiature thermocouple monitors own installation

MACHINES
- Machining heavy plastic sections
  N-FS-12720 B67-10381 03
- Development of detonation reaction engine
  N-FS-14020 B67-10652 01

THERMOCOUPLE
- Cold solid propellant motor has stop-restart capability
  JPL-836 B66-10673 03
- Two-step rocket engine bipropellant valve concept
  N-FS-10551 B69-10280 05
- Piezoelectric linear actuator
  MSC-13194 B69-10469 02

THERMOMETRY
- Apparatus measures very small thrusts
  WOO-048 B64-10284 05
- Doppler reduces effects of resonance on force transducer
  MSC-121 B66-10550 05
- Device measures reaction engine thrust vector deviations
  JPL-SC-163 B66-10642 05
- A comparison of two methods of measuring particle size of Al2O3 produced by a small rocket motor
  B69-10572 03

THERMAL EXPANSION
- Study of vortex valve for medium temperature solid propellants
  LANGLEY-204 B66-10524 01
- Phase plane displays detect incipient failure in servo system testing
  HQ-10018 B67-10662 01

THERMAL CONDUCTIVITY
- Effect of preparation procedures on intensity of radioautographic labeling is studied
  ARC-10032 B67-10500 04

THERMAL REGISTRANTS
- Solid state detectors monitor relay contacts
  JPL-785 B66-10396 01
- High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes
  LEWIS-90271 B69-10376 01
- Hydrogen flash lamps studied
  ARG-10419 B69-10411 02

TIGHTNESS
- Tool pre-tensions covers prior to lacing
  MSC-631 B66-10305 01

TIME
- Commercial film produces positive X-ray photo in ten seconds
  N-FS-521 B66-10307 02
- Sea dye marker provides visibility for 20 hours

I-679
TIME CONSTANT

MSC-714 B66-10313 03

Vis-A-Plan / visualize a plan / management technique provides performance-time scale
KSC-10073 B67-10240 06

Electronic shutter gates image orthicon on and off
HQ-76 B67-10270 01

Computer program generates averaged value data tapes
M-PS-12728 B67-10411 06

Training course for radiation safety technicians
ARG-216 B67-10477 02

GMT/local-time conversion chart
GSFC-10521 B67-10548 01

Shortened processing time technique for color industrial radiography
ARG-10235 B69-10448 02

An improved atomic hydrogen frequency and time standard
GSFC-10706 B69-10341 02

TIME DEPENDENCE

Computer program PPIP-REV calculates fission product inventory for U-235
NNS-10089 B67-10450 06

TIME DIVISION MULTIPLEXING

Multiplexing control device enables handling of wide variations in sampling rates
M-PS-18714 B67-10150 01

Multiplex television transmission system
MSC-11595 B67-10576 01

TIME FUNCTIONS

Computer program reduces calculation time of normal response functions
M-PS-1517 B67-10108 01

Computer program calculates monotonic maximum likelihood estimates using method of reversals
M-PS-1516 B67-10136 01

Circuit measures hysteresis loop areas at 30 Hz
M-PS-13069 B67-10519 01

Analysis of dynamic systems with DAP 60 computer program
M-PS-13999 B67-10523 06

SUBJECT INDEX

Application of a truncated normal failure distribution in reliability testing
M-PS-14328 B66-10179 02

Computer program determines system stability /DES/LEWIS-10355
B66-10216 06

Design techniques - Stochastic controllers
MSC-11554 B66-10234 02

Study of optimum discrete estimators in measurement analysis
M-PS-14915 B66-10348 02

Integrated sequence display device
KSC-10381 B69-10316 01

On the bound of first excursion probability
KFC-11158 B69-10334 06

TIME LAG

Frequency offset in linear FM/CW transponder eliminates clutter
H-PS-249 B65-10146 01

Gapped toroid provides infinite resolution of delay-line pickup
GSFC-370 B65-10258 01

Frequency discriminator with binary output eliminates tuned circuits
M-PS-376 B65-10349 01

Optically driven switch turn-off time reduced by opaque coatings
JPL-SC-107 B66-10141 01

Pneumatic shutoff and time-delay valve operates at controlled rate
M-PS-602 B66-10189 05

Means for improving apparent resolution of television
NRC-65 B67-10152 01

Study of yttrium iron garnet rods reveals new magnetostrictive echo mode
NRC-37 B67-10153 01

Cytopathy is advanced by studying effects of deuterium environment
ARG-205 B67-10304 04

Communication system features dual mode range acquisition plus time delay measurement
M-PS-18323 B66-10306 01

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110 B66-10328 01

Reducing quantizes deadband with a range switching digital filter
M-PS-20419 B69-10259 01

Combination ranging system and mapping radar
NPO-11001 B69-10325 01

A method for reducing sampling jitter in digital control systems
NPO-11068 B69-10338 01

Dynamic calibration of turbine flowmeters
LEWIS-11014 B69-10764 01

TIME MEASUREMENT

Volumetric system calibrates meters for large flow rates
WCO-130 B65-10323 05

Binary counter accumulates time by complementary preset
MSC-242 B65-10399 01

Single channel pulse-height analyzer operates
Nanosecond-range variable-pulse switching circuit accurately controls solenoid-valve actuations (Lewis-267).

Modified univibrator compensates for output timing errors (ARS-85).

Hydrogen maser as a highly stable frequency reference (Lewis-2437).

Vibrator elapsed time is automatically controlled (Lewis-2573).

Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors (Lewis-1887).

KOPE/Kalendar Oriented Program efforts provide data for management decisions (Lewis-12331).

Communication system features dual mode range acquisition plan time delay measurement (Lewis-14323).

Ultrasonic temperature measuring device (Lewis-10446).

Simple tunnel diode circuit for accurate zero crossing timing (Lewis-10399).

Performance statistics of the FORTRAN 4 library for the IBM system/360 (Lewis-10299).

Tosone seahorse battery separator (Lewis-11091).

TIME MEASURING INSTRUMENTS
Vibration analysis utilizing Mossbauer effect (Lewis-11974).
Tunnel diode circuit used as nanosecond-range time marker (Lewis-90146).

TIME OF FLIGHT SPECTROMETERS
Analyses of silicone dioxide, magnesium oxide, lead fluoride, bismuth as velocity filters for neutrons (Lewis-10220).

TIME OPTICAL CONTROL
Computer program VARIS-QUID 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations (Lewis-10025).
Computerized parts list system coordinates engineering releases, parts control, and manufacturing planning (Lewis-10073).

TIME RESPONSE
Densitometer systems for liquid hydrogen have high accuracy, fast response (Lewis-909).
Improved design provides faster response time in photomultiplier (Lewis-451).
Study of fast response thermocouple measurement of temperatures in cryogenic gases (Lewis-1659).

DYANA - An advanced programming system for large classes of dynamic and equivalent systems (Lewis-12084).

TIME SERIES ANALYSIS
Computer programs perform spectral analyses of up to seven time series (Lewis-1133).

Technique for strip chart recorder time notation (Lewis-473).

Instrumentation monitors transported material through variety of parameters (Lewis-12938).

Phase plane displays detect incipient failure in servo system testing (Lewis-10018).

Manganese-56 coincidence-counting facility precisely measures neutron-source strength (Lewis-90261).

TIME SHARING
New computer system simplifies programming of mathematical equations (Lewis-441).
Nixie tube display unit employs time-shared logic (Lewis-117).

Multiplexer uses insulated gate-field effect transistors (Lewis-13096).

Time-shared Cathode Ray Tube (Lewis-12238).

Simplified system displays complex curves corresponding to input data (Lewis-10073).

Special purpose computer provides programmable digital filter for sampled-data control systems (Lewis-20290).

TIME SIGNALS
PKM magnetic tape system efficiently records and reproduces data (Lewis-391).

Recording and time expansion technique for high-speed, single-shot transient video signal (Lewis-10003).

Subminature deflection circuit operates integrated sweep circuits in TV camera (Lewis-1263).

Method of reducing time base error in digital magnetic recorders (Lewis-10408).

TIME DEVICES
Solenoid permits remote control of stop watch and assures restarting (Lewis-909).

Coincident switch closing reduces error in motor-driven timer (JPL-182).

Electro-mechanically operated camera shutter provides uniform exposure (JPL-357).

Unijunction frequency divider is free of backward loading (JPL-100-0).

High-intensity flashing beacon powered by...
SUBJECT INDEX

Mercury cells
LANGELBY-80 B65-10361 01

Flowmeter measures low gas-flow rates
B-PS-215 B66-10036 01

Modified McLeod gage records automatically
LEWIS-290 B66-10290 02

Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart
JPL-805 B66-10386 01

Technique for strip chart recorder time notation
GSFC-473 B67-10196 01

Cut-through tester accurately measures insulation failure rates
B-PS-12506 B67-10354 03

Long time constant timer requires no recovery time
GSFC-10693 B67-10578 01

System measures arc energy dissipated in relay contact cycling
B-PS-14541 B68-10312 01

Circuit counts pulses and indicates time of occurrence of slow pulses
XNP-06234 B69-10313 01

Automatic filter-blowback systems used with sintered-metal filters
ARG-10324 B69-10342 05

Improved dc voltage regulator
XKS-06467 B69-10369 01

Novel multipurpose timer for laboratories
ARG-10147 B69-10410 01

Load current sensor for a pulse width modulator power regulator
GSFC-10656 B69-10578 01

TIN

Solder flux leaves corrosion-resistant coating on metal
JPL-611 B64-10206 03

Nickel/tin coating protects threaded fasteners in corrosive environment
MSC-253 B65-10398 03

Jig protects transistors from heat while tinning leads
MSC-515 B66-10240 05

Weldable aluminum alloy has improved mechanical properties
B-PS-295 B66-10445 03

Evaluation of high temperature stranded hookup wire
B-PS-2470 B67-10122 03

Silver plating ensures reliable diffusion bonding of dissimilar metals
B-PS-1575 B67-10124 03

Inspection criteria ensure quality control of parallel gap soldering
B-PS-14530 B68-10257 05

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte
ARG-10453 B69-10627 03

Electron interaction in matter
B-PS-14886 B69-10674 02

TIN ALLOYS

Gallium alloy films investigated for use as boundary lubricants
LEWIS-245 B66-10165 03

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment
LEWIS-359 B66-10678 05

Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation
ARG-10288 B69-10081 03

TIN OXIDES

Photovoltaic effect in organic polymer-iodine complex
BNO-10373 B67-10634 03

Improved radiographic image amplifier panel
B-PS-14522 B68-10363 02

TIN TELLURIDES

Thermoelectric elements diffusion-bonded to tungsten electrodes
GSFC-346 B65-10309 01

TIPS

Hand-held instrument should relieve hematomas pressure
MSC-599 B67-10332 04

TIRES

Shock-absorbing caster wheel is simple and compact
SAR-10019 B68-10266 05

TISSUES (BIOLOGY)

Uranyl phthalocyanines show promise in the treatment of brain tumors
ARG-100 B67-10188 04

Effect of preparation procedures on intensity of radioautographic labeling is studied
ARG-10032 B67-10500 04

Simple colorimetric method determines uranium in tissue
ARG-10039 B67-10560 03

Study of radiation effects on mammalian cells in vitro
ARG-10191 B68-10294 02

Experimental study and evaluation of radioprotective drugs
ARG-10196 B68-10320 04

Method for making small pointed thermocouples
SAR-10014 B68-10389 01

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331 B69-10208 04

TITANIUM

Air-cured ceramic coating insulates against high heat fluxes
B-PS-150 B65-10357 03

High-resistance coatings on metal substrates
LEWIS-10325 B68-10381 03

TITANIUM

New alloy brazes titanium to stainless steel
MSC-102 B65-10060 05

Lightweight aluminum casting alloy is useful at cryogenic temperatures
B-PS-267 B65-10092 03

Titanium treatment improves brazed joints
MSC-127 B65-16153 05

Ion pump provides increased vacuum pumping speed
NEO-13 B65-10239 02

Titanium diaphragm makes excellent amplitron cathode support
Reflective insulator layers separated by bonded silica beads

MSC-215

Hot-wire detector for chemically active materials used in gas chromatography

MSC-269

Aluminum/steel wire composite plates exhibit high tensile strength

N-PS-401

Auxiliary titanium sublimation pump produces ultrahigh 10^-11 torr/ vacuum

LANGLEY-212

Lateral ring metal elastic wheel absorbs shock loading

N-PS-1312

Process reduces secondary resonant emission in electronic components

JPL-934

Silver plating ensures reliable diffusion bonding of dissimilar metals

M-PS-1975

Aluminum-titanium hydride-boron carbide composite provides lightweight neutron shield material

MUC-10069

Crack growth measured on flat and curved surfaces at cryogenic temperatures

LEWIS-389

Aluminum and stainless steel tubes joined by simple ring and welding process

N-PS-113120

Magnesium-zinc reduction is effective in preparation of metals

ARG-10050

Nickel base alloy with improved stress rupture properties

LEWIS-10283

Titanium-nitrogen reaction investigated for application to gettering systems

ARG-10208

Two systems developed for purifying inert atmospheres

ARG-10234

An ultrasonic method for studying elastic moduli as a function of temperature

ARG-10187

Silicon carbide diode for increased light output

N-PS-20063

Precision mounting for instrument optical elements provided by polyimide bonding

N-PS-20293

Effects of hydrogen on metals

N-PS-20364

Galvanic corrosion reduced in aluminum fabrications

N-PS-272

Nickel-base superalloys developed for high-temperature applications

LEWIS-226

Brazing process provides high-strength bond between aluminum and stainless steel

N-PS-803

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics

LEWIS-320

Simple technique determines ac properties of hard superconductive materials

M-PS-1918

Degreasing of titanium to minimize stress corrosion

LEWIS-382

Glass bead shot peening retards stress corrosion failure of titanium tanks

LANGLEY-319

Auxiliary titanium sublimation pump produces ultrahigh 10^-11 torr/ vacuum

LANGLEY-10077

Copper and nickel adherently electroplated on titanium alloy

M-PS-13952

Boll diffusion bonding of titanium alloy panels

M-PS-14743

Consolidation and fabrication techniques for vanadium-20 w/o titanium /TV-20/

ARG-10148

Corrosion protection of aluminum alloys in contact with other metals

M-PS-18526

Handbook for design of containers of fluids and gases for spacecraft

M-PS-20502

Titanium carbides study of high temperature bearing materials

LEWIS-10529

Titanium nitrides two systems developed for purifying inert atmospheres

ARG-10234

Titanium oxides refractory thermal insulation for smooth metal surfaces

N-PS-160

Inorganic paint is durable, fireproof, easy to apply

GSFC-366

Anodization process produces opaque, reflective coatings on aluminum

N-PS-348

Special coatings control temperature of structures

GSFC-444

White primer permits a corrosion-resistant coating of minimum weight

M-PS-304

Coating protects magnesium-lithium alloys against corrosion

M-PS-2046

Scribable coating for plastic films

MSC-1194

Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions

ARG-147

Effect of preparation procedures on intensity of radioautographic labeling is studied

ARG-10032

I-683
TOLERANCES (MECHANICS)

Improved gyro-flotation /damping/ fluids
MSC-13217 B69-10360 03

Novel multipurpose timer for laboratories
ARG-10147 B69-10410 01

TOLERANCES (MECHANICS)

Etching process mills pH 14-8 Mo alloy
MSC-270 B66-10110 03

Soldering tool heats workpieces and applies
solder in one operation
MSC-297 B66-10115 05

Rotating mandrel speeds assembly of plastic
inflatables
LANLEY-155 B66-10137 05

Diffusion technique stabilizes resistor
values
MSC-205 B66-10142 01

Depth indicator and stop aid machining to
precise tolerances
MSC-555 B66-10149 05

Device spot-laps spheres to very close
tolerances
JPL-SC-119 B66-10175 05

Hollow needle used to cut metal honeycomb
structures
MSC-486 B66-10244 05

Gear drive automatically indexes rotary table
MSC-753 B66-10283 05

Pressure probe compensates for dimensional
tolerance variations
LEWIS-302 B66-10599 01

Traveling wire electrode increases
productivity of Electrical Discharge
Machining /EDM/ equipment
ARG-136 B67-10238 05

Static seal concept to accommodate seat
tolerances
MSC-1854 B67-10285 05

Square tubing reduces cost of telescoping
bridge crane hoist
ARG-13 B67-10293 05

Steel test panel helps control additives in
pyrophosphate copper plating
LEWIS-10101 B67-10358 05

Machining heavy plastic sections
MSC-12720 B67-10381 03

Precision metal molding
MSC-13305 B67-10423 05

Computer program HCAP provides for steady
state thermal and flow analysis of multiple
parallel channels in heat generating solid
MSC-10043 B67-10457 06

Eolasite - A new mechanical design concept
SAM-10001 B67-10611 05

Pneumatic flow comparator
MSC-18373 B69-10400 05

A new method for the determination of
particulate contamination levels for
surface cleanliness of fluid systems
MSC-10267 B69-10520 02

Photomicroscopy
MSC-14556 B69-10736 01

TOLEREE

Direct measurement of carbon-14 in carbon
dioxide by liquid scintillation counting
ARG-10237 B69-10092 03

SUBJECT INDEX

Production of metals and compounds by
radiation chemistry
LEWIS-10231 B69-10123 03

Recent development in organic scintillators
ARG-10344 B69-10198 03

Masking of aluminum surface against
anodizing
H-PS-12964 B69-10335 05

Technique for ultrasonic cleaning with
volatile solvents eliminates need for
hoods or condensers
MSC-15611 B69-10552 03

TOOLING

Fiber glass dies speed forming of large metal
sheets
H-PS-214 B65-10210 05

Multisurface fixture permits easy grinding
of tool bit angles
MSC-586 B66-10171 05

Cork is used to make tooling patterns and
molds
MSC-425 B66-10328 01

System enables dimensional inspection of
very large structures
H-PS-2477 B67-10214 05

TOOLS

V-slotted screw head and matching driving tool
facilitate insertion and removal of screw
fasteners
FRC-16 B63-10223 05

Special pliers connect home containing liquid
under pressure
JPL-1T-1003 B63-10291 05

Heavy-duty staple remover operated by hand
JPL-1T-1004 B63-10292 05

Tool facilitates sealing of metal fill tubes
MSC-24 B63-10519 05

Insulated weld tooling permits uniform,
high quality weld
MSC-42 B64-10058 05

Forming blocks speed production of strain gage
grids
LEWIS-182 B65-10009 05

Cutter and stripper reduces coaxial cable
connection time
ARG-40 B65-10094 05

Low-cost tool minimizes damage to O-rings
during installation
MSC-740 B65-10116 05

Lathe attachment used to machine elliptical
ces
MSC-100 B65-10168 05

Hand tool facilitates extraction of circuit
modules
LANLEY-38 B65-10231 05

Remotely operated clamping tool has positive
grip
Woo-029 B65-10254 05

Standoff tool speeds placement of friction-fit
electrical terminals
Woo-029 B65-10348 05

Portable tool removes burrs from pipe and
tubing
MSC-237 B65-10360 05

Portable tool cleans pipes and tubing
MSC-239 B65-10375 05

Drill bit design assures clean holes in
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>TOOLS CONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>laminated materials</td>
<td>B65-10386 05 alignment tool facilitates pin placement on irregular horizontal surfaces</td>
</tr>
<tr>
<td>W00-096</td>
<td>B66-10410 05 modified pliers facilitate coupling of bayonet-type connectors</td>
</tr>
<tr>
<td>Forming tool improves quality of tubing flares W00-231</td>
<td>B66-10041 05 bearing puller facilitates removal and replacement of bearing assemblies</td>
</tr>
<tr>
<td>B66-10001</td>
<td>B66-10417 05 heat treatment stabilizes welded aluminum fings and tool structures</td>
</tr>
<tr>
<td>Improved tool easily removes brazed tube connectors MSC-263</td>
<td>B66-10003 05 hole saw drill attachment has zero force reaction</td>
</tr>
<tr>
<td>B66-10003</td>
<td>B66-10604 05 film coating permits low-force scribing</td>
</tr>
<tr>
<td>Bench vise adapter grips tubing securely and safely MSC-279</td>
<td>B66-10056 05 mechanical gauge accurately checks tubing flares, roundness, and concentricity</td>
</tr>
<tr>
<td>Shoulder adapter steadies spot welding gun M-FS-321</td>
<td>B66-10076 05 micromanipulation tool is easily adapted to many uses</td>
</tr>
<tr>
<td>Tool provides constant purge during tube welding M-FS-547</td>
<td>B66-10093 05 tool facilitates installation of marion clamps M-FS-2039</td>
</tr>
<tr>
<td>Soldering tool heats workpieces and applies solder in one operation LW12-247</td>
<td>B66-10115 05 photorefractive filler minimizes internal stresses in epoxy resins M-FS-1860</td>
</tr>
<tr>
<td>Device spot-lapses spheres to very close tolerances JPL-SC-119</td>
<td>B66-10175 05 concept for modifying drafting instruments to minimize smearing</td>
</tr>
<tr>
<td>Low power heating element provides thermal control during swaging operations M-FS-457</td>
<td>B66-10206 05 tool samples subsurface soil free of surface contaminants MSC-10988</td>
</tr>
<tr>
<td>Tool enables proper rating of accelerometer and cable connector M-FS-6-11</td>
<td>B66-10208 05 tube displaying tool assures accurate dip-brazed joints</td>
</tr>
<tr>
<td>Special tool seals conductors with combination of plastic sleeves M-FS-579</td>
<td>B66-10209 05 tool permits damage-free removal of solar cell GSPC-467</td>
</tr>
<tr>
<td>Tool permits damage-free removal of solar cell GSPC-467</td>
<td>B66-10219 05 tool facilitates installation of marion clamps</td>
</tr>
<tr>
<td>Automatic reel controls filler wire in welding machines MSC-416</td>
<td>B66-10236 05 tool reconstructs data input points corresponding to first order output graph</td>
</tr>
<tr>
<td>Adjustable knife cuts honeycomb material to specified depth MSC-475</td>
<td>B66-10237 05 versatile impact hand tool M-FS-20140</td>
</tr>
<tr>
<td>Hand tool permits shrink sizing of assembled tubing MSC-504</td>
<td>B66-10239 05 coaxial cable stripper for confined areas</td>
</tr>
<tr>
<td>Portable sandblaster cleans small areas MSC-523</td>
<td>B66-10242 05 weld preparation tool for pipes and tubing</td>
</tr>
<tr>
<td>Lathe chuck key incorporates safety feature MSC-506</td>
<td>B66-10243 05 fixture facilitates soldering operations M-FS-14456</td>
</tr>
<tr>
<td>Hollow needle used to cut metal honeycomb structures MSC-486</td>
<td>B66-10244 05 gun facilitates adhesive bonding of studs to surfaces M-FS-20299</td>
</tr>
<tr>
<td>Modified soldering iron speeds cutting of synthetic materials M-FS-725</td>
<td>B66-10246 05 tube welding and brazing M-FS-20344</td>
</tr>
<tr>
<td>Tool separates sleeve-type unions without heat MSC-497</td>
<td>B66-10253 05 shell design computer program LW12-10734</td>
</tr>
<tr>
<td>Ultrasonic hand tool allows convenient scanning of spot welds M-FS-539</td>
<td>B66-10269 02 astronaut™ tool for withdrawing/replacing computer cards M-FS-20453</td>
</tr>
<tr>
<td>Tool pre-tensions covers prior to lacing MSC-631</td>
<td>B66-10301 05 adjustable wrench for electronic connectors M-FS-18547</td>
</tr>
<tr>
<td>Tool forms right angles in component leads M-FS-722</td>
<td>B66-10346 05 tools made of ice facilitate forming of soft, sticky materials MSC-10262</td>
</tr>
<tr>
<td>Welds chilled by liquid coolant manifold M-FS-679</td>
<td>B66-10354 05 tool simplifies machining of pipe ends for</td>
</tr>
<tr>
<td>Special tool kit aids heavily garmented workers MSC-163</td>
<td>B66-10403 05</td>
</tr>
</tbody>
</table>
precision welding
KSC-10361 B69-10231 05

Repair of weld defects in thin-walled stainless steel tubes
N-PS-16293 B69-10305 05

Design of a strain-gage probe
ARG-10338 B69-10343 05

Tool repairs tube components in situ
MSC-15348 B69-10379 05

Quick-acting backup tool for welding ducts
N-PS-18404 B69-10396 05

One-handed hammer-spanner for chucks
N-PS-18581 B69-10398 05

Possible correlation between work-hardening and fatigue-failure
ARG-10371 B69-10414 03

Flexible rivet-set
N-PS-20317 B69-10459 05

Tool for reading psychrometric charts
KSC-10358 B69-10527 05

TOPOGRAPHY
Surface profilometer for examining grain-boundary grooves
ARG-10290 B69-10345 05

TOPOLOGY
GHT EXCLUSIVE-OR combining paths and loops of electrical networks
KRC-10206 B66-10435 06

TORCHES
Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle
JPL-545 B63-10517 05

Oxygen-hydrogen torch is a small-scale steam generator
NU-0042 B66-10120 03

Argon pulse gas cooled by chill box
N-PS-566 B66-10153 02

Effect of welding position on porosity formation in aluminum alloy welds
N-PS-2318 B67-10177 05

Weld procedure produces quality welds for thick sections of Hastelloy-X
KSC-10048 B67-10195 05

Welding torch and wire feed manipulator
N-PS-13102 B67-10385 05

Improved torch increases weld quality in refractory metals
LEWIS-324 B68-10081 05

Automatic contour welder incorporates speed control system
N-PS-14574 B68-10091 01

Closed circuit TV system automatically guides welding arc
N-PS-20004 B68-10357 01

Plasma-heating by induction
LEWIS-10528 B69-10185 02

Improved table for cutting and welding
MSC-15537 B69-10346 05

Gas Metal Arc/GMA/ weld torch proximity control
N-PS-16237 B69-10533 01

TOROIDAL SHELLS
Investigation of pressurized toroidal shells
NU-27 B67-10117 05

TOROIDS
Improved magnetometer uses toroidal gating coil
GSFC-249 B65-10103 01

Gapped toroid provides infinite resolution of delay-line pickup
GSFC-370 B65-10258 01

High frequency wide-band transformer uses cores to achieve high turn ratio and flat response
ARG-107 B66-10600 01

Solid state high-voltage pulser operates with low supply voltage
N-PS-16034 B68-10308 01

Miniaturization of magnetic logic circuitry
LANGLEY-10037 B69-10148 06

Novel terminal strips for transformers
NF-10842 B69-10286 01

Evaluation of magnetic materials for static inverters and converters
LEWIS-10343 B69-10306 01

TORECO
Device transmits rotary motion through hermetically sealed wall
JPL-303 B63-10198 05

Lightweight universal joint transmits both torque and thrust
JPL-375 B63-10236 05

Shock absorber protects motive components against overloads
WGO-092 B65-10008 05

Tension is servo controlled in film advance system
LANGLEY-54 B65-10075 05

New coupling compensates for shaft misalignment
NO-0013 B65-10077 05

Slit feeds reduce unbalanced torques in gas-lubricated bearings
JPL-264 B65-10099 05

Bidirectional torque filter eliminates backlash
GSFC-335 B65-10148 05

Motor position sensor switches currents in brushless dc motors
GSFC-315 B65-10151 01

System measures unidirectional forces, excludes extraneous forces
LEWIS-170 B65-10154 05

Pressure transducer system is force-balanced, has digital output
N-PS-154 B65-10174 05

Torque wrench designed for restricted areas
LEWIS-264 B66-10111 05

Modified power tool rapidly drives series torque bolts
MSC-221 B66-10054 05

T-handle wrench has torque-limiting action
MSC-280 B66-10065 05

Thermal motor positions magnetometer sensors
ARC-51 B66-10078 05

Switching mechanism senses angular acceleration
GSFC-462 B66-10158 01

Transducer measures force in vacuum environment
LEWIS-218 B66-10161 01
SUBJECT INDEX

Torque wrench allows readings from inaccessible locations
M-FS-598 B66-10204 05

Tool enables proper mating of accelerometer and cable connector
M-FS-611 B66-10208 05

Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
M-FS-640 B66-10247 05

Modified hydraulic braking system limits angular deceleration to safe values
GSPC-476 B66-10310 05

Braking mechanism is self actuating and bidirectional
M-FS-1299 B66-10484 05

Hole saw drill attachment has zero force reaction
MSC-543 B66-10608 05

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment
LEWIS-359 B66-10678 05

Single motor drive system operates heavy hinged door
BH-0093 B66-10712 05

A theoretical model for determining turbine flowmeter sensitivity
M-FS-1172 B67-10179 01

Ultrasonic wrench produces leaktight connections
M-FS-12561 B67-10353 05

Standard surface grinder for precision machining of thin-wall tubing
ARG-10014 B67-10400 05

Power torque wrench concept for precision torque application
M-FS-13546 B67-10547 05

Magnetically controlled torque wrench prevents overtightening
SAM-10002 B68-10209 05

High-torque power wrench, a concept
M-FS-18194 B68-10299 05

Electrochemical rotary actuator operates over wide temperature range
M-FS-18402 B69-10100 05

Torsion system for creep testing with multiple stress reversals
E4-10539 B69-10147 03

Adjustable wrench for electronic connectors
M-FS-10547 B69-10184 05

Compensation of pulse-rebalanced inertial instruments
MSC-13098 B69-10216 01

Sealing a rubber bladder between two sections of an accumulator
M-FS-20403 B69-10355 05

Pressure transducer
NPO-10853 B69-10364 01

Air-cushion lift pad
M-FS-14685 B69-10448 05

Torsional tubular disconnect
NPO-10704 B69-10499 05

Repair on a cryogenic gyroscope
NPO-11200 B69-10504 02

TORQUE MOTORS

Hydraulic drive system prevents backlash
JPL-371 B65-10351 05

Quick-response servo amplifies small hydraulic pressure differences
ABO-99 B66-10498 05

Improved fluid control circuit operates on low power input
LEWIS-325 B67-10042 01

Gimbaled-mirror scanning system capable of spiral pattern
GSPC-10170 B67-10609 02

Low-cost, fast-response drive circuit for electromagnetic torque motors
LEWIS-10143 B68-10386 01

Two-step rocket engine bipropellant valve concept
MSC-10951 B69-10280 05

Multi-purpose tool sitten
B69-10483 05

TORQUE METERS

Optics used to measure torque at high rotational speeds
LEWIS-13 B65-10338 01

Device enables measurement of moments of inertia about three axes
GSPC-49 B65-10176 05

Air brake-dynamometer accurately measures torque
LEWIS-163 B65-10312 05

Miniature servo accelerometer is force-balanced
JPL-155 B65-10340 01

Torsion wrench designed for restricted areas
LEWIS-246 B66-10011 05

Noncontacting transducer measures shaft torque
M-FS-474 B66-10048 01

Torsion wrench allows readings from inaccessible locations
M-FS-598 B66-10204 05

Torque meter aids study of hysteresis in motor rings
8-FS-12215 B67-10412 01

Noncontacting transducer measures torque
M-PS-474 B66-10048 01

Helical recorder
GSPC-10614 B65-10340 01

TORSION

Dispensing system eliminates torsion in deployed booms
MSC-80 B65-10185 05

Miniature servo accelerometer is force-balanced
JPL-155 B65-10340 01

Sheet metal strip unrolls to form circular boom
GSPC-423 B66-10032 05

Resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05

Noncontacting transducer measures shaft torque
M-FS-474 B66-10048 01

Thermodynamic properties of solid palladium-silver alloys and other alloys are
investigated by torsion-effusion technique

Torsion system for creep testing with multiple stress reversals

Torsional stress

Bellows joint absorbs torsional deflections in duct system

Pipe joints reinforced in place with fitted aluminum sleeves

Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-effusion technique

Buckling strength of filament-wound cylinders under axial compression is investigated

Torsional vibration

Computer program for determination of natural frequencies of closed spherical sandwich shells

Torsuses

Tors elements used in effective shock absorber

Inflatable holding fixture permits X-rays to be taken of inner weld areas

Fixture facilitates helium leak testing of pipe welds

Development of technology for hot-drape forming of large torus sections

Toughness

Improved primer for bonding polyurethane adhesives to metals

Strain-age cracking in Rene 41 alloy

Retention of ductility in high-strength steels

Towed bodies

Quick-attach clamp

Towers

Wind tower influence study

Towing

Quick-attach clamp

Toxic hazards

Dispenser leak-tests and sterilizes rubber gloves

Self-contained clothing system provides protection against hazardous environments

Weldable aluminum alloy has improved mechanical properties

Product identification techniques used as training aids for analytical chemists

Heat-shrinkable jacket holds fluid in contact with tensile test specimen

TOXICITY

Liquid microscopy chamber and microsyringe designs allow more efficient micromanipulations

Study made of anodized aluminum circuit boards

Metabolic and toxicological effects of water-soluble xenon compounds are studied

Experimental study and evaluation of radioprotective drugs

Torsional stress

SUBJECT INDEX

Product identification techniques used as training aids for analytical chemists

Heat-shrinkable jacket holds fluid in contact with tensile test specimen

TOXICITY

Liquid microscopy chamber and microsyringe designs allow more efficient micromanipulations

TOXICITY AND SAFETY HAZARD

Health hazards of ultrafine metal and metal oxide powders

Trace contaminants

Trace levels of metallic corrosion in water determined by emission spectrography

Analytical technique characterizes all trace contaminants in water

Trace hydrazines in aqueous solutions accurately determined by gas chromatography

Separation of traces of metal ions from sodium matrices

Trace elements

Wear studies made of slip rings and gas bearing components

Control apparatus for spectral energy source

Weld microfissuring in Inconel 718 minimized by minor elements

Ignition of binary alloys of uranium

Diffusion of trace gases for leak detection - a study

Direct in-vial collection for liquid-scintillation assay of carbon-14 and tritium

Trackers

Radioactive tracer system detects oil contaminants in fluid lines

Portable detector set discloses helium leak rates

 usher manner of gas flow
TBAUSDUCBRS
TRACEBA
llutomatic patient respiration failure detection system with wireless transmission
ARC-10174 B66-10365 01

TRACKING (POSITION)
Binary system generates sidereal rate from standard solar rate
GSFC-190 B64-10200 01
Bandwidth switching is transient-free, avoids loss of loop lock
W00-654 B64-10349 01
Direction indicator system does not require complicated optics
W00-305 B66-10407 01
Photocell shadowing technique improves light source detector
JPL-809 B66-10564 01
Optical superheterodyne receiver uses laser for local oscillator
NS-FS-1605 B66-10584 01
Optical automatic gain channel
NS-FS-1550 B66-10596 02
Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates
NFO-10316 B67-10418 05
Reflectometer for receiver input system
NFO-10843 B67-10457 01
Communication system features dual mode range acquisition plus time delay measurement
NS-FS-14323 B68-10306 01
Closed circuit TV system automatically guides welding arc
NS-FS-20084 B68-10357 01
Telescope dome control system automatically tracks sun
MSC-10966 B60-10521 02
Sweep frequency detector
NFO-10669 B69-10289 01
Method of directing a laser beam with very high accuracy
NFO-11087 B69-10508 02

TRACKING NETWORKS
MOSFET analog memory circuit achieves long duration signal storage
NS-FS-960 B66-10603 01
Acquisition of pseudo-noise signals by sequential estimation
N-FS-13862 B68-10258 01
One hundred MHz voltage-controlled oscillator
NFO-11004 B69-10133 01

TRACKING RADAR
An interferometer tracking radar system
MSC-10556 B69-10523 01

TRACKING STATIONS
ABTRAJ on-site tracking prediction program
NFO-10836 B69-10103 06
An improved atomic hydrogen frequency and time standard
GSFC-10706 B69-10341 02

TRACTORS
Lateral ring metal elastic wheel absorbs shock loading
NS-FS-1312 B66-10663 05
Study of high-speed angular-contact ball bearings under dynamic load
NS-FS-20562 B69-10367 05

TRACKOFFS
Selective vignetting of Type 1 X-ray telescopes
GSFC-10682 B69-10705 02

TRAFFIC CONTROL
Computer program simplifies transient and steady-state temperature prediction for complex body shapes
MSC-989 B66-10619 01

TRAILS
Compressed gas system operates semitrailer brakes during winching operation
JPL-0036 B64-10306 05
Fifth wheel fork truck adapter
NS-FS-14460 B69-10021 05

TRAINING SIMULATORS
Technique simulates effect of reduced gravity
LANGLEY-64 B64-10146 04

TRAJECTORIES
Computer program for mass optional solutions of some endpoint trajectory problems
NS-FS-12976 B67-10370 06
Earth orbit rendezvous evaluation program
NS-FS-13016 B67-10407 06
BICOV - Newton-Raphson calculus of variations with automatic transversality
NS-FS-14464 B68-10232 06
ABTRAJ on-site tracking prediction program
NFO-10836 B69-10103 06

TRAJECTORY ANALYSIS
Space trajectories program for IBM 7090
NS-FS-10125 B67-10172 06
Internal velocity factors
MSC-15002 B68-10403 06
Generalized Newton-Raphson trajectory optimization-generator 1
NS-FS-15020 B68-10422 06
Advanced mission analysis programs
GSFC-10575 B69-10171 06

TRAJECTORY CONTROL
SLIC/Si diode trigger circuit provides automatic range switching for log amplifier
NS-FS-1879 B67-10314 01

TRAJECTORY MEASUREMENT
Study of optimum discrete estimators in measurement analysis
NS-FS-14915 B68-10346 02

TRAJECTORY OPTIMIZATION
Generalized Newton-Raphson trajectory optimization-generator 1
NS-FS-15020 B68-10422 06
Trajectory optimization using regularized variables
MSC-13770 B69-10810 02

TRANSUCERS
High purity electroforming yields superior metal models
ARC-6 B63-10007 05
Improved variable reluctance transducer measures transient pressures
LANGLEY-10 B63-10321 01
Cooling method prolongs life of hot-wire transducer

SUBJECT INDEX

Study of theory and application of long duration heat flux transducers
M-FS-1265  B66-10614  01

Motion drive system is accurately controlled in the 1-micron range
JPL-864  B66-10695  05

Multipurpose instrumentation cable provides integral thermocouple circuit
NU-0108  B67-10046  01

Cleanroom air sampler counts, categorizes, and records particle data
M-FS-2221  B67-10076  01

Ultrasone permits brazing complex stainless steel assembly without flux
NU-0115  B67-10094  05

Calibrating ultrasonic test equipment for checking thin metal strip stock
NUC-10009  B67-10127  01

Solid state circuit averages multiple signals and rejects those varying significantly from the average
NUC-10066  B67-10262  01

IR vidicon scanner monitors many test points
M-FS-1937  B67-10277  01

Vibration analysis utilizing Mossbauer effect
M-FS-11974  B67-10339  01

Transducer measures embedment stresses in electronic modules
M-FS-13486  B67-10367  01

System measures unidirectional forces, excludes extraneous forces
LEWIS-170  B67-10542  01

Interferometer combines laser light source and digital counting system
MSC-151  B67-10605  01

Detector circuit compensates for vidicon beam current variations
GSFC-310  B67-10606  01

Electropneumatic rheostat regulates high current
ARC-44  B67-10607  01

Direct force-measuring transducer used in blood pressure research
ARC-53  B67-10608  01

Noncontacting vibration transducer has constant sensitivity
LANLEY-99  B67-10609  01

Device without electrical connections in tank measures liquid level
WOO-235  B67-10610  01

Wide-range instrument monitors flow rates of chemically active fluids
MSC-186  B67-10611  01

Ultrasonic quality inspection of bonded honeycomb assemblies is automated
MSC-859  B67-10612  01

Dasher reduces effects of resonance on force transducer
WOO-321  B67-10613  01

Ultrasonic water column probe speeds up testing of welds
BG-58  B67-10614  01

Developmental instrument supplies accurate attitude and attitude-rate data
BG-57  B67-10615  01

M-FS-10344  B63-10344  02
M-FS-10551  B63-10551  01
M-FS-10004  B64-10004  01
M-FS-10031  B64-10031  05
M-FS-10122  B64-10122  01
WOO-048  B64-10284  05
M-FS-10029  B65-10029  05
M-FS-10056  B65-10056  01
M-FS-207  B65-10059  01
M-FS-10085  B65-10085  01
M-FS-10089  B65-10089  01
LEWIS-170  B65-10115  05
MSC-151  B65-10161  01
GSFC-310  B65-10212  01
ARC-44  B65-10229  01
ARC-53  B67-10574  01
BG-57  B67-10607  01
MSC-186  B66-10205  01
MSC-859  B66-10544  01
WOO-235  B66-10198  01
BG-58  B66-10577  01
BG-57  B66-10607  01
M-FS-1265  B66-10611  01
JPL-864  B66-10695  05
NU-0108  B67-10046  01
NU-0115  B67-10094  05
NUC-10009  B67-10127  01
NUC-10066  B67-10262  01
M-FS-1937  B67-10277  01
M-FS-11974  B67-10339  01
M-FS-13486  B67-10367  01
LEWIS-170  B67-10542  01
MSC-151  B67-10543  02
BG-57  B67-10609  02
MSC-13086  B67-10609  02
M-FS-13372  B67-10607  01
M-FS-13486  B67-10610  01
NUC-10010  B67-10609  02
M-FS-1214  B67-10605  02
M-FS-1017C  B67-10609  02
M-FS-1359C  B67-10620  01
MSC-859  B67-10663  04
GSFC-483  B67-10079  01
M-FS-13362  B67-10099  05
LEWIS-65  B67-10124  01
MSC-13086  B67-10314  01

I-690
Ultrasonic temperature measuring device
LEWIS-10446 B68-10319 01

Cooled miniature pressure transducers effective at high temperatures
LEWIS-10401 B68-10370 01

Automatic calibration system for pressure transducers
N-PS-20127 B68-10412 01

Fluidic transducer gives pressure output as function of temperature
EBC-10093 B68-10537 05

Fluidic analog amplifier
EBC-10102 B68-10538 05

Welding skate with computerized controls
N-PS-20224 B68-10566 01

Simple switch actuated by force applied over wide solid angle
XHP-09808 B69-10032 01

Thick transducers used for generating short-duration stress pulses in thin specimens
ARC-10232 B69-10045 01

Bootstrap unloader
XHF-09768 B69-10120 01

Nosebauer vibration calibration systems evaluated
N-PS-20014 B69-10125 01

A magnifying scratch-gage force transducer
LANGLEY-10496 B69-10212 01

High-power microwave power divider concept
NPO-11031 B69-10290 01

Surface profilometer for examining grain-boundary grooves
ARC-10290 B69-10345 05

Tracer of electrical conduit or pipes
NSC-15223 B69-10347 01

Pressure transducer
NPO-10853 B69-10364 01

Instrumentation for nondestructive testing of composite honeycomb materials
N-PS-20465 B69-10366 03

Nondestructive determination of cohesive strength of adhesive-bonded composites
N-PS-20397 B69-10464 03

Torsional tubular disconnect
NFO-10704 B69-10499 05

Gas Metal Arc/GMA weld torch proximity control
N-PS-16327 B69-10533 01

Cryogenic pressure transducer
N-PS-18099 B69-10601 01

New type pressure transducer for severe thermal environments
N-PS-20208 B69-10652 01

Miniature backward-diode pressure sensor features stability and low power consumption
EBC-10229 B69-10690 01

TRANSFER FUNCTIONS
Cryogenic liquid transducer system reduces residual bollof
LEWIS-274 B66-10157 02

Transistor circuit increases range of logarithmic current amplifier
NU-0018 B66-10350 01

Human transfer functions used to predict system performance parameters
LANGLEY-203 B66-10379 01

Carriage system remotely moves drawer over extended distance
NU-0092 B66-10711 05

Circuit multiplies pulse width modulation, exhibits linear transfer function
HQ-56 B67-10055 01

Plotter design simplifies determination of image sensor transfer characteristic
NPO-10164 B67-10206 01

CINDA - Chrysler Improved Numerical Differentiating Analyzer computer program
N-PS-2298 B67-10278 06

Computer program provides linear sampled-data analysis for high order systems
N-PS-12971 B67-10287 06

General frequency response program calculates frequency response of system, open at any specified element
N-PS-12817 B67-10521 06

Phase plane displays detect incipient failure in servo system testing
HQ-10018 B67-10662 01

Active RC networks of low sensitivity for integrated circuit transfer function
ARC-1046 B68-10210 01

Method for reducing snap in magnetic amplifiers
LEWIS-10388 B68-10388 01

Symbolic reduction of block diagrams using FORNAC
LEWIS-10469 B68-10423 06

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSFC-10675 B69-10037 01

Tunable bandpass filter with variable selectivity
ARC-10191 B69-10130 01

Reducing quantizer deadband with a range switching digital filter
N-PS-20419 B69-10259 01

Analysis of space vehicle structures using the transfer-function concept
NPO-11162 B69-10337 06

Fast Fourier Transform Spectral Analysis Program
N-PS-15062 B69-10434 06

Current-switching technique for analog pulse circuits
ARC-10479 B69-10445 01

TRANSFER ORBITS
Computer program for mass optimal solutions of some endpoint trajectory problems
N-PS-12974 B67-10310 06

Generalized Newton-Raphson trajectory optimization-generator
N-PS-15020 B68-10422 06

TRANSFER
Rapid billet loader aids extrusion of refractory metals
LEWIS-50 B63-10354 05

Study of theory and application of long duration heat flux transducers
N-PS-1265 B66-10614 01

Irradiated gases transferred without contamination or dilution
Two-light circuit continuously monitors ac ground, phase, and neutral wires

Soldering iron temperature is automatically reduced

Substituting transistor for diode improves rectifying means

Microphone multiplex system provides multiple outlets from single source

Efficient dc to dc converter eliminates large stray magnetic fields

Control circuit maintains unity power factor of reactive load

Thermionic scanner pinpoints work function of emitter surfaces

Rectilinear accelerometer possesses self-calibration feature

Process yield Co-Fe alloys with superior high temperature magnetic properties

High frequency wide-band transformer uses coax to achieve high turn ratio and flat response

Amplifier provides dual outputs from a single source with complete isolation

Solid state phase detector replaces bulky transformer circuit

Ultrasonic wrench produces leaktight connections

Signal generator converts direct current to multiphase supplies

High power dc/ac and ac/dc electrical power conversion techniques developed

Blood pressure reprogramming adapter assists signal recording

Converter provides constant electrical power at various output voltages

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems

Electronic skewing circuit monitors exact position of object underwater

Compensation circuit improves operation of inductive coupling transformers

Solid state high-voltage pulser operates with low supply voltage

Concept to convert electrical power

LEWIS-278 B67-10044 03

Study made of pneumatic high pressure piping materials /10,000 psi/

KSEC-10133 B67-10437 03

Vacuum-jacketed transfer line installation technique

K-PS-14496 B68-10125 05

Encode/Decode facility for FORTRAN

ARG-10335 E69-10169 06

TRAUSPOBIATIONS (HATEEHATICS) SUBJECT IUDEX

GSPC-474 B66-10295 01

Encode/Decode facility for

FORTRAN 4

ARG-10335 E69-10169 06

Microphone multiplex system provides multiple outlets from single source

GSPC-426 B66-10308 01

TRAUSPOBIAPIOUS (HATEEIATICS)

A modal combination computer program for dynamic analysis of structures

UPO-10129 B67-10217 06

Computer program provides linear sampled-data analysis for high order systems

K-PS-12821 B67-10287 06

Solution of differential equations by application of transformation groups

M-PS-14044 B68-10276 02

Computer program analyzes and designs supersonic wing-body combinations

ARC-10141 B68-10335 06

ABRAJ on-site tracking prediction program

BNO-10029 B69-10103 06

Root-cubing and general root-powering methods for finding the zeros of polynomials

M-PS-14802 B69-10424 02

Trajectory optimization using regularized variables

KSC-13370 B69-10810 02

TRANSFORMERS

Simple circuit continuously monitors thermocouple sensor

K-PS-61 B63-10567 01

Improved insertion-loss tester

JPL-358 B64-10080 01

Variable frequency transistor inverters use multiple core transformers

GSPC-183 B65-10119 01

Apparatus permits flexure testing of specimens at cryogenic temperatures

K-PS-257 B65-10129 02

System measures unidirectional forces, excludes extraneous forces

LEWIS-170 B65-10154 05

Analog-to-digital converter has increased reliability and reduced power consumption

GSPC-246 B65-10194 01

High-speed square-wave current limiter operates efficiently

JEL-5C-073 B65-10233 01

Electronic asphere-hour integrator is accurate to one percent

GSPC-203 B65-10308 01

Compact SCR trigger circuit for ignitron switch operates efficiently

K-PS-371 B65-10387 01

Noncontacting vibration transducer has constant sensitivity

LANGLEY-99 B65-10392 01

Dual-voltage power supply has increased efficiency

LEWIS-107A B66-10002 01

Complementary system vaporizes subcooled liquid, improves transformer efficiency

M-PS-550 B66-10045 02

SUBJECT INDEX

Two-light circuit continuously monitors ac ground, phase, and neutral wires

MSPC-356 B66-10163 01

Soldering iron temperature is automatically reduced

ARC-57 B66-10203 01

Substituting transistor for diode improves rectifying means

GSPC-474 B66-10295 01

Microphone multiplex system provides multiple outlets from single source

GSPC-426 B66-10308 01

Efficient dc to dc converter eliminates large stray magnetic fields

GSPC-463 B66-10376 01

Control circuit maintains unity power factor of reactive load

LEWIS-192 B66-10431 01

Thermionic scanner pinpoints work function of emitter surfaces

JPL-SC-177 B66-10444 01

Rectilinear accelerometer possesses self-calibration feature

K-PS-14802 B66-10452 01

Process yield Co-Fe alloys with superior high temperature magnetic properties

LEWIS-333 B66-10535 03

High frequency wide-band transformer uses coax to achieve high turn ratio and flat response

ABG-107 B66-10600 01

Amplifier provides dual outputs from a single source with complete isolation

BNO-10056 B67-10221 01

Solid state phase detector replaces bulky transformer circuit

KSEC-11007 B67-10253 01

Ultrasonic wrench produces leaktight connections

K-PS-12561 B67-10353 05

Signal generator converts direct current to multiphase supplies

KSEC-11043 B67-10368 01

High power dc/ac and ac/dc electrical power conversion techniques developed

M-PS-13277 B67-10390 01

Blood pressure reprogramming adapter assists signal recording

BNO-265 B67-10475 01

Converter provides constant electrical power at various output voltages

GSPC-519 B67-10481 01

Light-controlled resistors provide quadrature signal rejection for high-gain servo systems

KSEC-340 B67-10552 01

Electronic skewing circuit monitors exact position of object underwater

KSEC-10146 B67-10629 01

Compensation circuit improves operation of inductive coupling transformers

K-PS-13801 B68-10129 01

Solid state high-voltage pulser operates with low supply voltage

K-PS-14034 B68-10308 01

Concept to convert electrical power

GSPC-10222 B68-10321 01

I-692
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>TRANSISTOR CIRCUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full wave dc-to-dc converter using energy storage transformers</td>
<td>LEWIS-10375</td>
</tr>
<tr>
<td>Torsion system for creep testing with multiple stress reversals</td>
<td>HG-10039</td>
</tr>
<tr>
<td>Remote balance weighs accurately amid high radiation</td>
<td>ARG-10387</td>
</tr>
<tr>
<td>Novel terminal strips for transformers</td>
<td>WTC-10042</td>
</tr>
<tr>
<td>Magnetic field mapper</td>
<td>LEWIS-10782</td>
</tr>
<tr>
<td>Improved pulse shape discriminator for fast neutron-gamma ray detection system</td>
<td>HG-10151</td>
</tr>
<tr>
<td>Synchronizing redundant power oscillators</td>
<td>GSC-09777</td>
</tr>
<tr>
<td>High voltage pulse generator</td>
<td>B5C-12178</td>
</tr>
<tr>
<td>Load current sensor for a pulse width modulator power regulator</td>
<td>GSFC-10656</td>
</tr>
<tr>
<td>Flexible high-voltage supply for experimental electron microscope</td>
<td>ARG-10482</td>
</tr>
<tr>
<td>TRANSIENT HEATING</td>
<td>New computer program solves wide variety of heat flow problems</td>
</tr>
<tr>
<td>Gage measures total radiation, including vacuum UV, from ionized high-temperature gases</td>
<td>JMR-09802</td>
</tr>
<tr>
<td>Surface-renewal models for heat-transfer between walls and fluidized beds</td>
<td>ARG-10732</td>
</tr>
<tr>
<td>TRANSIENT PRESSURES</td>
<td>Improved variable-reluctance transducer measures transient pressures</td>
</tr>
<tr>
<td>Burst diaphragm protects vacuum vessel from internal pressure transients</td>
<td>JPL-667</td>
</tr>
<tr>
<td>Special mount improves remote transducer accuracy</td>
<td>LEWIS-269</td>
</tr>
<tr>
<td>Magnetoresistor monitors relay performance</td>
<td>M-FS-1754</td>
</tr>
<tr>
<td>Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts</td>
<td>M-PS-13058</td>
</tr>
<tr>
<td>Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes</td>
<td>ARG-10274</td>
</tr>
<tr>
<td>TRANSIENT RESPONSE</td>
<td>Polarimeter provides transient response in nanosecond range</td>
</tr>
<tr>
<td>Computer program analyzes generalized environmental control and life support systems</td>
<td>MSC-1157</td>
</tr>
<tr>
<td>Computer program determines system stability</td>
<td>/DIGSTA/</td>
</tr>
<tr>
<td>LEWIS-10375</td>
<td>B68-10216</td>
</tr>
<tr>
<td>Improved limiter for turn-on current</td>
<td>GSFC-10413</td>
</tr>
<tr>
<td>TRANSISTOR AMPLIFIERS</td>
<td>Simplified electrometer has excellent operating characteristics</td>
</tr>
<tr>
<td>High-gain amplifier has excellent stability and low power consumption</td>
<td>GSFC-272</td>
</tr>
<tr>
<td>Tiny biomedical amplifier combines high performance, low power drain</td>
<td>ARC-41</td>
</tr>
<tr>
<td>Field effect transistor presents high input impedance in ac amplifier</td>
<td>JPL-500</td>
</tr>
<tr>
<td>Electrometer preamplifier has drift correction feedback</td>
<td>JPL-SC-074</td>
</tr>
<tr>
<td>Photosensors used to maintain welding electrode-to-joint alignment</td>
<td>MNC-293</td>
</tr>
<tr>
<td>FFT comparator detects analog signal levels without leading analog device</td>
<td>M-FS-503</td>
</tr>
<tr>
<td>Phase inverter provides variable reference push-pull output</td>
<td>HQ-23</td>
</tr>
<tr>
<td>Modified univibrator compensates for output timing errors</td>
<td>ARG-85</td>
</tr>
<tr>
<td>Experimental coherent fractional frequency multiplier at S-band</td>
<td>M-PS-2427</td>
</tr>
<tr>
<td>Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions</td>
<td>ARG-167</td>
</tr>
<tr>
<td>Transistor biased amplifier minimizes diode discriminator threshold attenuation</td>
<td>ARG-163</td>
</tr>
<tr>
<td>Limit circuit prevents overdriving of operational amplifier</td>
<td>MNC-10682</td>
</tr>
<tr>
<td>Solid state high-voltage pulser operates with low supply voltage</td>
<td>M-FS-14034</td>
</tr>
<tr>
<td>TRANSISTOR CIRCUITS</td>
<td>New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation</td>
</tr>
<tr>
<td>Increased performance reliability obtained with dual/redundant oscillator system</td>
<td>GSFC-36</td>
</tr>
<tr>
<td>Igniting system for mercury lamps protects transistorized sustaining supply</td>
<td>JPL-421</td>
</tr>
<tr>
<td>Temperature-compensation circuit stabilizes performance of vidicons</td>
<td>JPL-486</td>
</tr>
<tr>
<td>Inexpensive, stable circuit measures heart rate</td>
<td>MNC-95</td>
</tr>
</tbody>
</table>
TRANSMITOR CIRCUITS CONT

Transistor voltage comparator performs own sensing
GSFC-228 B65-10028 01

Pulse height analyzer operates at high repetition rates, low power
WOC-046 B65-10041 01

Variable voltage supply uses Zener diode as reference
GSFC-262 B65-10097 01

Transistorized circuit clamps voltage with 0.1 percent error
GSFC-196 B65-10118 01

Variable frequency magnetic multivibrator generates stable square-wave output
GSFC-48-21 B65-10124 01

Sensitive electrometer features digital output
GSFC-208 B65-10206 01

High-speed square-wave current limiter operates efficiently
JPL-SC-073 B65-10233 01

Simple circuit reduces transistor switching time
GSFC-314 B65-10234 01

Solid-state laser transmitter is amplitude modulated
MSC-121 B65-10238 01

Increased junction lead inductance ballasts high-frequency transistors
GSFC-387 B65-10259 01

Electronic amper-hour integrator is accurate to one percent
GSFC-203 B65-10308 01

Hybrid circuit achieves pulse regeneration with low power drain
GSFC-382 B65-10314 01

High-intensity flashing beacon powered by mercury cells
LANAGLEY-80 B65-10361 01

Automatic gain control circuit handles wide input range
MSC-166 B66-10089 01

Fingertip current control facilitates use of arc welding gun
MSC-289 B66-10092 05

Low-power ring counter drives high-level loads
GSFC-431 B66-10106 01

Improved chopper circuit uses parallel transistors
K-FS-468 B66-10113 01

FET comparator detects analog signal levels without loading analog device
K-FS-503 B66-10224 01

Electronic phase-locked-loop speed control system is stable
JPL-SC-084 B66-10232 01

Circuit protects regulated power supply against overload current
GSFC-453 B66-10292 01

Substituting transistor for diode improves rectifying means
GSFC-576 B66-10295 01

Circuit provides accurate four-quadrant multiplication
WOC-272 B66-10331 02

Transistor circuit increases range of

SUBJECT INDEX

Logarithmic current amplifier
H0-0018 B66-10350 01

Efficient dc to dc converter eliminates large stray magnetic fields
GSFC-463 B66-10376 01

Single channel pulse-height analyzer operates in subnanosecond range
KFS-267 B66-10377 01

Equivalent circuit for a field effect transistor established for computer simulation
H-FS-1752 B66-10590 01

Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 ampere to 10 to the minus 3 ampere
H0-0087 B66-10706 01

Double emitter suppressed carrier modulator uses commercially available components
H-FS-2494 B67-10101 01

Modified univibrator compensates for output timing errors
ARG-85 B67-10130 01

Subminiature deflection circuit operates integrated sweep circuits in TV camera
MSC-1263 B67-10155 01

Hybrid solid state switch replaces motor-driven power switch
JPL-931 B67-10165 01

Switching-type regulator circuit has increased efficiency
MSC-1063 B67-10190 01

An efficient, temperature-compensated subcarrier oscillator
JPL-SC-091 B67-10251 01

Fast-response frequency-to-analog converter
K-FS-709 B67-10257 01

Solid state circuit averages multiple signals and rejects those varying significantly from the average
MSC-10066 B67-10262 01

Analog buffer isolates high impedance source from low impedance load
K-FS-13481 B67-10548 01

Transistor h parameter conversion slide rule
JPL-649 B67-10561 01

Improved frequency divider employs transistor avalanche effect
MSC-10068 B67-10575 01

Low cost SCR lamp driver indicates contents of digital computer registers
GSFC-10221 B67-10656 01

Current-limiting voltage regulator
MSC-11824 B68-10305 01

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110 B68-10328 01

Two-way digital driver/receiver uses one set of lines
ERC-10055 B68-10437 01

An electronic circuit for sensing malfunctions in test instrumentation
KSC-10209 B69-10392 01

Accurate nine-decade temperature-compensated logarithmic amplifier
ARG-10480 B69-10429 01

I-694
SUBJECT INDEX

Lateral PNP bipolar transistor with aiding field diffusions
MSC-13072 869-10741 01

TRANSISTORS

Indium foil with beryllia washer improves transistor heat dissipation
GSFC-42 863-10033 01

Two-stage emitter follower is temperature stabilized
MSC-20 863-10493 01

Computer circuit will fit on single silicon chip
JPL-513 863-10518 01

Transistorized trigger circuit is frequency-controllable
GSFC-111 863-10553 01

High efficient square-wave oscillator operator at high power levels
GSFC-112 863-10554 01

Monostable circuit with tunnel diode has fast recovery
GSFC-132 863-10603 01

Low-power transistorized circuit provides staircase waveform
GSFC-48 864-10007 01

Blocking oscillator uses low triggering voltage
MSC-28 864-10017 01

Novel circuit combines pulse stretcher with NOR gate
GSFC-187 864-10150 01

Temperature-compensation circuit stabilizes performance of vidicons
JPL-486 864-10226 01

PTC thermistor protects multiloaded power supplies
GSFC-236 864-10281 01

Tunnel-diode circuit features zero-level clipping
GSFC-247 865-10002 01

Circuit Improved produces monostable multivibrator with load-carrying capability
GSFC-344A 865-10011 01

Circuit detects errors in address currents for magnetic core arrays
F-PS-234 865-10047 01

Pulse generator permits nondestructive testing of component breakdown voltage
MSC-122 865-10054 01

Feedback oscillator functions as low-level pulse stretcher
GSFC-261 865-10069 01

Synchronized pulse generator needs no external power
GSFC-274 865-10072 01

Simple circuit functions as frequency discriminator for PPM signals
GSFC-267 865-10102 01

Variable load automatically tests dc power supplies
GSFC-291 865-10105 01

Unijunction frequency divider is free of backward loading
JPL-500-010 865-10112 01

Motor position sensor switches currents in brushless dc motors
GSFC-315 865-10151 01

Dc to ac converter operates efficiently at low input voltages
GSFC-130 865-10178 01

Voltage controlled oscillator is easily aligned, has low phase noise
JPL-510 865-10223 01

Magneto-spike register circuit controls step motor operation
GSFC-340 865-10226 01

Boron trifluoride nuclear detector preamplifier uses single-cable connection
LEWIS-178 865-10255 01

Constant-current regulator improves tunnel diode threshold-detector performance
GSFC-239 865-10282 01

Boron nitride housing cools transistors
WO-079 865-10289 01

Insulator-holder protects transistors in dense electronic assemblies
MSC-214 865-10389 01

Mounting improves heat-sink contact with beryllia washer
MSC-194 866-10144 01

Complementary monostable circuits achieve low power drain and high reliability
GSFC-433 866-10179 01

Jig protects transistors from heat while tinning leads
MSC-515 866-10240 05

Function generator eliminates necessity of series summation
GSFC-214 866-10351 01

Brushless dc motor has high efficiency, long life
GSFC-181 866-10355 01

Solid-state switch increases switching speed
WO-298 866-10380 01

Semiconductors can be tested without removing them from circuitry
F-PS-1163 866-10447 01

Pulse generator using transistors and silicon controlled rectifiers produces high current pulses with fast rise and fall times
MSC-405 866-10456 01

Solid state circuit switches ac load
JPL-798 866-10465 01

Bipolar current driver for memory circuits
GSFC-213 866-10469 01

Simple, one transistor circuit boosts pulse amplitude
GSFC-501 866-10480 01

Solid state annunciator facilitates complex system troubleshooting
F-PS-1259 866-10505 01

Computer program searches characteristic data of diodes and transistors
GSFC-493 866-10529 01

Preregulator feedback circuit utilizes Light Actuated Switch
F-PS-1180 866-10542 01

Collector/collector guard ring balancing circuit eliminates edge effects
JPL-SG-143 866-10563 01

Circuit provides overcurrent protection to push-pull amplifier
MSC-12033 867-10300 01

I-695
TRAUITS
TIME

SiC/Si diode trigger circuit provides automatic range switching for log amplifier N-PS-1879 B67-10514 01

Field effect transistors improve buffer amplifier N-PS-916 B67-10334 01

Current pulse amplifier transmits detector signals with minimum distortion and attenuation NEC-10055 B67-10347 01

High power dc/dc and dc/ac electrical power conversion techniques developed N-PS-13227 B67-10390 01

Multiplexer uses insulated gate-field effect transistors N-PS-13096 B67-10396 01

Study made of anodized aluminum circuit boards N-PS-13560 B67-10425 01

Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board N-PS-13663 B67-10426 01

Series transistors isolate amplifier from flyback voltage MSC-11023 B67-10468 01

Blood pressure reprogramming adapter assists signal recording MSC-265 B67-10475 01

Converter provides constant electrical power at various output voltages GSPC-519 B67-10481 01

Solid state zero-bias bilateral switch GSPC-532 B67-10559 01

Prediction of radiation damage effects in transistors GSPC-10021 B67-10606 01

Gyrator-type circuits replace ungrounded inductors YAC-10608 B68-10084 01

Analysis and design of a class-D amplifier N-PS-18803 B68-10313 01

Integrated metal transistor leads GSPC-90536 B68-10518 01

Pressure-sensitive boaded junction transducers ERC-10087 B68-10563 01

Microelectronic oscillator, 2 GSPC-10387 B69-10063 01

Microelectronic oscillator GSPC-10375 B69-10064 01

Remotely-actuated biomedical switch ARC-10105 B69-10117 01

Integrated circuit with multiple collector current source N-PS-20177 B69-10126 01

Self-starting circuit for switching regulators LEWIS-10686 B69-10128 05

Full wave dc-to-dc converter using energy storage transformers LEWIS-10375 B69-10140 01

Positive and negative output circuits LEWIS-10715 B69-10151 01

Conceptual techniques for reducing parasitic current gain of lateral pnp transistors MSC-13199 B69-10244 01

Improved dc voltage regulator TKB-06467 B69-10369 01

Punch-magnet delay eliminated by modification of circuit ARG-10333 B69-10416 01

An unconventional magnetically-coupled multivibrator EQ-10226 B69-10480 01

Constant-frequency, variable-duty-cycle multivibrator XGS-10033 B69-10512 01

Instrument calibrates low gas-rate flowmeters MSC-134 B65-10137 01

Ultrasonic temperature measuring device LEWIS-10446 B68-10319 01

Fused-salt calorimeter determines heats of formation of alloys at high temperatures ARC-10114 B68-10083 01

Levitation-melting technique for metals and alloys ARG-10240 B69-10045 01

Silicon carbide diode for increased light output N-PS-20063 B69-10196 01

Coordination chemistry in fused-salt solutions ARC-10469 B69-10423 03

Preparation of superconducting thin films of transition-metal interstitial compounds Eq-10445 B69-10470 01

Electrolytic separation of crystals of transition-metal oxides ARG-10506 B69-10642 03

Lower-cost tungsten-rhenium alloys LEWIS-332 B66-10528 03

Elimination of rocket engine asymmetric loads during tests at sea level N-PS-1730 B66-10674 05

Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing ARG-10100 B68-10284 05

Preparation of superconducting thin films of transition-metal interstitial compounds Eq-10445 B69-10470 01

Training manual on optical alignment instruments N-PS-20292 B66-10574 02

Conditioning of pulses from aerosol-particle detectors ERC-10250 B69-10691 01
**SUBJECT INDEX**

**TRANSLATIONAL MOTION**

- Eccentric drive mechanism is adjustable during operation
  M-FS-2576 B67-10373 05
- Magnifying scratch-gage force transducer
  LANGLEY-10496 B69-10212 01
- Precisely repeatable rotary mechanism
  NFO-10679 B69-10696 05

**TRANSLUCENCE**

- Setting of angles on machine tools speeded by magnetic protractor
  ARC-5 B63-10006 01
- Areas of irregular, discontinuous patterns rapidly and accurately measured
  GSPC-10184 B67-10674 01

**TRANSMISSION**

- Bearing transmits rotary and axial motion
  LANGLEY-27 B64-10130 05
- Pneumatic power is transmitted through air
  MSC-8 B64-10141 05
- IR-transmission glasses formed from oxides of bismuth and tellurium
  M-FS-279 B65-10190 03
- Optically exciting a magnetic memory, a feasibility study
  M-FS-11854 B69-10600 02
- Resonant microwave dichroic surface
  GSPC-10658 B69-10274 01
- High voltage pulse generator
  MSC-12178 B69-10548 01

**TRANSMISSION CIRCUITS**

- TV synchronization system features stability and noise immunity
  JPL-915 B67-10118 01
- Current pulse amplifier transmits detector signals with minimum distortion and attenuation
  NUC-10055 B67-10347 01
- Optometric system facilitates colorimetric and fluorometric measurements
  NFO-10233 B68-10316 01
- Technique for tuning antenna systems producing negligible signal radiation
  KSC-10060 B69-10215 01

**TRANSMISSION LINES**

- Igniting system for mercury lamps protects transistorized sustaining supply
  JPL-144 B67-10262 01
- Plastic molds reduce cost of encapsulating electric cable connectors
  M-FS-69 B63-10568 05
- High-pass RF coaxial filter rejects dc and low frequency signals
  GSPC-73 B64-10173 01
- Thermistor connector assembly increases accuracy of measurements
  LANGLEY-62 B65-10045 01
- Electrical cable connector-clamp has smooth exterior surface
  MSC-154 B65-10201 05
- Oscillator circuit measures liquid level in tanks
  M-FS-245 B65-10209 01
- Electromagnetic hammer removes weld distortions from aluminum tanks
  M-FS-287 B65-10342 05

**TRANSMISSIVITY**

- Single connector provides safety fuses for multiple lines
  NUC-199 B66-10050 01
- Electrical cabling withstands severe environmental conditions
  M-FS-1585 B66-10827 01
- Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
  M-781 B66-10429 01
- Remote preamplifier circuit maintains stability over wide temperature range
  WCO-278 B66-10432 01
- Pulse technique provides more accurate checkout of exploding bridge wire device
  HQ-62 B66-10561 01
- Electrical continuity scanner facilitates identification of wires for soldering to connectors
  M-852 B66-10605 01
- Improved memory word line configuration allows high storage density
  GSPC-559 B66-10617 01
- Cable clamp bolt fixture facilitates assembly in close quarters
  KSC-67-80 B67-10244 01
- Metal flame spray coating protects electrical cables in extreme environment
  WUC-10077 B67-10351 03
- Cut-through tester accurately measures insulation failure rates
  M-FS-12506 B67-10354 03
- Temperature-sensed cryogenic bleed maintains liquid state in transfer line
  M-FS-12681 B67-10424 01
- Adhesives for laminating polyimide insulated flat conductor cable
  MSC-12066 B67-10429 03
- Rectangular configuration improves superconducting cable
  ARG-90088 B68-10098 02
- Solid state high-voltage pulser operates with low supply voltage
  M-FS-14034 B68-10308 01
- Automatic colorimetry system monitors RF power
  NFO-11033 B69-10384 01

**TRANSMITTANCE**

- Shock and vibration response of multistage structure
  M-FS-14972 B68-10353 05

**TRANSMITTANCE**

- Calculation of infrared spectral transmittances of inhomogeneous gases
  M-FS-1563 B68-10554 02
- Exposure Value /EV/ system expanded to include filter factors and transmittance
  LANGLEY-150 B66-10602 02
- Detection of effect of deposits on optical windows of pyrometer measurements
  LBW-10366 B68-10367 01
- Correction for losses in optical birefringent networks, a concept
  M-FS-20086 B66-10571 02

**TRANSMITTER RECEIVERS**

- Frequency offset in linear FM/CW transponder eliminates clutter
  M-FS-249 B65-10146 01
Improved electro-optical tracking system
N-PS-14791 B68-10311 01
Combination ranging system and mapping radar
NPO-11001 B69-10325 01
Emission tester for high-power vacuum tubes
JPL-628 B64-10150 01
Subminiature biotelemetry unit permits remote physiological investigations
ARC-39 B64-10171 01
Helical coaxial-resonator makes excellent RF filter
GSFC-243 B65-10012 01
Solid-state laser transmitter is amplitude modulated
MNS-121 B65-10238 01
System locates randomly placed remote objects
LANGLEY-209 B66-10315 01
Helmet system broadcasts electroencephalograms of wearer
ARC-70 B66-10536 01
Ultraminiature television camera
N-PS-11967 B67-10469 01
Multichannel implantable telemetry system
ARC-10083 B68-10065 01
Communication system features dual node range acquisition plus time delay measurement
N-PS-14323 B68-10306 01
A 35 GHz solid state transmitter/driver
N-PS-20152 B68-10545 01
Low-loss C-band parasitic probe
KSC-09346 B69-10251 01
Self-shielding printed circuit boards for high frequency amplifiers and transmitters
HQ-10433 B69-10314 01
Automatic calorimetry system monitors RF power
NPO-11033 B69-10384 01
Estimation of signal-to-noise ratio
XRF-05259 B69-10557 01
Versatile telemonitoring system
ARO-10334 B69-10655 01
PCR synchronization by word stuffing
NPO-10688 B69-10695 01
Pocket-sized tone-modulated FM transmitter
NPO-11180 B69-10725 01
Computer program calculates peripheral water injection cooling of axisymmetric supersonic diffuser
NUC-10541 B67-10543 06
Experimental program to investigate transonic flow around protuberances
N-PS-20037 B69-10609 05
Variable-transparency wall regulates temperatures of structures
LANGLEY-25 B63-10528 03
Use of photographs speeds inspection of printed-circuit boards
MSC-72 B64-10118 01
Simple scale interpolator facilitates reading of graphs
LANGLEY-88 B65-10070 05
Fresnel zone plate forms images at wavelengths below 1000 angstroms
GSFC-251 B65-10171 02
Respiratory transfer value has fail-safe feature
ARC-1 B65-10369 01
One-piece transparent shell improves design of helmet assembly
MSS-187 B66-10390 05
Scribable coating for plastic films
B67-10409 03
Projection transparencies from printed material
N-PS-14608 B69-10112 01
Improved atomic resonance gas cell for use in frequency standards
MSS-11666 B68-10230 01
Fluorescent particles enable visualization of gas flow
N-PS-14583 B69-10259 02
Improved radiographic image amplifier panel
N-PS-14522 B69-10363 02
Direct reading of electrocardiograms and respiration rates
KSC-10233 B69-10188 04
Separation stabilized with crosslinking agent
NPO-10834 B69-10299 03
Oceanborne transponder platform has good stability
N-PS-171 B65-10035 05
Frequency offset in linear FM/CW transponder eliminates clutter
N-PS-249 B65-10146 01
Interference effects eliminated in random oriented space station antenna system
NCS-11004 B67-10435 01
Communication system features dual node range acquisition plus time delay measurement
N-PS-14323 B68-10306 01
Combination ranging system and mapping radar
NPO-11001 B69-10325 01
Computer programs for thermodynamic and transport properties of hydrogen
NCS-10537 B68-10150 06
High-speed pulse camera
MSS-11353 B68-10329 02
Real fluid properties of normal and parahydrogen
LEWIS-10458 B68-10361 06
GAMBIT program
MCS-10243 B69-10433 06
Ionone membrane battery separator
NPO-11091 B69-10501 03
Properties of air and combustion products of fuels with air
LEWIS-11030 B69-10711 03
Surface-renewal models for heat-transfer between walls and fluidized beds
ARG-10372 B69-10772 02
TRANSPORT THEORY
Computer program P1-GAS calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas
BNC-10141 867-10678 06

TRANSPORTATION
Universal transloader moves delicate equipment without stress
MSC-654 866-10384 05
Carriage system remotely moves drawer over extended distance
NU-0092 866-10711 05
Swing-out rail system separates overhead crane rails
NU-0094 866-10713 05
Hydrostatic force used to handle outsized, heavy objects
HQ-90 867-10167 05
Instrumentation monitors transported material through variety of parameters
I-PS-12938 867-10546 01
Packaging criteria for transportation and handling shock and vibration
I-PS-13007 866-10219 05
Computer graphics data conditioning
I-PS-14695 866-10296 06
Weight Control System
I-PS-15028 869-10041 06

TRANSU MBUR A IENTS
Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods
AMG-10065 866-10425 03

TRANSVERSE WAVES
Computer program for determination of natural frequencies of closed spherical sandwich shells
MSC-1246 867-10279 06

TRAPPERS
Antenna configurations provide polarization diversity
GSPC-74 866-10066 01

TRAPPING
Method for determining properties of microinstabilities of a magnetized plasma
KSC-10447 869-10462 02

TRAV ELIN G WAVE M ASHERS
Superconductor magnets used for stagger-tuning traveling-wave maser
GSPC-292 865-10165 01
Parametric up-converter increases flexibility of maser
KSC-67-98 867-10104 01
Apparatus makes klystron operating frequency adjustable from remote point
NPO-09831 867-10514 01
Highly stable microwave delay line
NPO-09828 867-10642 01
Thermal short improves sensitivity of cryogenically cooled maser
NPO-09975 868-10059 01
Improved traveling wave maser amplifier
NPO-10946 869-10244 01
RF noise suppression using the photodiode effect in semiconductors
MSC-12255 869-10225 01

TRAVELING WAVE TUNES
Traveling-wave tube circuit simplifies microwave relay
GSPC-299 865-10127 01

TRAVELING WAVE TUBES
A positive taper traveling-wave tube
LANGLEY-10263 869-10407 01
Viscous-pendulum damper suppresses structural vibrations
LANGLEY-45 864-10272 05
Mass culture of photobacteria to obtain luciferase
GSPC-10563 869-10294 04
Lateral ring metal elastic wheel absorbs shock loading
B66-10663 05
Apparatus of small size can be extended into long, rigid boom
JPL-305 863-10200 05

TRIGGER CIRCUITS
Unmanned seismometer levels self, corrects drift errors
GSPC-100 863-10551 01
Transistorized trigger circuit is frequency-controllable
GSPC-111 863-10553 01
System selects framing rate for spectrophotograph camera
LANGLEY-55 865-10086 01
Compact SCR trigger circuit for ignitron switch operates efficiently
B65-371 865-10347 01
Security warning system monitors up to fifteen remote areas simultaneously
KSC-66-39 866-10548 01
Circuit multiplies pulse width modulation, exhibits linear transfer function
EQ-56 867-10055 01
TV synchronization system features stability and noise immunity
JPL-915 867-10118 01
Modified univibrator compensates for output timing errors
AMG-85 867-10130 01
Laboratory pulse modulator uses minority carrier storage diodes
I-PS-2442 867-10226 01
A calibration means for spectrum analyzers
MSC-10987 867-10254 01
Multichannel pulse height analyzer is inexpensive, features low power requirements
E68-10066 867-10258 01
SiC/Si diode trigger circuit provides automatic range switching for log amplifier
I-PS-1879 867-10258 01
Logic circuit detects both present and missing negative pulses in superimposed wave trains
I-PS-12515 867-10314 01
Temperature-stabilized, triggerable microelectronic astable multivibrator starts reliably
MSC-1173 867-10624 01
Unique frequency-shift-keyed demodulation system
GSPC-217 867-10668 01
High-speed camera synchronization
I-PS-18062 868-10282 02
Transistorized Marx hank pulse circuit

I-699
provides voltage multiplication with nanosecond rise-time
ARG-10110 B66-10328 01
Schmitt trigger multivibrator
MSC-10955 B66-10143 01
Positive and negative output circuits
LEWIS-10715 B66-10151 01

Circuit operates as sine function generator
MSC-259 B66-10038 01
Wide-band doubler and sine wave quadrature generator
NPO-11133 B66-10383 01

Instrument accurately measures weld angle and offset
JPL-0021 B63-10280 01
Application of the solid lubricant molybdenum disulfide by sputtering
LEWIS-10544 B68-10340 02

Instrument quickly transposes ground reference target to eye level
MSC-275 B66-10061 05
Alignment tool facilitates pin placement on irregular horizontal surfaces
LANGLEY-219 B66-10410 05

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331 B69-10208 04
Direct in-vial collection for liquid-scintillation assay of carbon-14 and tritium
ARG-10424 B69-10208 03

Fifth-wheel fork truck adapter
NFS-14460 B69-10021 05

Variable-numbers method of solving differential equations
NPO-10515 B69-10017 02

Collapsible truss structure is automatically expandable
GSPC-265 B65-10126 05

Solar X-ray spectrum reproduced in vacuum
MSC-228 B67-10164 02
X-ray source uses interchangeable target anodes to vary X-ray wavelength
NPO-10036 B67-10218 02

Solar X-ray spectrum reproduced in vacuum
MSC-228 B67-10164 02
Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry
ARG-100 B67-10236 03
Oscilloscope used as X-Y plotter or two-dimensional analyzer
LEWIS-311 B67-10269 01

Technique for tuning antenna systems producing negligible signal radiation
XNP-09808 B69-10411 02

New electron microscope employs new video display technique
ARG-156 B67-10312 03

Fuel element concept for long life high power nuclear reactors
LEWIS-10369 B69-10154 03

Rectangular-bore, high-gain laser plasma tube
U-10234 B69-10193 02

Oscilloscope used as X-Y plotter or two-dimensional analyzer
LEWIS-311 B67-10269 01

Technique for tuning antenna systems producing negligible signal radiation
XNP-09808 B69-10411 02
selectivity
ARC-10191 B69-10130 01

An improved atomic hydrogen frequency and
time standard
GSFC-10706 B69-10341 02

TUNGSTATES
Electrolytic separation of crystals of
transition-metal oxides
ARG-10506 B69-10642 03

TUNGSTEN
Apparatus facilitates high-temperature tensile
testing in vacuum
LEWIS-62 B63-10345 03

Novel clamps align large rocket cases,
eliminate back-up bars
M-FS-1 B63-10376 05

New apparatus increases ion beam power density
LEWIS-73 B63-10440 01

Precision gage measures ultrahigh vacuum
levels
GSFC-114 B63-10597 01

Attachment converts microscope to point source
autooscillator
JPL-499 B64-10124 05

Pressure molding of powdered materials
improved by rubber mold insert
WOO-100 B64-10270 03

Fine-mesh screen made by simplified method
WOO-104 B64-10282 03

Forming blocks speed production of strain gage
grids
LEWIS-162 B65-10009 05

Carbon arc ignition improved by simple
auxiliary circuit
MSC-103 B65-10018 01

Wire winding increases lifetime of oxide
coated cathodes
LEWIS-154 B65-10032 03

Ceramic-coated boat is chemically inert,
provides good heat transfer
LANGLEY-90 B65-10063 05

Jig and fixture aid fabrication of tungsten
rivets
LEWIS-165 B65-10101 05

Tantalum cathode improves electron-beam
evaporation of tantalum
JPL-WOO-021 B65-10175 03

Resistive metal shielding /insulation/
increases operating range of induction furnace
LEWIS-202 B65-10188 02

Thermoelectric elements diffusion-bonded to
tungsten electrodes
GSFC-346 B65-10309 01

Wire bundle formed into grids with minute
interstices
WOO-089 B65-10372 03

Tungsten wire and tubing joined by nickel
brazing
M-FS-394 B65-10391 05

Electron beam seals outer surfaces of porous
bodies
M-FS-562 B66-10033 03

Protective coating withstands high temperature
in oxidizing atmosphere
M-FS-529 B66-10044 03

Heated die facilitates tungsten forming
LEWIS-25A B66-10047 05

Thin carbon film serves as UV bandpass filter
ERC-8 B66-10060 02

Refractory coating protects intricate graphite
elements from high-temperature hydrogen
N9-0027 B66-10084 01

High temperature thermocouple operates
in reduction atmosphere
NT-0046 B66-10134 01

Chromium oxide coatings improve thermal
emissivity of alumina
WOO-263 B66-10227 03

Chemical regeneration of emitter surface
increases thermionic diode life
LEWIS-17 B66-10435 02

Study shows effect of surface preparations
on improving thermionic emission
JPL-SC-140 B66-10493 01

Tungsten insulated susceptor cup for high
temperature induction furnace eliminates
contamination
LEWIS-283 B66-10538 03

Tungsten fiber-reinforced copper composites
form high strength electrical
conductors
LEWIS-338 B66-10572 03

Sensors measure surface ablation rate of
reentry vehicle heat shield
LANGLEY-287 B66-10592 01

Plasma jet electrode has longer operating
life
NU-0098 B67-10024 02

Sensing disks for slug-type calorimeters
have higher temperature stability
M-FS-1067 B67-10161 01

Electron beam welder X-rays its own welds
LEWIS-10111 B67-10216 02

Welding, bonding, and sealing of refractory
metals by vapor deposition
LEWIS-123 B67-10232 03

Water cooled anode increases life of high
temperature arc lamp
N-P0-10180 B67-10247 02

Self-balancing line-reversal pyrometer
automatically measures gas temperatures
LEWIS-348 B67-10268 01

Portable spectrometer monitors inert gas
shield in welding process
M-FS-12144 B67-10326 02

Extrusion of small-diameter, thin-wall
tungsten tubing
LEWIS-90335 B67-10355 05

Electron beam parallel X-ray generator
MSC-11022 B67-10372 02

Torsion meter aids study of hysteresis
motor rings
M-FS-12215 B67-10412 01

Thoriated tungsten tube provides improved
high temperature thermocouple sheath
NUC-10145 B67-10627 03

Reinforced thermal-shock resistant ceramics
LEWIS-10376 B68-10085 03

High temperature alloy
LEWIS-10377 B68-10253 03

Fabrication techniques developed for small-
diameter, thin-wall tungsten and tungsten
alloy tubing
ARG-10100 B68-10284 05
Application of the solid lubricant molybdenum disulfide by sputtering LEWIS-10544 B68-10340

Nickel-base alloy with improved stress rupture properties LEWIS-10283 B68-10344

Nickel-base superalloys excellent properties promote its service to 2200 degrees F LEWIS-10355 B68-10380

Grain growth inhibitor for porous tungsten materials LEWIS-10535 B68-10527

Method for controlling density and permeability of sintered powdered metals LEWIS-10393 B68-10528

Cold machining of high density tungsten and other materials ARG-10289 B69-10110

Tungsten thermal neutron dosimeter LEWIS-10369 B68-10249

Study of high temperature bearing materials LEWIS-10629 B69-10252

High strength, superplastic superalloy LEWIS-10874 B69-10293

Improved high-temperature-strength nickel-base superalloy LEWIS-10352 B68-10352

Conversion of continuous-direct-current TIG welder to pulse-arc operation N-PS-16141 B69-10393

Discrimination of fish oil and mineral oil slicks on sea water Bq-10412 B69-10673

TUNGSTEN ALLOYS Brazing method produces solid-solution bond between refractory metals LEWIS-212 B65-10370

Nickel-base superalloys developed for high-temperature applications LEWIS-226 B66-10222

Lower-cost tungsten-rhenium alloys LEWIS-332 B68-10528

New tungsten alloy has high strength at elevated temperatures LEWIS-336 B68-10551

Low-energy gamma ray inspection of brazed aluminum joints NESC-1189 B67-10337

High-strength tungsten alloy with improved ductility LEWIS-10257 B67-10340

Cobalt-tungsten, ferromagnetic high-temperature alloy LEWIS-10376 B68-10095

Tungsten-rhenium alloy thermocouples effective for high-temperature measurement ARG-10059 B68-10109

Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing ARG-10100 B68-10284

Tungsten fiber-reinforced nickel superalloy LEWIS-10424 B68-10369

Refractory oxide insulated thermocouple designed and analyzed for high temperature applications

TUNGSTEN CARBIDES Continuous internal channels formed in aluminum fusion welds N-PS-2399 B67-10183

Flare angles measured with ball gage N-PS-16695 B68-10030

TUNGSTEN FLUORIDES Refractory-metal compound impregnation of polytetrafluoroethylene LEWIS-10733 B69-10072

TUNGSTEN OXIDES Multilayer refractory nozzles produced by plasma-spray process WOD-318 B66-10611

TUNING Helical coaxial-resonator makes excellent RF filter GSFC-243 B65-10012

Device for diode tuning in a stripline varactor harmonic multiplier N-PS-20153 B69-10013

Technique for tuning antenna systems producing negligible signal radiation KSC-10060 B69-10215

Resonant microwave dichroic surface GSFC-10658 B69-10274

Simple, accurate automatic frequency control circuit KSC-10393 B69-10323

Automatic tuning of hydrogen masers GSFC-10127 B69-10452

Proposed acousto-optic filter Bq-10440 B69-10466

TUNNEL DIODES Monostable circuit with tunnel diode has fast recovery GSFC-132 B65-10603

Circuit converts AM signals to FM for magnetic recording GSFC-227 B65-10001

Tunnel-diode circuit features zero-level clipping GSFC-241 B65-10002

Synchronized pulse generator needs no external power GSFC-274 B65-10072

Simple circuit produces high-speed, fixed duration pulses GSFC-285 B65-10228

Constant-current regulator improves tunnel diode threshold-detector performance GSFC-239 B65-10282

Threshold detector produces narrow pulses at high repetition rates GSFC-383 B65-10310

Hybrid circuit achieves pulse regeneration with low power drain GSFC-382 B65-10314

Digitally controlled pulse-level discriminator operates over wide voltage range GSFC-324 B66-10129

Circuit protects regulated power supply against overload current GSFC-453 B66-10292

Solid-state time-to-pulse-height converter developed

X-702
SUBJECT INDEX

ARG-170 Tunnel diode circuit used as nanosecond-range time marker B68-10173 01
Pressure-sensitive bonded junction transducers B68-10563 01
Simple tunnel diode circuit for accurate zero crossing timing B68-10116 01
Manganese-56 coincidence-counting facility precisely measures neutron-source strength B69-10621 01
Miniature backward-diode pressure sensor features stability and low power consumption B68-10690 01

TURBIDITY
Life detection NPO-10510 B69-10475 04

TURBINE BLADES
Turbine blade root design concept promises superior alignment M-PS-1685 B66-10620 05
Nickel base alloy with improved stress rupture properties LEWIS-10283 B68-10344 03
Computer program for off-design performance of radial inflow turbines LEWIS-10764 B68-10267 06

TURBINE INSTRUMENTS
A theoretical model for determining turbine flowmeter sensitivity M-PS-1172 B67-10179 01
Circuit automatically calibrates flowmeter against liquid-level gage reference M-PS-2194 B67-10376 01
Performance of turbine-type flowmeters in liquid hydrogen LEWIS-10137 B67-10506 01
High-pressure gas facilitates calibration of turbine flowmeters for liquid hydrogen LEWIS-10402 B68-10145 01
Dynamic calibration of turbine flowmeters LEWIS-11014 B68-10764 01

TURBINE BLADES
Turbine blade root design concept promises superior alignment M-PS-1685 B66-10620 05
Nickel base alloy with improved stress rupture properties LEWIS-10283 B68-10344 03
Computer program for off-design performance of radial inflow turbines LEWIS-10764 B68-10267 06

TURBINE INSTRUMENTS
A theoretical model for determining turbine flowmeter sensitivity M-PS-1172 B67-10179 01
Circuit automatically calibrates flowmeter against liquid-level gage reference M-PS-2194 B67-10376 01
Performance of turbine-type flowmeters in liquid hydrogen LEWIS-10137 B67-10506 01
High-pressure gas facilitates calibration of turbine flowmeters for liquid hydrogen LEWIS-10402 B68-10145 01
Dynamic calibration of turbine flowmeters LEWIS-11014 B68-10764 01

TURBINE PUMPS
Fluid pressure used to test turbopump bearings BU-0001 B65-10024 03
Run-in with chemical additive protects gear surface M-PS-548 B66-10069 05
Auxiliary titanium sublimation pump produces ultrahigh 10 to the minus 10 torr/ vacuum LANGLEY-212 B66-10388 02
This plastic sheet eliminates need for expensive plating M-PS-1896 B66-10681 03
Honeycomb seal backing ring increases turbopump disk life M-PS-13303 B67-10607 05
Between-bearing shaft seal, a concept M-PS-18179 B68-10286 05
Heat transfer coefficients for liquid hydrogen turbopumps M-PS-18345 B68-10517 02
Design eliminates radial thermal expansion in turbine stator components M-PS-18146 B68-10531 05

TUBE GENERATORS
Potassium plasma cell facilitates thermionic energy conversion process ARG-10010 B67-10399 01
Study of high temperature bearing materials LEWIS-10629 B69-10252 03

TURBOJET ENGINES
Simple key locks turbine rotor blades WO-103 B66-10023 05
Noise study of single stage compressor rotor-stator interaction LANGLEY-137 B67-10516 02
Computer program for axial flow compressor design LEWIS-10765 B69-10174 06

TURBOMACHINERY
Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings M-PS-18453 B69-10170 05
Simple key locks turbine rotor blades WO-103 B66-10023 05
Turbine blade root design concept promises superior alignment M-PS-1685 B66-10620 05
Inflatable bladder to facilitate handling of heavy objects - A concept M-PS-14272 B69-10069 05

TURBINES
Air brake-dynamometer accurately measures torque LEWIS-163 B65-10312 05
Design eliminates radial thermal expansion in turbine stator components M-PS-18146 B68-10531 05
Combination probe for airflow measurements LEWIS-10281 B68-10558 01
Radial inflow turbine design charts LEWIS-10720 B68-10567 05
Channel-wall limitations in the magnetohydrodynamic induction generator ARG-10128 B69-10255 02
Computer program for off-design performance of radial inflow turbines LEWIS-10764 B69-10267 06
Automatic calorimetry system monitors RF power NPO-11033 B69-10384 01

TURBOPRESSORS
Simple key locks turbine rotor blades WO-103 B66-10023 05
Noise study of single stage compressor rotor-stator interaction LANGLEY-137 B67-10516 02
Computer program for axial flow compressor design LEWIS-10765 B69-10174 06

TURBOGENERATORS
Potassium plasma cell facilitates thermionic energy conversion process ARG-10010 B67-10399 01
Study of high temperature bearing materials LEWIS-10629 B69-10252 03

TURBOJET ENGINES
Simple key locks turbine rotor blades WO-103 B66-10023 05

TURBOMACHINERY
Computer program performs flow analysis through turbines LEWIS-236 B66-10496 01
Computer program simplifies design of rotating components of turbomachinery NUC-10046 B67-10235 06

I-703
Computer program calculates velocities and streamlines in turbomachines
LEWIS-10252 B66-10097 06

Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing
MPS-10308 B69-10034 06

Improved design of items in high speed rotating machinery
MPS-10441 B69-10373 05

A rotating, noncapillary heat pipe
LEWIS-10298 B69-10684 05

Large volume continuous countercflow dialyzer has high efficiency
BG-10055 B67-10395 04

Fast-response cup anemometer features cosine response
ARG-90193 B68-10202 01

Experimental design for research on shock-turbulence interaction
I-PS-18441 B69-10373 05

Study of hot wire techniques in low density flows with high turbulence levels
MPS-1269 B66-10687 01

Laser-Doppler gas-velocity instrument
MPS-20399 B68-10349 02

Binary fluid amplifier solves stability and load problems
ERC-15 B66-10177 01

Thin-film gage measures low heat-transfer rates
LANGBY 205 B66-10180 01

Experimental program to investigate transonic flow around protuberances
MPS-20037 B69-10609 05

Characteristics of fluidized-packed beds
ARG-10049 B68-10279 03

Concept for passive system to control gas flow independently of temperature
MPS-982 B66-10343 05

Stationary device produces homogeneous mixture of fluids
MPS-525 B66-10570 05

Study of hot wire techniques in low density flows with high turbulence levels
MPS-1269 B66-10687 01

Local measurements in turbulent flows through cross correlation of optical signals
MPS-1268 B67-10030 01

Study made of thin-walled pipe response to turbulent fluids
MPS-1321 B67-10518 05

Prediction of friction coefficients for gases
LEWIS-10774 B69-10112 02

FORTRAN 4 program calculates velocities and streamlines in a tandem blade turbomachine
LEWIS-10743 B69-10219 06

Variable-step method of solving differential equations
NPO-10515 B69-10017 02

Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine
ARG-901 B66-10562 05

Tool post modification allows easy turret lathe cutting-tool alignment
FPM-10871 B66-10191 05

Improved electro-mechanical master-slave manipulator
ARG-10027 B68-10372 05

Computer program for mass optimal solutions of some endpoint trajectory problems
MPS-12976 B67-10310 06

Study of hot wire techniques in low density flows with high turbulence levels
MPS-1269 B66-10687 01

Helium tube separates nitrogen gas from liquid nitrogen
JPL-398 B63-10251 05

Mixer conditions temperature of liquified gas streams
MPS-1784 B66-10565 02

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
ARG-10461 B69-10620 02

On-line computer system for use with low-energy nuclear physics experiments is reported
ARG-10257 B69-10094 01

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys
MPS-10554 B69-10707 02

Thermodynamic properties related to expansion of two-component gas
MPS-1133 B67-10112 03

Test instrumentation evaluates electrostatic hazards in fluid system
MPS-2277 B67-10145 01

Elimination of dissolved gases in hypergolic engine propellants
MPS-16775 B69-10692 03

Increased junction lead inductance ballasts high-frequency transistors
GSFC-387 B65-10259 01

Mechanical device accurately measures rf phase differences in vhf or uhf ranges
MPS-1738 B66-10694 05

Experimental coherent fractional frequency multiplier at S-band
MPS-2427 B67-10250 01

Ultraminiature television camera
I-PS-11967 B67-10469 01

Reflectometer for receiver input system
NPO-10843 B67-10657 01

Improved traveling wave maser amplifier
NPO-10548 B68-10244 01

Thermodynamic properties related to expansion of two-component gas
MPS-1133 B67-10112 03

Test instrumentation evaluates electrostatic hazards in fluid system
MPS-2277 B67-10145 01

Elimination of dissolved gases in hypergolic engine propellants
MPS-16775 B69-10692 03

Increased junction lead inductance ballasts high-frequency transistors
GSFC-387 B65-10259 01

Mechanical device accurately measures rf phase differences in vhf or uhf ranges
MPS-1738 B66-10694 05

Experimental coherent fractional frequency multiplier at S-band
MPS-2427 B67-10250 01

Ultraminiature television camera
I-PS-11967 B67-10469 01

Reflectometer for receiver input system
NPO-10843 B67-10657 01

Improved traveling wave maser amplifier
NPO-10548 B68-10244 01

Thermodynamic properties related to expansion of two-component gas
MPS-1133 B67-10112 03

Test instrumentation evaluates electrostatic hazards in fluid system
MPS-2277 B67-10145 01

Elimination of dissolved gases in hypergolic engine propellants
MPS-16775 B69-10692 03

Increased junction lead inductance ballasts high-frequency transistors
GSFC-387 B65-10259 01

Mechanical device accurately measures rf phase differences in vhf or uhf ranges
MPS-1738 B66-10694 05

Experimental coherent fractional frequency multiplier at S-band
MPS-2427 B67-10250 01

Ultraminiature television camera
I-PS-11967 B67-10469 01

Reflectometer for receiver input system
NPO-10843 B67-10657 01

Improved traveling wave maser amplifier
NPO-10548 B68-10244 01

Thermodynamic properties related to expansion of two-component gas
MPS-1133 B67-10112 03

Test instrumentation evaluates electrostatic hazards in fluid system
MPS-2277 B67-10145 01

Elimination of dissolved gases in hypergolic engine propellants
MPS-16775 B69-10692 03

Increased junction lead inductance ballasts high-frequency transistors
GSFC-387 B65-10259 01

Mechanical device accurately measures rf phase differences in vhf or uhf ranges
MPS-1738 B66-10694 05

Experimental coherent fractional frequency multiplier at S-band
MPS-2427 B67-10250 01

Ultraminiature television camera
I-PS-11967 B67-10469 01

Reflectometer for receiver input system
NPO-10843 B67-10657 01

Improved traveling wave maser amplifier
NPO-10548 B68-10244 01
Survey of man-made electrical noise affecting radio broadcasting
HQ-10290

ULTRASONIC WAVE TRANSDUCERS

ULTRASONIC TESTS

Fatigue cracks detected and measured without test interruption
LEWIS-266

ULTRASONIC WAVE TRANSDUCERS

Fatigue cracks detected and measured without test interruption
LEWIS-266
ULTRASONICS

Nondestructive weld inspection
N-PS-284 B66-10220 01

An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10187 B69-10082 02

Nondestructive testing of welds on thin-walled tubing
N-PS-18144 B69-10402 01

Ultrasonics permits brazing complex stainless steel assembly without flux
NU-0195 B67-10094 05

Ultrasonics permits brazing complex stainless steel assembly without flux
NU-0195 B67-10094 05

Development of mechanized ultrasonic scanning system
N-PS-13638 B68-10004 05

New camera tube improves ultrasonic inspection system
ARG-90237 B68-10088 01

Ultrasonic temperature measuring device
LMHS-10446 B68-10319 01

Stress-corrosion-induced property changes in aluminum alloys
N-PS-20209 B68-10568 03

An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10187 B69-10082 02

Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers
MSC-15611 B69-10552 03

ULTRAVIOLET FILTERS
PTFE-aluminum films serve as neutral density filters
LANGLEY-189 B66-10017 02

This carbon film serves as UV bandpass filter
ERC-8 B66-10060 02

Improved method of optical design
GSPC-10743 B69-10405 02

ULTRAVIOLET MICROSCOPY
Ultraviolet microscopy aids in cytological and biomedical research
ABC-178 B67-10590 04

ULTRAVIOLET PHOTOGRAPHY
Ultraviolet photographic pyrometer used in rocket exhaust analysis
N-PS-499 B66-10095 02

UV detector monitors organic contamination of optical surfaces
N-PS-20246 B68-10413 01

ULTRAVIOLET RADIATION
Oil-smeared models aid wind tunnel measurements
LANGLEY-4 B63-10311 03

Instrument accurately measures extremely low altitudes
N-PS-193 B65-10221 01

Improved carbon electrode reduces arc sputtering
MSC-219 B66-10026 01

Sensor detects hydrocarbon oil contaminants in fluid lines
N-PS-522 B66-10068 01

Plastic scintillator converts standard photomultiplier to ultraviolet range
ERC-9 B66-10108 02

Hydrogen fire detection system features sharp discrimination
N-PS-683 B65-10368 01

SUBJECT INDEX

Self-supported aluminum thin films produced by vacuums deposition process
ARC-58 B66-10387 03

Dielectricometer design permits measurement in vacuums under irradiation
N-PS-359 B66-10401 01

A continuously operating source of vacuums ultraviolet below 500 angstrom
GSPC-545 B66-10576 01

Photosensitive filler minimizes internal stresses in epoxy resins
N-PS-1830 B67-10227 03

Liquid mercury chamber and microsyringe designs allow more efficient micromanipulations
ARG-251 B67-10305 04

AeW camera tube improves ultrasonic inspection system
ARG-90237 B68-10088 01

Lamp enables measurement of oxygen concentration in presence of water vapor
MSC-10043 B67-10387 01

Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers
MSC-15611 B69-10552 03

ULTRAVIOLET MICROSCOPY
Ultraviolet microscopy aids in cytological and biomedical research
ABC-178 B67-10590 04

ULTRAVIOLET PHOTOGRAPHY
Ultraviolet photographic pyrometer used in rocket exhaust analysis
N-PS-499 B66-10095 02

UV detector monitors organic contamination of optical surfaces
N-PS-20246 B68-10413 01

ULTRAVIOLET RADIATION
Oil-smeared models aid wind tunnel measurements
LANGLEY-4 B63-10311 03

Instrument accurately measures extremely low altitudes
N-PS-193 B65-10221 01

Improved carbon electrode reduces arc sputtering
MSC-219 B66-10026 01

Sensor detects hydrocarbon oil contaminants in fluid lines
N-PS-522 B66-10068 01

Plastic scintillator converts standard photomultiplier to ultraviolet range
ERC-9 B66-10108 02

Hydrogen fire detection system features sharp discrimination
N-PS-683 B65-10368 01

X-706
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>URANIUM COMPOUNDS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HELIICAL CONNECTORS</strong></td>
<td><strong>URIVAC 1108 COMPUTER</strong></td>
</tr>
<tr>
<td>Lock-disconnect mechanism gives positive release to joined bodies</td>
<td>CINDA - Chrysler Improved Numerical Differencing Analyzer computer program</td>
</tr>
<tr>
<td>H-PS-2147</td>
<td>H-PS-2298</td>
</tr>
<tr>
<td><strong>DAMPED OSCILLATIONS</strong></td>
<td><strong>URANIAN</strong></td>
</tr>
<tr>
<td>Damping technique gives accelerometer flat frequency response</td>
<td>Use of steel and tantalum apparatus for molten Cd-Hg-In alloys</td>
</tr>
<tr>
<td>H-PS-471</td>
<td>H-PS-14651</td>
</tr>
<tr>
<td><strong>UNDERGROUND EXPLOSIONS</strong></td>
<td><strong>Teflon-packed flexible joint</strong></td>
</tr>
<tr>
<td>Transplutonium elements processed from rock debris of underground detonations</td>
<td>LEWIS-90252</td>
</tr>
<tr>
<td>ARG-10222</td>
<td>E-62-10049</td>
</tr>
<tr>
<td><strong>UNDERWATER ACOUSTICS</strong></td>
<td><strong>NIOBIUM-URANIUM ALLOYS</strong></td>
</tr>
<tr>
<td>System locates randomly placed remote objects</td>
<td>Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels</td>
</tr>
<tr>
<td>LANGLEY-209</td>
<td>ARG-232</td>
</tr>
<tr>
<td><strong>UNDERWATER ENGINEERING</strong></td>
<td><strong>NIMROD-URANIUM ALLOYS</strong></td>
</tr>
<tr>
<td>Electronic skewing circuit monitors exact position of object underwater</td>
<td>Ignition of binary alloys of uranium</td>
</tr>
<tr>
<td>MSC-1046</td>
<td>ARG-10057</td>
</tr>
<tr>
<td><strong>UNDERWATER STRUCTURES</strong></td>
<td><strong>RUSSELL ALLOYS</strong></td>
</tr>
<tr>
<td>Flexible fastener effects airtight material closure</td>
<td>Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels</td>
</tr>
<tr>
<td>JPL-684</td>
<td>ARG-232</td>
</tr>
<tr>
<td><strong>UNDERWATER TESTS</strong></td>
<td><strong>URANIUM ALLOYS</strong></td>
</tr>
<tr>
<td>Colloidal suspension simulates linear dynamic pressure profile</td>
<td>Ignition of binary alloys of uranium</td>
</tr>
<tr>
<td>WOO-266</td>
<td>ARG-10057</td>
</tr>
<tr>
<td><strong>UNDERWATER VEHICLES</strong></td>
<td><strong>URANIUM COMPOUNDS</strong></td>
</tr>
<tr>
<td>Device measures fluid drag on test vehicles</td>
<td>Study of actinide chemistry in saturated potassium fluoride solution</td>
</tr>
<tr>
<td>LANGLEY-34</td>
<td>ARG-10204</td>
</tr>
<tr>
<td><strong>UNIFORM FLOW</strong></td>
<td><strong>URANIUM COMPOUNDS</strong></td>
</tr>
<tr>
<td>Brazing retort manifold design concept may minimize air contamination and enhance uniform gas flow</td>
<td>Study of mechanical properties of uranium compounds</td>
</tr>
<tr>
<td>H-PS-701</td>
<td>ARG-10074</td>
</tr>
<tr>
<td><strong>UNIONS (CONNECTORS)</strong></td>
<td><strong>URANIUM COMPOUNDS</strong></td>
</tr>
<tr>
<td>Union would facilitate joining of tubing, minimize brase contamination</td>
<td>Sintering characteristics and properties of PuS and PuP are determined</td>
</tr>
<tr>
<td>MSC-777</td>
<td>ARG-10228</td>
</tr>
<tr>
<td><strong>URIVAC 1108 COMPUTER</strong></td>
<td><strong>URANIUM COMPOUNDS</strong></td>
</tr>
<tr>
<td>New computer system simplifies programming of mathematical equations</td>
<td>Effect of interparticle forces on the</td>
</tr>
<tr>
<td>H-PS-441</td>
<td>ARG-10228</td>
</tr>
<tr>
<td><strong>URANIUM ALLOYS</strong></td>
<td><strong>URANIUM COMPOUNDS</strong></td>
</tr>
<tr>
<td>Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels</td>
<td>Study of mechanical properties of uranium compounds</td>
</tr>
<tr>
<td>ARG-10204</td>
<td>ARG-10074</td>
</tr>
<tr>
<td><strong>URANIUM COMPOUNDS</strong></td>
<td><strong>URANIUM COMPOUNDS</strong></td>
</tr>
<tr>
<td>Study of mechanical properties of uranium compounds</td>
<td>Sintering characteristics and properties of PuS and PuP are determined</td>
</tr>
<tr>
<td>ARG-10074</td>
<td>ARG-10228</td>
</tr>
<tr>
<td></td>
<td><strong>URANIUM COMPOUNDS</strong></td>
</tr>
<tr>
<td></td>
<td>Study of mechanical properties of uranium compounds</td>
</tr>
<tr>
<td></td>
<td>ARG-10074</td>
</tr>
<tr>
<td></td>
<td>Sintering characteristics and properties of PuS and PuP are determined</td>
</tr>
<tr>
<td></td>
<td>ARG-10228</td>
</tr>
<tr>
<td></td>
<td>Effect of interparticle forces on the</td>
</tr>
</tbody>
</table>
URANIUM FLUORIDES

Fluidization of fine particles
ARG-10264 B69-10195 03

URANIUM FLUORIDES

Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232 B67-10032 03

Study of fluoride corrosion of nickel alloys
ARG-10224 B69-10048 03

URANIUM ISOTOPES

Uranium phthalocyanines show promise in the treatment of brain tumors
ARG-100 B67-10188 03

Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry
ARG-210 B67-10236 03

URANIUM OXIDES

Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
ARG-22 B66-10527 03

Characteristics of fluidized-packed beds
ARG-10049 B68-10278 03

URANIUM 232

Daughter growth in freshly separated Ra-226, Ac-227 and U-232
ARG-10226 B69-10003 02

URANIUM 235

Computer program FNP-REV calculates fission product inventory for U-235 fission
NRC-10089 B67-10245 04

Neutron therapy of cancer
ARG-10310 B66-10425 03

URENS

Large volume continuous counterflow dialyzer has high efficiency
HQ-10055 B67-10395 04

Microdetermination of urea in urine using p-dimethylaminobenzaldehyde /PDAB/
NPO-10715 B69-10317 04

UHERTHANS

Composite seal reduces alkaline battery leakage
GSFC-42 B66-10578 05

White primer permits a corrosion-resistant coating of minimum weight
M-PS-304 B66-10207 03

Grit blasting nozzle fabricated from mild tool steel proves satisfactory
M-PS-1920 B66-10597 05

New class of thermosetting plastics has improved strength, thermal and chemical stability
LEWIS-10108 B67-10197 03

Adhesive for cryogenic temperature applications
LEWIS-10264 B69-10074 03

Helium batteries, charged and heated by solar energy
GSFC-10769 B69-10585 01

URINALYSIS

Automated urinalysis technique determines concentration of creatine and creatinine by colorimetry
WPO-10149 B67-10245 04

URINE

Ion exchange determines iodine-131 concentration in aqueous samples
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Vacuum Chambers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technique for measuring absorptance and emittance by using cyclic incident radiation</td>
<td>Low rate flow switch can be used for gas or liquid&lt;br&gt;LEWIS-321</td>
</tr>
<tr>
<td>Predicting surface heating rates and pressures resulting from hot exhaust gases</td>
<td>Aspirator increases relief valve poppet stroke&lt;br&gt;MSC-971</td>
</tr>
<tr>
<td>Study made of destructive sectioning of complex structures for examination</td>
<td>Fixture facilitates helium leak testing of pipe welds&lt;br&gt;LEWIS-341</td>
</tr>
<tr>
<td>Inexpensive cryogenic insulation replaces vacuum jacketed line</td>
<td>Jacketed cryogenic piping is stress relieved&lt;br&gt;MSC-10056</td>
</tr>
<tr>
<td>Improved compression molding process</td>
<td>Precision capacitor has improved temperature and operational stability&lt;br&gt;LANGLEY-10027</td>
</tr>
<tr>
<td>Scribable coating for plastic films</td>
<td>Machine tests slow-speed sliding friction in high vacuum&lt;br&gt;MSC-1194</td>
</tr>
<tr>
<td>Fuel cell life improved by metallic sinttering after electrode assembly welding</td>
<td>Vacuum-jacketed transfer line installation technique&lt;br&gt;MSC-10365</td>
</tr>
<tr>
<td>Portrait of a program for two-impulse rendezvous analysis</td>
<td>Fast gas probe sampler removes micron-sized particles from surfaces&lt;br&gt;M-PS-13977</td>
</tr>
<tr>
<td>Variable-speed, portable routing skate</td>
<td>Conceptual dead weight device to provide pressure calibration&lt;br&gt;M-PS-13772</td>
</tr>
<tr>
<td>Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide</td>
<td>A new method for fabrication of flexible vacuum purge jackets&lt;br&gt;ARG-10154</td>
</tr>
<tr>
<td>Food products for space applications</td>
<td>Vacuum probe sampler removes micron-sized particles from surfaces&lt;br&gt;MSC-11697</td>
</tr>
<tr>
<td>Rating of electrical wires in vacuum environments</td>
<td>Apparatus facilitates high-temperature tensile testing in vacuum&lt;br&gt;M-PS-13510</td>
</tr>
<tr>
<td>Insertion device for pressure testing</td>
<td>Vacuum-type backup bar speeds weld repairs&lt;br&gt;M-PS-13515</td>
</tr>
<tr>
<td>Coatings decrease metal fatigue failure</td>
<td>Low-cost tape system measures velocity of acceleration&lt;br&gt;M-PS-1190</td>
</tr>
<tr>
<td>Continuous analysis of nitrogen dioxide in gas streams of plants</td>
<td>Insertion device for pressure testing&lt;br&gt;ARG-10154</td>
</tr>
<tr>
<td>Report on a cryogenic gyroscope</td>
<td>Coatings decrease metal fatigue failure&lt;br&gt;M-PS-13261</td>
</tr>
<tr>
<td>Measurement of gas flow at extremely low pressures</td>
<td>Continuous analysis of nitrogen dioxide in gas streams of plants&lt;br&gt;M-PS-1350</td>
</tr>
<tr>
<td>Kiborium-uranium alloys with voids of predetermined size and total volume</td>
<td>Report on a cryogenic gyroscope&lt;br&gt;ARG-10154</td>
</tr>
<tr>
<td>Ceramic-coated boat is chemically inert, provides good heat transfer</td>
<td>Vacuum probe sampler removes micron-sized particles from surfaces&lt;br&gt;M-PS-13266</td>
</tr>
<tr>
<td>Vacuum chamber provides improved insulation and support for cryostat</td>
<td>VACUUM APPLIANCES</td>
</tr>
<tr>
<td>Connectors for vacuum-jacketed lines cuts tubing system cost</td>
<td>Low rate flow switch can be used for gas or liquid&lt;br&gt;LEWIS-66</td>
</tr>
<tr>
<td>Spherical electrode eliminates high-voltage breakdown</td>
<td>Aspirator increases relief valve poppet stroke&lt;br&gt;LEWIS-155</td>
</tr>
<tr>
<td>Burst diaphragm protects vacuum vessel from internal pressure transients</td>
<td>Modified FF coaxial connector ends vacuum chamber wiring problem&lt;br&gt;JPL-687</td>
</tr>
<tr>
<td>Feed-through connector withstands high temperatures in vacuum environment</td>
<td>Test device prevents molecular bounce-back&lt;br&gt;M-PS-603</td>
</tr>
<tr>
<td>Fixed vacuum plate clamps styrofoam for machining</td>
<td>Vacuum probe sampler removes micron-sized particles from surfaces&lt;br&gt;GSCF-354</td>
</tr>
<tr>
<td>Composite bulkhead fabrication development</td>
<td>Low rate flow switch can be used for gas or liquid&lt;br&gt;GSCF-281</td>
</tr>
<tr>
<td>VACUUM APPARATUS</td>
<td>B66-10696</td>
</tr>
<tr>
<td>Connector for vacuum-jacketed lines cuts tubing system cost</td>
<td>Aspirator increases relief valve poppet stroke&lt;br&gt;GSCF-356</td>
</tr>
<tr>
<td>Spherical electrode eliminates high-voltage breakdown</td>
<td>Plastic bags in evacuated chamber make lightweight gas sampling system&lt;br&gt;M-PS-165</td>
</tr>
<tr>
<td>Burst diaphragm protects vacuum vessel from internal pressure transients</td>
<td>Electron bombardment improves vacuum chamber efficiency&lt;br&gt;LEWIS-150</td>
</tr>
<tr>
<td>Feed-through connector withstands high temperatures in vacuum environment</td>
<td>Vacuum probe sampler removes micron-sized particles from surfaces&lt;br&gt;M-PS-603</td>
</tr>
</tbody>
</table>

X-709
Rod and dish cathode improves penning-type vacuum gages
GSFC-447

Apparatus measures thermal conductivity of honeycomb-core panels
LANGLEY-202

Vacuum test fixture improves leakage rate measurements
MSC-271

Gas-injection valve operates at high speed
HQ-49

Auxiliary titanium sublimation pump produces ultrahigh vacuum
LANGLBP-202

Thin-film ferrites vapor deposited by one-step process in vacuum
ISC-259

Dielectrometer design permits measurement in vacuum under irradiation
I-PS-359

Uniform reflective films deposited on large surfaces
GSPC-507

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum
ARG-109

Feed-thru flange is useful in vacuum applications to cryogenic temperatures
JPL-846

Volume-ratio calibration system for vacuum gages
LEWIS-303

Process reduces secondary resonant emission in electronic components
JPL-934

Combination double door high-vacuum valve provides access to vacuum chamber
JPL-947

Feed-through connector couples RF power into vacuum chamber
NU-0096

Irradiated gases transferred without contamination or dilution
LEWIS-278

Vacuum chamber is remotely sealed by eutectic metal
NU-0091

Solar X-ray spectrum reproduced in vacuum
ASC-228

Quartz crystals detect gas contaminants during vacuum chamber evacuation
MPO-10144

Electron beam welder X-rays its own welds
LEWIS-10111

Evaporant feed device facilitates flash vapor deposition process in vacuum
MPO-10232

Technique eliminates high voltage arcing at electrode-insulator contact area
LEWIS-10133

Method for X-ray study under extreme temperature and pressure conditions
MSC-11232

Feed-thru conduit minimizes heat pickup
JPL-847

Application of the solid lubricant molybdenum disulfide by sputtering
LEWIS-10544

Miniaturized King furnace permits absorption spectroscopy of small samples
ABO-10177

High-temperature thermionic emission microscope
MPO-10584

Epitaxial crystalline growth upon cold substrates
ESC-11196

Pulsed high-voltage dc RF sputtering
LEWIS-10920

Vacuum deposition
Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns
ARC-7

Thermistor connector assembly increases accuracy of measurements
LANGLEY-62

Efficient thin film heating element takes minimum space
GSFC-289

Aluminized fiberglass insulation conforms to curved surfaces
MPS-477

Capacitive system detects and locates fluid leaks
MPS-478

Thin-film gage measures low heat-transfer rates
LANGLEY-205

Self-supported aluminum thin films produced by vacuum deposition process
ARC-58

Uniform reflective films deposited on large surfaces
GSFC-507

Low rate flow switch can be used for gas or liquid
JPL-957

Thin film process forms effective electrical contacts on semiconductor crystals
MPS-2343

Graphite cloth facilitates vacuum evaporation of silicon monoxide
MPS-14764

Preparation of silver-activated zinc sulfide thin films
GSFC-10687

Superconductive thin film makes convenient liquid helium level sensor
LANGLEY-10289

Multilayer infrared beamsplitter film system
XGS-11036

Preparation of superconducting thin films of transition-metal interstitial compounds
EQ-10445

VACUUM EFFECTS
Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics
LEWIS-320
Study made of transfer of heat energy through metal joints in vacuum environment
M-FS-12534 B67-10465 02

Multiple-orifice throttle valve
KKF-09658 B69-10030 03

VACUUM PUMPS
Radiant heater for vacuum furnaces offers high structural rigidity, low heat loss
LEWIS-39 B63-10342 01

New cobalt alloys have high-temperature strength and long life in vacuum environments
LEWIS-47 B63-10351 03

Brassing retort manifold design concept may minimize air contamination and enhance uniform gas flow
M-PS-707 B66-10371 05

Brass alloy holds bonding strength over wide temperature range
LEWIS-337 B66-10519 03

An ultrasonic method for studying elastic moduli as a function of temperature
ARG-10167 B69-10082 02

VACUUM GAGES
Ionization vacuum gage starts quickly, is unaffected by spurious currents
JPL-304 B65-10036 02

Rod and dish cathode improves penning-type vacuum gage
GSFC-447 B66-10082 01

Materials physically tested in variable-environment chamber
JPL-789 B66-10130 01

Dispenser leak-tests and sterilizes rubber gloves
MSC-285 B66-10166 03

Modified McLeod pressure gage eliminates measurement errors
ARG-62 B66-10481 01

Absolute low-pressure calibration system
M-FS-13005 B68-10160 03

Vacuum gage system for radiation environment
LEWIS-10797 B69-10156 01

Vacuum gage calibration system for 10 to the minus 8th power to 10 torr
LEWIS-11032 B69-10713 01

VACUUM PUMPS
Fine-particle filter prevents damage to vacuum pumps
LEWIS-106 B63-10489 05

Test device prevents molecular bounce-back
GSFC-82 B63-10546 03

Fine-mesh screen made by simplified method
M-PS-104 B64-10282 03

Vapor pressure measured with inflatable plastic bag
GSFC-281 B65-10136 03

Heater decomposes oil backstreaming from high-vacuum pumps
GSFC-356 B65-10224 02

Ion pump provides increased vacuum pumping

speed
BEO-13 B65-10239 02

Flexible plastic ring assembly makes durable shaft seal
WOO-227 B65-10367 05

Mount makes liquid nitrogen-cooled gamma ray detector portable
LEWIS-259 B66-10103 01

Dispenser leak-tests and sterilizes rubber gloves
MSC-285 B66-10166 03

Modified McLeod gage records automatically
LEWIS-290 B66-10290 02

Automatic protective vent has fail-safe feature
LANGLEY-210 B66-10369 05

Auxiliary titanium sublimation pump produces ultrahigh /10 to the minus 11 power/ vacuum
LANGLEY-212 B66-10388 02

Seal-off assembly permits rapid evacuation of air from containers
LEWIS-290 B66-10290 02

Automatic protective vent has fail-safe feature
LANGLEY-210 B66-10369 05

VACUUM SPECTROSCOPY
Thin carbon film serves as UV bandpass filter
EBC-8 B66-10060 02

VACUUM SYSTEMS
Packless valve with all-metal seal handles wide temperature, pressure range
JPL-361 B63-10228 05

Instrument accurately measures extremely low air densities
M-PS-193 B65-10221 01

Portable tool cleans pipes and tubing
MSC-238 B65-10375 05

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 B66-10187 02

Portable sandblaster cleans small areas
MSC-523 B66-10242 05

Versatile machine mills, saws light materials
M-PS-827 B66-10364 05

Automatic protective vent has fail-safe feature
LANGLEY-210 B66-10369 05

Special treatment reduces helium permeation of glass in vacuum systems
EQ-25 B66-10372 02

Precise doping of metals by small gas flows
LEWIS-10444 B65-10526 03

Thermal radiation shields for piping in vacuum environments
LEWIS-10899 B69-10262 03

Tool repairs tube components in situ
MSC-15948 B69-10379 05

Self-lubricating gear
M-PS-14971 B69-10408 05

Accurate nine-decade temperature-compensated logarithmic amplifier
ARG-10480 B69-10429 01
<table>
<thead>
<tr>
<th>Subject Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure responsive seal handles static and dynamic loads</td>
</tr>
<tr>
<td>GSFC-641</td>
</tr>
<tr>
<td>Improved poppet valve provides positive damageproof seal</td>
</tr>
<tr>
<td>N-PS-253</td>
</tr>
<tr>
<td>Respiratory transfer value has fail-safe feature</td>
</tr>
<tr>
<td>ARC-1</td>
</tr>
<tr>
<td>Centrifugal device separates liquid from gas</td>
</tr>
<tr>
<td>N-PS-282</td>
</tr>
<tr>
<td>Tensile-strength apparatus applies high strain-rate loading with minimum slack</td>
</tr>
<tr>
<td>JPL-28</td>
</tr>
<tr>
<td>Transmission system isolates pressure transducer from severe environment</td>
</tr>
<tr>
<td>WOO-239</td>
</tr>
<tr>
<td>Soft-seal valve holds hazardous fluids safely</td>
</tr>
<tr>
<td>LEWIS-275</td>
</tr>
<tr>
<td>Flexible fastener effects airtight material closure</td>
</tr>
<tr>
<td>JPL-684</td>
</tr>
<tr>
<td>Valve seat pores sealed with thermosetting monomer</td>
</tr>
<tr>
<td>N-PS-900</td>
</tr>
<tr>
<td>Matching flow characteristics of standard shutoff valves eliminates need for</td>
</tr>
<tr>
<td>custom fabricated valves</td>
</tr>
<tr>
<td>N-PS-1069</td>
</tr>
<tr>
<td>Labyrinth-type valve seat increases valve life by decreasing fluid velocity</td>
</tr>
<tr>
<td>N-PS-1051</td>
</tr>
<tr>
<td>Apparatus enables automatic microanalysis of body fluids</td>
</tr>
<tr>
<td>JPL-962</td>
</tr>
<tr>
<td>Positive displacement cylinder measures corrosive liquid volume</td>
</tr>
<tr>
<td>HSC-1038</td>
</tr>
<tr>
<td>Fluid logic control circuit operates actuator motor</td>
</tr>
<tr>
<td>LEWIS-294</td>
</tr>
<tr>
<td>Actuator device schedules rate of valve closure</td>
</tr>
<tr>
<td>N-PS-1056</td>
</tr>
<tr>
<td>Combination double door high-vacuum valve provides access to vacuum chamber</td>
</tr>
<tr>
<td>JPL-889</td>
</tr>
<tr>
<td>Teflon sheet permits valve and valve operator to move as a single unit in</td>
</tr>
<tr>
<td>a cryogenic pipe line</td>
</tr>
<tr>
<td>B-0077</td>
</tr>
<tr>
<td>Simple pump maintains liquid helium level in cryostat</td>
</tr>
<tr>
<td>N-PS-1763</td>
</tr>
<tr>
<td>Improved fluid control circuit operates on low power input</td>
</tr>
<tr>
<td>LEWIS-325</td>
</tr>
<tr>
<td>Irradiated gases transferred without contamination or dilution</td>
</tr>
<tr>
<td>LEWIS-278</td>
</tr>
<tr>
<td>Temperature responsive valve withstands high impact loading</td>
</tr>
<tr>
<td>N-PS-10186</td>
</tr>
<tr>
<td>Cut-through tester accurately measures insulation failure rates</td>
</tr>
<tr>
<td>N-PS-12506</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vacuum Tubes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control for maintaining constant level of a cryogenic liquid</td>
</tr>
<tr>
<td>NPS-11177</td>
</tr>
<tr>
<td>Cesium iodide crystals fused to vacuum tube faceplates</td>
</tr>
<tr>
<td>GSFC-67</td>
</tr>
<tr>
<td>Emission tester for high-power vacuum tubes</td>
</tr>
<tr>
<td>JPL-628</td>
</tr>
<tr>
<td>Ion pump provides increased vacuum pumping speed</td>
</tr>
<tr>
<td>BEO-13</td>
</tr>
<tr>
<td>Chromium oxide coatings improve thermal emissivity of alumina</td>
</tr>
<tr>
<td>WOO-263</td>
</tr>
<tr>
<td>X-ray source uses interchangeable target anodes to vary X-ray wavelength</td>
</tr>
<tr>
<td>NPS-10036</td>
</tr>
<tr>
<td>Electron beam parallel X-ray generator</td>
</tr>
<tr>
<td>BGC-1022</td>
</tr>
<tr>
<td>Concept for improved vacuum pressure measuring device</td>
</tr>
<tr>
<td>N-PS-20172</td>
</tr>
<tr>
<td>Properties of optics at high temperature and their measurement, a study</td>
</tr>
<tr>
<td>N-PS-14696</td>
</tr>
<tr>
<td>Vented piston seal prevents fluid leakage between two chambers</td>
</tr>
<tr>
<td>JPL-179</td>
</tr>
<tr>
<td>Packless valve with all-metal seal handles wide temperature, pressure range</td>
</tr>
<tr>
<td>JPL-361</td>
</tr>
<tr>
<td>Design of valve permits sealing even if the stem is misaligned</td>
</tr>
<tr>
<td>LEWIS-36</td>
</tr>
<tr>
<td>High-temperature, high-pressure spherical segment valve provides quick opening</td>
</tr>
<tr>
<td>ARC-12</td>
</tr>
<tr>
<td>Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle</td>
</tr>
<tr>
<td>JPL-545</td>
</tr>
<tr>
<td>Gate valve with ceramic-coated base operates at high temperatures</td>
</tr>
<tr>
<td>ARC-23</td>
</tr>
<tr>
<td>Multiple port pressure scanner valve features greater accuracy, quicker data</td>
</tr>
<tr>
<td>JPL-555</td>
</tr>
<tr>
<td>Blade valve isolates compartment in pipe, opens to allow free flow</td>
</tr>
<tr>
<td>JPL-585</td>
</tr>
<tr>
<td>Two-part valve acts as quick coupling</td>
</tr>
<tr>
<td>JPL-478</td>
</tr>
<tr>
<td>Apparatus measures concentration of suspended droplets in gas streams</td>
</tr>
<tr>
<td>LANLEY-31</td>
</tr>
<tr>
<td>Compressed gas system operates semi-trailer brakes during winching operation</td>
</tr>
<tr>
<td>JPL-0036</td>
</tr>
<tr>
<td>Valve designed with elastic seat</td>
</tr>
<tr>
<td>JPL-442</td>
</tr>
<tr>
<td>Simple control device senses solar position</td>
</tr>
<tr>
<td>JPL-630</td>
</tr>
<tr>
<td>Averaging probe reduces static-pressure sensing errors</td>
</tr>
<tr>
<td>LANLEY-36</td>
</tr>
<tr>
<td>SUBJECT INDEX</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>Stabilizing stainloc components for cryogenic service</td>
</tr>
<tr>
<td>Improved sample capsule for determination of oxygen in hemolyzed blood</td>
</tr>
<tr>
<td>Temperature-seeded cryogenic bleed maintains liquid state in transfer line</td>
</tr>
<tr>
<td>Study made of acoustical monitoring for mechanical checkout</td>
</tr>
<tr>
<td>Pump simulator provides variable pressure-flow characteristics</td>
</tr>
<tr>
<td>Hand-operated plug insertion valve</td>
</tr>
<tr>
<td>Accumulator isolator prevents malfunctioning of faulty hydraulic system</td>
</tr>
<tr>
<td>Butterfly valve with metal seals controls flow of hydrogen from cryogenic through high temperatures</td>
</tr>
<tr>
<td>Dynamic captive plastic seal</td>
</tr>
<tr>
<td>Eddy current disk valve</td>
</tr>
<tr>
<td>Pressure variable orifice for hydraulic control valve</td>
</tr>
<tr>
<td>Dynamically stable check valve concept for wide flow range</td>
</tr>
<tr>
<td>High-torque power wrench, a concept</td>
</tr>
<tr>
<td>Fluidic-thermochromic display device</td>
</tr>
<tr>
<td>Evaluation of a fluorocarbon plastic used in cryogenic valve seals</td>
</tr>
<tr>
<td>Multiple-orifice throttle valve</td>
</tr>
<tr>
<td>Propagation of density disturbances in air-water flow</td>
</tr>
<tr>
<td>Abrasion and resistant discharge valve developed</td>
</tr>
<tr>
<td>Inflatable bladder to facilitate handling of heavy objects - A concept</td>
</tr>
<tr>
<td>Calibrated water tank facilitates proof-loading of cranes and derricks</td>
</tr>
<tr>
<td>Leakage measuring method</td>
</tr>
<tr>
<td>Piezoelectric linear actuator</td>
</tr>
<tr>
<td>Burst diaphragm leak detector</td>
</tr>
<tr>
<td>Integral valve provides automatic relief and remote venting</td>
</tr>
<tr>
<td>Control for maintaining constant level of a cryogenic liquid</td>
</tr>
<tr>
<td>Sealed container sampling device</td>
</tr>
<tr>
<td>Improved solenoid valve design</td>
</tr>
<tr>
<td>Fluid sample collection and storage device</td>
</tr>
<tr>
<td>VAPOR DEPOSITION</td>
</tr>
<tr>
<td>Fresnel cup reflector directs maximum energy from light source</td>
</tr>
<tr>
<td>Economical fabrication process produces high quality function transistors</td>
</tr>
<tr>
<td>Tantalum cathode improves electron-beam evaporation of tantalum</td>
</tr>
<tr>
<td>Boron carbide whiskers produced by vapor deposition</td>
</tr>
<tr>
<td>Thin-film resistors used in functional electronic blocks</td>
</tr>
<tr>
<td>Plated nickel wire mesh makes superior catalyst bed</td>
</tr>
</tbody>
</table>
Automatic fluid separator supplies own driving power
WGO-085

Thin-film semiconductor rectifier has improved properties
MSC-207

PTFE-aluminum films serve as neutral density filters
LANGLEY-189

Refractory coating protects intricate graphite elements from high-temperature hydrogen
NU-0027

Thin-film semiconductor rectifier has improved properties
MSC-207

Brazing process provides high-strength bond between aluminum and stainless steel
8-PS-803

Submicron holes in thin films increase the sampling range of mass spectrometers
JPL-SC-097

Thin-film ferrites vapor deposited by one-step process in vacuum
MSC-259

Uniform reflective films deposited on large surfaces
GSPC-507

Combustion chamber struts can be effectively transpiration cooled
K-PS-1030

Mechanism facilitates coating of inner surfaces of metal cylinders
GSPC-515

Sensing disks for slug-type calorimeters have higher temperature stability
K-PS-1067

Welding, bonding, and sealing of refractory metals by vapor deposition
LEWIS-123

Evaporant feed device facilitates flash vapor deposition process in vacuum
NFPO-10232

Method of improving contact bonds in silicon integrated circuits
JFS-1753

Vapor deposition process provides new method for fabricating high temperature thermocouples
NUC-10152

An investigation of particle mixing in a gas-fluidized bed
ARG-113

Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites
HER-10161

Coaxial capacitor used to determine fluid density
LEWIS-232

Combustion chamber inlet manifold separates vapor from liquid
K-PS-531

Xenon fluorides show potential as fluorinating agents
LEWIS-263
Cryogenic trap valve has no moving parts
I-O-487  B66-10136  05

Cryogenic liquid transfer system reduces residual boiloff
LEWIS-274  B66-10157  02

Vapor diffusion electrode improves fuel cell operation
LEWIS-167  B66-10281  03

Radial furnace shows promise for growing straight boron carbide whiskers
H-50  B67-10070  03

Thermodynamic properties related to expansion of two-component gas
M-1133  B67-10112  03

Control apparatus for spectral energy source
LEWIS-391  B67-10404  01

Viscosity and density of methanol/water mixtures at low temperatures
M-PS-14991  B68-10274  03

Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide
ARG-10154  B68-10293  02

Dispensing graduate for butadiene
ABG-10240  B69-10067  03

Levitation-melting technique for metals and alloys
ABG-10070  B69-10068  03

Technical report on galvanic cells with fused-pelt electrolytes
ABG-10297  B69-10155  01

Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers
MSC-15611  B69-10552  03

Control for maintaining constant level of a cryogenic liquid
NPO-11177  B69-10573  05

Liquid-metal-piston MHD generator
ABG-10500  B69-10771  02

VARACTOR DIODES
Efficient millimeter wave 1140 GHz diode for harmonic power generation
M-PS-20430  B69-10541  02

Varactor diodes
I-PS-12986  B67-10666  06

Device for diode tuning in a stripline varactor harmonic multiplier
M-PS-20153  B69-10013  01

An improved atomic hydrogen frequency and time standard
GSPC-10706  B69-10341  02

Automatic tuning of hydrogen masers
GSPC-10127  B69-10452  01

VARIABILITY
Phase inverter provides variable reference push-pull output

VARIABLES
Computer program utilizes FORTRAN 4 subroutines for contour plotting
NPO-10127  B67-10323  06

VARIABLE SLEEP WINGS
Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
LEWIS-10391  B67-10666  06

VARIATIONAL PRINCIPLES
Computer program VARI-MIX 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations
NUC-10052  B67-10345  06

VARIATIONS
Magnetically coupled emission regulator
GSPC-10056  B69-10213  01

VARNISHES
Basic suppression techniques are evaluated
M-PS-867  B68-10449  01

VARNISHES
White primer permits a corrosion-resistant coating of minimum weight
M-PS-304  B66-10406  01

VARIANTS
Silicon carbide whiskers in electrical insulations improve dielectric constant
LEWIS-10917  B67-10466  03

CONTROLING NUMERICAL INVERSION
Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices
ARG-10445  B69-10415  01

VARYING VELOCITY
Study of optimum discrete estimators in measurement analysis
M-PS-14915  B68-10348  02

VECTOR SPACES
Computer program for mass optimal solutions of some endpoint trajectory problems
M-PS-12976  B67-10310  06

VECTORS
Inhibition of browning in foodstuffs
H-50-23  B66-10344  01

VECTORS (MATHEMATICS)
Computer program for network synthesis by frequency response fit
M-PS-12686  B67-10406  06

Tunable bandpass filter with variable selectivity
ARC-10191  B69-10130  01

VECTORS
Study of optimum discrete estimators in measurement analysis
M-PS-12976  B67-10310  06

VECTORS (MATHEMATICS)
Device measures reaction engine thrust vector deviations
JPL-SC-163  B66-10642  05

VECTORS (MATHEMATICS)
Improved computer program for elastic analysis of highly redundant structural configurations
M-PS-13087  B67-10330  06

VECTORS (MATHEMATICS)
Global angle sensor
GSPC-10305  B68-10315  01

VECTORS (MATHEMATICS)
Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices
ARG-10445  B69-10415  02

VEGETABLES
Economical and maintenance-free gas system operates railroad switches
NU-0045  B66-10124  05

VEGETABLES
Inhibition of browning in foodstuffs
H-50-23  B66-10493  04

VEGETABLES
Economical and maintenance-free gas system operates railroad switches
NU-0045  B66-10124  05

VELOCITY
Digital system accurately controls velocity of electromechanical drive
GSPC-287  B65-10069  01

VELOCITY
Study made to establish parameters and limitations of explosive welding
M-PS-13006  B67-10393  05

VELOCITY
Digital system accurately controls velocity of electromechanical drive
GSPC-287  B65-10069  01

VELOCITY
Study made to establish parameters and limitations of explosive welding
M-PS-13006  B67-10393  05

I-715
Interference effects eliminated in random oriented space station antenna system MSC-11004 B67-10435 01

Fortran 4 program for two-impulse rendezvous analysis M-PF-12449 B67-10428 02

Computer program analyzes and designs supersonic wing-body combinations ARC-10141 B68-10335 06

Study of optimum discrete estimators in measurement analysis M-PF-14945 B68-10348 02

Axisymmetric two-phase perfect gas performance program MSC-11774 B68-10374 06

Internal velocity factors MSC-15002 B68-10403 06

Midcourse maneuver operations program NFO-10935 B69-10105 06

Computer program for axial flow compressor design LEWIS-10765 B69-10174 06

Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings M-PF-18453 B69-10176 05

Prediction of performance of centrifugal pumps during starts under pressure LEWIS-10905 B69-10263 05

Study made of large amplitude fuel sloshing by laser M-PF-12381 B67-10439 03

Proposed method of rotary dynamic balancing by laser M-PF-12422 B67-10452 02

Computer program calculates velocities and streamlines in turbomachines LEWIS-10252 B68-10097 06

Large-amplitude inviscid fluid motion in an accelerating container MSC-11560 B68-10170 02

Dynamics of moving bubbles in single and binary component systems M-PF-14845 B68-10339 02

Design of fluid-duct bends with low pressure loss M-PF-20176 B68-10395 05

Magnity - Program for calculating velocities in amplified region of turbomachines LEWIS-10769 B69-10132 06

FORTRAN 4 program calculates velocities and streamlines in a tandem blade turbomachine LEWIS-16743 B69-10219 06

Low-cost tape system measures velocity of acceleration GSFC-85 B63-10512 01

Ion pump provides increased vacuum pumping speed NHO-13 B65-10239 02

Photographic method measures particle size and velocity in fluid stream M-PF-1536 B66-10668 01

Laser Doppler flowmeter measures gas velocity M-PF-1747 B66-10693 02

Rectilinear display gives acceleration load
SUBJECT INDEX

VENTS
Vented piston seal prevents fluid leakage between two chambers
JPL-179 B63-10141 05

High speed blowdown system provides rapid pressure loss
LEWIS-375 B67-10043 05

Toroidal ring prevents gas ignition at vent stack outlet
K-PS-2042 B67-10098 05

Concept for cryogenic liquid reclamation system
NPO-10322 B67-10420 02

Temperature-sensed cryogenic bleed maintains liquid state in transfer line
K-PS-12807 B67-10424 01

Vent and relief valve maintains low leakage rate over broad temperature range
K-PS-13290 B68-10078 05

Device damp fluid pressure oscillations in vent valve
K-PS-13290 B68-10078 05

Control for maintaining constant level of a cryogenic liquid
NBO-11777 B69-10573 05

VENTURI TUBES
Mixer conditions temperature of liquefied gas streams
K-PS-1784 B66-10565 02

Venturi meter with separable diffuser
LEWIS-10463 B68-10295 05

Piezoelectric linear actuator
ESC-13194 B69-10469 02

VENUS (PLANET)
Space trajectories program for IBM 7090
KPO-10125 B67-10172 06

Molecular radiation—Its application in physical measurements and analyses
K-PS-14816 B69-10562 02

VERSATILITY
Metal-bending brake facilitates lightweight, close-tolerance fabrication
ABC-29 B64-10069 05

Offset lenses add versatility to phototypesetting machine
HQ-9 B66-10173 02

Versatile impact hand tool
K-PS-20140 B68-10371 05

Improved mouse cage provides versatility and ease in handling laboratory mice
ESC-12250 B69-10124 04

VERTICAL DISTRIBUTION
Proposed technique for vertical alignment of a crane's cable
K-PS-16496 B69-10202 05

VERTICAL MOTION
Remotely operated gripper provides vertical control rod movement
ABC-10460 B68-10359 05

Air-cushion lift pad
K-PS-14665 B69-10448 05

VHF HIGH FREQUENCIES
Mechanical device accurately measures phase differences in vhf or uhf ranges
K-PS-1738 B66-10694 05

Survey of man-made electrical noise affecting radio broadcasting
HQ-10290 B69-10308 01

Self-shielding printed circuit boards for high frequency amplifiers and transmitters
HQ-10433 B69-10314 01

Improved VHF direction finding system
K-PS-20439 B69-10378 01

VESSELS
Method of welding joint in closed vessel improves quality of seam
JPL-170 B63-10139 05

Method prevents secondary radiation in radiographic inspection
K-PS-13383 B67-10391 02

VESTIBULAR TESTS
Two devices for analysis of nystagmus
HQ-10273 B69-10224 01

VHF OMNIRANGE NAVIGATION
Literal readout of identification signals in Morse code
LANLEY-10222 B69-10479 01

VIABILITY
Technique for highly efficient recovery of microbiological contaminants
MSC-13250 B69-10273 04

VIBRATION
Adhesive for vacuum environments resists shock and vibration
MSC-56 B65-10016 03

Improved holder protects crystal during high acceleration and impact
JPL-463 B65-10037 05

Vibrating-membrane electrometer has high conversion gain
ANC-38 B65-10056 01

Internal cooling increases range of immersion-type temperature probe
LEWIS-171 B65-10157 02

Back mount device quickly inserts or extracts chassis units
MSC-244 B65-10385 05

Electrical cabling withstands severe environmental conditions
K-PS-1585 B66-10427 01

Plastic tubing protects flexible copper hose
K-PS-772 B66-10588 05

Instrument continuously measures density of flowing fluids
LEWIS-309 B67-10080 01

Device enables calibration of microphones at high sound pressure levels
K-PS-11980 B67-10336 01

Coaxial cable stripping device facilitates RF cabling fabrication
NPO-10315 B67-10419 05

Ultrasonics used to measure residual stress
K-PS-12449 B67-10426 02

Study made of actusical monitoring for mechanical checkout
K-PS-13372 B67-10430 02

Stable ac phase and amplitude comparator
K-PS-13086 B67-10459 01

Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area
NOC-10007 B67-10536 01

Bacteriostatic conformal coating for electronic components
GSPC-10007 B67-10599 03

I-717
VIBRATION DAMPING

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers
NWC-10024 B67-10664 05

Packaging criteria for transportation and handling shock and vibration
M-PS-13007 B66-90219 05

Between-bearing shaft seal, a concept
M-PS-18179 B68-10286 05

Mass loading effects on vibrated ring and shell structures
M-PS-14979 B68-10532 03

Fatigue failure in metal bellows due to flow-induced vibrations
M-PS-10363 B69-10071 05

Mounting method improves electrical and vibrational characteristics of screen electrodes
M-PS-20169 B69-10097 01

Precision mounting for instrument optical elements provided by polystyrene bonding
M-PS-20293 B69-10310 05

Analysis of space vehicle structures using the transfer-function concept
MPO-11162 B69-10337 06

Air-cushion lift pad
M-PS-14665 B69-10448 05

Improved inorganic ion exchange membranes
LNWS-10737 B69-10451 03

Optim structural design based on reliability and proof-load testing
MPO-11226 B69-10723 31

VIBRATION DAMPING

Thermally conductive metal wool-silicone rubber material can be used as shock and vibration damper
JPL-321 B66-10207 03

Shock mount isolates pressure transducers from vibration
JPL-631 B66-10113 05

Lightweight load support serves as vibration damper
JPL-661 B66-10144 05

Oil-damped mercury pool makes precise optical alignment tool
GSFC-353 B65-10253 02

Rubber-coated bellows improves vibration damping in vacuum lines
LNWS-273 B66-10187 02

Fluid damping reduces bellows seal fatigue failures
M-PS-565 B66-10249 05

Miniature capacitive accelerometer is especially applicable to telemetry
ARC-72 B66-10491 01

Resonant frequency can be adjusted on vibration mount
JPL-SC-134 B66-10672 05

Tester for study of rolling element bearings
LIVES-305 B67-10009 01

Post-stressed concrete foundation may reduce machinery vibration
ARC-130 B67-10237 05

Vibration damping composition has flush-away feature
M-PS-597 B67-10432 03

Solenoid valve design minimizes vibration
and sliding wear problems
M-PS-14079 B67-10667 05

Identification and evaluation of linear damping models in beam vibrations
ARG-10275 B69-10196 03

Nondestructive determination of cohesive strength of adhesive-bonded composites
M-PS-20397 B69-10464 03

Hermetically sealed vibration damper
MSC-10959 B69-10634 05

VIBRATION EFFECTS

Angular acceleration measured by deflection in sensing ring
MSC-250 B66-10105 01

Vibrator improves spark erosion cutting process
MPO-0071 B66-10333 01

Variable reluctance switch avoids contact corrosion and contact bounce
MSC-1178 B67-10137 01

Application of distorted models in developing scaled structural models
M-PS-2540 B67-10321 05

Study made of thin-walled pipe response to turbulent fluids
M-PS-1321 B67-10518 05

Eutectic fuse provides current and thermal protection under high vibration
M-PS-13664 B67-10535 01

VIBRATION ISOLATORS

Wire mesh isolator protects sensitive electronic components
GSFC-347 B65-10216 05

Tensile-strength apparatus applies high strain-rate loading with minimum shock
JPL-28 B66-10063 05

Friction brake cushions acceleration and vibration loads
MSC-715 B66-10608 05

Metal flange spray coating protects electrical cables in extreme environment
MPO-10077 B67-10351 03

Machining heavy plastic sections
M-PS-12720 B67-10381 03

Sleeved damper limits spring surging
MSC-12071 B66-10111 05

Improved active vibration isolator
LANGLEY-9106 B68-10123 05

Vibration damper for miles vertical boring mill ram
MSC-15529 B69-10388 05

Modular packaging technique for combining integrated circuits and discrete components
GSFC-10365 B65-10453 01

Hermetically sealed vibration damper
MSC-10959 B69-10634 05

VIBRATION MEASUREMENT

Device calibrates vibration transducer at amplitudes up to 20 g
M-PS-86 B63-10572 01

Transducer senses displacements of panels subjected to vibration
ARC-37 B65-10085 01

Noncontacting vibration transducer has constant sensitivity
LANGLEY-99 B65-10392 01
MONITORING SYSTEM

Determines amplitude and time of vibration channel peaks
JPL-879  B66-10699  01

INSTRUMENT

Sequentially samples ac signals from several accelerometers
JPL-884  B67-10029  01

VIBRATION ANALYSIS

Utilizing Mossbauer effect
N-PS-11974  B67-10339  01

RELIABLE, SELF-CALIBRATING VIBRATION TRANSUDER

LANGLEY-89  B66-10124  01

Mossbauer vibration calibration systems evaluated
N-PS-20014  B69-10125  01

Seismographic recording of large rocket engine operation
N-PS-20545  B69-10756  01

VIBRATION METERS

Interferometer combines laser light source and digital counting system
ISC-151  B65-10161  01

Precision capacitor has improved temperature and operational stability
ARG-189  B67-10313  01

VIBRATION SPECTRA

Nonresonant support facilitates vibration testing of structures
N-PS-224  B65-10039  05

Multicolor stroboscope pinpoints resonances in vibrating components
JPL-0033  B66-10223  01

Monitoring system determines amplitude and time of vibration channel peaks
JPL-879  B66-10699  01

Quartz crystals detect gas contaminants during vacuum chamber evacuation
NPO-10144  B67-10205  01

Post-stressed concrete foundation may reduce machinery vibration
ARG-130  B67-10237  05

System precisely controls oscillation of vibrating mass
N-PS-1875  B67-10276  01

Study made of thin-walled pipe response to turbulent fluids
N-PS-1321  B67-10515  05

Quantum mechanical calculations of reactive scattering cross sections in biomolecular encounters
NPO-13594  B67-10527  03

Computer program calculates the effective temperature for a crystalline solid
JPL-10161  B65-10036  06

VIBRATION STRESS

Wire material reduces compressor blade vibration
LEWIS-357  B66-10666  03

Pipe joints reinforced in place with fitted aluminum sleeves
MSC-11109  B67-10271  01

Nondestructive testing of brazed rocket engine components
N-PS-18191  B68-10394  03

Fatigue of reinforced concrete beams under dynamic loading
N-PS-1490C  B68-10515  05

I-719
VIBRATORY LOADS
Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
B-FS-640 066-10247 05
Beat exchanger tubes supported in high vibration environment
B-FS-1401 066-10567 05
Highly linear, sensitive analog-to-digital converter
KSC-13110 069-10230 01
VIBRATORY POLISHING
Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine
ABC-42 066-10562 05
VIDEO DATA
Recording and time expansion technique for high-speed, single-shot transient video signal
ABC-10003 067-10139 01
Video synchronization processor overcomes poor signal-to-noise ratio
KSC-10002 067-10515 01
Computer program for Video Data Processing System /VDP/ /NPO-10042/ 067-10630 05
Scan rate converter for tape recording and playback of TV pictures
NPO-10166 067-10676 01
Technique for improving solid state mosaic images
M-FS-20532 069-10676 01
System converts slow-scan to standard fast-scan TV signals
KSC-90534 069-10748 01
VIDEO EQUIPMENT
Vibration tests on vidicons made by improved method
JPL-SC-115 066-10042 01
Screen of cylindrical lenses produces stereoscopic television pictures
M-FS-273 066-10086 02
Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
KSC-781 066-10429 01
Security warning system monitors up to fifteen remote areas simultaneously
KSC-66-39 066-10548 01
Miniature electrometer preamplifier effectively compensates for input capacitance
ABC-69 066-10549 01
Recording and time expansion technique for high-speed, single-shot transient video signal
ABC-10003 067-10139 01
Design concept for improved photo-scan tube
JPL-618 067-10157 01
New electron microscope employs new video display technique
ABC-158 067-10312 03
System remotely inspects, measures, and records internal irregularities in piping
M-FS-14056 068-10149 01
Facsimile video enhancement device
GSFC-10185 068-10207 01
Solid state high-voltage pulser operates
WITH LOW SUPPLY VOLTAGE
K-FS-10034 068-10308 01
SELECTIVE VIDEO BLANKING TECHNIQUE
K-FS-20013 068-10434 01
VIDICONS
Electro-mechanically operated camera shutter provides uniform exposure
JPL-357 068-10227 01
Master linearity of video cameras calibrated with precision tester
GSFC-200 068-10209 01
Temperature-compensation circuit stabilizes performance of vidicons
JPL-886 068-10226 01
Detector circuit compensates for vidicon beam current variations
GSFC-310 068-10363 01
VIBRATION TESTS ON VIDICONS MADE BY IMPROVED METHOD
JPL-SC-115 066-10042 01
NEW TELEVISION CAMERA ELIMINATES VIDICON TUBE
M-FS-472 066-10112 01
INFRARED TELEVISION USED TO DETECT HYDROGEN FIRES
M-FS-654 066-10363 01
AN IMPROVED METHOD FOR TESTING PERFORMANCE OF VIDICONS DURING VIBRATION
JPL-SC-113 066-10442 01
SUBMINIATURE DEFLECTION CIRCUIT OPERATES INTEGRATED CIRCUITS IN TV CAMERA
KSC-1263 067-10155 01
CLOSED CIRCUIT TV SYSTEM MONITORS WELDING OPERATIONS
KSC-11002 067-10162 01
PLANNER DESIGN SIMPLIFIES DETERMINATION OF IMAGE SENSOR TRANSFER CHARACTERISTIC
NPO-10164 067-10206 01
IMPROVED TELEVISION SIGNAL PROCESSING SYSTEM
NPO-10140 067-10246 01
IR VIDICON SCANNER MONITORS MANY TEST POINTS
M-FS-1957 067-10277 01
ULTRAMINIATURE TELEVISION CAMERA
M-FS-11967 067-10469 01
COLOR-TELEVISIONED MEDICAL MICROSCOPY
KSC-13086 068-10314 01
AN INFRARED TELEVISION SYSTEM FOR HYDROGEN FLAME DETECTION
KSC-10368 069-10354 01
VIEWING
Library of documents compressed into lap-held display kit
KSC-125 065-10030 01
OPTICAL PROJECTORS SIMULATE HUMAN EYES TO ESTABLISH OPERATOR'S FIELD OF VIEW
NOO-250 066-10100 02
POCKET-SIZE MANUAL TAPE READER DEVICE AIDS COMPUTER TAPE CHECKING
KSC-10058 067-10361 01
VIGNETTING
SELECTIVE VIGNETTING OF TYPE 1 X-RAY TELESCOPES
GSFC-10682 069-10075 02
VINYL COPOLYMERES
QUICK DON-DOFF ELECTRODE PASTES
KSC-13249 069-10598 04
Production of crystalline polymers via liquid crystal monomers
BG-10235  B69-10744  03

VISINL POLYMERS
Static electricity of polymers reduced by treatment with iodine
SFO-10062  B67-10132  03
Heparin insolubilized with crosslinking agent
SFO-10834  B69-10299  03

VIRTUAL PROPERTIES
Improved circularly polarized planar-array antenna
SFO-10301 B69-10362  01

VIRUSSES
Cytology is advanced by studying effects of deuterium environment
ARG-205  B67-10304  04

VISCOElasticity
Finite element formulation for linear thermoelastic materials
SFO-11229  B69-10660  03

VISCOElastERS
Absolute viscosity measured using instrumented parallel plate system
JPL-874  B67-10041  01
Viscosity and density of methanol/water mixtures at low temperatures
M-PS-1401  B68-10274  03

VISCOSeity
Traction improves properties of an aromatic polyester
LANGLEY-115  B65-10164  03
Study made of destructive sectioning of complex structures for examination
LEWIS-341  B66-10676  05
Absolute viscosity measured using instrumented parallel plate system
JPL-874  B67-10041  01
Flowmeter determines mix ratio for viscous adhesives
M-PS-2308  B67-10378  01
Viscosity and density of methanol/water mixtures at low temperatures
M-PS-1401  B68-10274  03

REAL fluid properties of normal and parahydrogen
LEWIS-10458  B68-10361  06
Flow properties of suspensions rich in solids
ARG-10451  B69-10622  02
Production of crystalline polymers via liquid crystal monomers
BG-10235  B69-10744  03

VISCOUS DAMPING
Viscous-pendulum damper suppresses structural vibrations
LANGLEY-45  B64-10272  05
Nonresonant support facilitates vibration testing of structures
M-PS-224  B65-10039  05
Oil-damped mercury pool makes precise optical alignment tool
GSFC-353  B65-10253  02
Damping technique gives accelerometer flat frequency response
M-PS-471  B66-10293  01
Dumper reduces effects of resonance on force transducer
WSO-321  B66-10550  05

VISCOS DOMAG
Improved strain-wire flowmeter has fast response time
LEWIS-241  B65-10304  01
Flowmeter measures flow rates of high temperature fluids
LEWIS-328  B66-10521  01

VISCOS FLUIDS
Viscous-pendulum damper suppresses structural vibrations
LANGLEY-45  B64-10272  05
Damper reduces effects of resonance on force transducer
WSO-321  B66-10550  05
Improved gyro-flotation/damping fluids
MSC-13017  B69-10360  03

VISIBILITY
Split glass tube assures quality in electron beam brazing
M-PS-564  B66-10151  05
Scanning photometer system automatically determines atmospheric layer height
MSC-245  B66-10170  01
Special tool kit aids heavily garmented workers
MSC-163  B66-10403  05
Improved head-controlled TV system produces high-quality remote image
ARG-128  B67-10317  01
Thermal protective visor for entering high temperature areas
MSC-10285  B68-10277  05
Improved combustion chamber optical probe
MSC-10953  B69-10142  02
An infrared television system for hydrogen flame detection
KSC-10366  B69-10354  01

VISORS
One-piece transparent shell improves design of helmet assembly
MSC-187  B66-10390  05
Thermal protective visor for entering high temperature areas
MSC-10285  B68-10277  05

VISUAL AIDS
Single projector accommodates slides of different size and format
GSFC-439  B66-10016  02
Chart case opens to form briefing easel
MSC-349  B66-10135  05
Multicolor strobescope pinpoints resonances in vibrating components
JPL-0033  B66-10223  01
Simple scale interpolator facilitates reading of graphs
LEWIS-92  B66-10302  05
Sea dye marker provides visibility for 20 hours
MSC-714  B66-10313  03
Chart system simplifies identification of complex design assemblies
VISUAL CONTROL

MSC-752  B66-10460  05

Visual attitude orientation and alignment system
MSC-647  B67-10120  02

Vis-a-Plan /visualize a plan/ management technique provides performance-time scale.
KSC-10073  B67-10240  06

New electron microscope employs new video display technique
ABS-158  B67-10312  03

Low cost SCR lamp driver indicates contents of digital computer registers
GSFC-10221  B66-10644  01

VISUAL CONTROL
Visual attitude orientation and alignment system
MSC-647  B67-10120  02

VISUAL FIELDS
Optical projectors simulate human eyes to establish operator's field of view
WOO-250  B66-10010  02

Optical device enables small detector to see large field of view
WOO-253  B66-10263  02

One-piece transparent shell improves design of helmet assembly
MSC-187  B66-10390  05

VISUAL OBSERVATION
Use of photographs speeds inspection of printed-circuit boards
MSC-72  B66-10118  01

High-speed furnace uses infrared radiation for controlled brazing
NR-0047  B66-10268  02

High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation
LEWIS-310  B66-10394  01

Quality control criteria for acceptance testing of cross-wire welds
MSC-627  B66-10587  05

Fused diode provides visual indication of fuse condition
KSC-67-16  B67-10230  01

Simplified technique demonstrates magnetic domain switching
K-PS-13153  B67-10342  02

Automatic patient respiration failure detection system with wireless transmission
ARC-10174  B66-10365  01

Visual task analysis /VISTA/
M-PS-14716  B69-10394  06

Cryogenic fluid flow instabilities in heat exchangers
K-PS-20438  B69-10541  02

A method for precision anodize stripping
MSC-15040  B69-10581  03

Long range holographic contour mapping concept
HQ-10350  B69-10700  02

VISUAL PERCEPTION
Distant objects detected visually with optical filters
LANGLEY-466  B65-10252  02

Instrument quickly transposes ground reference target to eye level
MSC-275  B66-10061  05

Screen of cylindrical lenses produces stereoscopic television pictures
K-PS-273  B66-10086  02

Torque wrench allows readings from inaccessible locations
K-PS-598  B66-10204  05

Instrument transmits vanishing point to illustration point
KSC-267A  B66-10324  01

Infrared television used to detect hydrogen fires
K-PS-654  B66-10363  01

Three-axis attitude and direction reference instrument has only one moving part
K-PS-1819  B66-10644  01

Polarized light reveals stress in machined laminated plastics
WUS-10018  B67-10383  03

VISUAL SIGNALS
Speed-sensing device aids crane operators
WUS-4  B66-10006  05

Device detects unbonded areas in plastic laminates
WOO-206  B65-10380  01

Conceptual apparatus for detecting leaks of nonconductive liquids
K-PS-18172  B69-10303  01

Automatic patient respiration failure detection system with wireless transmission
ARC-10174  B66-10365  01

Use of both linear and logarithmic transfer functions to increase dynamic range of visual channel
GSFC-10675  B69-10037  01

Occulting-filter method for obtaining flashing-light visibility data
MSC-13097  B66-10107  02

VITREOUS MATERIALS
Selenium bond decreases ON resistance of light-activated switch
JPL-SC-101  B65-10324  01

VLASOV EQUATIONS
Computer programs calculate potential and charge distributions in a plasma
K-PS-871  B66-10553  01

VOCODERS
Analog voicing detector responds to pitch
GSFC-10085  B67-10571  01

VOICE
Electronic dummy for acoustical testing
MSC-206  B67-10298  01

VOICE COMMUNICATION
Electrocardiograph transmitted by RF and telephone links in emergency situations
FRC-10031  B68-10233  01

Pocket-sized tone-modulated FM transmitter
WGO-11180  B69-10725  01

VOID RATIO
Mathematical relation predicts achievable densities of compacted particles
ARB-10082  B67-10592  03

Fuel element concept for long life high power nuclear reactors
LEWIS-10309  B69-10154  03

VOIDS
Liquid crystals detect voids in fiber glass laminates
LEWIS-10104  B67-10286  03

I-722
Vibration damping composition has flush-away feature 667-10432 03
Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing 667-10542 02
Niobium-uranium alloys with voids of predetermined size and total volume 669-10641 03

**VOLT-EFFECT**
A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt line profile 669-10232 06

**VOLATILITY**
New cobalt alloys have high-temperature strength and long life in vacuous environments LEWIS-47 663-10351 03
Solvent residue content measured by light scattering technique 666-10320 01
Fluid-bed fluoride volatility process recovers uranium from spent uranium alloys ARG-232 667-10032 03
Improved compression molding process LANGLBP-10027 667-10302 03
Technological survey of tellurium and its compounds ARG-10119 668-10201 03
Characteristics of fluidized-packed beds ARG-10049 668-10278 03
Dispensing graduate for butadiene ARG-10070 668-10524 03
Apparatus automatically measures soluble residue content of volatile solvents 669-10032 03
A method for observing gas evolution during plastic laminate cure MSC-15592 669-10530 03
Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers MSC-15611 669-10552 03

**VOLT-ANDER CHARACTERS**
Didymium compound improves nickel-cadmium cell GSFC-295 665-10083 03
Adaptive control circuit prevents amplifier saturation 667-10026 02
Simple quasi-exponential slope generator EFO-11130 669-10439 01

**VOLTAGE AMPLIFIERS**
Field effect transistor presents high input impedance in ac amplifier JPL-500 665-10232 01
Solid state thermostat has integral probe and circuitry 666-10193 01
NEGEM analog memory circuit achieves long duration signal storage 666-10603 01
Voltage regulator/amplifier is self-regulated MSC-1240 667-10156 01
Plotter design simplifies determination of image sensor transfer characteristic 650-10164 667-10206 01

**VOLTAGE REGULATORS**
Amplifier provides dual outputs from a single source with complete isolation NUC-10056 667-10221 01
Vibrator elapsed time is automatically controlled M-FS-2573 667-10284 01
Limit circuit prevents overdriving of operational amplifier NUC-10082 667-10343 01
Current pulse amplifier transmits detector signals with minimum distortion and attenuation NUC-10055 667-10347 01
Adaptive control circuit prevents amplifier saturation ENC-10026 667-10648 02
Improved dc voltage multiplier M-FS-14042 668-10074 01
Highly linear, sensitive analog-to-digital converter MSC-13110 669-10230 01

**VOLTAGE GENERATORS**
Pressure sensor responds only to shock wave M-FS-238 665-10184 01
Modular thermoelectric cell is easily packaged in various arrays GSFC-339 665-10199 01
Electron-beam deflection controlled by digital signals GSFC-385 665-10283 02
Dual-voltage power supply has increased efficiency LEWIS-1076 666-10002 01
Simple, one transistor circuit boosts pulse amplitude GSFC-501 666-10480 01
Circuit increases capability of hysteresis synchronous motor MSC-1080 667-10084 01
Superconducting switch permits measurement of small voltages at cryogenic temperatures ARG-90260 668-10087 01
System measures response time of photomultiplier tubes LEWIS-10437 668-10382 01
Linear voltage-to-frequency converter GSFC-10546 669-10220 01
Synchronizing redundant power oscillators KGS-09377 669-10546 01
Dual-voltage power supply has increased efficiency
LEWIS-101A  B66-10002  01

Circuit exhibits power efficiency greater than 75 percent
MSC-254  B66-10034  01

Improved chopper circuit uses parallel transistors
M-PS-468  B66-10113  01

Soldering iron temperature is automatically reduced
ARC-57  B66-10203  01

Circuit protects regulated power supply against overload current
GSPC-853  B66-10292  01

Circuit prevents overcharging of secondary cell batteries
GSPC-854  B66-10492  01

Pre-regulator feedback circuit utilizes Light Actuated Switch
M-PS-1160  B66-10542  01

Electronic circuit provides accurate sensing and control of dc voltage
BS-0089  B66-10591  01

Low input voltage converter/regulator minimizes external disturbances
GSPC-527  B66-10689  01

Voltage regulator/amplifier is self-regulated
MSC-1240  B67-10156  01

Switching-type regulator circuit has increased efficiency
MSC-1063  B67-10190  01

An efficient, temperature-compensated subcarrier oscillator
JPL-SC-094  B67-10251  01

Circuit provides overcurrent protection to push-pull amplifier
MSC-12033  B67-10300  01

Digital-to-analog converter operates from low level inputs
JPL-907  B67-10357  01

Battery charge regulator is coulometer controlled
GSPC-561  B67-10446  01

Digital voltage-controlled oscillator
GSPC-512  B67-10449  01

MOSFET improves performance of power supply regulator
GSPC-10022  B67-10569  01

Circuit detects voltage decrease in computer power supply
KSC-67-120  B68-10019  01

Deep space FM system, a concept
MSC-11825  B68-10289  01

Current-limiting voltage regulator
MSC-11824  B68-10305  01

Analysis and design of a class-D amplifier
H-PS-14803  B68-10313  01

Concept to convert electrical power
GSPC-10222  B68-10321  01

Improved limiter for turn-on current transient
GSPC-10413  B68-10384  01

High-efficiency step-up regulator
H-PS-20049  B68-10432  01

Isolated, multiple-output voltage dc-to-dc converter
H-PS-14976  B69-10014  01

Millivolt signal limiter
LEWIS-90297  B69-10015  01

Improved dc voltage regulator
KR-80467  B69-10369  01

High-temperature, gas-filled ceramic rectifiers, thyristors, and voltage-reference tubes
LEWIS-50271  B69-10376  01

Constant-frequency, variable-duty-cycle multivibrator
XGS-10033  B69-10512  01

VOLTMETERS

SUBJECT INDEX

Isolated, multiple-output voltage dc-to-dc converter
H-PS-14976  B69-10014  01

Millivolt signal limiter
LEWIS-90297  B69-10015  01

Improved dc voltage regulator
KR-80467  B69-10369  01

High-temperature, gas-filled ceramic rectifiers, thyristors, and voltage-reference tubes
LEWIS-50271  B69-10376  01

Constant-frequency, variable-duty-cycle multivibrator
XGS-10033  B69-10512  01

VOLTMETERS

Emulsion tester for high-power vacuum tubes
JPL-628  B66-10158  01

Improved magnetometer uses toroidal gating coil
GSPC-249  B65-10103  01

Piezoresistive gage tests pin-connector sockets
JPL-675  B65-10128  01

Spiral spring/strain gage combination accurately measures shock-induced deflection
MSC-133  B65-10143  01

Piezoresistive gage tests pin-connector sockets
JPL-675  B65-10128  01

Digital-outrut cardiotachometer measures rapid changes in heartbeat rate
MSC-133  B65-10143  01

Spiral spring/strain gage combination accurately measures shock-induced deflection
MSC-789  B66-10488  01

Magnetoresistor monitors relay performance
M-PS-1754  B66-10560  01

Test instrumentation evaluates electrostatic hazards in fluid system
M-PS-2277  B66-10145  01

Optimum FM pre-emphasis
KSC-10151  B66-10359  01

Test instrumentation evaluates electrostatic hazards in fluid system
M-PS-2277  B66-10145  01

Potassium plasma cell facilitates thermionic energy conversion process
ARG-10010  B67-10399  01

Test instrumentation evaluates electrostatic hazards in fluid system
M-PS-2277  B66-10145  01

Optimum FM pre-emphasis
KSC-10151  B66-10359  01

Test instrumentation evaluates electrostatic hazards in fluid system
M-PS-2277  B66-10145  01

Optimum FM pre-emphasis
KSC-10151  B66-10359  01

Automatic calorimetry system monitors RF power
NPO-11033  B68-10384  01

Analysis and design of a class-D amplifier
H-PS-14803  B68-10313  01

Optimum FM pre-emphasis
KSC-10151  B66-10359  01

Automatic calorimetry system monitors RF power
NPO-11033  B68-10384  01

Instrumentation for potentiostatic corrosion studies with distilled water
ARG-10069  B69-10413  03

Analysis and design of a class-D amplifier
H-PS-14803  B68-10313  01

Concept to convert electrical power
GSPC-10222  B68-10321  01

Improved limiter for turn-on current transient
GSPC-10413  B68-10384  01

High-efficiency step-up regulator
H-PS-20049  B68-10432  01

Large volume continuous counterflow

I-724
dialyzer has high efficiency
HQ-10055 B67-10395 04

SOC-DS computer code provides tool for
design evaluation of homogeneous
two-material nuclear shield
BEC-10142 B67-10537 06

Leakage tester for flat conductor cable
connector
M-PS-20427 B69-10284 05

A laboratory method for precisely
determining the micro-volume-magnitudes of
liquid efflux
ARC-10052 B68-10295 05

VOLUPTIC ANALYSIS
Computer circuit calculates cardiac output
MSC-274 B66-10006 01

Method of improving contact bonds in
silicon integrated circuits
N-PS-1753 B67-10335 01

VORTEX INJECTORS
Study of vortex valve for median
temperature solid propellants
LANGLEY-204 B66-10524 01

VORTICES
Fluid logic control circuit operates nutator
actuator motor
LEWIS-256 B66-10593 05

Experimental scaling study of fluid
amplifier elements
M-PS-1882 B67-10088 02

VORTICITY
Experimental design for research on
shock-turbulence interaction
N-PS-20031 B69-10604 02

VOTING
Logic realization of simple majority voting
connectives
JPL-727 B67-10511 06

VULCANNIZED ELASTOMERS
Compressible sleeve provides automatic
centering for grinding or turning of
cylinders
SAR-10021 B66-10318 05

VULCANIZING
Rubber-coated bellows improves vibration
damping in vacuum lines
LEWIS-273 B66-10187 02

Encapsulation technique eliminates thermal
stresses in welded electronic modules
N-PS-14561 B66-10307 01

VYCOR
Laboratory arc furnace features
interchangeable hearths
ARG-125 B67-10052 05

Precision capacitor has improved temperature
and operational stability
ARG-189 B67-10313 01

WAFERS
Stepping switch with simple actuator provides
many contacts in small space
JPL-122 B63-10118 01

System for etching thick aluminum layers
minimizes bridging and undercutting
M-PS-1366 B66-10400 03

Efficient millimeter wave 1140 GHz/ diode
for harmonic power generation
SI-61 B67-10166 01

Process controls introduction of selected
impurities into semiconductor wafers
GSFC-523 B67-10303 01

Test and inspection for process control of
monolithic circuits
N-PS-13084 B67-10507 01

High-temperature /1100 degrees F/
capacitors operate without supplement cooling
LEWIS-10326 B67-10550 01

Broadband choke suppresses spurious currents
in antenna structure
MSC-10013 B67-10675 01

Improved method of dicing integrated circuit
wafers into chips
ERG-10138 B69-10441 01

Reducing contact resistance at semiconductor
to metal or aluminum to metal interfaces
EBC-10294 B69-10669 01

WEES
Acoustic wave analysis
N-PS-18076 B66-10265 02

WALKING
Integrated mobility measurement and notation
system
MSC-726 B67-10114 04

WALL TEMPERATURE
Variable-transparency wall regulates
temperatures of structures
LANGLEY-25 B63-10528 03

Computer optimization program finds values
for several independent variables that
minimize a dependent variable
N-PS-13030 B67-10328 06

WALLS
Variable-transparency wall regulates
temperatures of structures
LANGLEY-25 B63-10528 03

Metal tube reducer is inexpensive and
simple to operate
ARG-9 B67-10401 05

Buckling Of Shells Of Revolution
/100SB/ with various wall constructions
LANGLEY-10441 B69-10300 06

Surface-renewal models for heat-transfer
between walls and fluidized beds
ARG-10372 B67-10772 02

WARNING SYSTEMS
Fuel cell serves as oxygen level detector
JPL-SC-072 B65-10066 01

Pressure sensor responds only to shock wave
N-PS-238 B65-10164 01

Detection system ensures positive alarm
activation in digital message loss
WOO-208 B66-10287 01

Security warning system monitors up to
fifteen remote areas simultaneously
KSC-66-39 B66-10548 01

Multiple meter monitoring circuits served
by single alar
MSC-10984 B67-10369 01

Silicon solar cell monitors high temperature
furnace operation
MSC-10163 B68-10168 01

Automatic patient respiration failure
detection system with wireless transmission
ARC-10174 B68-10365 01

WARPAGE
Concealed hinge permits flush mounting of
doors and hatches
I-725
Beat-treatment of metal parts facilitated by sand embedment
I-FS-1543 E66-10616 03
Stabilizing stainless steel components for cryogenic service
J-FS-13127 B67-10377 05
Precision metal molding
J-FS-13305 B67-10423 05
Warpage eliminated in copper-clad microwave circuit laminates
J-FS-13692 B67-10054 03
Asbestos and Inconel combined to form hot-gas seal
J-FS-14004 E66-10162 05
Techniques for controlling warpage and residual stresses in welded structures
J-FS-20307 E69-10086 05
WASHERS
Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures
J-FS-800 B66-10325 02
WASHERS (SPACERS)
Indium foil with beryllia washer improves transistor heat dissipation
JPSG-42 B63-10033 01
New package for Belleville spring permits rate change, easy disassembly
JPL-392 E66-10247 05
Composite seal reduces alkaline battery leakage
JPSG-337 B65-10271 01
Mounting improves heat-sink contact with beryllia washer
JSC-194 B66-10144 01
Design concept for pressure switch calibrator
HP-36 B66-10598 01
Friction brake cushions acceleration and vibration loads
JSC-715 B66-10608 05
Miniature capacitor functions as pressure sensor
JPL-903 B67-10020 01
Aluminum and stainless steel tubes joined by simple ring and welding process
J-FS-13120 B67-10472 05
Electrothermal linear actuator
NPO-10637 B69-10296 05
Removal of retaining washers of the waffle-spring type
NPO-15531 B69-10350 05
Pressure transducer
NPO-10853 B69-10364 01
WASPALOT
Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys
NPO-10554 B69-10707 02
WASTE DISPOSAL
Rock bit requires no flushing medium to maintain drilling speed
JPL-WOO-031 B65-10109 05
WASTE UTILIZATION
Concept for cryogenic liquid reclamation system
NPO-10322 B67-10420 02
Electrolytic silver ion cell sterilizes water supply
MSC-11827 B68-10555 01
WASTES
Analytical technique characterizes all trace contaminants in water
MSC-11032 B67-10243 03
Replacement of fluid-filter elements without interruption of flow
MSC-15499 B69-10245 05
WATER
Inorganic paint is durable, fireproof, easy to apply
GSFC-366 B65-10156 03
Infrared shield facilitates optical pyrometer measurements
LANGLEY-133 B65-10272 02
Reaction heat used in static water removal from fuel cells
MSC-532 B66-10013 01
Microorganisms detected by enzyme-catalyzed reaction
JPL-782 B66-10117 04
Electro pneuma tic transducer automatically limits motor current
LEWIS-253 B66-10160 01
Coating permits use of strain gage in water and liquid hydrogen
J-FS-594 B66-10192 01
Simple, nondestructive test identifies metals
MSC-525 B66-10305 03
Modular Porous Plate Sublimator requires only water supply for coolant
J-FS-1374 B66-10409 01
Ultrasonic water column probe speeds up testing of welds
HQ-58 B66-10577 01
Ion exchange determines iodine-131 concentration in aqueous samples
ARG-208 B67-10129 04
Water cooled anode increases life of high temperature arc lamp
NPO-10180 B67-10247 02
Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident
NDC-10054 B67-10281 06
Trace hydrazines in aqueous solutions accurately determined by gas chromatography
NDC-11222 B67-10290 03
Scribable coating for plastic films
MSC-11194 B67-10409 01
Vibration damping composition has flush-away feature
MSC-597 B67-10432 03
Fuel cell life improved by metallic sinter activation after electrode assembly welding
MSC-10965 B67-10436 03
Reaction of steam with molybdenum is studied
ARG-295 B67-10502 03
Performance of turbine-type flowmeters in liquid hydrogen
LEWIS-10137 B67-10506 01
Viscosity and density of methanol/water mixtures at low temperatures
J-FS-14991 B66-10274 03
Electrochemical study of aluminum corrosion in boiling high purity water
ARG-10306 B69-10033 03

Calibrated water tank facilitates proof-loading of cranes and derricks
E-PS-15059 B69-10109 05

Primary radical yields in pulse irradiated alkaline aqueous solution
ARG-10322 B69-10167 02

Reduction by monovalent zinc, cadmium, and nickel cations
ARG-10328 B69-10170 03

Concentrations of the naturally occurring radionucleides Pb-210, Po-210, and Ra-226 in aquatic fauna
ARG-10345 B69-10258 02

Technique for highly efficient recovery of microbiological contaminants
MSC-13250 B69-10273 04

Rate of heat extraction controller for environmental control
HQ-10318 B69-10516 01

Measurement of gas flow at extremely low pressures
MSC-13261 B69-10522 03

Water-glycol system volume calculation
MSC-15193 B69-10563 03

Quick don-doff electrode pastes
MSC-13249 B69-10598 04

Device separates hydrogen from solution in water at ambient temperatures
MSC-13335 B69-10635 03

WATER FLOW
Transducer measures temperature differentials in presence of strong electromagnetic fields
ARC-27 B65-10089 01

Studies reveal effects of pipe bends on fluid flow cavitation
M-PS-516 B66-10228 05

Low rate flow switch can be used for gas or liquid
JPL-867 B66-10696 01

Corrosion reduction of aluminum alloys in flowing high-temperature water
ARG-10294 B69-10029 03

Propagation of density disturbances in air-water flow
ARG-10260 B69-10043 02

WATER INJECTION
Computer program calculates peripheral water injection cooling of axisymmetric subsonic diffuser
MSC-10541 B67-10543 06

WATER MODERATED REACTORS
Portable, high intensity isotopic neutron source provides increased experimental accuracy
ARG-90250 B68-10243 02

WATER POLLUTION
Reduction by monovalent zinc, cadmium, and nickel cations
ARG-10328 B69-10170 03

Airborne Framhofer Line Discriminator
MSC-13146 B69-10594 02

WATER TREATMENT
Emergency solar still desalts seawater
MSC-135 B65-10214 03

Trace levels of metallic corrosion in water determined by emission spectrograph
MSC-1193 B66-10701 03

Effects of surface preparation on quality of aluminum alloy weldments
M-PS-13152 B69-10302 03

Electrolytic silver ion cell sterilizes water supply
MSC-11827 B69-10555 01

Improved pH buffering agent for sodium hypochlorite
MSC-15443 B69-10084 03

A method for precision anodize stripping
MSC-15040 B69-10581 03

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
ARG-10661 B69-10620 02

WATER VAPOR
Apparatus measures concentration of suspended droplets in gas streams
LANELEY-31 B64-10237 01

Reaction heat used in static water removal from fuel cells
M-PS-532 B66-10013 01

Lamp enables measurement of oxygen concentration in presence of water vapor
MSC-10043 B67-10387 01

Welding of commercial base plates is investigated
M-PS-13649 B69-10192 03

Plume radiation program
M-PS-13202 B69-10447 06

High conductance vapor thermal switch
GSFC-10109 B69-10519 02

Reliable method for testing gross leaks in semiconductor component packages
ERC-10150 B69-10562 01

Two systems developed for purifying inert atmospheres
ARG-10234 B69-10026 03

Dewpoint temperature inversions analyzed
ARG-10316 B69-10057 02

Coatings decrease metal fatigue failure
ARG-10015 B69-10176 03

Prediction of thermal radiation from exhaust plume
M-PS-20414 B69-10371 02

Molecular radiation - Its application in physical measurements and analyses
M-PS-14816 B69-10562 02

Millimeter-wave atmospheric loss prediction method
NPO-11054 B69-10584 01

WATERPROOFING
Inexpensive electrical connector is moisture and corrosion-proof
MSC-164 B66-10196 01

Coating permits use of strain gage in water and liquid hydrogen
M-PS-594 B66-10192 01

Electrical cabling withstands severe environmental conditions
M-PS-1585 B69-10427 01

High energy forming facility
M-PS-14026 B67-10588 05
WATERTHERES
Circuit measures hysteresis loop areas at
30 Hz
M-PS-13069 B67-10519 01
Calibration technique for electromagnetic
cflowmeters
LMIS-10328 B67-10554 01
WAVE ATTENUATION
System precisely controls oscillation of
vibrating mass
M-PS-1975 B67-10276 01
Stress-corrosion-induced property changes
in aluminum alloys
M-PS-20209 B68-10568 03
WAVE DIFFRACTION
Optical frequency waveguide and ion
transmission system
Hq-10541 B69-10746 01
WAVE DRAG
Program computes zero lift wave drag of
entire aircraft
LANLEY-10079 B67-10530 06
WAVE EQUATIONS
Acoustic wave analysis
M-PS-18076 B68-10265 02
Solution of differential equations by
application of transformation groups
M-PS-14802 B68-10276 02
WAVE EXCITATION
Antenna configurations provide polarization
 diversity
GSFC-74 B66-10066 01
Glow discharge density sensor probe life is
extended
M-PS-1707 B67-10229 01
Vibration testing and dynamic studies of
relays
M-PS-14542 B68-10268 01
Evaluation of magnetic materials for static
inverters and converters
LMIS-10343 B69-10306 01
WAVE FUNCTIONS
Quantum mechanical calculations of reactive
scattering cross sections in biomolecular
 encounters
M-PS-13594 B67-10527 03
WAVE GENERATION
Variable frequency magnetic multivibrator
generates stable square-wave output
GSFC-AE-21 B65-10128 01
Glow discharge density sensor probe life is
extended
M-PS-1707 B67-10229 01
A phonocardiogram simulator
KSC-67-94 B67-10239 01
Signal generator converts direct current
to multiphase supplies
MSC-11043 B67-10368 01
Development of detonation reaction engine
M-PS-14020 B67-10652 01
Pneumatic pressure wave generator provides
economical, simple testing of pressure
transducers
NWC-10024 B67-10664 05
Simple quasi-exponential slope generator
NFO-11130 B69-10439 01
WAVE INTERACTION
One-dimensional Coulomb-damped wave motion
in prismatic bars
SUBJECT INDEX
X-PS-14615 B68-10548 02
WAVE PROPAGATION
Ultrasounds used to measure residual stress
M-PS-12649 B67-10628 02
Study made of large amplitude fuel sloshing
M-PS-12381 B67-10639 03
Propagation of density disturbances in
air-water flow
ANG-10260 B69-10043 02
Damping of thermoelastic structures
M-PS-20002 B69-10467 02
Millimeter-wave atmospheric loss prediction
method
NFO-11054 B69-10584 01
WAVE REFLECTION
The effect of mismatched components on
microwave noise-temperature calibrations
NFO-11163 B69-10333 01
WAVEFORMS
Low-power transistorized circuit provides
staircase waveform
GSFC-48 B64-10007 01
Improved electrode gives high-quality
biological recordings
MSC-17 B64-10025 04
Analog device simulates physiological
waveforms
MSC-51 B64-10109 01
Pneumotachometer counts respiration rate of
human subject
MSC-92 B64-10259 01
Circuit converts AM signals to FM for
magnetic recording
GSFC-227 B65-10001 01
Simulator produces physiological waveforms
MSC-94 B65-10091 01
Transistorized circuit clamps voltage with
0.1 percent error
GSFC-196 B65-10118 01
Auxiliary circuit enables automatic monitoring
of EEG's
MSC-106 B65-10142 02
Frequency discriminator with binary output
eliminates tuned circuits
M-PS-376 B65-10349 01
Function generator eliminates necessity
of series summation
GSFC-214 B66-10351 01
Feedback loop compensates for rectifier
nonlinearity
M-PS-304 B66-10362 02
Parallel line raster eliminates ambiguities in
reading timing of pulses less than 500
microseconds apart
JPL-805 B66-10386 01
Subminiature deflection circuit operates
integrated sweep circuits in TV camera
MSC-1263 B67-10155 01
Fast-response frequency-to-analog converter
M-PS-706 B67-10257 01
Electronic test instrument generates
extremely small current signals
ANG-276 B67-10310 01
Logic circuit detects both present and
missing negative pulses in superimposed
wave trains
M-PS-12516 B67-10565 01

I-728
### SUBJECT INDEX

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Wavelengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic pressure wave generator provides economical, simple testing of pressure transducers</td>
<td>NNC-10024</td>
<td>B67-10664 05</td>
</tr>
<tr>
<td>Improved traveling wave maser amplifier</td>
<td>NPO-10548</td>
<td>B67-10244 01</td>
</tr>
<tr>
<td>Improved traveling wave maser amplifier</td>
<td>NPO-10548</td>
<td>B67-10244 01</td>
</tr>
<tr>
<td>Optically induced free carrier light modulator</td>
<td>GSFC-10216</td>
<td>B69-10114 01</td>
</tr>
<tr>
<td>Sweep frequency detector</td>
<td>NPO-10669</td>
<td>B69-10289 01</td>
</tr>
<tr>
<td>Phase multiplying electronic scanning array</td>
<td>NPO-10302</td>
<td>B69-10381 01</td>
</tr>
<tr>
<td>A compact traveling wave maser attenuator</td>
<td>NPO-10562</td>
<td>B69-10427 01</td>
</tr>
<tr>
<td>Rotary antenna attenuator</td>
<td>NPO-10468</td>
<td>B69-10502 01</td>
</tr>
<tr>
<td>Optical frequency waveguide and ion transmission system</td>
<td>NPO-10541</td>
<td>B69-10746 01</td>
</tr>
<tr>
<td>Improved circularly polarized planar-array antenna</td>
<td>NPO-10301</td>
<td>B69-10433 01</td>
</tr>
<tr>
<td>Improved circularly polarized planar-array antenna</td>
<td>NPO-10301</td>
<td>B69-10433 01</td>
</tr>
<tr>
<td>Inexpensive infrared source improved from flashlight</td>
<td>N-FS-501</td>
<td>B66-10072 02</td>
</tr>
<tr>
<td>A continuously operating source of vacuum ultraviolet below 500 angstrom</td>
<td>GSFC-545</td>
<td>B66-10576 01</td>
</tr>
<tr>
<td>A radiofrequency receiver</td>
<td>LEWIS-284</td>
<td>B66-10606 01</td>
</tr>
<tr>
<td>Solar X-ray spectrum reproduced in vacuum</td>
<td>NCC-228</td>
<td>B67-10164 02</td>
</tr>
<tr>
<td>X-ray source uses interchangeable target anodes to vary X-ray wavelength</td>
<td>NPO-10036</td>
<td>B67-10218 02</td>
</tr>
<tr>
<td>Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples</td>
<td>NPO-10036</td>
<td>B67-10218 02</td>
</tr>
<tr>
<td>Self-balancing line-reversal pyrometer automatically measures gas temperatures</td>
<td>LEWIS-348</td>
<td>B67-10268 01</td>
</tr>
<tr>
<td>Ultrasonics used to measure residual stress</td>
<td>N-FS-12449</td>
<td>B67-10428 02</td>
</tr>
<tr>
<td>Glancing incidence telescope for far ultraviolet and soft X-rays</td>
<td>GSFC-10052</td>
<td>B67-10508 02</td>
</tr>
<tr>
<td>Broadband choke suppresses spurious currents in antenna structure</td>
<td>MSC-10013</td>
<td>B67-10675 01</td>
</tr>
<tr>
<td>Electro-optic modulator for infrared laser using gallium arsenide crystal</td>
<td>GSFC-10686</td>
<td>B68-10255 02</td>
</tr>
<tr>
<td>Feasibility study of wireless power transmission systems</td>
<td>N-FS-14691</td>
<td>B68-10309 01</td>
</tr>
<tr>
<td>Fluorescent photography of spray droplets using a laser light source</td>
<td>LEWIS-10777</td>
<td>B69-10122 02</td>
</tr>
<tr>
<td>A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt model</td>
<td>N-10541</td>
<td>B69-10746 01</td>
</tr>
</tbody>
</table>

### WAVEGUIDES

- **Cryogenic waveguide window is sealed with plastic foam**
  - JPL-559
  - B63-10613 01

- **Novel horn antenna reduces side lobes, improves radiation pattern**
  - JPL-425
  - B63-10264 01

- **Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths**
  - GSFC-422
  - B66-10051 01

- **Oscillational antennas transmit and receive over large bandwidth**
  - GSFC-436
  - B66-10133 01

- **Composite filter steepens rejection slopes in microwave application**
  - GSFC-480
  - B66-10393 01

- **Broadband choke suppresses spurious currents in antenna structure**
  - MSC-10013
  - B67-10675 01

- **Electro-optic modulator for infrared laser using gallium arsenide crystal**
  - GSFC-10686
  - B68-10255 02

- **Feasibility study of wireless power transmission systems**
  - N-FS-14691
  - B68-10309 01

- **Fluorescent photography of spray droplets using a laser light source**
  - LEWIS-10777
  - B69-10122 02

- **A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt model**
  - N-10541
  - B69-10746 01
line profile ARC-10221 B69-10232 06

Continuous analysis of nitrogen dioxide in gas streams of plants ARC-10356 B69-10254 03

Laser action from a terbium beta-ketoenolate at room temperature GSPC-10593 B69-10324 02

Hydrogen flash lamps studied ARG-10419 B69-10411 02

The Quantasyn, an improved quantum detector EBC-10148 B69-10443 01

Discrimination of fish oil and mineral oil slicks on sea water HQ-10412 B69-10673 01

Long range holographic contour mapping concept HQ-10350 B69-10700 02

WAVES

Improved gas ring laser NSC-11584 B68-10304 02

One-dimensional Coulomb-damped wave motion in prismatic bars N-PS-14945 B69-10548 02

SILAZANE POLYMERS SHOW PROMISE FOR HIGH-TEMPERATURE APPLICATION M-PS-466 B66-10194 03

Proposed method of rotary dynamic balancing by laser M-PS-12422 E67-10452 02

Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol M-PS-14962 B69-10636 03

WEAPONS DEVELOPMENT

Rolamite - A new mechanical design concept SAR-10001 B67-10611 05

WEAR

Fatigue tester achieves true axial motion through flex plates and bars NU-0021 B66-10164 01

Modified drill permits one-step drilling operation N-PS-559 B66-10169 05

Wire material reduces compressor blade vibration LEWIS-357 E66-10666 03

Composites of porous metal and solid lubricants increase bearing life LEWIS-307 B67-10007 03

Solenoid valve design has one moving part NPO-10039 B67-10219 05

Wear studies made of slip rings and gas bearing components M-PS-12862 B67-10403 05

Solenoid valve design minimizes vibration and sliding wear problem M-PS-14079 B67-10667 05

Spiral-grooved shaft seals substantially reduce leakage and wear, LEWIS-10397 B68-10270 05

A new solid lubricant LEWIS-10812 B69-10250 03

WEAR INHIBITORS

Compact retractor protects cabling UCPS M-PS-561 B66-10018 05

Gallium alloy films investigated for use as boundary lubricants LEWIS-245 B66-10165 03

Intermediate rotating ring improves reliability of dynamic shaft seal M-PS-575 B66-10197 05

Valve seat pores sealed with thermosetting monomer N-PS-960 B66-10322 03

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics LEWIS-320 B66-10373 03

Viscous seal design offers zero-leakage and wear-free characteristics WSO-329 B67-10047 05

High-temperature bearing lubricants LEWIS-10408 B68-10249 05

WEAR TESTS

Gallium alloy films investigated for use as boundary lubricants LEWIS-245 B66-10165 03

Environmental study of miniature slip rings M-PS-2443 B67-10210 05

Cut-through tester accurately measures insulation failure rates N-PS-12506 B67-10354 03

Mechanical properties of wire insulation automatically determined NSC-10983 B67-10370 01

Study of high temperature bearing materials LEWIS-10629 B69-10252 03

WEATHER FORECASTING

Crossed-beam technique for measuring horizontal winds M-PS-20160 B69-10447 02

Balloon batteries, charged and heated by solar energy GSPC-16769 B69-10585 01

WEATHERING

Silaned hailstone fabrication and use in testing weatherability of structures NPO-10783 B68-10552 03

WEAVING

Composite weld rod corrects individual filler weaknesses M-PS-1923 B67-10107 05

Nonwoven glass fiber mat reinforces polyurethane adhesive M-PS-2309 B67-10113 03

WEBBING

Portable flooring protects finished surfaces, is easily moved N-PS-15 B63-10387 05

Novel shock absorber features varying yield strengths NSC-63A B64-10138 03

Nylon shock absorber prevents injury to parachute jumpers M-PS-226 B66-10080 05

Web belt load measuring instrument has excellent stability M-PS-921 B67-10242 01

WEDGES

Frictional wedge shock mount is inexpensive, has good damping characteristics JPL-IT-1001 B63-10289 05

Heavy duty precision leveling jacks expedite
Aluminum/steel wire composite plates exhibit high tensile strength

Lightweight magnesium-lithium alloys show promise

Regenerative fuel cell combines high efficiency with low cost

White primer permits a corrosion-resistant coating of minimum weight

Pneumatic separator gives quick release to heavy loads

High-performance RC bandpass filter is adapted to miniaturized construction

Rotary valve controls multiple hydraulic leveling cylinders

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill

Simple motor drive system operates heavy hinged door

Hydrostatic force used to handle oversized, heavy objects

System enables dimensional inspection of very large structures

Advances in aluminum anodizing

Electronic analog equalization for vibrational testing

Weight Control System

Weight Indicators

A design procedure for the weight optimization of straight finned radiators

Digital servo readout system increases recording accuracy of servo-balance scales

Mechanism isolates load weighing cell during lifting of load

Three-axis attitude and direction reference instrument has only one moving part

Remote balance weighs accurately amid high radiation

Metallic diffusion measured by a modified Knudsen technique

Weight Analysis

Effect of Pre-Weld Heat Treatment on Weld Strength of Rene 41

Welding, bonding, and sealing of refractory metals by vapor deposition

Portable machine welding head automatically controls arc

Welder analyzer

Pre-weld heat treatment improves welds in Rene 41
WELL TESTS

Calibration standard for dynamic evaluation of a profile plotter
H-FS-16476  b69-10458  05

MAGNETS POSITION X-RAY FILM FOR WELD INSPECTION
H-FS-253  b65-10110  05

PROBE TESTS MICROWELD STRENGTH
WOO-118  b65-10111  05

FORCE CONTROLLED SOLENOID DRIVES MICROWELD TESTER
WOO-125  b65-10182  01

ULTRASONIC RECORDING SCANNER USED FOR NONDESTRUCTIVE WELD INSPECTION
H-FS-284  b66-10220  01

ULTRASONIC HAND TOOL ALLOWS CONVENIENT SCANNING OF SPOT WELDS
H-FS-539  b66-10289  02

INFILTRABLE HOLDING FIXTURE PERMITS X-RAYS TO BE TAKEN OF INNER WELD AREAS
H-FS-856  b66-10327  03

ULTRASONIC WATER COLUMN PROBE SPEEDS UP TESTING OF WELDS
NQ-58  b66-10577  01

FIXTURE FACILITATES HELIUM LEAK TESTING OF PIPE WELDS
H-FS-2167  b67-10178  05

CONTINUOUS INTERNAL CHANNELS FORMED IN ALUMINUM FUSION WELDS
H-FS-2399  b67-10183  05

ELECTRON BEAM WELDER X-RAYS ITS OWN WELDS
LEWIS-10111  b67-10216  02

PLASTIC SHOE FACILITATES ULTRASONIC INSPECTION OF THIN WALL METAL TUBING
NOC-10010  b67-10542  02

GAGE MONITORS QUALITY OF CROSS-WIRE RESISTANCE WELDS
GSPC-90569  b68-10002  01

DEVELOPMENT OF MECHANIZED ULTRASONIC SCANNING SYSTEM
H-FS-13638  b68-10004  05

SYSTEM REMOTELY INSPECTS, MEASURES, AND RECORDS INTERNAL IRREGULARITIES IN PIPING
H-FS-14545  b68-10149  01

WELDING OF COMMERCIAL BASE PLATES IS INVESTIGATED
H-FS-13649  b68-10192  03

AUTOMATIC, NONDESTRUCTIVE TEST MONITORS IN-PROCESS WELD QUALITY
H-FS-14956  b68-10333  01

MICROPROBE INVESTIGATION OF BRITTLE SEGREGATES IN ALUMINUM MIG AND TIG WELDS
H-FS-14720  b68-10334  03

X-RAY FILM HOLDER PERMITS SINGLE CONTINUOUS PICTURE OF WELD JOINT
LEWIS-10382  b68-10343  05

HOT-CRACKING STUDIES OF INCONEL 718 WELDS HEAT- Affected ZONES
H-FS-18211  b69-10005  05

QUALITY-WELD PARAMETERS FOR MICROWELDING TECHNIQUES AND EQUIPMENT
H-FS-20484  b69-10303  05

REPAIR OF WELD DEFECTS IN THIN-WALLED STAINLESS STEEL TUBES
H-FS-16293  b69-10305  05

NONDESTRUCTIVE TESTING OF WELDS ON THIN-WALLED TUBING

SUBJECT INDEX

B-18114  b69-10402  01

RADILOGIC THRESHOLD DETECTION LEVELS OF ALUMINUM WELD DEFECTS
H-FS-20487  b69-10418  01

WELDABILITY

TANTALUM ALLOYS RESIST CREEP DEFORMATION AT ELEVATED TEMPERATURES
LEWIS-350  b66-10558  03

NEW WELDABLE HIGH-STRENGTH ALUMINUM ALLOY DEVELOPED FOR CRYOGENIC SERVICE
H-FS-737  b66-10613  05

CONTROLLED FERRITE CONTENT IMPROVES WELDABILITY OF CORROSION-RESISTANT STEEL
H-FS-568  b67-10069  03

STUDY MADE OF PNEUMATIC HIGH PRESSURE PIPING MATERIALS /10,000 PSI/
KSC-10133  b67-10437  03

WELD MICROFUSING IN INCONEL 718 SENSIBLE BY MINOR ELEMENTS
H-FS-18115  b68-10251  03

HIGH TEMPERATURE ALLOY
LEWIS-10377  b68-10253  03

HOT-CRACKING STUDIES OF INCONEL 718 WELDS HEAT-AFFECTED ZONES
H-FS-18211  b69-10052  05

WELDED JOINTS

SLEEVE AND CUTTER SIMPLIFY DISCONNECTING WELDED JOINT IN TUBING
JPL-384  b63-10240  05

PORTABLE DISPLAY PANELING HAS WIDE USE, EASY TAKE DOWN AND ASSEMBLY
ABC-17  b63-10435  05

WELDING PROCEDURES IMPROVES QUALITY OF WELDS, OFFERS OTHER ADVANTAGES
H-FS-32  b64-10309  01

PROBE TESTS MICROWELD STRENGTH
WOO-118  b65-10111  05

FORCE CONTROLLED SOLENOID DRIVES MICROWELD TESTER
WOO-125  b65-10182  01

WELD LEAKS RAPIDLY AND SAFELY DETECTED
H-FS-362  b65-10265  01

O-RING TUBE FITTINGS FORM LEAKPROOF SEAL IN HYDRAULIC SYSTEMS
H-FS-281  b66-10020  05

CAPACITIVE SYSTEM DETECTS AND LOCATES FLUID LEAKS
H-FS-478  b66-10099  01

ALUMINUM OXIDE FILLER PREVENTS OBSTRUCTIONS IN TUBING DURING WELDING
KSC-222  b66-10125  05

PORTABLE POWER TOOL MACHINES WELD JOINTS IN FIELD
H-FS-258  b66-10145  05

SIMPLE DEVICE FACILITATES INERT-GAS WELDING OF TUBES
H-FS-558  b66-10155  05

ELECTRON BEAM WELDING OF COPPER-NICKEL FACILITATED BY CIRCULAR MAGNETIC SHIELDS
H-FS-569  b66-10215  05

ULTRASONIC RECORDING SCANNER USED FOR NONDESTRUCTIVE WELD INSPECTION
H-FS-204  b66-10220  01

BRASSING PROCESS USING A1-SI FILLER ALLOY RELIABLY BONDS ALUMINUM PARTS
MSC-448  b66-10241  05
Vacuum test fixture improves leakage rate measurements 
MSC-271  E66-10286 01

Union would facilitate joining of tubing, minimize braze contamination 
MSC-777  E66-10311 05

Special mandrel permits uniform welding of out-of-round tubing 
M-FS-706  E66-10323 05

Inflatable holding fixture permits X-rays to be taken of inner weld areas 
M-FS-856  E66-10327 03

Welds chilled by liquid coolant manifold 
M-FS-679  E66-10354 05

Diaphragm valve for corrosive and high temperature fluid flow control has unique features 
LEWIS-304  E66-10365 05

Hollow spherical rotors fabricated by electroplating 
JPL-SC-117  E66-10366 05

Electroplating eliminates gas leakage in brazed areas 
M-FS-923  E66-10415 05

Preformed stiffeners used to fabricate structural components for pressurized tanks 
M-FS-1796  E66-10688 05

Silver plating technique seals leaks in thin wall tubing joints 
NU-0090  E66-10703 05

Closed circuit TV system monitors welding operations 
MSC-11002  E67-10162 01

Effect of welding position on porosity formation in aluminum alloy welds 
M-FS-2318  E67-10177 05

Continuous internal channels formed in aluminum fusion welds 
M-FS-2399  E67-10183 05

Weld procedure produces quality welds for thick sections of Hastelloy-X 
NUC-10048  E67-10195 05

High-strength braze joints between copper and steel 
M-FS-2519  E67-10211 05

Electron beam welder X-rays its own welds 
LEWIS-10111  E67-10216 02

Welding, bonding, and sealing of refractory metals by vapor deposition 
LEWIS-123  E67-10232 03

Portable machine welding head automatically controls arc 
M-FS-12763  E67-10272 05

Welding of Al350 and Al355 steel 
M-FS-2314  E67-10292 05

Jacketed cryogenic piping is stress relieved 
M-FS-985  E67-10308 05

Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules 
LEWIS-10201  E67-10359 01

Tube-to-header joint for bimetallic construction 
LEWIS-10202  E67-10464 05

Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing 
B67-10542 02

Instrument accurately measures weld angle and offset 
M-PS-12809  E67-10563 05

Tube投影ing tool assures accurate diaphragm brazed joints 
MSC-533  E66-10036 05

Standards for compatibility of printed circuit and component lead materials 
M-FS-14531  E68-10310 01

Closed circuit TV system automatically guides welding arc 
M-FS-20084  E68-10357 01

Cooled miniature pressure transducers effective at high temperatures 
LEWIS-10401  E68-10370 01

Nondestructive testing of brazed rocket engine components 
M-FS-10191  E68-10394 03

Mixing weld gases offers advantages 
M-FS-10143  E69-10145 05

Detecting hydrogen-containing contaminants on metal surfaces 
M-FS-20546  E69-10192 03

Quick-acting backup tool for welding ducts 
M-FS-10404  E69-10396 05

Nondestructive testing of welds on thin-walled tubing 
M-FS-18144  E69-10402 01

Breakaway electrical connector 
NPO-11140  E69-10472 01

WELDED STRUCTURES

Method of welding joint in closed vessel improves quality of seam 
JPL-170  E63-10139 05

Vacuum-type backup bar speeds weld repairs 
M-FS-12  E63-10184 05

Upsetting butt edge increases weld-joint strength 
M-FS-175  E64-10164 05

Improved technique for localizing electropolishing features novel nozzles 
WO-0003  E64-10271 01

Fastener provides cooling and compensates for thermal expansion 
NU-0003  E65-10038 05

Magnets position X-ray film for weld inspection 
M-FS-253  E65-10110 05

Electromagnetic hammer removes weld distortions from aluminum tanks 
M-FS-287  E65-10342 05

Lifting clamp positively grips structural shapes 
M-FS-593  E66-10176 05

Nonhazardous acid etches weld samples 
M-FS-975  E66-10378 05

Metal tube can be folded for compact storage, is self-erecting 
LEWIS-298  E66-10450 05

Heat treatment stabilizes welded aluminum jigs and tool structures 
MSC-800  E66-10458 03

Microminiature thermocouple monitors own installation 
I-733
Large seals fabricated from small segments reduce procurement lead time
M-FS-1117  B66-10464  05

Tests show that aluminum welds are improved by bead removal
M-FS-1817  B67-10023  05

Effects of heat input rates on T-1 and T-1A steel welds
M-FS-2475  B67-10163  05

Transducer measures embedment stresses in electronic modules
M-FS-13486  B67-10367  01

Study made of ductility limitations of aluminum-silicon alloys
M-FS-12524  B67-10392  03

Camera lens adapter magnifies image
M-FS-11955  B67-10431  02

Study made of procedures for externally loading and corrosion testing stress corrosion specimens
M-FS-12064  B67-10451  03

Plastic preforms facilitate fabrication of welded cordwood electronic modules
LEWIS-90339  B68-10063  03

Encapsulation technique eliminates thermal stresses in welded electronic modules
M-FS-14581  B68-10307  01

Techniques for controlling warpage and residual stresses in welded structures
M-FS-20307  B69-10086  05

A biaxial weld strength prediction method
M-FS-20019  B69-10471  05

Connector for vacuum-jacketed lines cuts tubing system cost
LEWIS-66  B63-10367  05

Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems
LEWIS-67  B63-10368  05

Novel clamps align large rocket cases, eliminate back-up bars
M-FS-1  B63-10376  05

Flexible honeycomb structure can bend to fit compound curves
M-FS-13  B63-10385  05

Lightweight magnesium-lithium alloys show promise
M-FS-17  B63-10389  03

Gate value with ceramic-coated base operates at high temperatures
ABC-23  B63-10562  03

Compact coaxial connector for printed circuit adds reliability
MSC-57  B64-10016  01

Miniature stress transducer has directional capability
JPL-591  B65-10023  01

High permeability semiconductors permit close-tolerance soldering
GSFC-319  B65-10134  05

Inert-gas welding and brazing enclosure fabricated from sheet plastic
LEWIS-220  B65-10338  05

Calibrated clamp facilitates pressure application
MSC-298  B66-10059  05

Tool provides constant purge during tube welding
M-FS-547  B66-10093  05

Composite improves thermal interface between thermocouple and sensed surface
F0-0028  B66-10121  02

Aluminum oxide filler prevents obstructions in tubing during welding
MSC-222  B66-10125  05

Pressure vessels fabricated with high-strength wire and electroformed nickel
M-FS-580  B66-10218  05

Electrical upsetting of metal sheet forms weld edge
M-FS-720  B66-10248  05

Flexible drive allows blind machining and welding in hard-to-reach areas
MSC-524  B66-10428  05

New backup-bar groove configuration improves heliarc welding of 2014-T6 aluminum
MSC-806  B66-10443  05

Weldable aluminum alloy has improved mechanical properties
M-FS-295  B66-10445  03

Thermal stress-relief treatments for 2219 aluminum alloy are evaluated
M-FS-1213  B66-10448  03

Composite bulkhead fabrication development
M-FS-1264  B66-10582  05

Instrument accurately measures small temperature changes on test surface
LANGLLEY-174  B66-10637  01

Effects of heat input rates on T-1 and T-1A steel welds
M-FS-2475  B67-10163  03

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
ARG-184  B67-10202  05

Welding, bonding, and sealing of refractory metals by vapor deposition
LEWIS-123  B67-10232  03

Portable spectrometer monitors inert gas shield in welding process
M-FS-12144  B67-10326  02

Welding torch and wire feed manipulator
M-FS-13102  B67-10385  05

Study made to establish parameters and limitations of explosive welding
M-FS-13006  B67-10393  05

Fuel cell life improved by metallic sinter activation after electrode assembly welding
MSC-10965  B67-10436  03

Proposed method of rotary dynamic balancing by laser
M-FS-12822  B67-10452  02

Aluminum and stainless steel tubes joined by simple ring and welding process
M-FS-13120  B67-10472  05

Mechanical shielding reduces weld surface cracking in 6061 T6 aluminum
MSC-11994  B68-10022  05

Automatic contour welder incorporates speed control system
M-FS-14574  B68-10091  01

Proposed gas generation assembly would
recover deeply submerged objects
SAK-10007
Pre-weld heat treatment improves welds in
Rene 41
M-FS-18174
Effects of surface preparation on quality
of aluminum alloy weldments
M-FS-13152
Standards for compatibility of printed
circuit and component lead materials
M-FS-14531
Automatic, nondestructive test monitors
in-process weld quality
M-FS-14996
Compact monitoring and control console for
pressurized gas bottles
M-FS-14874
Weld preparation tool for pipes and tubing
KSC-09955
Multiple-orifice throttle valve
KSC-09698
Welded repairs of punctured thin-walled
aluminum pressure vessels
M-FS-14836
Tube welding and brazing
M-FS-20348
Renewal of corrosion protection of coated
aluminum after welding
M-FS-20361
J-beveling of pipe ends with a hand-held
tool
KSC-10356
Tool simplifies machining of pipe ends for
precision welding
KSC-10361
Repair of honeycomb panels with welded
breakaway studs
MSC-15046
Parameters for good welding of copper to
nickel
M-FS-20353
Quality-weld parameters for microwelding
techniques and equipment
M-FS-20484
Improved table for cutting and welding
M-FS-15537
Effects of hydrogen on metals
M-FS-20364
Conversion of continuous-direct-current
TIG welder to pulse-arc operation
M-FS-16411
Pressure-control purge panel for automatic
butt welding
M-FS-18465
Generation of sonic power during welding
M-FS-20339
WELDING MACHINES
Refractory metals welded or brazed with
tungsten inert gas equipment
LEWIS-279
Shoulder adapter steadies spot welding gun
M-FS-321
Fingertip current control facilitates use
of arc welding gun
MSC-289
Automatic reel controls filler wire in
welding machines
MSC-416
Special mandrel permits uniform welding of
out-of-round tubing
M-FS-706
Power arc welder touch-started with
consumable electrode
M-FS-1485
Portable machine welding head automatically
controls arc
M-FS-12763
Eccentric drive mechanism is adjustable
during operation
M-FS-2576
Improved torch increases weld quality in
refractory metals
LEWIS-324
Welder analyzer
MSC-12068
Miniature pressure transducer for stressed
member application
MSC-11869
Closed circuit TV system automatically
guides welding arc
M-FS-20084
Detachable caster adapter
MSC-91215
Pressure-control purge panel for automatic
butt welding
H-FS-18465
Gas Metal Arc (GMA) weld torch
B-FS-16327
Regenerative fuel cell combines high
efficiency with low cost
LEWIS-990
Primary cell uses neither liquid nor fused
electrolytes
NPO-10001
Improved anode design for metal-oxygen
cells
LEWIS-10829
Rotating magnetic poles used to pump mercury
LEWIS-276
Study of high temperature bearing materials
LEWIS-10829
Inorganic paint is durable, fireproof, easy
to apply
GSFC-366
Etching process mills PH 14-8 Mo alloy
steel to precise tolerances
MSC-270
Nozzles for size reclassification of
microfog particles
LEWIS-10705
Mixing weld gases offers advantages
M-FS-16413
Improved nickel plating of Inconel X-750
M-FS-16604
I-735
HEATSWSGS

WHEATSTONE BRIDGES

Electronic ohmmeter provides direct digital output
GSPC-363 B65-10274 01

Differential pressure gauge has fast response
K-FS-358 B65-10285 05

Photoresistance analog multiplier has wide range
GSPC-360 B65-10287 01

Improved strain-wire flowmeter has fast response time
LEWIS-241 B65-10304 01

Angular acceleration measured by deflection in sensing ring
MSC-250 B66-10105 01

Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735 B66-10182 01

Detector measures power in 50 to 30,000 Gauss radiation band
FRC-26 B66-10581 01

Resistance thermometer has linear resistance-temperature coefficient at low temperatures
WGO-190 B66-10612 01

Fast-acting calorimeter measures heat output of plasma gun accelerator
LEWIS-288 B67-10192 01

Electronic circuitry used to automate paper chromatography
JPL-880 B67-10201 01

Web belt load measuring instrument has excellent stability
MSC-921 B67-10242 01

Machine tests low-speed sliding friction in high vacuum
K-FS-12341 B67-10379 05

Ratio matching of half-bridge weldable strain gages, computer program
FRC-10032 B69-10040 06

Design of a strain-gage probe
ARG-10318 B69-10334 05

WHEELS

Lateral ring metal elastic wheel absorbs shock loading
K-FS-1312 B66-10663 05

Shock-absorbing caster wheel is simple and compact
SAN-10019 B68-10266 05

Fifth-wheel fork truck adapter
K-FS-14460 B69-10021 05

WHISKER COMPOSITES

Radial furnace shows promise for growing straight boron carbide whiskers
SQ-50 B67-10070 03

WHISKERS (SINGLE CRYSTALS)

Boron carbide whiskers produced by vapor deposition
SQ-24 B65-10261 03

Efficient millimeter wave 1140 GHz diode for harmonic power generation
SQ-61 B67-10166 01

WHITE BLOOD CELLS

Foot-operated cell-counter
ARG-10315 B69-10351 01

WHITE NOISE

On the bound of first excursion probability
FPO-11158 B69-10334 06

SUBJECT INDEX

Optimal FM pre-emphasis
MSC-10151 B69-10359 01

WICKS

Improved anode design for metal-oxygen cells
LEWIS-10871 B69-10318 01

WIRELESS COMMUNICATION

Unidirectional antennas transmit and receive over large bandwidth
GSPC-436 B66-10133 01

Wideband, high efficiency optical modulator requires less than 10 watts drive power
K-FS-12733 B67-10289 01

RF noise suppression using the photodiodelectric effect in semiconductors
MSC-12259 B69-10225 01

WIDTH

System enables dimensional inspection of very large structures
K-FS-2477 B67-10214 05

Edgy current probe measures size of cracks in nonmetallic materials
K-FS-14059 B67-10645 03

WINDERS

Compressed gas system operates semitrailer brakes during winching operation
JPL-0036 B67-10306 05

Hoisting frame facilitates handling of large objects
K-FS-16166 B68-10575 05

Two-axis winch installer for heavy ducts in confined space
K-FS-14254 B69-10062 05

Space-saving hoist for tank manholes
K-FS-16508 B69-10180 05

WIND (METEOROLOGY)

Small foamed polystyrene shield protects low-frequency microphones from wind noise
ARG-50 B67-10579 06

Efficient millimeter wave 1140 GHz diode sounding balloons for harmonic power generation
ARG-80193 B68-10202 01

Wind tower influence study
K-FS-20239 B69-10653 01

WIND EFFECTS

Suspended chains damp wind-induced oscillations of tall flexible structures
LANGLEY-10193 B69-10057 02

WIND MEASUREMENT

New anemometer has fast response, measures dynamic pressure directly
LANGLEY-26 B63-10530 05

Fast-response cup anemometer features cosine response
ARG-90193 B68-10202 01

Wind tower influence study
K-FS-20239 B69-10653 01

WIND PROFILES

New anemometer has fast response, measures dynamic pressure directly
LANGLEY-26 B63-10530 05

Rough surface improves stability of air-sounding balloons
K-FS-320 B65-10326 05

A method of determining combustion gas flow
K-FS-13757 B67-10455 03

WIND SHEAR

Oil-measured models aid wind tunnel measurements
LANGLEY-4 B63-10311 03
WIND TUNNEL APPARATUS

- Electric arc heater is self starting
  LANGLEY-208  B66-10230  03
- Jet engine powers large, high-temperature wind tunnel
  ARC-TP-15544  B67-10621  02

WIND TUNNEL MODELS

- Welded pressure transducer made as small as 1/8th-inch in diameter
  ARC-11  B63-10429  03
- Built-in templates speed up process for making accurate models
  LANGLEY-23  B63-10526  05
- Flexible fastener allows thermal expansion
  LANGLEY-40  B64-10145  05

WIND TUNNEL STABILITY TESTS

- Rapid helium-air analyzer can measure other binary gas mixtures
  LANGLEY-16  B63-10557  03

WIND TUNNELS

- Oil-smeared models aid wind tunnel measurements
  LANGLEY-4  B63-10311  03
- Laser-Doppler gas-velocity instrument
  N-PS-20039  B68-10349  02
- Experimental design for research on shock-turbulence interaction
  N-PS-20031  B69-10604  02

WIND VELOCITY

- Dewpoint temperature inversions analyzed
  ARG-10316  B69-10057  02
- Crossed-beam technique for measuring horizontal winds
  N-PS-20160  B69-10447  02

WIND VELOCITY MEASUREMENT

- Independent doubly truncated gamma variables
  N-PS-20143  B69-10345  02

WINDING

- Simple transducer measures low heat-transfer rates
  JPL-466  B64-10122  01
- Variable frequency transistor inverters use multiple core transformers
  GSFC-183  B65-10119  01
- Variable frequency magnetic multivibrator generates stable square-wave output
  GSFC-AE-21  B65-10124  01
- Rotor position sensor switches currents in brushless d.c. motors
  GSFC-315  B65-10151  01
- Spiral heater coils hand-formed with fixture
  LEWIS-200  B65-10192  05
- High frequency wide-band transformer uses coax to achieve high turn ratio and flat response
  ARG-107  B66-10600  01
- An improved magnetic tape recorder
  GSFC-08259  B67-10646  01
- Improved control system power unit for large parachutes
  MSC-12052  B67-10677  05
- Induction probe determines levels of liquid metals
  ARG-10348  B69-10256  03

WINDOWS (APERTURES)

- Plastic scintillator converts standard photomultiplier to ultraviolet range
  BRC-9  B66-10108  02
- High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation
  LEWIS-310  B66-10394  01
- Aluminized thin-window proportional-counter tube is stronger, more responsive in long wavelength region
  JPL-689  B67-10015  01
- Detection of effect of deposits on optical windows of pyrometer measurements
  LEWIS-10366  B68-10367  01

WING CANON

- Computer program analyzes and designs supersonic wing-body combinations
  ARC-10141  B68-10335  06
- Modified Multhopp mean camber computer program
  LANGLEY-10376  B68-10446  06

WING PANELS

- Computer program analyzes and designs supersonic wing-body combinations
  ARC-10141  B68-10335  06

WING PLANFORMS

- Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
  LANGLEY-10191  B67-10666  06
- Modified Multhopp lifting surface loading program
  LANGLEY-10375  B68-10452  06

WING PROFILES

- Computer program analyzes and designs supersonic wing-body combinations
  ARC-10141  B68-10335  06

WINGS

- Program computes zero lift wave drag of entire aircraft
  LANGLEY-10079  B67-10530  06

WIRE

- Thermocompression bonding produces efficient surface-barrier diode
  JPL-SC-066  B65-10007  05
- Forming blocs speed production of strain gage grids
  LEWIS-182  B65-10009  05
- Cantilever springs maintain tension in thermally expanded wires
  LEWIS-136  B65-10149  05
- Improved solderless connector is easily disconnected
  JPL-SC-060  B65-10197  01
- Improved wire memory matrix uses very little power
  JPL-SC-167  B65-10359  01
- Vacuum chamber provides improved insulation and support for cryostat
  N-PS-415  B65-10368  02
- Wire bundle forged into grids with minute interstices
  WOO-089  B65-10372  03
- Tungsten wire and tubing joined by nickel brazing
  N-PS-394  B65-10391  05
- Mechanism continuously measures static and dynamic cable loads
  MSC-217  B66-10107  05
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weld procedure produces quality welds for thick sections of Hastelloy-X</td>
</tr>
<tr>
<td>Traveling wire electrode increases productivity of Electrical Discharge Machining Equipment</td>
</tr>
<tr>
<td>Improved ultrasonic TV images achieved by use of Lamb-wave orientation technique</td>
</tr>
<tr>
<td>Method of improving contact bonds in silicon integrated circuits</td>
</tr>
<tr>
<td>Cut-through tester accurately measures insulation failure rates</td>
</tr>
<tr>
<td>Mechanical properties of wire insulation automatically determined</td>
</tr>
<tr>
<td>Welding torch and wire feed manipulator</td>
</tr>
<tr>
<td>Current steering commutator offers versatility</td>
</tr>
<tr>
<td>Improved cavity-type absolute total-radiation radiometer</td>
</tr>
<tr>
<td>Ferromagnetic core valve gives rapid action on minimum energy</td>
</tr>
<tr>
<td>Multilayer plated wire shows promise as memory device</td>
</tr>
<tr>
<td>One hundred angstrom niobium wire</td>
</tr>
<tr>
<td>Dual wire weld feed proportioner</td>
</tr>
<tr>
<td>Rating of electrical wires in vacuum environments</td>
</tr>
<tr>
<td>Method for making small pointed thermocouples</td>
</tr>
<tr>
<td>Novel terminal strips for transformers</td>
</tr>
<tr>
<td>Parameters for good welding of copper to nickel</td>
</tr>
<tr>
<td>An improved method for electrical cable terminations</td>
</tr>
<tr>
<td>Testing the flammability of materials exposed to arcs</td>
</tr>
<tr>
<td>Explosive bonding of metal-matrix composites</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WIRE BRIDGE CIRCUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin-fil gage measures low heat-transfer rates</td>
</tr>
<tr>
<td>Wide-range instrument monitors flow rates of chemically active fluids</td>
</tr>
<tr>
<td>Pulse technique provides more accurate checkout of exploding bridge wire device</td>
</tr>
</tbody>
</table>
WIRE CLOTH

WIRE CLOTH

Wire mesh isolator protects sensitive electronic components
GSFC-397 B65-10216 05

Plated nickel wire mesh makes superior catalyst bed
BSC-216 B65-10321 03

Three-dimensional wire-mesh capacitor system measures fluid density
WOC-194 B65-10379 01

Strainer fits inside flared-tube fittings
LANGLEY-180 B65-10388 05

Centrifugal device separates liquid from gas
MSC-282 B65-10394 05

Flexible electrochemical cell and sealing technique
XGS-10010 B59-10056 01

WIRE WINDING

Wire winding increases lifetime of oxide coated cathodes
LEWIS-154 B65-10032 03

Magnetic field test coils are temperature compensated
GSFC-294 B65-10081 02

Fiber glass parts cured during filament winding eliminates oven, saves time
S-FS-14 B65-10088 03

Automatic reel controls filler wire in welding machines
MSC-416 B66-10226 05

High transients suppressed in electromagnetic devices
ESC-66-13 B67-10031 01

Variable reluctance switch avoids contact corrosion and contact bounce
MSC-1178 B67-10137 01

WIRELESS COMMUNICATIONS

Phase shift frequency synthesizer is efficient, small in size
S-FS-250 B65-10169 01

Feasibility study of wireless power transmission systems
S-FS-16651 B68-10309 01

WIRING

Circuit reliability boosted by soldering pins of disconnect plugs to sockets
JPL-847 B66-10002 01

Modified RF coaxial connector ends vacuum chamber wiring problem
GSFC-150 B64-10010 01

Compact retractor protects cabling loops
S-FS-561 B66-10018 05

Copper wire plated with nickel and silver resists corrosion
S-FS-761 B66-10421 03

Electrical continuity scanner facilitates identification of wires for soldering to connectors
MSC-626 B66-10565 01

Instrument accurately measures small temperature changes on test surface
LANGLEY-174 B66-10637 01

Thermocouples easily installed in hard-to-get-to places
S-FS-1946 B66-10653 01

Logic circuitry used to automatically test shielded cables
HQ-60 B66-10659 01

Separable, high-density microelectronic module provides effective heat sink
B-PS-13075 B67-10356 01

Flat pack interconnection structure simplifies modular electronic assemblies
JPL-619 B67-10560 01

Multichannel wireway adapter box
MSC-30645 B66-10052 05

Nondestructive evaluation of printed wiring boards by micro-resistance measurements
SANS-10034 B66-10272 01

Pressure transducer
BFO-10653 B66-10364 01

WOOD

Cork is used to make tooling patterns and molds
MSC-425 B56-10056 01

WOODEN STRUCTURES

Built-in templates speed up process for making accurate models
LANGLEY-223 B63-10526 05

Nylon bit removes cork insulation without damage to substrate
MSC-381 B66-10152 05

Alignment tool facilitates pin placement on irregular horizontal surfaces
LANGLEY-219 B66-10110 05

WOOL

Thermally conductive metal wool-silicone rubber material can be used as shock and vibration damper
JPL-321 B56-10207 01

WORDS (LANGUAGE)

Detection system ensures positive alarm activation in digital message loss
WOO-208 B66-10287 01

Variable reluctance switch avoids contact corrosion and contact bounce
MSC-1178 B67-10137 01

Feasibility study of wireless power transmission systems
S-FS-16651 B68-10309 01

WRENCHES

Torque wrench designed for restricted areas
LEWIS-246 B66-10110 05

T-handle wrench has torque-limiting action
BSC-260 B66-10065 05

Torque wrench allows readings from inaccessible locations
B-PS-598 B66-10204 05

Tool enables proper mating of accelerometer
I-739
SUBJECT INDEX

MSC-11232 B67-10474 02

X RAY ASTRONOMY
Imaging slitless spectrometer for X-ray astronomy
M-PS-14309 B68-10546 02

X RAY DIFFRACTION
Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 03

IR-transmission glasses formed from oxides of bismuth and tellurium
M-PS-279 B65-10190 03

Ion pump provides increased vacuum pumping speed
EIO-13 B65-10239 02

Specimen holder design improves accuracy of X-ray powder analysis
JPL-SC-165 B66-10075 02

Thin-film ferrites vapor deposited by one-step process in vacuum
MSC-259 B66-10398 03

Mass-spectrometric study of the rhenium-oxygen system
ABO-10421 B69-10645 02

X RAY FLUORESCENCE
Nondispersive X-ray emission analysis for geological exploration
GSFC-10568 B65-10011 02

X RAY INSPECTION
New method forms bond line free of voids
LANGLEY-20 B63-10558 05

Magnets position X-ray film for weld inspection
M-PS-253 B65-10110 05

Multiple test chamber exposes materials to various environments
MSC-179 B65-10268 01

Inflatable holding fixture permits X-rays to be taken of inner weld areas
M-PS-856 B66-10327 03

Polaroid film helps locate objects in inaccessible areas quickly
MSC-960 B67-10008 02

Electron beam welder X-rays its own welds
LEWIS-10111 B67-10216 02

Mechanized X-ray inspection system for large tanks
M-PS-12867 B67-10564 02

X-ray film holder permits single continuous picture of tubing joint
LEWIS-10382 B66-10343 05

Mixing weld gases offers advantages
M-PS-16413 B69-10145 05

X RAY IRRADIATION
Dielectrometer design permits measurement in vacuum under irradiation
M-PS-359 B66-10401 01

Electronic shutter gates image orthicon on and off
EQ-96 B67-10270 01

Study made of relationship between growth and metabolism
ABO-10046 B67-10604 04

Production of crystalline polymers via liquid crystal monomers
BQ-10235 B69-10744 03

and cable connector
M-PS-611 B66-10208 05

Hand tool permits shrink sizing of assembled tubing
MSC-504 B66-10239 05

Pneumatic wrench retains or discharges nuts or bolts as desired
8U-0085 B66-10707 05

Single wrench separates nuts from free-floating bolts
MSC-10013 B67-10158 05

Ultrasonic wrench produces leaktight connections
M-PS-12561 B67-10353 05

Magnetically controlled torque wrench prevents overtorquing
SAN-10002 B68-10209 05

High-torque power wrench, a concept
M-PS-16194 B68-10299 05

Adjustable wrench for electronic connectors
M-PS-18547 B69-10184 05

One-handed hammer-spanner for chucks
M-PS-18581 B69-10398 05

Multi-purpose tool mitten
M-PS-18581 B69-10483 05

Shell design computer program
LEWIS-10734 B69-10175 06

X RAY ABSORPTION
Specimen holder design improves accuracy of X-ray powder analysis
JPL-SC-165 B66-10075 02

X RAY ANALYSIS
Ceramic materials purified by experimental method
LEWIS-225 B65-10270 03

Specimen holder design improves accuracy of X-ray powder analysis
JPL-SC-165 B66-10075 02

Commercial film produces positive X-ray photo in ten seconds
M-PS-521 B66-10307 02

Reidentifying hardware after loss of serial number
M-PS-16133 B69-10059 05

Technique for pinpointing submicron particles in the electron microprobe
BQ-10043 B69-10465 01

Improved camera for better X-ray powder photographs
BQ-1024 B69-10537 01

Use of medical and dental X-ray equipment for nondestructive testing
MSC-13389 B69-10553 01

X RAY APPARATUS
Densitometer system for liquid hydrogen has high accuracy, fast response
M-PS-909 B66-10438 01

X-ray source uses interchangeable target anodes to vary X-ray wavelength
BPO-10036 B67-10218 02

Electron beam parallel X-ray generator
MSC-11022 B67-10372 02

Method for X-ray study under extreme temperature and pressure conditions

MSC-11232 B67-10474 02

X RAY ASTRONOMY
Imaging slitless spectrometer for X-ray astronomy
M-PS-14309 B68-10546 02

X RAY DIFFRACTION
Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 03

IR-transmission glasses formed from oxides of bismuth and tellurium
M-PS-279 B65-10190 03

Ion pump provides increased vacuum pumping speed
BIO-13 B65-10239 02

Specimen holder design improves accuracy of X-ray powder analysis
JPL-SC-165 B66-10075 02

Thin-film ferrites vapor deposited by one-step process in vacuum
MSC-259 B66-10398 03

Mass-spectrometric study of the rhenium-oxygen system
ABO-10421 B69-10645 02

X RAY FLUORESCENCE
Nondispersive X-ray emission analysis for geological exploration
GSFC-10568 B65-10011 02

X RAY INSPECTION
New method forms bond line free of voids
LANGLEY-20 B63-10558 05

Magnets position X-ray film for weld inspection
M-PS-253 B65-10110 05

Multiple test chamber exposes materials to various environments
MSC-179 B65-10268 01

Inflatable holding fixture permits X-rays to be taken of inner weld areas
M-PS-856 B66-10327 03

Polaroid film helps locate objects in inaccessible areas quickly
MSC-960 B67-10008 02

Electron beam welder X-rays its own welds
LEWIS-10111 B67-10216 02

Mechanized X-ray inspection system for large tanks
M-PS-12867 B67-10564 02

X-ray film holder permits single continuous picture of tubing joint
LEWIS-10382 B66-10343 05

Mixing weld gases offers advantages
M-PS-16413 B69-10145 05

X RAY IRRADIATION
Dielectrometer design permits measurement in vacuum under irradiation
M-PS-359 B66-10401 01

Electronic shutter gates image orthicon on and off
EQ-96 B67-10270 01

Study made of relationship between growth and metabolism
ABO-10046 B67-10604 04

Production of crystalline polymers via liquid crystal monomers
BQ-10235 B69-10744 03
X RAY SPECTROSCOPY
- Glancing incidence telescope for far ultraviolet and soft X-rays: GSFC-10052, E67-10508
- Imaging slitless spectrometer for X-ray astronomy: N-FS-14309, E68-10546
- Non-dispersive X-ray emission analysis for geochemical exploration: GSFC-10568, E69-10011

X RAY STRESS ANALYSIS
- Ultrasoneics used to measure residual stress: GSFC-10052

X RAY TELESCOPES
- Imaging slitless spectrometer for X-ray astronomy: N-FS-14309, E68-10546
- Selective vignetting of Type 1 X-ray telescopes: GSFC-10682, E69-10075

X RAYS
- Precision gage measures ultrahigh vacuum levels: GSFC-114, E63-10597
- Multiple element soft X-ray source produces wide range of radiation: GSFC-286, E65-10082
- An improved soft X-ray photoionization detector: GSFC-540, E67-10072
- Improved television signal processing system: EPO-10140, E67-10246
- Training course for radiation safety technicians: ARG-216, E67-10477
- Numerical least-square method for resolving complex pulse height spectra: GSFC-10142, E67-10480
- Weld microfissuring in Inconel 718 minimized by minor elements: N-FS-18185, E68-10251
- Rotary-knife stripper facilitates removal of X-ray film from pack: N-FS-14837, E68-10509
- Primary radical yields in pulse irradiated alkaline aqueous solution: ARG-10322, E69-10167
- Preferred-orientation analysis of polycrystalline materials: NFO-10064, E69-10336
- New shield for gamma-ray spectrometry: ARG-10388, E69-10344
- A simple electrometer for measuring small photoelectric currents: GSFC-10603, E69-10734

X-Y PLOTTERS
- System remotely inspects, measures, and records internal irregularities in piping: N-FS-14545, E68-10149
- Two devices for analysis of nystagmus: HQ-10273, E69-10224
- Automated plotting of equipotentials: NFO-11134, E69-10570
- Direct determination of lead-210 by liquid-scintillation counting: ARG-10462, E69-10611

XENON
- Densitometer system for liquid hydrogen has high accuracy, fast response: N-FS-909, B66-10438
- An improved soft X-ray photoionization detector: GSFC-540, B67-10072
- High-temperature, gas-filled ceramic rectifiers, thyristors, and voltage-reference tubes: LEWIS-90271, B69-10376

XENON COMPOUNDS
- Xenon forms stable compound with fluorine: ARG-8
- Xenon fluoride solutions effective as fluorinating agents: ARG-217
- Xenon fluorides show potential as fluorinating agents: ARG-113
- Pure xenon hexafluoride prepared for thermal properties studies: ARG-10239, E69-10076

XENON LAMPS
- High-intensity flashing beacon powered by mercury cells: LANGLEY-6C, B65-10361
- Lamp enables measurement of oxygen concentration in presence of water vapor: BSC-10043, E67-10387
- Laser action from a terbium beta-ketoenolate at room temperature: GSFC-10593, E69-10324

XEROGRAPHY
- Shortened procedure for obtaining reproducible copies of 35 mm color slides: KSC-09957, B66-10560

XYLENE
- Special coatings control temperature of structures: GSFC-944, B65-10337
- Process produces chlorinated aromatic isocyanate in high yield: N-FS-1658, B66-10646

YAGI ANTENNAS
- Modified interelement spacing improves Yagi antenna array: LANGLEY-150, B65-10183

YAW
- Knob linkage permits one-hand control of several operations: BSC-30, B65-10022

YIELD STRENGTH
- Novel shock absorber features varying yield strengths: BSC-63A, B64-10138
- Lightweight aluminum casting alloy is useful at cryogenic temperatures:  

X-741
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>new magnetostatic echo mode</td>
</tr>
<tr>
<td>Improved traveling wave maser amplifier</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ZERHAN EFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibration analysis utilizing Mossbauer effect</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ZENER EFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varistor diode controls switching of large direct currents</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ZIRCONIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purification train produces ultrapure hydrogen gas</td>
</tr>
<tr>
<td>Improved inorganic ion exchange membranes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ZEROFORCE CURVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hole saw drill attachment has zero force reaction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ZEROLIFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program computes zero lift wave drag of entire aircraft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ZINC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lightweight aluminum casting alloy is useful at cryogenic temperatures</td>
</tr>
<tr>
<td>Adhesive protective coatings plated on magnesium-lithium alloy</td>
</tr>
<tr>
<td>Hollow spherical rotors fabricated by electroplating</td>
</tr>
<tr>
<td>Use of steel and tantalum apparatus for melt Cd-Mg-Zn alloys</td>
</tr>
<tr>
<td>Efficient millimeter wave 1140 GHz diode for harmonic power generation</td>
</tr>
<tr>
<td>Magnesium-zinc reduction is effective in preparation of metals</td>
</tr>
<tr>
<td>Study made of resistance of stainless steels to zinc-vapor corrosion</td>
</tr>
<tr>
<td>Zinc-oxygen primary cell yields high energy density</td>
</tr>
<tr>
<td>Preparation of thorium magnesium-zinc reduction</td>
</tr>
<tr>
<td>Reduction by monovalent zinc, cadmium, and nickel cations</td>
</tr>
<tr>
<td>Metallic diffusion measured by a modified Knudsen technique</td>
</tr>
<tr>
<td>Improved anode design for metal-oxygen cells</td>
</tr>
<tr>
<td>Zinc alloys</td>
</tr>
<tr>
<td>New brazing alloy eliminates metal-stress cracking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YOKES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer program simplifies selection of structural steel columns</td>
</tr>
<tr>
<td>Weldable aluminum alloy has improved mechanical properties</td>
</tr>
<tr>
<td>Tungsten fiber-reinforced copper composites form high strength electrical conductors</td>
</tr>
<tr>
<td>Treatment increases stress-corrosion resistance of aluminum alloys</td>
</tr>
<tr>
<td>Tests show that aluminum welds are improved by bead removal</td>
</tr>
<tr>
<td>Heat treatment study of aluminum casting alloy</td>
</tr>
<tr>
<td>Magnesium-lithium alloys developed for low temperature use</td>
</tr>
<tr>
<td>Improved thermal treatment of aluminum alloy</td>
</tr>
<tr>
<td>Weld joint strength and mechanical properties in 2219-281 aluminum alloy</td>
</tr>
<tr>
<td>Development of structural test articles from magnesium-lithium and beryllium</td>
</tr>
<tr>
<td>Apparatus permits flexure testing of specimens at cryogenic temperatures</td>
</tr>
<tr>
<td>Hand tool facilitates extraction of circuit modular</td>
</tr>
<tr>
<td>Electron-beam deflection controlled by digital signals</td>
</tr>
<tr>
<td>Subminiature deflection circuit operates integrated sweep circuits in TV camera</td>
</tr>
<tr>
<td>Safety yoke would protect construction workers from falling</td>
</tr>
<tr>
<td>Refractory oxides evaluated for high-temperature use</td>
</tr>
<tr>
<td>High permeability semiconductors permit close-tolerance soldering</td>
</tr>
<tr>
<td>Study of yttrium iron garnet rods reveals</td>
</tr>
</tbody>
</table>
Aluminum core structures brazed without use of flux
S-FS-659 B66-10360 05.

Solubility data are compiled for metals in liquid zinc
ARG-169 B67-10191 03

Resistivity measurements of neutron-irradiated pure metals and Al-Zn alloys
ARG-10108 B68-10200 03

ZINC COATINGS
Galvanic corrosion reduced in aluminum fabrications
M-FS-272 B65-10140 03

ZINC COMPOUNDS
New method used to fabricate gallium arsenide photovoltaic device
MGC-062 B64-10019 01

Inexpensive infrared source improvised from flashlight
M-FS-894 B66-10096 02

White primer permits a corrosion-resistant coating of minimum weight
M-FS-304 B66-10207 03

New class of compounds have very low vapor pressures
ARG-115 B65-10184 03

Aggregation of metallochlorophylls - Examination by spectroscopy
ARG-10273 B69-10163 04

ZINC OXIDES
Anodization process produces opaque, reflective coatings on aluminum
M-FS-348 B65-10336 03

Pigmented coating resists thermal shock
JPL-SC-063 B65-10354 03

Tool samples subsurface soil free of surface contaminants
MSC-10988 B67-10473 05

Concept for improved vacuum pressure measuring device
M-FS-20172 B69-10421 02

ZINC SILicides
Thin-film semiconductor rectifier has improved properties
MSC-207 B66-10012 01

ZINC SULFides
Thermal neutron image intensifier tube provides brightly visible radiographic pattern
ARG-120 B67-10296 02

Preparation of silver-activated zinc sulfide thin films
GSFC-10667 B68-10271 03

ZIPPERS
A new method for fabrication of flexible vacuum purge jackets
M-FS-12646 B69-10564 03

ZIRCALOYS (TRADEMARK)
Metal tube reducer is inexpensive and simple to operate
ARG-49 B67-10401 05

ZIRCONATES
Phonocardiograph microphone is rugged and moistureproof
MSC-212 B66-10314 04

ZIRCONIUM
Refractory oxides evaluated for high-temperature use
LANGLEY-121 B65-10167 03

Hot-wire detector for chemically active materials used in gas chromatography
MSC-269 B66-10139 03

New weldable high strength aluminum alloy developed for cryogenic service
M-FS-737 B66-10613 05

Intergranular metal phase increases thermal shock resistance of ceramic coating
M-FS-1862 B66-10651 03

Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232 B67-10032 03

Extrusion of small-diameter, thin-wall tungsten tubing
LEWIS-90335 B67-10355 05

Newly developed foam ceramic body shows promise as thermal insulation material at 3000 deg F
M-FS-11966 B67-10441 03

Reaction of steam with polyethylene is studied
ARG-295 B67-10502 03

Magnesium-zinc reduction is effective in preparation of metals
ARG-10050 B67-10579 03

Studies in zirconium oxidation
ARG-10099 B67-10199 03

High-speed camera synchronization
M-FS-18062 B68-10282 02

Nickel-base superalloy's excellent properties promote its service to 2200 degrees F
LEWIS-10385 B66-10380 03

High-emittance coatings on metal substrates
LEWIS-10325 B68-10381 03

Silicon carbide diode for increased light output
M-FS-20663 B69-10096 01

High strength, superelastic superalloy
LEWIS-10805 B69-10293 03

Improved high-temperature-strength nickel-base superalloy
LEWIS-10874 B69-10352 03

Improved inorganic ion exchange membranes
LEWIS-10737 B69-10451 03

ZIRCONIUM ALLOYS
Nickel-base superalloys developed for high-temperature applications
LEWIS-226 B66-10222 03

 Brazing process provides high-strength bond between aluminum and stainless steel
M-FS-903 B66-10352 05

Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam
ARG-226 B67-10222 03

Superconductivity in zirconium-rhodium alloys
ARG-9223 B69-10010 03

ZIRCONIUM COMPOUNDS
Protective coating withstands high temperature in oxidizing atmosphere
M-FS-529 B66-10044 03

White primer permits a corrosion-resistant coating of minimum weight
M-FS-304 B66-10207 03
ZINCONIUM OXIDES

Ceramic-coated boat is chemically inert, provides good heat transfer.
LANGLEY-90 B65-10063 05

Refractory oxides evaluated for high-temperature use.
LANGLEY-121 B65-10167 03

Hydrogen-atmosphere induction furnace has increased temperature range.
LEWIS-153 B66-10055 05

Fibers of newly developed refractory ceramics produced by improved process.
WOO-169 B66-10196 03

Improved thermal insulation materials made of foamed refractory oxides.
M-PS-735 B66-10288 03

Oxide film on metal substrate reduced to form metal-oxide-metal layer structure.
ARG-48 B67-10187 03

A method of determining combustion gas flow.
M-PS-13757 B67-10455 03

Reinforced thermal-shock resistant ceramics.
LEWIS-10376 B68-10085 03

ZONE MELTING

Single-crystal semiconductor films grown on foreign substrates.
WOO-076 B66-10225 01

Process yield Co-Fe alloys with superior high temperature magnetic properties.
LEWIS-333 B66-10535 03

Zone purification of potassium chloride.
ARG-10377 B69-10241 03
### Personal Author Index

This index is arranged alphabetically by author. The Tech Brief title is listed followed by the originating source number, e.g., MFS-283. The Tech Brief number, e.g., B68-10346 is followed by a two-digit number, e.g., 05, which designates the subject category.

#### A

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Source Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABLER, E. S.</td>
<td>Analog voicing detector responds to pitch</td>
<td>B67-10571</td>
</tr>
<tr>
<td>ABENS, S. G.</td>
<td>High-energy, high-power, long-life battery</td>
<td>B69-10131</td>
</tr>
<tr>
<td>ABLER, J.</td>
<td>Experimental scaling study of fluid amplifier elements</td>
<td>M-FS-1882</td>
</tr>
<tr>
<td>ABRAHAMS, R. H.</td>
<td>Ion mass spectrometer for special uses</td>
<td>B89-10410</td>
</tr>
<tr>
<td>ABALOZ, J. G.</td>
<td>Analysis of dynamic systems with DAP48 computer program</td>
<td>M-FS-13999</td>
</tr>
<tr>
<td>ABO-SUMAYAT, I. K.</td>
<td>Structure of the isotropic transport operators in three independent space variables</td>
<td>M-FS-14579</td>
</tr>
<tr>
<td>ACKERMAN, R. J.</td>
<td>The thermodynamic properties of the wustite phase are studied</td>
<td>B69-10200</td>
</tr>
<tr>
<td>ACOBB, J. D.</td>
<td>Hydraulic drive system prevents backlash</td>
<td>B65-10351</td>
</tr>
<tr>
<td>ADAMS, C. J.</td>
<td>Nondestructive testing of brazed rocket engine components</td>
<td>M-FS-18191</td>
</tr>
<tr>
<td>ADAMS, W. T.</td>
<td>Lightweight magnesium-lithium alloys show promise</td>
<td>M-FS-17</td>
</tr>
<tr>
<td>ADAMS, J. H.</td>
<td>Basal-plane metallography of deformed pyrolytic carbon</td>
<td>M-FS-11196</td>
</tr>
<tr>
<td>ADAMS, L.</td>
<td>Nonradiative X-ray emission analysis for geochronological exploration</td>
<td>GSFC-10568</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Source Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADA-DAVIDSON, M.</td>
<td>Fractional content of Na in molten ice</td>
<td>B89-1000</td>
</tr>
<tr>
<td>ADDIS, T.</td>
<td>Contact stresses calculated for miniature slip rings</td>
<td>B65-10098</td>
</tr>
<tr>
<td>ADLER, B.</td>
<td>Ion accelerator for mass spectrometry</td>
<td>B69-10072</td>
</tr>
<tr>
<td>ADLER, J.</td>
<td>Nondestructive X-ray emission analysis for geochronological exploration</td>
<td>B69-10011</td>
</tr>
<tr>
<td>ADLER, L.</td>
<td>Light scattering by Na in fused quartz</td>
<td>B89-10010</td>
</tr>
<tr>
<td>ADLER, M.</td>
<td>The response of a high-energy, high-power, long-life battery</td>
<td>B69-10131</td>
</tr>
<tr>
<td>ADLER, M.</td>
<td>Development and test of flexible film coupon strip for use in a sampling technique</td>
<td>E-FS-20488</td>
</tr>
<tr>
<td>ADLERMAN, D.</td>
<td>Nonlinear X-ray emission analysis for geochronological exploration</td>
<td>B69-10008</td>
</tr>
<tr>
<td>ADLERMAN, D.</td>
<td>Development and test of flexible film coupon strip for use in a sampling technique</td>
<td>E-FS-20488</td>
</tr>
</tbody>
</table>

### Cumulative Index to Tech Briefs

#### Issue 10

<table>
<thead>
<tr>
<th>Title</th>
<th>Source Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remotely operated clamping tool has positive grip</td>
<td>E-10010BE</td>
</tr>
<tr>
<td>Phase plane displays detect incipient failure in servo motor system</td>
<td>E-10010BC</td>
</tr>
<tr>
<td>Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors</td>
<td>E-10010BD</td>
</tr>
<tr>
<td>In lookangle program</td>
<td>E-10010BE</td>
</tr>
<tr>
<td>Circuit protects regulated power supply</td>
<td>E-10010BC</td>
</tr>
<tr>
<td>Optical integrating sphere operates at visible and infrared wavelengths</td>
<td>E-10010BD</td>
</tr>
<tr>
<td>ELAS - A general purpose computer program for the equilibrium problems of linear structures</td>
<td>E-10010BE</td>
</tr>
<tr>
<td>CERT EXCLUSIVE-OR combining paths and loops of electrical networks</td>
<td>E-10010BC</td>
</tr>
<tr>
<td>CERT simulation program for GERT network analysis</td>
<td>E-10010BD</td>
</tr>
<tr>
<td>Development of structural test articles from magnesium-lithium and beryllium</td>
<td>E-10010BE</td>
</tr>
<tr>
<td>White primer permeates corrosion-resistant coating of minimum weight</td>
<td>E-10010BC</td>
</tr>
<tr>
<td>New electrolyte may increase life of polarographic oxygen sensors</td>
<td>B89-10003</td>
</tr>
<tr>
<td>Electrolytic silver ion cell sterilizes water supply</td>
<td>B89-10055</td>
</tr>
<tr>
<td>Development and test of structural test articles from magnesium-lithium and beryllium</td>
<td>E-10010BD</td>
</tr>
<tr>
<td>Contact stresses calculated for miniature slip rings</td>
<td>B65-10098</td>
</tr>
<tr>
<td>Study reveals effect of aluminum on saturation moment of Fe-81 alloys</td>
<td>B89-10025</td>
</tr>
<tr>
<td>Development and test of flexible film coupon strip for use in a sampling technique</td>
<td>E-10010BD</td>
</tr>
<tr>
<td>Computer program simulates design, test, and analysis phases of sensitivity experiments</td>
<td>E-10010BE</td>
</tr>
<tr>
<td>Computer program calculates monotonic</td>
<td>B67-10100</td>
</tr>
</tbody>
</table>
ALLEN, W. R.

- Various likelihood estimates using method of reversals
  N-P5-1516 B67-10136 01

ALLEN, W. N.

- Microparticle impact sensor measures energy directly
  GSFC-252 B65-10048 01

ALFREEDSON, P. G.

- Computer program developed for flowsheet calculations and process data reduction
  ARG-10134 B69-10023 06

ALLAN, K. R.

- Cooling of 2 kw n subscript feed 2 subscript fuel cell
  N-P5-13737 B68-10544 01

ALLER, R. C.

- Nonhazardous acid etches weld samples
  N-FS-975 B66-10376 05

Allen, B. C

- Semiconductors can be tested without removing them from circuitry
  N-FS-1163 B66-10447 01

ALLER, G. P.

- Spiral-grooved shaft seals substantially reduce leakage and wear
  LEWIS-10397 B68-10270 05

ALLER, J. H., Sr.

- Lathe attachment used to machine elliptical cones
  M-100 B65-10168 05

ALLEN, L. B.

- Method of directing a laser beam with very high accuracy
  N-10187 B69-10508 02

ALLAN, W. K.

- Travelling-wave tube circuit simplifies microwave relay
  GSFC-299 B65-10127 01

ALLER, W. W.

- Automatic calibration apparatus for telemetry systems
  NPO-10540 B68-10514 01

ALLISTON, W.

- Master control data handling program uses automatic data input
  N-P5-2259 B67-10280 06

ALMOND, J. C.

- New computer program solves wide variety of heat flow problems
  N-P5-421 B66-10400 01

ALBROTH, E. G.

- Computer program analyzes Buckling of Shells Of Revolution with various wall constructions
  NPO-10150 B68-10226 06

ALRASBY, W. N.

- Instrument transmits vanishing point to illustration point
  MSC-207A B66-10324 01

AMBRUCH, R.

- Digital computer technique for setup and checkout of an analog computer
  N-FS-13969 B68-10576 06

AMBER, W. E. G.

- Technique developed for measuring transmittance of optical birefringent networks
  N-FS-14267 B68-10260 02

- Synthesis of electro-optic modulators for amplitude modulation of light
  N-FS-14268 B68-10275 02

- Correction for losses in optical birefringent networks, a concept
  N-FS-20888 B68-10571 02

INDEX

PERSONAL AUTHOR INDEX

ANDERMAN, R. L.

- Pressure variable orifice for hydraulic control valve
  MSC-11233 B68-10120 05

ANASTASSII, L. J.

- Computer program developed for flowsheet calculations and process data reduction
  ARG-10134 B69-10023 06

ANDERSON, E. A.

- Electronic aperture control devised for solid state imaging system
  N-P5-12428 B68-10028 01

ANDERSON, G. E.

- Portable detector set discloses helium leak rates
  N-FS-1733 B67-10065 01

ANDERSON, J. W.

- Solenoid valve design has one moving part
  NPO-10039 B67-10219 05

ANDERSON, K. F.

- Ratio matching of half-bridge weldable strain gages, computer program
  FRC-10032 B69-10040 06

ANDERSON, R. J.

- Design eliminates radial thermal expansion in turbine stator components
  N-P5-18146 B68-10531 05

ANDERSON, W. R.

- Neutrons irradiation of Am-241 effectively produces curium
  AFS-10030 B67-10501 03

ANDERSON, T. G.

- Improved circuit minimizes generation time of pseudonoise check bits
  B65-10275 01

- Monitoring system determines amplitude and time of vibration channel peaks
  JPL-797 B66-10699 01

- A conceptual, parallel operating data compression processor
  NPO-10069 B67-10204 01

- Logic realization of simple majority voting connectives
  JPL-727 B67-10511 06

- Simple first order data compression processor concept
  NPO-10338 B67-10553 01

- Simplified, high-speed binary data decoder
  NPO-10118 B68-10058 01

- A method for reducing sampling jitter in digital control systems
  NPO-11089 B69-10338 01

- Simple quasi-exponential slope generator
  NPO-11130 B69-10439 01

- Simplified, reliable circuit sorts binary numbers in order of magnitude
  NPO-10172 B69-10503 01

- Design for a rapid automatic sync acquisition system
  NPO-10214 B69-10538 01

ANDERSON, W. J.

- Control of component differential hardness increases bearing life
  LEWIS-190 B65-10251 05

- Shallow grooves in journal improve air bearing performance
  LEWIS-10396 B68-10134 05

- Bearings use dry self-lubricating cage materials
  LEWIS-10432 B68-10165 05

- High-temperature bearing-cage materials
  LEWIS-10403 B68-10176 05

- High-temperature bearing lubricants
  LEWIS-10408 B68-10249 05

ANDERSON, W. W., JR.

- Calorimeter accurately measures thermal radiation energy
  Langley-173 B66-10058 02

ANDERSON, C. A.

- Improved first order interpolator
  MSC-11085 B68-10291 02

ANDERSON, S. D., JR.

- Aerial-image enables diagrams and animation to be inserted in motion pictures
  ARG-165 B67-10398 02

ANGELIE, V.

- Contact-spring forming machine for flat
ANGELL, C. A. Hydrated multivalent cations are new class of molten salt mixtures. ARG-211  B67-10033  03

ANHIS, J. P. Rate of heat extraction controller for environmental control. E-10310  B69-10516  01

APPEN, R. H. Adjustable thermal **tree**. RSC-15556  B69-10648  01

APPTRAM, R. B. Synthesis of perbromates. ARG-10459  B69-10647  03

ARMS, F. R. Detector measures power in 50 to 30,000 GHz radiation band. EBC-26  B66-10581  01

ARNEB, W. Z. Modular chassis simplifies packaging and interconnecting of circuit boards. JPL-236A  B63-10174  01

ARGENTINO, F. D. The t square statistic and goodness of fit test. GSFC-10547  B68-10136  02

ARGOUD, M. J. Protective clothing for workers with 5-kW and 20-kW short-arc lamps. ARG-1155  B69-10218  01

ARYAS, A. Improved retort for cleaning metal powders with hydrogen. LEWIS-10716  B69-10468  03

ARMBRIGHT, N. C. Cooled miniature pressure transducers effective at high temperatures. LEWIS-10401  B68-10370  01

ARMSTRONG, G. C. System transmits mechanical vibration into hazardous environment. M-0025  B65-10248  05

ARMSTRONG, G. M. Development of low temperature battery. LEWIS-10326  B67-10546  01

ARMSTRONG, J. L. Laboratory arc furnace features interchangeable hearths. ABO-125  B67-10052  05

ARMSTRONG, T. W. Deep gamma ray penetration in thick shields. E-PS-14380  B68-10143  02

ARMSTRONG, W. P. Flow properties of suspensions rich in solids. ARG-10481  B69-10622  02

ARNST, G. D. BF noise suppression using the photodielectric effect in semiconductors. RSC-12259  B69-10225  01

ARNST, J. H. Optical device enables small detector to see large field of view. WO-253  B66-10263  02

ARNOLD, J. G. A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt line profile. ABC-10221  B69-10232  06

ARNOTT, R. J. Electrolytic separation of crystals of transition-metal oxides. ABO-10506  B69-10642  03

ARREST, J. D. Zirconium-nitrogen reaction investigated for application to gettering systems. ARG-10208  B68-10144  03

ARRANCE, B. C. Improved anode design for metal-oxygen cells. LEWIS-10371  B69-10318  01

AROTTE, J. S. Threading hook facilitates safe recovery of heavy loads. M-04-46  B69-10185  05

ASHBROOK, R. L. New cobalt alloys have high-temperature strength and long life in vacuum environments. LEWIS-47  B63-10351  03

ABEST, W. C. Dewpoint temperature inversions analyzed. ARG-10316  B69-10057  02

ASTON, R. Multidimensional reaction kinetic ablation program / RHEKAP/ M-10079  B67-10495  06

ATTISSON, M. A. Coaxial capacitor used to determine fluid density. LEWIS-232  B65-10296  02

ATLA, N. D. Comfortable, lightweight safety helmet holds radio transmitter, receiver. M-53  B64-10015  05

ATOJ, E. Neutron diffractometer allows both magnetic and crystallographic analyses. ARG-191  B67-10131  02

ATTWOOD, S. W. Phase-lock loop frequency control and the dropout problem. E-FS-13948  B68-10130  01

AAMASON, J. L. Communication system features dual mode range acquisition plus time delay measurement. M-PS-14323  B68-10306  01

AUGOAL, F. Rotation fluid coupling eliminates hose entanglements. HSC-312  B66-10585  05

AULT, E. M. Survey made of refractory metals. LEWIS-10380  B68-10032  03

AUTIO, J. G. Compact cartridge drives coded tape at constant readout speed. JPL-472  B68-10222  01

AUTIO, J. G. Viscosity and density of methanol/water mixtures at low temperatures. E-PS-14991  B68-10274  03

AUTIO, W. L. Estimating reliability by application of matrix representation. M-10286  B69-10793  02

AUTLEB, R. A. Mechanism of superconductivity investigated by nuclear radiation E-FS-1944  B67-10057  02

AVERY, H. W. Device spot-laps spheres to very close tolerances. JPL-SC-119  B66-10175  05

Hollow spherical rotors fabricated by electroplating. JPL-SC-117  B66-10366  05
AYELE, J. E.
Mathematical relation predicts achievable densities of compacted particles
ARS-10082 B67-10592 03

AYELE, J. E.
System for measuring spatial distribution of ejected droplets, a concept
NPO-10165 B68-10402 01

BAEBLE, C. V.
Measurements of thermoelectric power in annealed and quenched gold-platinum alloys
ARS-10303 B69-10206 03

BABA, P. R.
Miniaturization of magnetic logic circuitry
LANGLEY-10037 B69-10148 06

BABINE, B. D.
Technique for stripping Teflon insulated wire
HPS-1774 B67-10048 05

BACHE, W. H.
A mechanically extendible boom
NPO-11118 B69-10328 05

BACICAPUI, A. J.
Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 03

BADSTEIN, C. G.
Phase-locked-loop phase modulator with high modulation index, low distortion
MSC-12247 B69-10487 01

BALKIILL, R. V.
New method used to fabricate light-weight heat exchanger for rocket motor
WIS-43 B63-10346 02

BAKER, V. R.
Recharge unit provides for optimum recharging of battery cells
ARINC-10688 B68-10273 01

BAKER, H. H.
ANalog solar system model relates celestial bodies spatially
JPL-195 B66-10413 01

BAKERS, W. G.
Effect of interparticle forces on the fluidization of fine particles
ARS-10264 B69-10195 03

BAILEY, B. N.
Cryogenic flux-concentrator
GSPC-10654 B69-10564 02

BAILEY, J. W.
Electronic assembly rack panels snap on and off
GSFC-59 B64-10121 05

BAILEY, L. R.
Cryogenics: an overview of present and future trends in superconductivity and its application
GSFC-152 B69-10247 01

BAILEY, R.
A special system for radiation detector
ARS-10160 B68-10113 02

BAILEY, W. N.
Study made of ductility limitations of aluminum-silicon alloys
ARS-12524 B67-10392 03

BAJOWIZE, W.
Connect-disconnect coupling for preadjusted rigid shafts
MSC-12470 B69-10375 05

Baker, E. B.
Readout system for radiation detector
RSOC-10160 B68-10501 01

Baker, C. D.
An improved method for electrical cable terminations
NPO-10694 B69-10327 01

Baker, R. B.
Pressure transducer
NPO-10364 B69-10364 01

Baker, R. D.
Quick-set temporary bonding clamps
NPO-10695 B69-10406 03

Baker, V. L.
Combustion chamber inlet manifold separates vapor from liquid
HPS-531 B66-10052 05

Baker, D. L.
Stationary device produces homogeneous mixture of fluids
HPS-525 B66-10570 05

BAKER, E. H.
Static structural analysis of shell-type structures
MSC-11552 B68-10066 03

BAKER, E. U.
Cut-through tester accurately measures insulation failure rates
M-FS-12506 B67-10354 03

BAKER, L. B.
Plotter design simplifies determination of image sensor transfer characteristic
NPO-10164 B67-10206 01

BAKER, L. J.
Ignition of binary alloys of uranium
NPO-10057 B68-10280 01

BAKER, R.
Bidirectional torque filter eliminates backlash
GSPC-335 B65-10148 05

BAKER, W. H.
Ultrasonics permits brazing complex stainless steel assembly without flux
NOS-10115 B67-10302 05

BALDWIN, J. M.
Laser microprobe facility used in the elemental analysis of small feature of a sample
NPO-10359 B69-10165 02

BALDWIN, L. V.
Cooling method prolongs life of hot-wire transducer
LEWIS-81 B63-10344 02

BALES, T. T.
Thoriated nickel bonded by solid-state diffusion method
LANGLEY-116 B65-10220 03

BALLEW, J. T.
Method of making coaxial fiber optical components
XRP-09745 B69-10020 02

BALL, L. L.
Tomography thermal neutron dosimeter
LEWIS-10880 B69-10249 02

BALL, N.
Triple Modular Redundancy /TMR/ computer operation improved
MSC-831 B67-10085 01

BALLEW, J. T.
Computerized Schedule Effectiveness Technique /SET/ determines present and future schedule position
M-FS-13012 B67-10522 06

BALLOW, V. J.
Flared-tube fittings with replaceable seat inserts
MSC-15372 B69-10519 05

BAND, K. H.
Lightweight universal joint transmits both torque and thrust
JPL-375 B63-10236 05

BANFORD, R. H.
A modal combination computer program for dynamic analysis of structures
NPO-10129 B67-10217 06

BANFORD, R. H.
Computer program performs stiffness matrix structural analysis
NPO-10502 B68-10096 06

BANDLIN, M.
Multiple meter monitoring circuits served by single alarm
MSC-10694 B67-10369 01

BANCE, W. M.
Sodium perxenate permits rapid oxidation of manganese for easy spectrophotometric determination
NPO-262 B67-10421 03

BANKS, D. L.
Reducing bubbles in glass coatings improves electrical breakdown strength
LEWIS-10278 B68-10214 03

BANKS, D. A.
Glass coated single grid for charged
particle acceleration
LEWIS-10106 B68-10215 03

BANKS, W.
Series transistors isolate amplifier from flyback voltage
MSC-11023 B67-10468 01

BANKSTON, B. Y.
Stress-corrosion-induced property changes in aluminum alloys
M-FS-20209 B68-10568 03

BARBOUR, J. R.
Universal transloader moves delicate equipment without stress
MSC-654 B68-10384 05

BAREISS, B. T.
Toggle operated double latch
MSC-11377 B68-10117 05

BARDOS, R. D.
Study reveals effect of aluminum on saturation moment of Fe-Ni alloys
ARG-90840 B68-10172 03

BAUER, E. H.
Linear systems of equations solved using mathematical algorithms
ARG-10184 B68-10292 06

BEACH, J. J.
Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232 B67-10032 03

BAULL, R. H., JR.
Fortran 4 program for two-impulse rendezvous analysis
M-FS-13971 B67-10479 06

BARNES, R. F.
Improved dc voltage regulator
IKS-06467 B69-10369 01

BARRANGER, J. P.
Process yields Co-Fe alloys with superior high temperature magnetic properties
LEWIS-333 B66-10535 03

BARETT, C. A.
Precise doping of metals by small gas flows
LEWIS-10444 B68-10526 03

BARTHOLOMEW, R. C.
Process controls introduction of selected impurities into semiconductor wafers
GSFC-253 B67-10303 01

BARTLET, D. H.
Fiber glass reinforced structural materials for aerospace application
M-FS-14806 B68-10360 03

BAXTER, B.
Effect of preparation procedures on intensity of radioautographic labeling in studied
ARG-10332 B67-10500 04

BASILL, L. J.
Daughter growth in freshly separated Na-226, Ac-227 and U-232
ARG-10226 B69-10003 02

BASELIS, A.
Distillation device supplies cesium vapor at constant pressure
IMP-00126 B68-10020 03

BASLOW, H. W.
Seater control circuit provides both fast and proportional control
M-FS-206 B67-10097 01

BASTINN, E. C.
Multilayer infrared beamsplitter film system
IGS-11036 B69-10260 02

BASTONI, J. G.
An overview of electromagnetic interference problems in spacecraft
NPO-11770 B69-10362 01

BATCHelor, B.
Computer program performs stiffness matrix

structural analysis
NPO-10502 B68-10096 06

BATES, L. E., JR.
Low rate flow switch can be used for gas or liquid
JPL-967 B66-10696 01

BATSCH, F. P.
Elastic orifice automatically regulates gas bearings
JPL-113 B68-10123 03

BATTEN, W. G.
Exclusive-or logic circuit has useful properties
LANGLEY-214 B66-10272 01

BATTLES, J. E.
Neutron-spectroscopic study of the rhodium-oxygen system
NPO-10421 B69-10645 02

BAUDE, J.
Signal generator converts direct current to multiphase supplies
MSC-11043 B67-10368 01

BAUER, B. E.
Electronic dummy for acoustical testing
MSC-206 B67-10298 01

BAURENRUBEN, J. R., JR.
Explosives actuate nonmagnetic indexing device
GSFC-237 B65-10017 05

BAUER, E. A.
High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes
LEWIS-90271 B69-10376 01

BAUMAN, G. J.
Solder flux leaves corrosion-resistant coating on metal
JPL-611 B64-10206 03

BAUER, W. E.
Reusable chelating resins concentrate metal ions from highly dilute solutions
JPL-758 B66-10451 03

BAWNER, C.
Circuit counts pulses and indicates time of occurrence of slow pulses
XM-06234 B69-10313 01

BEACH, R.
Measurement of mechanical properties of uranium compounds
ARG-10074 B68-10197 03

BECKER, B. D.
Study of mechanisms of the occurrence of slow pulses
JPL-610 B66-10100 02

BECK, C. C.
Visual attitude orientation and alignment
MSC-647 B67-10120 02

BECK, R.
Modified interelement spacing improves Yagi antenna array
LANGLEY-150 B65-10183 01

BECK, P. A.
Study reveals effect of aluminum on saturation moment of Fe-Ni alloys
ARG-90259 B68-10172 03

BECKER, G. W.
Testing device subjects elastic materials to biaxial deformations
JPL-616 B65-10189 03

BECKER, R. H.
Superconductive thin film aterS convenient
Beckley, J. K., Jr.

Liquid helium level sensor

Beckley, J. E., Jr.

Tool permits damage-free removal of solar cell

GSPC-467

Beckwith, W. B.

Wideband, high efficiency optical modulator requires less than 10 watts drive power

E-PS-12733

Bedard, W. E.

Automated patient monitoring system

E-PS-10552

Beer, J.

Unique construction makes interferometer insensitive to mechanical stresses

E-65-10295

Beere, D. R.

System measures unidirectional forces, excludes extraneous forces

LEWIS-170

Bell, V. L., Jr.

Irradiation improves properties of an aromatic polyester

LANGLEY-115

Polymer film exhibits thermal and radiation stability

LANGLEY-100

Bell, M. E.

Electrodes discharge lamp is easily started, has high stability

E-66-10015

Belmont, G. E.

Teflon-packed flexible joint

LEWIS-9252

Bennah, T. Y.

Jet engine powers large, high-temperature wind tunnel

E-PS-13544

Bennett, A. G.

Computer program for mass optional solutions of some endpoint trajectory problems

E-PS-12976

Earth orbit rendezvous evaluation program

E-PS-13016

Computer program offers new method for constructing periodic orbits in nonlinear dynamical systems

E-PS-14654

Bennett, L. F.

Four pi recoil proportional counter used as neutron spectrometer

ARU-10101

Bennett, G. A.

Use of steel and tantalum apparatus for solenoid Cd-My-Zn alloys

ARG-199

Study made of resistance of stainless steels to zinc-vapor corrosion

ARG-10055

Bennett, J.

Manual feed adapter permits microfilming of continuous oscillograph output

NU-0029

Roll diffusion bonding of titanium alloy panels

E-PS-19743

Bennight, J. D.

Nondestructive forming for precision sizing and joining of large-diameter tubes

E-PS-20481

Benson, L.

Carbon offers advantages as implant material in human body

E-PS-18207

Hydraulic calipers

E-PS-10052

Benson, R. J.

Hydrogen flash lamps studied

ARG-10419

Bentley, C.

Conceptual servo technique for controlling tape drivers

E-PS-12955

Benz, W. D.

Gage accurately controls force for placing chips on substrates

E-PS-1941

Berg, G. E.

Microparticle impact sensor measures energy directly

GSPC-252

Dust particle injector for hypervelocity accelerators provides high charge-to-mass ratio

GSPC-509

Bergman, C.

Improved inorganic ion exchange membranes

LEWIS-10737

Bergman, H.

Improved ultrasonic TV images achieved by use of Lamb wave orientation technique

ARG-203

Thermal neutron image intensifier tube provides brightly visible radiographic pattern

ARG-120

New camera tube improves ultrasonic inspection system

ARG-90237

Beckett, R. L.

Control system maintains selected liquid level

E-66-10039

Beckman, Y. B.

Hydrogen flash lamps studied

ARG-10419

Berman, A. L.

APRA on-site tracking prediction program

EEO-10836

Bemah, S.

Decomposition vessel

GSPC-10434

Bennett, R. C.

Automatic sample rotator for metallographic polishing

NEO-11015

Bennett, G.

Square tubing reduces cost of telescoping bridge crane hoist

EEO-13

Bertman, G.

High power dc/dc and dc/ac electrical power conversion techniques developed

E-PS-13227

Bertrand, A. R.

Computer program performs rectangular fitting stress analysis

E-PS-13010

Berrey, B. H.

Coating permits use of strain gage in water and liquid hydrogen

E-PS-999

Berrey, B. H.

Spiral spring/strain gage combination accurately measures shock induced deflection

MSC-789

Bessing, L. L.

Lightweight, all-metal hose assembly has high flexibility and strength over wide range of temperature and pressure

E-PS-1831

Betthel, P. G.

Device serves as hinge and electrical connector for circuit boards

E-PS-743

Bhuyan, C. S.

Brazing process using Al-Si filler alloy reliably bonds aluminum parts

MSC-448

Tube plating tool assures accurate dip brazed joints

MSC-533

Bhat, A. F.

Matching flow characteristics of standard shutoff valves eliminates need for custom fabricated valves

E-PS-1069

Biddle, N. M.

Aspirator increases relief valve poppet stroke

EQ-77
BIELAWSKI, T.
Study of fast response thermocouple measurement of temperatures in cryogenic gases
M-PS-1659 B66-10661 01

BILLINGS, B. R.
Hydrostatic testing of porous assemblies M-PS-18296 B68-10439 05

BILES, R. E.
Tool reconstructs data input points corresponding to first order output graph M-PS-18064 B68-10154 02

BILLERBACK, B. R.
Solid-state laser transmitter is amplitude modulated M-1255 MSC-10555 B68-10238 01
Improved optical diffractometer MSC-12055 B68-10071 02

BILLS, J. W. R.
High impact pressure regulator withstands impacts of over 15,000 g B68-10274 01

BILLINGS, C. R.
Emergency escape system uses self-braking mechanism on fixed cable B66-10575 05

BILLINGSLEY, F. C.
Computer program for Video Data Processing System VDPS/ EPO-10042 B67-10630 06
VICAR-DIGITAL image processing system EPO-10770 B69-10139 06
Electrooptical scanning of film EPO-11016 B69-10568 01

BILLINGSLEY, J. N.
Simple circuit functions as frequency discriminator for PM signals GSFC-267 B65-10102 01
Mechanism facilitates coating of inner surfaces of metal cylinders GSFC-515 B66-10698 05

BLACK, F.
Multidimensional reaction kinetic ablation program /ERAF/ MSC-10739 B67-10495 06

BINGLE, J. D.
Ignition of binary alloys of uranium ARO-10057 B68-10280 01

BIRD, A. R.
Infrared radiometer M-PS-13734 B67-10422 01

BIRDSONG, J.
Computerized Schedule Effectiveness Technique /SET/ determines present and future schedule position M-PS-13012 B67-10522 06

BIRNBAUM, H. A.
Pressure probe compensates for dimensional tolerance variations LBIVS-1032 B66-10599 01

BISHOP, O. L.
Broadband choke suppresses spurious currents in antenna structure MSC-10013 B67-10675 01

BISTROMAN, W. X.
Survey of man-made electrical noise affecting radio broadcasting HQ-02960 B69-10308 01

BISSEMO, W. E.
Heat transfer coefficients for liquid hydrogen turbines M-PS-18844 B68-10517 02

BITTERLY, J. G.
Measurement of gas flow at extremely low pressures MSC-13261 B69-10522 03

BJEJAK, J.
Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer MSC-924 B67-10083 03
Thermodynamic properties related to expansion of two-component gas MSC-1133 B67-10112 03

BJORKLUND, S.
Liquid laser cavities GSFC-10592 B69-10234 02
Laser action from a terbium beta-ketoenolate at room temperature GSFC-10591 B69-10324 02

BJORKMAN, E. K.
Cooling of 2 kW T tube with a 2-D substrate of 2 fuel cell M-PS-13737 B68-10544 01

BJORKMAN, W. S.
Advanced mission analysis program GSFC-10575 B69-10171 06

BLACK, F. J.
New backup-bar groove configuration improves heliarc welding of 1947 aluminum MSC-806 B66-10443 05

BLACK, R. R.
Automatic gain control circuit handles wide input range MSC-166 B66-10089 01

BLACKER, K. L.
Glass fiber fire barrier for silicone rubber parts MSC-15555 B69-10629 03

BLAINE, H. T.
Ultrasonic wrench produces leaktight connections M-PS-12061 B67-10353 05
Air-cushion lift pad M-PS-14685 B69-10448 05

BLAKE, C.
Multichannel wireeway adapter box MSC-90465 B68-10052 05

BLAND, C.
Bacteriostatic conformal coating for electronic components GSFC-10007 B67-10599 03

BLANK, C. B.
Sampling and handling of desert soils EOS-11171 B69-10304 04
Desert soil collection at the JPL soil science laboratory EOS-11206 B69-10571 04

BLAINEBERG, C. P.
Extrusion of small-diameter, thin-wall tungsten tubing LBIVS-00335 B67-10355 05

BLAYDES, B. A.
Special pliers connect hose containing liquid under pressure JPL-IT-1003 B63-10291 01

BLAZER, C. J.
Collar positions strip stock used to form coil on mandrel JPL-198 B65-10130 05

BLAINEBERG, W. H.
Silver plating technique seals leaks in thin wall tubing joints EOS-0060 B66-10703 05

BLUNT, J. L.
Multilayer refractory nozzles produced by plasma-spray process WOO-318 B66-10611 05

BLOCK, H.
Computer program utilizes PORTRAIN 4 subroutines for contour plotting MPO-12057 B67-10323 06

BLOCKER, E. W.
Newly developed fused ceramic body shows promise as thermal insulation material at 3000 deg F M-PS-11968 B67-10441 03

BLOOM, L. G.
Electrodes discharge lamp is easily started, has high stability WOO-030 B66-10015 01

BLOOMQUIST, C. A. A.
Nitric acid–organic mixtures surveyed for use in separation by anion exchange methods ABG-10065 B68-10348 05
Newly developed ceramic body shows promise as thermal insulation material at 3000 deg F M-PS-11968 B67-10441 03

BLUE, J. W.
An economical method for the continuous production of iodine-123 LBIVS-10518 B68-10343 03

BLAINE, D.
Preparing rock powder specimens of controlled size distribution MPO-10007 B68-10297 05
BOKROS, J. P.
Accurate nine-decade temperature-compensated logarithmic amplifier
AGS-10480 B69-10429 01

BONNELL, D. W.
Concentrator uses tetrode transistor
JPL-82 B65-10055 01

BOERS, E. L.
Identification and evaluation of linear damping models in beam vibrations
AGS-10275 B69-10196 03

BOSART, T. J.
Circuit operates as sine function generator
MSC-255 B66-10038 01

BOLLEY, R. L.
Three-position rocker switch actuator has positive centering
MSC-261 B65-10376 01

BOGNER, R. A.
Dewpoint temperature inversions analyzed
AGS-10376 B69-10557 02

BOGUE, R. K.
Alternating current electromagnetic servo induction actuator
XPR-03838 B68-10100 01

BOKROS, F.
Detection system ensures positive alarm activation in digital message loss
MDO-208 B66-10287 01

BOLIN, E. G.
Modular chassis simplifies packaging and interconnecting of circuit boards
JPL-236A B63-10174 01

BOLL, K. P.
Technique increases storage capacity in camera tube target
MSC-11599 B66-10213 01

BOLT, C. A., JR.
Broadband choke suppresses spurious currents in antenna structure
MSC-1013 B67-10675 01

BOLTE, G.
Zener diode function generator requires no external reference voltage
JPL-0031 B65-10013 01

BONTEJN, P. J.
A method of determining combustion gas flow
M-PS-11357 B67-10455 03

BOND, W. B. G.
Spray-on technique simplifies fabrication of complex thermal insulation blanket
M-PS-987 B66-10053 03

BOND, W. W.
Piezoromotive gage tests pin-connector sockets
JPL-675 B65-10128 01

BORE, E. L.
An integrated circuit switch
MSC-1073 B65-10326 01

BORN, J. L.
Forming blocks speed production of strain gage grids
LEWIS-182 B65-10009 05

IRRADIATED GASES TRANSFERRED WITHOUT CONTAMINATION OR DISSOLUTION
LEWIS-278 B67-10044 03

BORE, W. L., JR.
Warpage eliminated in copper-clad microwave circuit laminates
M-PS-13892 B67-10454 03

BOOZE, P. W.
Apparatus measures concentration of suspended droplets in gas streams
LANGL-24 B64-10237 01

BOOD, E. A.
Hybrid solid state switch replaces motor-driven power switch
JPL-931 B67-10165 01

BOOZE, S.
Laser-Doppler gas-velocity instrument
M-PS-20039 B68-10349 02

BOOD, G. W.
Study of random process theory aids digital data processing
MSC-1236 B65-10053 03

BOS, S.
Cytology is advanced by studying effects of deuterium environment
AGS-205 B67-10304 04

BOSSLER, R. B.
Three-axis attitude and direction reference instrument has only one moving part
M-PS-1019 B66-10644 01

BOUCHER, L. J.
Aggregation of metalchlorophylls - Examination by spectroscopy
ARG-10273 B69-10163 04

BOUCHILAS, T.
Use of color-coded sleeve shutters accelerates oscillograph channel selection
KSC-10092 B67-10382 01

BOULLE, J. R.
Pneumatic wrench retains or discharges nuts or bolts as desired
B66-10707 05

BOULTON, R. C.
Electrical continuity scanner facilitates identification of wires for soldering to connectors
MSC-626 B66-10605 01

BOUDREAU, F. W.
Use of color-coded sleeve shutters accelerates oscillograph channel selection
KSC-10092 B67-10382 01

BOUDEY, E. B.
Experiments to investigate particulate materials in reduced gravity fields
M-PS-13308 B67-10394 02

BOUZ, J. E.
Photomonitor used to maintain welding electrode-to-joint alignment
MSC-243 B65-10401 05

BOUS, W. H.
Jacketed cryogenic piping is stress relieved
M-PS-985 B67-10308 05

BOUZ, W. H.
Vacuum-jacketed transfer line installation technique
B66-10125 05

BOUZIE, C. E.
Conditioning of pulses from aerosol-particle detectors
ERG-10240 B69-10691 01

BOWMAN, R.
Silicon strain sensors enable pressure measurement at cryogenic temperatures
M-PS-14703 B68-10262 01

BOK, W. G.
Inertial accelerometer measures weld angle and offset
M-PS-12849 B67-10563 05

BOLE, J. V.
Alignment tool facilitates pin placement on irregular horizontal surfaces
LANGL-219 B66-10410 05

BOYLE, G. W., JR.
Health hazards of ultrafine metal and metal oxide powders
LEWIS-10878 B69-10268 04

BRAWNS, R.
Rate constants measured for hydrated electron reactions with peptides and proteins
AGS-10195 B68-10824 04

BROADHURST, P. A.
Portable Pulse Code Modulation (PCM)
LEWIS-1369 B68-10106 01

BRAZIER, R. E.
Integral ribs formed in metal panels by press extrusion
M-PS-230 B65-10141 05

BRAID, S. B.
Metal flame spray coating protects electrical cables in extreme environment
MSC-10077 B67-10351 03

BRAHAKETTER, J. H.
Pyroelectric handbook describes practical aspects of surface temperature measurements of opaque materials
LEWIS-349 B66-10520 01

BROTHE, K. E.
Simplified electrometer has excellent operating characteristics
I-752
### PERSONAL AUTHOR INDEX

<table>
<thead>
<tr>
<th>BROWN, J. L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transistor h parameter conversion slide rule</td>
</tr>
<tr>
<td>Carburetor calibration</td>
</tr>
<tr>
<td>Fast-exchanger control system provides reliable cold weather operation</td>
</tr>
<tr>
<td>Cryogenic trap valve has no moving parts</td>
</tr>
<tr>
<td>Shock-operated valve would automatically protect fluid systems</td>
</tr>
<tr>
<td>Device accurately measures and records low gas-flow rates</td>
</tr>
<tr>
<td>New shield for gamma-ray spectrometry</td>
</tr>
<tr>
<td>Chemical milling solution reveals stress corrosion cracks in titanium alloy</td>
</tr>
<tr>
<td>Gate valve with ceramic-coated base operates at high temperatures</td>
</tr>
<tr>
<td>Maximum RMS error comparison of several redundancy techniques</td>
</tr>
<tr>
<td>Cryogenic flux-concentrator</td>
</tr>
<tr>
<td>Aryleneisoxolane copolymers</td>
</tr>
<tr>
<td>Low-power transistorized circuit provides staircase waveform</td>
</tr>
<tr>
<td>Chemical regeneration of emitter surface increases thermonic diode life</td>
</tr>
<tr>
<td>Lightweight coaxial cable connector reduces signal loss</td>
</tr>
<tr>
<td>Connector acts as quick coupling in coaxial cable application</td>
</tr>
<tr>
<td>Versatile analog pulse height computer performs real-time arithmetic operations</td>
</tr>
<tr>
<td>High resolution 60/125/spectrometer reduces rate-dependent distortions at high counting rates</td>
</tr>
<tr>
<td>VICH-DIGITAL image processing system</td>
</tr>
<tr>
<td>Improved compensation circuit for direct-coupled amplifiers</td>
</tr>
<tr>
<td>Stratification of centrifuged ascene nuclei investigated by electron microscopy</td>
</tr>
<tr>
<td>Modified hydraulic braking system limits angular deceleration to safe values</td>
</tr>
<tr>
<td>Hydrogen fire detection system features sharp discrimination</td>
</tr>
<tr>
<td>Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing</td>
</tr>
<tr>
<td>Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi</td>
</tr>
<tr>
<td>Transistor h parameter conversion slide rule</td>
</tr>
<tr>
<td>Carburetor calibration</td>
</tr>
<tr>
<td>Fast-exchanger control system provides reliable cold weather operation</td>
</tr>
<tr>
<td>Cryogenic trap valve has no moving parts</td>
</tr>
<tr>
<td>Shock-operated valve would automatically protect fluid systems</td>
</tr>
<tr>
<td>Device accurately measures and records low gas-flow rates</td>
</tr>
<tr>
<td>New shield for gamma-ray spectrometry</td>
</tr>
<tr>
<td>Chemical milling solution reveals stress corrosion cracks in titanium alloy</td>
</tr>
<tr>
<td>Gate valve with ceramic-coated base operates at high temperatures</td>
</tr>
<tr>
<td>Maximum RMS error comparison of several redundancy techniques</td>
</tr>
<tr>
<td>Cryogenic flux-concentrator</td>
</tr>
<tr>
<td>Aryleneisoxolane copolymers</td>
</tr>
<tr>
<td>Low-power transistorized circuit provides staircase waveform</td>
</tr>
<tr>
<td>Chemical regeneration of emitter surface increases thermonic diode life</td>
</tr>
<tr>
<td>Lightweight coaxial cable connector reduces signal loss</td>
</tr>
<tr>
<td>Connector acts as quick coupling in coaxial cable application</td>
</tr>
<tr>
<td>Versatile analog pulse height computer performs real-time arithmetic operations</td>
</tr>
<tr>
<td>High resolution 60/125/spectrometer reduces rate-dependent distortions at high counting rates</td>
</tr>
<tr>
<td>VICH-DIGITAL image processing system</td>
</tr>
<tr>
<td>Improved compensation circuit for direct-coupled amplifiers</td>
</tr>
<tr>
<td>Stratification of centrifuged ascene nuclei investigated by electron microscopy</td>
</tr>
<tr>
<td>Modified hydraulic braking system limits angular deceleration to safe values</td>
</tr>
<tr>
<td>Hydrogen fire detection system features sharp discrimination</td>
</tr>
<tr>
<td>Fabrication techniques developed for small-diameter, thin-wall tungsten and tungsten alloy tubing</td>
</tr>
<tr>
<td>Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi</td>
</tr>
</tbody>
</table>

---

**I-753**
A study of the effects of cooling on single-point failures in critical system designs

Program computes single-point failures in critical system designs

Computer program FPIP-REV calculates absolute stable ac repair and replacement for polymer deformation gage measures thickness change in tensile tests

Polymer deformation gage measures thickness change in tensile tests

Polymer deformation gage measures thickness change in tensile tests

Absolute viscosity measured using instrumented parallel plate system

Repair of honeycomb panels with welded breakaway studs

Stable ac phase and amplitude comparator

Boydolt, a positive-latch, simple-release fastener

Study of stress corrosion in aluminum alloys

Edge-type connectors evaluated by electrical noise measurement

Sensitive level sensor made with spirit level, gives electrical output

Special treatment reduces helium permeation of glass in vacuum systems

Quality control criteria for acceptance testing of cross-wire welds

Pneumatic separator gives quick release to heavy loads

Self-balancing line-reversal pyrometer automatically measures gas temperatures

Pyrometry handbook describes practical aspects of surface temperature measurements of opaque materials

Computer simulation of high-frequency combustion instability and its suppression

BROWN, E. D.

PERSONAL AUTHOR INDEX

BUCHANAN, D. C.

BUCKLEY, D. E.

BUCKLEY, E. A.

BUCKLEY, R. E.

BUCHHEIT, F. A.

BUCHANAN, D. C.

BUCKEY, D. L.

BUCKET, D. L.

BUCKETT, R. E.

BUCKEY, R. E.

BUCKLEY, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.

BUCKETT, R. E.
CURRENT pulse amplifier transmits detector sample.......

Two techniques enable sampling of filtered molten metals at cryogenic temperatures.

System monitors discrete computer inputs to zinc-vapor corrosion.

Use of steel and tantalum apparatus for low-cost insulation system for cryostats.

Analysis of cell performance and thermal regeneration of a lithium-tin cell having molten metals.

Substituted silane-diol polymers have improved thermal stability.

Substituted silane-diol polymers have improved thermal stability.

Flexible arms provide constant force for pressure switch calibration.

Lithium-tellurium bimetallic cell has increased voltage.

Thermally conducting electron transfer polymers.

Monitored cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte.

Simple, accurate automatic frequency control circuit.

Flexible arms provide constant force for pressure switch calibration.

Lithium-tellurium bimetallic cell has increased voltage.

Techniques report on galvanic cells with fused-salt electrolytes.

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes.

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.

Computer program FPPIP-REV calculates fission product inventory for U-235 fission.
<table>
<thead>
<tr>
<th>PERSONAL AUTHOR INDEX</th>
<th>CHIPMAN, B. L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARTER, W. M.</td>
<td>Device removes hydrogen gas from enclosed spaces GSPC-495 B66-10340 03</td>
</tr>
<tr>
<td>CEAEBERS, G.</td>
<td>Hermetically sealed cells protected from internal gas pressure GSPC-555 B66-10692 01</td>
</tr>
<tr>
<td>CASTEELIBE, A.</td>
<td>Geometry and design point performance of axial flow turbines LEWIS-10471 B69-10111 06</td>
</tr>
<tr>
<td>CARTER, A.</td>
<td>Random access-random release relay switching matrix N-PS-12520 B66-10301 01</td>
</tr>
<tr>
<td>CASADO, T. A.</td>
<td>Automatic design of optical systems by digital computer IFO-10265 B67-10632 06</td>
</tr>
<tr>
<td>CASEY, L. O.</td>
<td>Fuse protects circuit from voltage and current overloads N-PS-12135 B69-10490 01</td>
</tr>
<tr>
<td>CASH, J.</td>
<td>Transient sensor development N-PS-13370 B67-10471 01</td>
</tr>
<tr>
<td>CASBIOT, K. D.</td>
<td>Headset system for radiation detector N-PS-40180 B67-10501 01</td>
</tr>
<tr>
<td>CASHELIBE, K. T.</td>
<td>Telescope dome control system automatically tracks sun N-PS-10966 B69-10521 02</td>
</tr>
<tr>
<td>CASTERLINE, R. T.</td>
<td>Integrated metal transistor leads N-PS-90536 B66-10518 01</td>
</tr>
<tr>
<td>CASTILLE, P.</td>
<td>Mounting fixtures removal and installation of class-detector rods N-PS-555 B66-10150 03</td>
</tr>
<tr>
<td>CATALDO, C. E.</td>
<td>Lightweight magnesium-lithium alloys show promise N-PS-17 B63-10389 03</td>
</tr>
<tr>
<td>CATREY, J. R.</td>
<td>Effects of hydroxide on metals N-PS-20364 B69-10372 03</td>
</tr>
<tr>
<td>CATHCART, J. H.</td>
<td>Internal velocity factors MSC-15002 B68-10403 06</td>
</tr>
<tr>
<td>CAVES, R. H.</td>
<td>Hydrogen-atmosphere induction furnace has increased temperature range LEWIS-153 B66-10055 05</td>
</tr>
<tr>
<td>CEDPOLSON, P. J.</td>
<td>Strain gauge network distinguishes between thermal and mechanical deformations GSPC-470 B66-10280 01</td>
</tr>
<tr>
<td>CHARBERLING, F. R.</td>
<td>Multifunction binocular scanning apparatus NPO-11002 B69-10311 02</td>
</tr>
<tr>
<td>CHARBERLING, R. X.</td>
<td>Health hazards of ultrafine metal and metal oxide powders LEWIS-10678 B69-10268 04</td>
</tr>
<tr>
<td>CHAMBERS, G.</td>
<td>Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables M-PS-4003 B66-10704 05</td>
</tr>
<tr>
<td>CHAN, G. C.</td>
<td>Fatigue of reinforced concrete beams under dynamic loading N-PS-19040 B60-10515 05</td>
</tr>
<tr>
<td>CHANDLER, J. A.</td>
<td>Improved control system power unit for large parachutes N-PS-1005 B67-10677 07</td>
</tr>
<tr>
<td>CHANDLER, R. W.</td>
<td>Improved phase-shift-keyed detector N-PS-20064 B69-10101 01</td>
</tr>
<tr>
<td>CHAPMAN, C. P.</td>
<td>Instrument automatically selects peak acceleration signal from several accelerometers JPL-816 B66-10462 01</td>
</tr>
<tr>
<td>CHAPMAN, G. L.</td>
<td>Flexible high-voltage supply for experimental electron microscope ARG-10462 B69-10603 01</td>
</tr>
<tr>
<td>CHAPPELL, E. R.</td>
<td>Mass culture of photobacteria to obtain luciferase GSPC-10563 B67-10294 01</td>
</tr>
<tr>
<td>CHAPPEY, J. H.</td>
<td>Jig and fixture aid fabrication of tungsten rivets LEWIS-185 B67-10101 05</td>
</tr>
<tr>
<td>CHEW, J. C.</td>
<td>Concept for passive system to control gas flow independently of temperature N-PS-902 B66-10343 05</td>
</tr>
<tr>
<td>CHESTER, B. L.</td>
<td>Welding of commercial base plates is investigated N-PS-13464 B68-10192 03</td>
</tr>
<tr>
<td>CHELLEW, R. W.</td>
<td>Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide ARG-10158 B69-10293 02</td>
</tr>
<tr>
<td>CHEW, L.</td>
<td>Fixate element formulation for linear thermonuclear materials NPO-11229 B67-10660 03</td>
</tr>
<tr>
<td>CHEBICK, C. L.</td>
<td>Neon fluoride shows potential as fluorescent agent ARG-113 B67-10185 03</td>
</tr>
<tr>
<td>CHEERY, S. S.</td>
<td>One-dimensional two-phase reacting gas nonequilibrium performance program MSC-11780 B68-10376 06</td>
</tr>
<tr>
<td>CHESTERTON, W. L.</td>
<td>Planetary camera control improves microfiche production NO-1 B65-10313 01</td>
</tr>
<tr>
<td>CHIAO, R. Y.</td>
<td>Optical frequency waveguide and ion transmission system NO-10543 B69-10746 01</td>
</tr>
<tr>
<td>CHIAPUSTA, A.</td>
<td>Polarizing keys prevent mismatch of connector plugs and receptacles MSC-443 B66-10251 01</td>
</tr>
<tr>
<td>CHILDS, J. A.</td>
<td>Accumulator for shaft encoder N-PS-13599 B68-10093 01</td>
</tr>
<tr>
<td>CHILDS, J. B.</td>
<td>Cryogenics of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogen LEWIS-15 B63-10340 05</td>
</tr>
<tr>
<td>CHILDEBAS, A. A.</td>
<td>Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels ARG-232 B67-10032 03</td>
</tr>
<tr>
<td>CHIPMAN, B. L.</td>
<td>Fishing process mills FN 1a-0 Mo alloy steel to precise tolerances MSC-270 B66-10110 03</td>
</tr>
</tbody>
</table>
Bipolar current driver for memory circuits

Chong, C. F.

GSPC-213

B66-10469 01

Auxiliary silver electrode eliminates two-step voltage discharge characteristic of silver-zinc cells

Chryseberg, A. M.

GSPC-169

B64-10114 01

Adhesive for polyester film cures at room temperature, has high initial tack

Christian, C. H.

MFS-938

B66-10847 03

Lathe chuck key incorporates safety feature

Christian, G. L.

MSC-506

B66-10243 05

Magnetic tape transport controlled by rotating transducer heads

Chupit, J.

GSPC-483

B66-10079 01

Battery charge-discharge controller

Ciccauti, A. D.

19136

B69-10747 01

Silver-palladium braze alloy recovered from casting materials

Cierniak, N.

MFS-1845

B66-10631 03

Evaluation of a fluorocarbon plastic used in cryogenic valve seals

Cierniak, R. L.

MFS-18169

B68-10523 03

Detection of effect of deposits on optical windows of pyrometer measurements

Cipolone, P.

LEWIS-10366

B68-10367 01

High energy forging facility

Clayton, E. K.

MFS-14026

B67-10568 05

Xenon forms stable compound with fluorine

Classe, H. H.

I-40-4

B66-10467 03

Switching-type regulator circuit has increased efficiency

Clapp, W. N.

MSC-10664

B67-10190 01

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys

Clark, A. P.

NRC-10554

B69-10707 02

FORTAN program flow chart is automatically produced

Clark, D. J.

MFS-3369

B66-10062 01

Dynamics of moving bubbles in single and binary component systems

Clark, J. A.

MFS-14845

B68-10339 02

Mechanical gauge accurately checks tubing flare, roundness, and concentricity

Clark, L. K.

MFS-1822

B66-10656 05

Performance statistics of the FORTAN 4 /F library for the IBM system/360

Clark, W. A.

ARG-10299

B69-10157 06

Some numerical methods for integrating systems of first-order ordinary differential equations

Clark, W. M.

ASG-10308

B69-10204 02

Computer program provides steady state analysis for liquid propellant propulsion systems

Clark, W. R.

NRC-10064

B67-10414 06

Scrubbable coating for plastic films

Clark, W. R.

MSC-11194

B67-10409 03

Vacuum forming of thermoplastic sheet results in low-cost investment casting patterns

Clark, A. E., Jr

ARC-7

B63-10008 05

A technique for making animal restraints

ARC-25

B63-10564 05

Improved process for epitaxial deposition of silicon on prediffused substrates

Clark, R. G.

MFS-14910

B68-10390 03

Composite seal reduces alkaline battery leakage

Clatterbuck, C. M.

GSPC-137

B65-10271 01

Leakage measuring method

Claussen, E. J.

MFS-14722

B69-10438 01

Double-throw microwave device switches two lines quickly

Clauss, R.

JPL-410

B63-10256 01

Cryogenic waveguide window is sealed with plastic foam

JPL-559

B63-10613 01

Apparatus makes klystron operating frequency adjustable from remote point

Clauss, R. C.

NPO-09831

B67-10514 01

Thermal short improves sensitivity of cryogenically cooled maser

NPO-09975

B68-10059 01

Improved traveling wave maser amplifier

NPO-10548

B68-10244 01

Sweep frequency detector

NPO-10669

B69-10289 01

Simple mechanism combines positive locking and quick-release features

Clayton, R. E.

NLO-4

B66-10467 03

Flare, roundness, and concentricity equations

Cliff, R. A.

MFS-14690

B68-10157 01

Effective seal in hazardous environment

Clune, C. F.

M-FS-14026

B65-10017 01

Low cost SCR lamp driver indicates contents

Clune, C. F.

MSC-10064

B67-10409 01

GPO-10631

B69-10053 01

Interlayer adhesive

Clement, W. G.

I-40-4

B67-10417 03

Technique for measuring magnetic tape

Cleveland, E. P.

MSC-11824

B68-10305 01

Method for predicting frictional loss in metal bellows and flexible hose

Cleveland, J. R.

NFS-5063

B66-10662 05

Novel circuit combines pulse stretcher with NOS gate

Cliff, R. A.

GSPC-167

B64-10150 01

Transistor voltage comparator performs own sensing

GSPC-228

B65-10028 01

Delayed ripple counter simplifies square-root computation

GSPC-398

B65-10393 01

Single circuit performs binary addition and subtraction

GSPC-399

B65-10335 01

Oscillator circuit operates as digitally controlled frequency synthesizer

GSPC-570

B67-10447 01

Low cost SCR lamp driver indicates contents of digital computer registers

GSPC-10221

B67-10656 01

Remotely installed pipe plug provides effective seal in hazardous environment

Clifton, R. F.

NRC-10303

B68-10053 05

Study made of thin-walled pipe response to turbulent fluids

Clint, J. R.

MFS-1321

B67-10518 05

One hundred angstrom niobium wire

Clint, J. R.

LEWIS-10128

B68-10279 03

Stress-corrosion-induced property changes in aluminum alloys

Clifton, L. W.

MFS-20209

B68-10568 03

Niobium thin films are superconductive in low magnetic fields at low temperatures

Cloough, P. J.

JPL-SC-174

B66-10122 02

Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites

EIO-10161

B69-10732 01

A laboratory method for precisely
determining the micro-volume-magnitudes of liquid efflux
ARC-10052  B69-10295  05

COCCOLI, J. D.
Improved gas ring laser
MSC-11584  B68-10304  02
Ring laser angle encoder
MSC-13099  B69-10115  01

COCKS, F. E.
Improved thermal treatment of aluminum alloy 7075
N-FS-20011  B68-10534  05

CODDING, G. C.
Knob linkage permits one-hand control of several operations
MSC-30  B65-10022  05

CODY, W. J., JR.
Performance statistics of the FORTRAN 4 VARI-QUIR
/REKAP/ library for the IBM system/360
ABG-10299  B69-10157  06

COFFEN, R. W.
Mechanisms of superconductivity investigated by nuclear radiation
B67-10057  02

COHEN, D.
Study of actinide chemistry in saturated potassium fluoride solution
ABG-10204  B69-10004  03
Fluid sample collection and storage device
GSFC-10962  B69-10816  05

COHEN, S. E.
Liquid crystal calibrator
M-FS-14511  B68-10221  03

COHEN, C. E.
Encode/Decode facility for FORTRAN 4
JPL-10325  B69-10169  06
Punch-magnet delay eliminated by modification of circuit
ARG-10333  B69-10416  01

COHI, M.
Ferroelectric bolometer measures PE absolute power at submillimeter wavelengths
GSFC-422

COLE, D. C.
Techniques for controlling warpage and residual stresses in welded structures
M-FS-20307  B69-10086  05

COLE, W. T.
Torque meter aids study of hysteresis in motor rings
M-FS-12219  B67-10412  01

COLE, R. T.
PCM magnetic tape system efficiently records and reproduces data
GSFC-375  B65-10311  01
Device measures static friction of magnetic tape
GSFC-10360  B67-10586  03
Helical tape forming device
GSFC-10830  B69-10137  05
Helical recorder
GSFC-10618  B69-10340  01

COLEBEN, E. R.
Study made of explosive cutting in simulated space environments
M-FS-1597  B67-10040  01

COLEMAN, L. F.
Titanium-nitrogen reaction investigated for application to gettering systems
ARC-10208  B68-10414  03

COLETTI, G.
Computer subroutine ISUDS accurately solves large systems of simultaneous linear algebraic equations
NUC-10051  B67-10344  06
Computer program VARI-QUIR 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations
NUC-10052  B67-10345  06
Computer program P1GAS calculates the P-0 and P-1 transfer matrices for neutrons moderating in a monatomic gas
NUC-10141  B67-10678  06
GAMBIT program
NUC-10283  B67-10433  06

COLLINS, D.
Fluid power-transmitting gas bearing
MSC-10079  B68-10097  05

COLLINS, R. E.
Nickel base alloy with improved stress rupture properties
LEWIS-10283  B68-10344  03

COLLINS, R. H.
Test instrumentation evaluates electrostatic hazards in fluid system
M-FS-2277  B67-10145  01

COLLINS, R. J.
New camera tube improves ultrasonic inspection system
ARG-10237  B68-10088  01

COLLINS, G.
Silver-palladium braze alloy recovered from masking materials
M-FS-1845  B66-10631  03

COLLINS, K. V.
Holistic frame facilitates handling of large objects
M-FS-16166  B68-10575  05

COLLINS, K. F.
Electrochemical cell has internal resistive heater element
GSFC-10358  B69-10325  01
Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid
GSFC-10764  B69-10227  05

CONC, D. B.
Imprinting of confining sites for cell cultures on thermoplastic substrates
LANGLEY-10495  B69-10236  04

COTTREY, D. J.
A microalgae technique for the culture of mammalian cells
LANGLEY-10407  B68-10554  04

CONGER, B. R.
Mylar film eliminates silk screening of equipment panels
MSC-798  B66-10455  05

COHN, J.
Device enables measurement of moments of inertia about three axes
GSFC-49  B65-10176  05

COHEN, R. A., JR.
Crystal structure analysis of intermetallic compounds
ABG-10092  B68-10198  03

CONNER, P.
Interferometer construction assures parallelism of critical components
JPL-704  B65-10292  02

CONVERSE, D.
Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
ABG-10220  B69-10211  02

CONRAD, R. W.
Kinetic-energy absorber employs frictional force between mating cylinders
LANGLEY-75  B63-10442  05

CONROY, T. F.
Hollow spherical rotors fabricated by electroplating
JPL-SC-117

CONSTANTA, L. J.
Improved prizer for bonding polyurethane adhesives to metals
M-FS-90591  B69-10540  03

CONWAY, A.
Neutron activation analysis traces copper artifacts to geographical point of origin
ABG-119  B67-10036  02

COOKE, G.
System maintains constant penetration during fusing welding
M-FS-937  B67-10091  01

COOLEY, R. H., JR.
Tool facilitates sealing of metal fill tubes
MSC-24  B63-10519  05

COON, G. W.
Welded pressure transducer made as small as 1/8th-inch in diameter
AC-11  B63-10429  03
Vibrating-resonance electrometer has high
PERSONAL AUTHOR INDEX

CRESHLING, R. P.  B67-10548  01
Computer programs for axial flow compressor design
LEWIS-10765  B69-10174  06

CRIBB, R. E.  B69-10251  01
Low-loss C-band parasitic probe
ESC-05346

CRIDLIEN, R.  B68-10021  02
Optical system facilitates inspection of printed circuit boards
GSFC-09791

CRIDLIEN, J. L.  B67-10516  02
Noise study of single stage compressor rotor-stator interaction
LANGLLEY-137

CRONEWS, W. R.  B68-10003  01
Linear analog dc voltage-to-pulse-width converter
GSFC-956

CROPPS, S. D.  B66-10531  01
Heat flux sensor design reduces extraneous source effects
MSC-400

CROSSLEY, A. P.  B69-10060  01
Optimizing solar-cell grid geometry
HQ-10-147

CROUGHTON, C. R.  B67-10189  03
Iron serves as diffusion barrier in thermally regenerative galvanic cell
ARG-29
Vanadium diaphragm electrode serves as hydrogen diffuser in lithium hydride cell
ARG-10048
Technical report on galvanic cells with fused-salt electrolytes
ARG-10297

CROW, R. B.  B69-10155  01
Wide-band doubler and sine wave quadrature generator
NPO-11133

CROWELL, J. W.  B69-10383  01
Low power heating element provides thermal control during swaging operations
M-FS-687

CROW, D. W.  B66-10206  05
Reinforced thermal-shock resistant ceramics
LANGLLEY-10376

CROWLEY, W. B.  B68-10085  03
Flexible fastener allows thermal expansion
LANGLLEY-60
Flexure support system protects thermally and dynamically loaded models
LANGLLEY-39

CULBERT, R. Y.  B65-10042  05
Calibration of a resistance thermometer down to 0.04 degrees K
ARS-10318

CUMMINGS, A.  B69-10149  01
Concept to standardize space vehicle piggyback experiment modules
M-FS-16977

CUMMINGS, J. Y.  B68-10038  05
System remotely inspects, measures, and records internal irregularities in piping
M-FS-14545

CUMMINGS, P.  B68-10149  01
Torque elements used in effective shock absorber
NCO-114

CUMMINGS, K. E.  B66-10318  05
Shallow grooves in journal improve air bearing performance
LEWIS-10396

CUNNINGHAM, G. H., JR.  B68-10134  05
Design of multilayer insulation systems
ARG-10166

CUPS, D.  B68-10065  05
Holding fixture facilitates pipe threadgage measurements
M-FS-2005

CURY, J. E.  B66-10259  03
Substituted silane-diol polymers have improved thermal stability
M-FS-869

CURY, K. C.  B69-10489  05
Torsional tunnel disconnect
M-FP-10704

CUSHMAN, J.  B66-10677  05
Study made to control depth of potting compound for honeycomb sandwich fasteners
LEWIS-370

D

DADDELMAN, S. M.  B67-10420  02
Concept for cryogenic liquid reclamation system
KSC-10322

DALL, R. H.  B69-10144  05
Advances in aluminum anodizing
M-FS-14600

DANLEY, T. J.  B68-10008  01
Improved phase locked loop receiver
GSFC-09561

DANTON, X.  B69-10153  01
Improved circuit for measuring capacitive and inductive reactances
M-FS-13083

SEISMOGRAPHIC RECORDING OF LARGE ROCKET ENGINE OPERATION
M-FS-20545

DARKER, C. E.  B69-10756  01
Automatic protective vent has fail-safe feature
LANGLLEY-218

DANCZ, W. N.  B69-10674  02
Electron interaction in matter
M-FS-14886

DANE, R. H.  B68-10948  05
Air-cushion lift pad
M-FS-14685

DANIELS, J. A., JR.  B69-10280  06
Master control data handling program uses automatic data input
M-FS-2259

FAST FOURIER TRANSFORM SPECTRAL ANALYSIS
M-FS-10562

DANIELS, G. M.  B69-10434  06
Bellow joint absorbs torsional deflections in duct system
M-FS-882

DARG, R. D.  B69-10664  05
Large seals fabricated from small segments reduce procurement lead time
M-FS-1117

DANIELS, W. M.  B69-10026  05
Method for predicting frictional loss in metal bellows and flexible hose
M-FS-803

PREDICTING FATIGUE LIFE OF METAL BELLOWS
M-FS-14096

DARRELL, W. P.  B69-10026  05
Fatigue failure in metal bellows due to flow-induced vibrations
M-FS-16838

DARRELL, D. W.  B69-10026  05
Liquid mercury chamber and microsyringe designs allow more efficient microinjections
ARG-251

STRATIFICATION OF CENTRIFUGED AMOEBA NUCLEI IN DUCT SYSTEM
M-FS-14096

DARLING, W. H., JR.  B68-10144  04
Torsional tubular disconnect
I-FS-1411

DARLING, W. H., JR.  B66-10662  04
Differential probability method
M-FS-803

DARLING, W. H., JR.  B68-10044  04
Determine deviation of centrifuged amoeba nuclei by electron microscopy
ARG-10161

DARLING, W. H., JR.  B68-10044  04
Locating **sneak paths** in electrical circuitry
M-FS-15016

DAQUIN, A. P., JR.  B67-10213  01
Carrier deviation measured by differential probability method
M-FS-2166

DABSON, D.  B69-10008  01
Twist solution calorimeter determines heats of formation of alloys at high temperatures
ARG-10114

DARK, R. H.  B67-10479  06
FORTRAN 4 program for two-impulse rendezvous analysis
M-FS-13971

DASH, J.  B68-10044  06
General computer program for calculation of radiation from inhomogeneous, nonisobaric, nonisothermal rocket exhaust plume
M-FS-14314

DAVID, J.  B68-10044  06
Swiveling lathe jaw concept for holding
DAVIDSON, J. S.

irregular pieces B66-10321 05

DAVIDSON, J. S.

Chain friction system gives positive, reversible drive B63-10009 05

DAVIES, J. B.

Digital servo readout system increases accuracy of servo-balance scales B67-10496 01

DAVIES, R. K.

Gun facilitates adhesive bonding of studs to surfaces B69-10009 05

DAVIS, B. A.

Computer program for interplanetary conic patching B68-10033 06

DAVIS, E. J.

Pneumatic separator gives quick release to heavy loads KSC-66-10 B66-10294 05

DAVIS, E. K.

Glass formulation has high coefficient of thermal expansion N-9-10084 B66-10705 03

DAVIS, E. W.

Point-source light sensor circuit is insensitive to background light JPL-776 B66-10502 01

DAVIS, R. A.

Effects of heat input rates on T-1 and T-3A steel welds M-PS-2475 B67-10163 03

DAVIS, R. C.

Analysis of flutter in tape transport systems M-PS-11970 B68-10027 01

DAVIS, R. J.

Welding of AM350 and AM355 steel M-PS-2314 B67-10292 05

DAVIS, R. L.

Molibius resistor is noninductive and nonreactive SAE-10020 B68-10267 01

DAVIS, W. T.

System measures angular displacement without contact LASLBT-66 B65-10073 01

DAVISON, D. H.

Improved sensor counts micrometeoroid penetrations LEWIS-76 B63-10443 01

DAVIES, R. W.

Basic suppression techniques are evaluated M-PS-867 B66-10449 01

DAW, S. A.

Mechanical properties of wire insulation automatically determined MSC-10983 B67-10370 01

DAY, D. J.

Computer program samples digital data for CRT display MSC-999 B67-10249 01

DAY, J. L.

Improved electrode gives high-quality biological recordings MSC-17 B64-10025 04

Rugged pressed disk electrode has low contact potential MSC-158 B65-10320 01

Improved electrode paste provides reliable measurement of galvanic skin response MSC-146 B66-10049 04

DAY, W. E.

Voltage regulator/amplifier is self-regulated MSC-1240 B67-10156 01

DAYAL, Y.

Hydrogen peroxide etching proves useful for germanium ABC-10170 B68-10454 03

DAYAN, V. H.

Sliffer used as portable hydrogen leak detector M-PS-886 B66-10356 01

DE ANGELES, E. A.

A 35 GHz solid state transmitter/driver M-PS-20152 B68-10545 01

DE ANGELO, P. T.

Tool for reading psychrometric charts KSC-10358 B69-10527 05

DE BARNARD, R.

Torque wrench allows readings from inaccessible locations M-PS-598 B66-10204 05

DE BOSS, W. E.

Bistable devices help maintain constant sealing force down to cryogenic temperatures M-PS-800 B66-10325 02

DE CARLO, S.

Silver-palladium braze alloy recovered from masking materials M-PS-1685 B66-10631 01

DE FOREST, W. S.

Corrosion of aluminum alloys by chlorinated hydrocarbon/methanol mixtures MSC-11325 B67-10442 03

DE FURIA, R.

Fluid power-transmitting gas bearing B68-10503 05

DE GAUTAM, S. A.

Cryogenic seal concept for static and dynamic conditions M-PS-12986 B67-10673 05

DE GREIER, D. J.

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum ARG-109 B66-10499 02

DE LAAT, P.

Sea dye marker provides visibility for 20 hours ARG-718 B66-10313 03

DE PERRY, T.

High frequency wide-band transformer uses coax to achieve high turn ratio and flat response ARG-107 B66-10600 01

DE SOTO, S.

Plume radiation program M-PS-13202 B68-10447 06

DE VOLPI, A.

Fast framing cameras provide high-speed multi-channel data recording ARG-10052 B69-10102 02

Manganese-56 coincidence-counting facility M-PS-90261 B69-10521 01

DE VOTO, H. J.

Portable display paneling has wide use, easy take down and assembly ABC-17 B63-10435 05

DE VRIES, H. R.

Technique increases storage capacity in camera tube target MSC-11599 B68-10213 01

DE WAARD, R.

Electrically conductive fibers thermally isolate temperature sensor GSC-456 B66-10349 01

DE WITT, R. L.

Quick-disconnect coupling safe transfer of hazardous fluids LEWIS-125 B65-10202 01

DE WITT, E. Z.

Roll diffusion bonding of titanium alloy panels M-PS-14743 B68-10161 05

DE WYS, R. C.

Preferred-orientation analysis of polycrystalline materials SPO-10604 B69-10336 02

DE BOO, G. J.

Miniature electrometer preamplifier effectively compensates for input capacitance ABC-69 B66-10549 01
DILTS, R. V.
DILTS, R. V.
DIMEPF
DITTRICE
DIII.
DIPPLE
DODDS
DOBBIUS
DIXOB
DISNEY
DINKEL

DILTS, R. V.
DILTS, R. V.
DIMEPF
DITTRICE
DIII.
DIPPLE
DODDS
DOBBIUS
DIXOB
DISNEY
DINKEL.

DIXOB,
DOBBELLY,
DOIEREST,
DOLIBSEEK,
DOLAUD,
DOEDE.

DODGE,
Capacitance-coupled wiper increases Amplifier
Vibrating-membrane electrometer has high
Automatic patient respiration failure
Cryogenic liquid level measuring probe
Reference black body is compact, convenient to
Status of ultrachemical analysis for
Simplified method measures changes in
SOC-DS
Synthesis of calculational methods for design
Computer program determines vibration in
Simple, nondestructive test identifies metals
A comparison of two methods of measuring
electrohydraulic system increases accuracy
Improved active vibration isolator
Rapid system automatically provides dynamic
Evaluation of high temperature stranded
Contact stresses calculated for miniature slip
Evaluation of high temperature stranded

DIXOB,
DOBBELLY,
DOIEREST,
DOLIBSEEK,
DOLAUD,
DOEDE.

DODGE,
Capacitance-coupled wiper increases Amplifier
Vibrating-membrane electrometer has high
Automatic patient respiration failure
Cryogenic liquid level measuring probe
Reference black body is compact, convenient to
Status of ultrachemical analysis for
Simplified method measures changes in
SOC-DS
Synthesis of calculational methods for design
Computer program determines vibration in
Simple, nondestructive test identifies metals
A comparison of two methods of measuring
electrohydraulic system increases accuracy
Improved active vibration isolator
Rapid system automatically provides dynamic
Evaluation of high temperature stranded
Contact stresses calculated for miniature slip
evaluation of homogeneous

E-PS-Z~O
J.
R.
6.
J.

E-PS-Z~O
J.
R.
6.
J.
DUNN, C. W., JR.
Solution of differential equations by application of transformation groups.

LEWIS-10483

DURKIN, D. R.
Computer programs perform spectral analyses of up to seven time series.

LEWIS-10345

DURBAN, R. W.
New class of thermosetting plastics has improved strength, thermal and chemical stability.

LEWIS-10100

DUCLOS, R. A.
Vapor grown silicon dioxide improves transistor base-collector junctions.

GSFC-289

DUGGER, G.
Nonreciprocional gain control for ring laser.

M-P-13041

DUFOUR, G.
Acid spray technique applies aluminum alloy materials without immersion.

M-BS-12500

DUMBER, P. R.
Insulation for cryogenic tanks has reduced thickness and weight.

M-P-326

DUNBAR, W. M.
Improved strain-wire flowmeter has fast response time.

LWTS-241

DUNCAN, A. C.
Soluble undercoating facilitates removal of foamed-in-place insulation.

LEWIS-193

DUNCAN, J. G.
A simplified PERT system.

M-P-2267

DUNDERLEY, J. C.
Argon-lithium alloys developed for low temperature use.

M-P-1541

DUNLAVY, A. M.
Heat-load simulator for heat sink design.

MSC-15170

DUNN, J. D.
Gas diffuser facilitates withdrawal of cryogenic liquids from tanks.

M-P-915

DUM, R. D.
Small, low power analog-to-digital converter.

M-PS-13994

DUNN, S. T.
Ellipsoidal-mirror reflectometer accurately measures infrared reflectance of materials.

GSFC-566

DURAM, W. A.
Apparatus enables accurate determination of alkali oxides in alkali metals.

LEWIS-256

DURACH, R. P.
Neutron detector simultaneously measures fluence and dose equivalent.

ARG-10071

DUGGER, A. E.
Crystal structure analysis of intermetallic compounds.

ARG-10094

DYK, R. A.
An investigation of phase-lock loop swept-frequency synchronization.

M-P-656

DYER, A. JR.
Weight Control System.

M-P-15028

DYER, W. F.
Neutron detector simultaneously measures fluence and dose equivalent.

ARG-10071

DYER, M. C.
Coldplate of pin fin design makes efficient heat exchanger.

MSC-1093

EAGLE, K. S.
New method for critical failure prediction of complex systems.

M-P-14133

EBBENA, B. T.
Refractory metal shielding/insulation/ increases operating range of induction furnace.

LEWIS-202

Eagle, E. F.
Diaphragm valve for corrosive and high temperature fluid flow control has unique features.

LEWIS-304

ECHENBRENNER, F. P.
Infrared shield facilitates optical pyrometer.

LEWIS-10073

ECHENBRENNER, F. P.
Refractory metal shielding/insulation/ increases operating range of induction furnace.

LEWIS-202

ECHENBRENNER, F. P.
Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts.

M-P-13058

ECKETT, R. W.
Cracks in glass electrical connector headers removed by dry blasting with fine abrasive.

LEWIS-381

ECKLES, P. W.
High-speed furnace uses infrared radiation for controlled brazing.

N-0047

EDEN, R. F.
Experiments to investigate particulate materials in reduced gravity fields.

M-P-13308

EDWARDS, O. H.
Self-balancing beam permits safe, easy load handling under overhang.

M-BS-94

EDWARDS, R. E.
Mass-spectrometric study of the rhenium-oxygen system.

ARG-10421

EGGENBERGER, R. A.
General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions.

M-PS-13094

EGGENBERGER, E. W.
Electronic gating circuit and ultraviolet laser excitation permit improved dosimeter sensitivity.

ARG-10109

EGGENBERGER, E. W.
Remote balance weighs accurately and high radiation.

ARG-10387

EGGERS, P. E.
Segmented SiGe-PhTe couples.

GSFC-10746

EHRHARDT, W. R., JR.
Space-saving hoist for tank manholes.

M-P-16508

EICHEM, T.
Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts.

M-P-13058

EICKLES, P. W.
High-speed furnace uses infrared radiation for controlled brazing.

N-0047
<table>
<thead>
<tr>
<th>Personal Author Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELSEH, A. R.</td>
</tr>
<tr>
<td>ELSEH, S. T.</td>
</tr>
<tr>
<td>ENAWELSON, R. C.</td>
</tr>
<tr>
<td>ENGEBL, R. E.</td>
</tr>
<tr>
<td>ENGEL, J.</td>
</tr>
<tr>
<td>ENGELHART, R. C., JR.</td>
</tr>
<tr>
<td>EPSTEIN, J.</td>
</tr>
<tr>
<td>EPSTEIN, A.</td>
</tr>
<tr>
<td>EPSTEIN, D.</td>
</tr>
<tr>
<td>EPSTEIN, H.</td>
</tr>
<tr>
<td>BRILL, B.</td>
</tr>
<tr>
<td>BRILL, A. L.</td>
</tr>
<tr>
<td>BRADMAN, C. A.</td>
</tr>
<tr>
<td>BRADMAN, D. C.</td>
</tr>
<tr>
<td>BRADMAN, D. C.</td>
</tr>
<tr>
<td>BRADMAN, E. B.</td>
</tr>
<tr>
<td>BRADMAN, R. C.</td>
</tr>
<tr>
<td>BOWERS, J. D.</td>
</tr>
<tr>
<td>BOWERS, J. D.</td>
</tr>
<tr>
<td>BOWERS, W. T.</td>
</tr>
</tbody>
</table>
Dispersion of borax in plastic is excellent
Electron beam recrystallization of amorphous
Improved solenoid valve design
Solar-angle sensor has no moving parts
Multichannel pulse height analyzer is
Electronic visualization of gas bearing
Modified gas bearing is adjustable to optimum
Modified borax in plastic is excellent
Development of mechanized ultrasonic
Electronic visualization of gas bearing
Multichannel pulse height analyzer is
Solar-angle sensor has no moving parts
Simple optical system used to align
defined contour projector makes excellent
contour densitometer
Rotating filters permit wide range of optical
Fluid power-transmitting gas bearing
Modified McLeod gage records automatically
Torque wrench designed for restricted area
High- and low-pressure pneumotachometers
Unijunction frequency divider is free of
Ring counter circuit switches multiphase

JPL-SC-166 866-10101 01
ION exchange determines iodine-131
concentration in aqueous samples
Direct determination of lead-210 by
Fatigue failure in metal bellows due to
Nitrates-organic mixtures surveyed for
Method for removing surface-damaged layers
Improved wire matrix uses very little
Improved nickel plating of Inconel X-750
Modification to improve self-isolating
Simple scale interpolator facilitates reading
Improved nickel plating of Inconel X-750
Surface-crack detection by microwave methods
Preparation of silver-activated zinc sulfide
Electrolytic separation of crystals of
Surface-crack detection by microwave methods
Separation of the rare earths by
Nitric acid-organic mixtures surveyed for
Fatigue failure in metal bellows due to
Iodine-121
Iodine-131
Reduction of alkali earth metals
Glass-organic mixtures surveyed for
Flow-induced vibrations
Iodine-131

FRC-10017 867-10549 06
thick sections of Hastelloy-X
M-PS-10048

FLETCHER, R. E.
Study to minimize hydrogen embrittlement of ultrahigh-strength steels
M-PS-2505
B67-10194 03

FLETCHER, R. E.
Literature review on pickling inhibitors and cadmium electroplating processes
M-PS-14142
B69-10606 03

FLETCHER, J. H.
Wall-thickness changes predicted in hollow-drawn tubing
ARG-10425
B69-10428 02

FLOWER, J. F.
Bimetal alloy potting seals aluminum connector in cryogenic application
WOO-260
B66-10138 03

FLOYD, L. E.
Single-source mechanical loading system produces biaxial stresses in cylinders
M-PS-12530
B67-10380 05

FLOYD, L. E.
High impact pressure regulator withstands impacts of over 15,000 g
WGO-10175
B67-10274 01

FOLLEY, J. T.
Environmental test planning, selection and standardization aids available
SAM-10228
B68-10445 06

FOLLEY, R. T.
Study of thermal effects on nickel-cadmium batteries
GSPC-10003
B67-10614 01

FOLLEY, R. T.
Improved calorimeter provides accurate thermal measurements of space batteries
GSPC-10003A
B67-10615 01

FOLLET, W. H.
Temperature transducer has high output, is time stable
GSPC-446
B65-10362 01

FORD, A. G.
Electrochemically operated camera shutter provides uniform exposure
JPL-357
B63-10227 01

FORD, A. G.
Compact actuator converts rotary to linear action
JPL-786
B66-10265 05

FORD, P.
Charge control of nickel-cadmium batteries by coulometer and third electrode method
GSPC-10687
B68-10431 01

FORD, P. E.
Recharge unit provides optimum recharging of battery cells
GSPC-10690
B68-10273 01

FORD, P. E.
Electrochemical cell has internal resistive heater element
GSPC-10356
B68-10325 01

FORD, R.
Metals plated on fluorocarbon polyzers
JPL-564
B63-10612 03

FORRENN, W.
Laser Doppler flowmeter measures gas velocity
M-PS-1747
B66-10693 02

FORGE, D. A.
Fiber glass prevents cracking of polyurethane foam insulation on cryogenic vessels
M-PS-20058
B68-10410 02

FORGE, K. G.
Digital system provides superregulation of nanosecond amplifier-discriminator circuit
ABO-61
B66-10500 01

FORRENN, R. A.
Tool pre-tensions covers prior to lacing
MSC-631
B66-10301 05

FORRENN, R. A.
Thin film process forms effective electrical contacts on semiconductor crystals
M-PS-2363
B67-10142 01

FORRENN, R. A.
Process facilitates photosensitive mask alignment on Si crystals
M-PS-2394
B67-10144 01

FORSTER, G.
Improved electromechanical master-slave manipulator
ABO-10027
B66-10372 05

FORSTER, A. K.
Device disconnects several couplings simultaneously
JPL-226
B65-10163 05

FOSTER, R. J.
IR vidicon scanner monitors many test points
M-PS-1937
B67-10277 01

FOSS, R.
Rectangular configuration improves superconducting cable
ARG-90088
B68-10908 02

FOSTER, D. L.
Plant respirometer enables high resolution of oxygen consumption rates
ARG-10406 04

FOSTER, J. N.
Analytical technique characterizes all trace contaminants in water
MSC-11032
B67-10243 03

FOSTER, L. E.
Compact SCR trigger circuit for ignitron switch operates efficiently
M-PS-371
B65-10347 01

FOSTER, M. S.
Two systems developed for purifying inert atmospheres
ARG-10234
B65-10026 03

FOWLER, E. G.
Technical report on galvanic cells with fused-salt electrolytes
ARG-10297
B69-10155 01

FOWLER, E. G.
Self-discharge in bimetallic cells containing alkali metal
ARG-10347
B69-10631 01

FOSTER, G.
Dielectric materials for use in thin-film capacitors
M-PS-20471
B69-10387 02

FOUTS, L.
Tool post modification allows easy turret lathe cutting-tool alignment
M-PS-581
B66-10191 05

FOWLES, P.
Nickel thin films are superconductive in strong magnetic fields at low temperatures
JPL-SC-174
B66-10122 02

FOWLES, V. J.
Digital laser-beam deflection sensor
M-PS-14785
B68-10525 01

FOX, R. A.
Metal flame spray coating protects electrical cables in extreme environment
MSC-10077
B67-10351 03

FOL, T. I.
Long-term data storage and retrieval system, a concept
M-PS-14789
B68-10505 01

FRAK, A. J.
Rectilinear display gives acceleration load factor and velocity information
MSC-1045
B67-10248 01

FRAK, A.
Regenerative fuel cell combines high efficiency with low cost
MSC-15002
B68-10403 06

FRAK, R.
Laminated plastics
MSC-10018
B67-10383 03

I-769

FRANKOWSKI, J.
FRASER, D. C.

FRASER, D. C.
New technique for optimal smoothing of data
MSC-11354 B68-10060 02

FRASER, G. F.
Friction brake cushions acceleration and vibration loads
MSC-715 B66-10608 05

FRAY, J. D.
Metallic diffusion measured by a modified Frenkel technique
HQ-10145 B69-10309 03

FRASE, K. E.
Dial-purpose chamber-cooling system
PR-B-10467 B66-10506 02

FRANCES, J. C.
New cobalt alloys have high-temperature strength and long life in vacuum environments
LEWIS-47 B63-10351 03

Fatigue cracks detected and measured without test interruption
LEWIS-266 B66-10178 02

Nickel-base superalloys developed for high-temperature applications
LEWIS-226 B66-10222 03

High strength nickel-base alloy with improved oxidation resistance up to 2200 degrees F
LEWIS-10115 B68-10094 03

Nickel-base superalloys' excellent properties prompted its service to 2200 degrees F
LEWIS-10355 B68-10380 03

High strength, superplastic superalloy
LEWIS-10805 B69-10293 03

Improved high-temperature-strength nickel-base superalloy
LEWIS-10874 B69-10352 03

FREDERICK, S. F.
Study made of ductility limitations of aluminum-silicon alloys
M-75-12524 B67-10392 03

FREDERICK, R. W.
Ion mass spectrometer for special uses
HQ-10418 B69-10510 02

FREEMAN, R.
Radial coolant channels fabricated by simplified method
NU-00797 B66-10267 05

FREEMAN, R.
Compact monitoring and control console for pressurized gas bottles
M-75-14674 B68-10401 05

FREEMAN, R.
Method of welding joint in closed vessel improves quality of seam
JEL-170 B63-10139 05

Device measures fluid drag on test vehicles
LANGLEY-34 B65-10195 01

FREEMER, A.
Fast-response cup anemometer features cosine response
ARG-90193 B68-10202 01

FRAY, A. H., JR.
Simultaneous message framing and error detection
MSC-12001 B68-10330 01

FRAY, R. N.
One-dimensional reacting gas nonequilibrium performance program
MSC-11777 B68-10375 06

One-dimensional two-phase reacting gas nonequilibrium performance program
MSC-11780 B68-10376 06

FREDERICK, R.
VISI-DIGITAL image processing system
MDO-10770 B69-10139 06

FREDERICKS, J. E.
Semiconductor forms biomedical radiation probe
MSC-320 B66-10254 02

FREEDMANN, A.
Neutron activation analysis traces copper artifacts to geographical point of origin
ARG-119 B67-10036 02

FREEDMANN, R. B.
Electronic load for testing power
generating devices
NPO-10350 B68-10203 01

FREEDMANN, R. A.
Computer program determines exact two-sided tolerance limits for normal distributions
NPS-18045 B66-10158 06

FRIEND, L. C.
Rugged switch responds to minute pressure differentials
NPS-12704 B67-10389 01

FRIEND, W. E.
A piezo-bar pressure probe
LEWIS-593 B67-10259 01

FREGER, W. A.
Granul phthalocyanines show promise in the treatment of brain tumors
ARG-100 B67-10188 04

Simple colorimetric method determines uranium in tissue
ARG-10039 B67-10580 03

Low scatter lightweight fission spectrometer constructed for biological research
ARG-10094 B68-10174 02

Cerium and ferrous dosimeters show precision for 50-5000 rad range
ARG-10173 B68-10146 02

Computer grading of examinations
ARG-10269 B69-10159 06

Neutron therapy of cancer
ARG-10310 B66-10203 04

Automatic bird watcher
ARG-10342 B69-10286 02

FROELICH, J. A.
Self-actuating grapple automatically engages and releases loads from overhead cranes
ARG-81 B66-10522 05

FRONBOLD, W. T., JR.
Dielectric materials for use in thin-film capacitors
M-75-20471 B69-10387 02

FROST, R. R.
Evaluation of magnetic materials for static inverters and converters
LEWIS-10343 B66-10306 01

FRY, R. J. M.
Foot-operated cell-counter
ARG-10315 B69-10351 01

FYFE, T. R.
Miniature bioelectric device accurately measures and telemeters temperature
ARC-52 B66-10057 01

Miniature telemetry system accurately measures pressure
ARC-74 B66-10624 04

Multichannel implantable telemetry system
ARC-10083 B68-10665 01

FUCHS, C. M.
Inexpensive cryogenic insulation replaces vacuum jacketed line
MUC-10061 B67-10264 02

FURR, L. B.
Special mandrel permits uniform welding of out-of-round tubing
M-75-706 B66-10323 05

FULK, N. R.
Special coatings control temperature of structures
GSPC-444 B65-10337 03

FULLERTON, D. R.
Small, low power analog-to-digital converter
NPS-13954 B68-10016 01

FULTON, W. C.
Instrument calibrates low gas-rate flowmeters
MSC-136 B65-10137 01

FUNK, G. H.
O-rings with mylar back-up provide high-pressure cryogenic seal
M-75-503 B66-10278 05

FURCIA, A.
Circuit multiplies pulse width modulation, exhibits linear transfer function
HQ-56 B67-10055 01

FULG, N. E.
Wear studies made of slip rings and gas bearing components
M-75-12882 B67-10403 05
PERSONAL AUTHOR INDEX

PARK, H. B.
Between-bearing shaft seal, a concept
M-PS-15179 B68-10286 05

PARK, H. P.
Magnetic forming studies
M-PS-14217 B68-10186 02

PASCO, B. C.
Security warning system monitors up to fifteen remote areas simultaneously
KSC-66-39 B66-10548 01

PATE, W. M.
Adhesive for polyester film cures at room temperature, has high initial tack
M-PS-19536 B66-10487 03

PUTMAN, S. W., JR.
Computer program for off-design performance of radial inflow turbines
LEWIS-10764 B69-10267 06

GAAL, A. E.
System transmits mechanical vibration into hazardous environment
SU-0025 B65-10248 05

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers
KCC-10024 B67-10664 05

GAAL, F. S.
Measuring thermal expansion of multiple specimens at high temperature
KSC-10153 B68-10122 05

GADK, J. D.
Characteristics of fluidized-packed beds
ARG-10049 B68-10278 03

An investigation of particle mixing in a gas-fluidized bed
ARG-1018 B68-10407 05

GABRIEL, C. F.
Airborne Fraunhofer Line Discriminator
LEWIS-10594 B69-10594 02

GAJ, E. F.
Apparatus enables accurate determination of alkali oxides in alkali metals
LEWIS-256 B66-10296 03

GAIN, P.
Improved method facilitates debulking and curing of phenolic impregnated asbestos
MSC-149 B66-10459 05

GALAN, L.
Lateral ring metal elastic wheel absorbs shock loading
M-PS-1312 B66-10663 05

GALL, L. S.
Automated microorganism Sample Collection Module
HQ-10223 B69-10223 04

GALLAGHER, R. C.
Diffusion technique stabilizes resistor values
MSC-250 B66-10142 01

Conceptual techniques for reducing parasitic current gain of lateral pnp transistors
M-SC-1319 B66-10244 01

Lateral NPN bipolar transistor with aiding field diffusions
MSC-10743 B69-10741 01

GALLAGHER, L. J.
Solution of differential equations by application of transformation groups
M-PS-14802 B68-10276 02

GALLAT, R. H.
Ronchi test applied to measurement of surface roughness
M-PS-1253 B67-10663 02

GALLK, A. J.
Design for a rapid automatic sync acquisition system
M-SC-10214 B69-10538 01

GALVIN, D.
Self-shielding printed circuit boards for high frequency amplifiers and transmitters
HQ-10133 B69-10314 01

GANTZ, A. M.
Device to color modulate a stationary light beam gives high intensity
EQ-64 B66-10476 01

GARDNER, D. H.
Recording blocks speed production of strain gage grids
LEWIS-162 B65-10009 05

GARDNER, J. M.
Technique cuts time and cost of bending jacketed piping
SSC-333 B67-10108 05

GARBIEN, A.
Miniature backward-diode pressure sensor features stability and low power consumption
ERC-10229 B69-10690 01

GARNER, D. P.
Survey of gas-safe electrical noise affecting radio broadcasting
HQ-10250 B69-10308 01

GARBARD, A. H.
Simple circuit produces high-speed, fixed duration pulses
GSPC-285 B65-10228 01

Threshold detector produces narrow pulses at high repetition rates.
GSPC-343 B65-10310 01

GARRETT, J. S.
New nut and sleeve improve flared connections
JPS-194 B65-10180 05

GARRETT, J. A.
Computer program utilizes FORTRAN 4 subroutines for contour plotting
M-PS-1027 B67-10323 06

GARRETT, A. J.
Microlineaire thermocouple monitors own installation
M-PS-1111 B66-10463 05

GARWOOD, D. C.
Ionization vacuum gage starts quickly, is unaffected by spurious currents
JPL-304 B65-10036 02

GASKELL, J. B.
CIHD - Chrysler Improved Numerical Differentiation Analyzer computer program
E-PS-2298 B67-10278 06

GATES, D. W.
Properties of optics at high temperature and their measurement, a study
M-PS-14696 B68-10240 02

GATES, G. B.
Single projector accommodates slides of different size and format
GSPC-939 B66-10106 02

GARCIA, G. A.
Piggy-back mounting would increase microcircuit packaging density
M-PS-12059 B68-10114 01

GAUL, L. C.
Fluid check valve has fail-safe feature
JPL-0019 B65-10207 05

GAUL, J.
Continuous internal channels formed in aluminum fusion welds
M-PS-2399 B67-10183 05

GAY, E. H.
Preparation of superconducting thin films of transition-metal interstitial compounds
HQ-10485 B69-10470 01

GAY, R. C.
Flow properties of suspensions rich in solids
ARG-10481 B69-10622 02

GEAR, C. W.
Numerical integration of ordinary differential equations of various orders
ARG-10247 B69-10089 02

GERBER, V.
Improved fluid control circuit operates on low power input
LEWIS-325 B67-10042 01
GEBBEN, V. D.
Cardiac R-wave detector
LEWIS-10394

GEBBEN, V. D.
Study of high-speed angular-contact ball bearings under dynamic load
NPS-20562

GEBRIDEIAN, W. A.
High intensity radiation heat source is capable of sustained operation
ARC-61

GEBREANDT, V. R.
A new shock absorber features varying yield strengths
MSC-63A

GEBRSTEIN, R.
Design of fluid-duct bends with low pressure losses
NPS-20176

GERSCHEL, D. S.
On-line computer system for use with low-energy nuclear physics experiments is reported
ASA-10257

GEREB, T. R.
Hoist is automatically stopped at low deceleration rate
NPS-16496

GEORGE, T. V.
Automatic telemetry checkout system
NPS-12580

GERA, J., Jr.
Proposed technique for vertical alignment of a crane cable
NPS-16496

GEBREH, E. J.
Tungsten insulated susceptor cup for high temperature induction furnace eliminates contamination
LEWIS-298

GERACHE, E.
Design of fluid-duct bends with low pressure losses
NPS-20176

GERLACH, D.
Self sealing disconnect for tubing forms metal seal after breakaway
JPL-354

GERHART, A.
Computer program aids dual reflector antenna system design
NPS-10501

GERHARD, E.
Fluid properties handbook
NPS-13462

GERSTEIN, E.
Evaluation of ignition mechanisms in selected nonmetallic materials
MSC-11645

GIAMBERGUGLIO, A.
Scanning means for Cassegrainian antenna
JPL-960

GIBBON, C. P.
Grain-boundary migration in KCl bicrystals
AGU-10161

GIBBON, C.
Computer program ETC improves computation of elastic transfer matrices of Legendre polynomials P/0 and P/1
NRC-10070

GIBBON, C. P.
Computer program /P/0-GAS/ calculates the P-0 and P-1 transfer matrices for neutron moderation in a monatomic gas
NRC-10070

GIBBON, C. P.
Computer program calculates transient and steady-state temperature prediction for complex body shapes
MSC-999

GIBBON, C. P.
Improved junction lead inductance ballasts high-frequency transistors
GSPC-387

GILCHRIST, C. N.
Estimation of signal-to-noise ratios
INF-05254

GILL, W. L.
Mechanical properties of wire insulation automatically determined
MSC-10983

GILL, J. B.
On-line computer system for use with low-energy nuclear physics experiments is reported
ASA-10257

GIL,B, J. E.
Hoist is automatically stopped at low deceleration rate
NPS-16496

GILBERT, R. W.
Temperature or pressure controller
LEWIS-10297

GILL, J. B.
Monitoring circuit accurately measures movement of solenoid valve
NPS-1829

GILL, J. B.
Monitoring circuit accurately measures movement of solenoid valve
NPS-1829

GILLETT, J. B.
Monitoring circuit accurately measures movement of solenoid valve
NPS-1829

GILL, J. B.
Monitoring circuit accurately measures movement of solenoid valve
NPS-1829

GILKIN, R. G.
Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
MSC-781

GILLIS, W. R.
Closed circuit TV system monitors welding operations
MSC-11002

GILMORE, J. P.
Conceptual nonorthogonal gyro configuration for guidance and navigation
MSC-11363

GILMORE, J. P.
Integral valve provides automatic relief and remote venting
NPS-12134

GILMORE, J. P.
Servo calorimeter measures material heating rate
MS-0024

GILMORE, J. P.
Transistor circuit increases range of logarithmic current amplifier
BO-0018

GILROY, J.
New electron microscope exploits new video display technique
ARC-158

GILROY, J. P.
Fire retardant foams developed to suppress fuel fires
ARC-10098

GILROY, J. P.
Gas radiation characteristics of plutonium dioxide fuel
BO-11220

GIOVANNETTI, A.
High-temperature, high-pressure spherical segment valve provides quick opening
ARC-13

GIZZITARDELLI, L. G.
Diffusion bonding makes strong seal at flanged connector
NPS-637

GIULIANNI, M. W.
Diffusion technique stabilizes resistor values
MSC-205

GIVENS, W. W.
Dual-mode operation of a neutron source, a concept
HE-1006

PERSONAL AUTHOR INDEX
GLACKIN, J. J.  Beryllium fastener technology B69-10019 05
GLASSER, P. E.  Experiments to investigate particulate materials in reduced gravity fields H-PS-13308 B67-10394 02
GLASSON, V. L.  Fluid behavioral patterns found in submucosal growing study H-PS-13582 B67-10462 02
GLASEE, L. P., JR.  Weld procedure produces quality welds for thick sections of Hastelloy-X H-PS-10688 B67-10195 05
Hastelloy X properties, data, and metallurgical characteristics H-PS-10302 B68-10023 03
GLATT, C. R.  Computer program for parameter optimization ARC-10168 B68-10453 06
GLAUCE, R. H.  Camera mount for close-up stereo photographs LANGLEY-10462 B69-10326 02
GLAUDE, R. D.  Method reduces computer time for smoothing functions and derivatives through ninth order polynomials H-PS-10334 B69-10524 06
GLAWI, G. M.  A mass flux probe for measurement in a supersonic stream LEWIS-10695 B68-10533 02
Combination probe for airflow measurements LEWIS-10281 B68-10558 01
GLERMES, W. N.  Resistance heating releases structural adhesive H-PS-1607 B67-10045 05
GLICH, C. G.  Tool forms right angles in component leads H-PS-722 B68-10346 05
UV detector monitors organic contamination of optical surfaces LEWIS-10286 B68-10413 01
GLICH, D. C.  Transducer measures force in vacuum environment LEWIS-218 B66-10161 01
Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment LEWIS-359 B66-10676 05
Bearings use dry self-lubricating cage materials LEWIS-10432 B68-101865 05
GLIEHREY, A. J.  A device for obtaining separation of oxygen LANGLEY-11007 B69-10477 01
GOODWIN, W. W.  Technique for highly efficient recovery of microbiological contaminants MSC-113250 B69-10273 04
GOODWIN, H. Improved head-controlled TV system produces high-quality remote image ARG-128 B67-10317 01
Improved electromechanical master-slave manipulator ARG-10027 B68-10372 05
GOODFORD, G. H.  Safety yoke would protect construction workers from falling MSC-10075 B67-10445 05
GOLDBERG, F. N.  Real fluid properties of normal and parahydrogen LEWIS-10438 B68-10361 06
GOLDBERG, J.  Simplified circuit corrects faults in parallel binary information channels JPL-SC-090 B66-10261 01
GOLDEN, G. H.  Thermophysical properties of sodium ARG-10363 B68-10240 03
GOLDING, C.  Continuity tester screens out faulty socket connections JPL-596 B64-10065 01
GOLDSMAN, A.  Cage off 6.5 per cent Si-Fe sheet in chemically reduced H-PS-537 B66-10544 03
GOLDSMAK, R. E.  Circuit improvement produces monostable multivibrator with load-carrying capability GSCC-294 B65-10011 01
GOLDSMITH, R. Threaded pilot insures cutting tool alignment H-PS-527 B66-10074 05
GOLDSTEIN, B. Simplified method introduces drift fields into cells H-PS-572 B67-10102 03
GOLDSTEIN, R. A.  Combination ranging system and mapping radar H-PS-11001 B69-10325 01
GOLDSWORTHY, W. W.  Pulse-height analyzer with digital readout ARG-10003 B69-10400 04
GOLLING, T. E.  Internal machining accomplished at constant radii H-PS-1573 B66-10546 05
GOODRICH, S. W.  Logic realization of simple majority voting connectives JPL-727 B67-10511 06
GOODWIN, T. J.  Large capacitor performs as a distributed parameter pulse line LEWIS-176 B66-10291 01
GOODWIN, J. T.  Saran film is fire-retardant in oxygen atmosphere MSC-11604 B68-10177 03
GORDON, R. J.  Midcourse maneuver operations program WPO-10735 B69-10105 06
GORDON, S.  Computer program determines chemical equilibria in complex systems LEWIS-281 B66-10671 01
Computer program for calculation of ideal gas thermodynamic data LEWIS-10254 B68-10025 06
GORDON, W. A.  Control apparatus for spectral energy source LEWIS-391 B67-10401 01
GODSET, S.  Special purpose reflectometer uses modified ultrahigh vacuum system MSC-1133 B67-10109 02
The Quantasy, an improved quantum detector EEC-10148 B69-10443 01
GOSPELL, R. E.  Composite gaskets are compatible with liquid oxygen, resist compression set H-PS-455 B66-10395 03
GOSSELL, C. N.  Special treatment reduces helium permeation of glass in vacuum systems H-PS-455 B66-10395 03
GOTTWALD, W. L.  Abrasion and resistant discharge valve developed ARG-10219 B69-10044 05
GOVINDREDD, R. L.  Plug replaces weld filler as seal in complex casting NO-0089 B66-10489 05
GOYERDEW, R. E.  Superconducting switch permits measurement
of small voltages at cryogenic temperatures

GBACEY, B.
Beryllium fastener technology
M-PS-20306

B68-10087 01

GBRAH, J. W.
Apparatus enables accurate determination of alkali oxides in alkali metals
LAW-256

B66-10296 03

GBRAB, J.
Square tubing reduces cost of telescoping bridge crane hoist
ARG-13

B67-10293 05

GRACCI, C. B.
Thermocouple-flexible cable connector insulator is highly reliable
MU-0082

B66-10709 01

GRAY, E. N.
Improved VHF direction finding system
M-PS-20435

B69-10378 01

GRAFF, C. B.
Zinc-oxygen primary cell yields high energy density
M-PS-14661

B68-10218 01

GRAYTHORP, E.
Fluidic-thermochromic display device
ERC-10031

B68-10350 01

GRAHAN, H. L.
Simplified system displays complex curves corresponding to input data
HQC-10073

B69-10247 01

GRAHAN, N. D.
Automated microorganism Sample Collection Module
HQC-10421

B69-10223 04

GRAHAN, O.
Pneumotachometer counts respiration rate of human subject
HSR-92

B64-10259 01

GHALON, J. E.
Maintainability methodology and maintenance analyses
M-PS-10139

B68-10075 05

GALLARDO, H.
Comparative chromatography of chloroplast pigments
ARG-10185

B69-10425 03

GRANDY, G. L.
Feed-through connector couples RF power into vacuum chamber
MU-0096

B67-10027 01

GRANT, D. J.
Electrochemical flowmeter accurately monitors fluid flow
GSFC-357

B65-10273 01

GRANT, L. B.
Flared-tube fittings with replaceable seat inserts
MSC-15272

B69-10519 05

GRANT, N. J.
Improved method of producing oxide-dispersion-strengthened alloys
HQC-10461

B69-10536 03

GRAVES, D. E.
 Brazed joint quality tested electrochemically
M-PS-12795

B67-10333 01

GRAVES, M. L.
Fast Fourier Transform Spectral Analysis Program

GBAFSTBIB, I.

GBAHAI, I.

GBALOI, I.

GBAUDY, I.

GBAAATA, I.

GBAVBS, I.

GBAVBS.

GBAAATA.

GBAAATA, I.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAAATA, I.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.

GBAAATA.

GBAHT.
PERSONAL AUTHOR INDEX

Gage tests tube flares quickly and accurately

Hydraulically controlled flexible arm can bend in any direction

GRIFFIN, H. G.

Polaroid film helps locate objects in inaccessible areas quickly

MSC-960

GRIFMIN, J. B.

Slide rule-type color chart predicts reproduced photo tones

MSC-1227

GRIPPS, P. A.

Remotely controlled system couples and decouples large diameter pipes

NS-0062

GRIFFITHS, L. B.

Silicon carbide diode for increased light output

E-FS-20063

GRIEALD,

Improved electromechanical master-slave manipulator

ARG-10027

GRIPSHOVER, F. J.

Force-sandwich-type provide uniform deformation in hydrostatic powder metallurgy

E-FS-1972

GRISE, J.

Optically exciting a magnetic memory - A feasibility study

E-FS-14854

GRUBN, J.

Cryopumping of hydrogen in vacuum chambers is achieved by catalytic oxidation of hydrogen

LEWIS-15

GRUBEV, V. P.

Study to minimize hydrogen embrittlement of ultrahigh-strength steels

E-FS-2455

Literature review on pickling inhibitors and cadmium electroplating processes

E-FS-14241

GROEBW, J.

Fluorescent photography of spray droplets using a laser light source

LEWIS-10777

GROSS, C.

Radiation utilized to temperature compensate semiconductor strain gages

LANGLEY-207

GROSS, S.

Battery-package design provides for cell cooling and constraint

MSC-11639

GRUBE, E. L.

Portable spectrometer monitors inert gas shield in welding process

S-FS-12144

Detecting hydrogen-containing contaminants on metal surfaces

S-FS-20456

GRUBE, C. J.

Application of a truncated normal failure distribution in reliability testing

S-FS-14328

GRUBB, T. M.

Improved control system power unit for large parachutes

MSC-12052

GRUBER, A.

New energy storage concept uses tapes

LEWIS-239

GRUBER, C. L.

Optically induced free carrier light modulator

GSPC-10216

GREN, D. M.

New class of compounds have very low vapor pressures

ARG-115

Coordination chemistry in fused-salt solutions

ARG-10469

GRENWALD, L. S.

Projection transparencies from printed material

L-WAF-14608

GRENWALD, A.

Miniature valve accurately controls small volume fluid flow

ARG-66

GRUHNER, J. L.

Burning technique improves lubrication of threaded fasteners

LEWIS-217

GRUDER, V. W.

Soldering tool heats workpieces and applies solder in one operation

LEWIS-247

GRUBEY, P. E., JR.

Two devices for analysis of nystagmus

HG-10273

GUNTER, P. G.

Thermocouples easily installed in hard-to-get-to places

E-FS-1946

GUISINGER, J. E.

Igniting system for mercury lamps protects transistorized sustaining supplies

JPL-421

GUSSON, G. E.

Field bed fluoride volatility process recovers uranium from spent uranium alloy fuels

ARG-232

GUSSON, D. G.

Asbestos jacketed new light on nickel-fluorine reactions

ARG-10008

Study of fluoride corrosion of nickel alloys

ARG-10224

GUSSON, S. R.

Multiplexer uses insulated gate-field effect transistors

M-FS-13096

GUSTAFSON, P. F.

New shield for gamma-ray spectrometry recovers uranium from spent uranium alloy fuels

ARG-10473

GUSDEN, J. C.

Guide for extrusion dies eliminates straightening operation

LEWIS-152

Apparatus facilitates pressure-testing of metal tubing

LEWIS-174

Extrusion of small-diameter, thin-wall tungsten tubing

LEWIS-90335

GUIDRES, J. C.

Subroutine allows easy computation in extended precision arithmetic

M-FS-1136

GUIDRES, J. C.

New class of compounds have very low vapor pressures

ARG-115

Coordination chemistry in fused-salt solutions

ARG-10469

GRENWALD, L. S.

Projection transparencies from printed material

L-WAF-14608

GRENWALD, A.

Miniature valve accurately controls small volume fluid flow

ARG-66

GRUHNER, J. L.

Burning technique improves lubrication of threaded fasteners

LEWIS-217

GRUDER, V. W.

Soldering tool heats workpieces and applies solder in one operation

LEWIS-247

GRUBEY, P. E., JR.

Two devices for analysis of nystagmus

HG-10273

GUNTER, P. G.

Thermocouples easily installed in hard-to-get-to places

E-FS-1946

GUISINGER, J. E.

Igniting system for mercury lamps protects transistorized sustaining supplies

JPL-421

GUSSON, G. E.

Field bed fluoride volatility process recovers uranium from spent uranium alloy fuels

ARG-232

GUSSON, D. G.

Asbestos jacketed new light on nickel-fluorine reactions

ARG-10008

Study of fluoride corrosion of nickel alloys

ARG-10224

GUSSON, S. R.

Multiplexer uses insulated gate-field effect transistors

M-FS-13096

GUSTAFSON, P. F.

New shield for gamma-ray spectrometry recovers uranium from spent uranium alloy fuels

ARG-10473

GUSDEN, J. C.

Guide for extrusion dies eliminates straightening operation

LEWIS-152

Apparatus facilitates pressure-testing of metal tubing

LEWIS-174

Extrusion of small-diameter, thin-wall tungsten tubing

LEWIS-90335

GUIDRES, J. C.

Subroutine allows easy computation in extended precision arithmetic

M-FS-1136
Electropneumatic rheostat regulates high current

Panels illuminated by edge-lighted lens technique

Thin-film ferrites vapor deposited by onestep process in vacuo

FS carrier deviation measured by differential probability method

Sonic boom propagation in stratified atmosphere

High purity electroforming yields superior metal models

Rack mount device quickly inserts or extracts chassis components

Light-sensitive potentiometer measures product of two variables

Gimballed-mirror scanning system capable of spiral patterns

Real fluid properties of normal and parahydrogen

Nondestructive testing of brazed rocket engine components

Nondestructive testing of welds on thin-walled tubing

Computer graphics data conditioning

Fast-response frequency-to-analog converter

Computer program for parameter optimization

Mechanism isolates load weighing cell during lifting of load

Double emitter suppressed carrier modulator uses commercially available components

Computer program predicts thermal and flow transients experienced in a reactor loss-of-flow accident

Automated measurement of thermal conductivity

Blackbody cavity radiometer has rapid response

Optic system facilitates colorimetric and fluorimetric measurements

High efficiency square-wave oscillator operator at high power levels

Status of ultrachemical analysis for semiconductors
checks and electronic calibrations
HAYT, J. E. B67-10467 01
LEWIS-10173

Primary radical yields in pulse irradiated
HAYT, J. E. B69-10167 02
alkaline aqueous solution
ARG-10322

Study made of corrosion resistance of
HAYT, R. K. B67-10051 03
stainless steel and nickel alloys in nuclear
reactor superheaters
ARG-230

Elementary review of electron microscope
techiques and correction requirements
HAYTSTEIN, R. G. B68-10195 03
ARG-10062

Low-cost tape system measures velocity of
HART, E. J. B67-10054 03
acceleration
GSFC-360

Photore sistance analog multiplier has wide
HART, E. A. B65-10287 01
range
GSFC-85

Flexible drive allows blind machining and
HART, B. E. B66-10069 05
welding in hard-to-reach areas
MSC-524

Transplutonium elements processed from
HART, E. W. B66-10637 01
rock debris of underground detonations
ARG-10222

Instrument accurately measures small
HART, W. D. B66-10637 01
temperature changes on test surface
LANGLEY-174

Effect of welding position on porosity
HARTUNG, J. B66-10177 05
formation in aluminum alloy welds
M-PS-2318

Linear circuit analysis program for IBM
HARTFIELD, J. B66-10173 06
1620 Monitor 2, 1311/1443 data processing
system /CIRCS/
HP-10131

Electrical cabling withstands severe
HAYHAY, J. D. B66-10427 01
environmental conditions
M-PS-1565

Break-up of metal tube makes one-time shock
HAYHAY, R. B. B63-10304 05
absorber, bars rebound
LANGLEY-14

Wind tower influence study
HATHORN, J. W. B69-10653 01
M-PS-20239

Improved chlorate candle provides
HAUG, E. D. B67-10095 03
concentrated oxygen source
MSC-1137

Gas Metal Arc /GM/ weld torch
HAWES, E. D. B69-10533 03
proximity control
M-PS-16327

Adjustable thermal "tree"
HAWKINS, R. H. B69-10484 01
MSC-15556

Key-locked guard prevents accidental switch
HAWTHORN, R. C. B66-10235 05
activation
MSC-419

Molded elastomer provides compact ferrite-core
HAYDEN, R. R. B64-10084 05
holder, simplifies assembly
JPL-584

Programmed schedule holds for improving
HAYES, J. D. B69-10602 03
launch vehicle holds
M-PS-14502

Bose beam propagation in stratified
HAYES, W. D. B69-10391 06
atmosphere
LANGLEY-10480

Frangible electrochemical cell and sealing
techique
HAYTON, J. B69-10056 01
XGS-10010

Accurate digital technique simulates flight
HAYS, J. R. B68-10569 02
control system
M-PS-14787

Frequency domain analysis and synthesis of
tuned parameter systems using nonlinear
least squares techiques
M-PS-15033

Preregulator feedback circuit utilizes
HAYSER, T. P. B69-10577 02
Light Actuated Switch
M-PS-1180

Heated die facilitates tungsten forming
HAYSTACK, J. E. B66-10047 05
LEWIS-25A

Computer program determines thermal
HEAD, R. E. B67-10307 06
environment and temperature history of
lunar ory
M-PS-12916

Portable tool removes burrs from pipe and
tubing
M-PS-237

Portable tool cleans pipes and tubing
M-PS-238

Pipe cutting tool is useful in limited space
M-PS-36

Portable tool cleans pipes and tubing
M-PS-238

Review of biological mechanisms for
HEALEY, J. B66-10663 04
application to instrument design
HQ-33

Study of theory and application of long
temperature heat flux transducers
M-PS-1265

Equations provide tubular information on
HARP, J. C. B66-10614 01
effects of uniform and variable loads on
thin, flat, circular plates
ARG-1051

Voltage variable oscillator has high phase
HEARNE, C. P. B66-10601 05
stability
LANGLEY-123

Color-television medical microscopy
HEATH, R. A. B68-10314 01
MSC-13086

Design reliability goal developed from small
HEATCROCK, B. B66-10405 05
sample
M-PS-403

Simple technique determines ac properties
HEMB, R. B66-10657 02
of hard superconductive material
M-PS-1816

Two-color holography
HECKEL, J. D. B65-10255 01
LEWIS-178

Electronic calorimetric computer
HEEB, E. B66-10138 01
LEWIS-9025A

Analysis of space vehicle structures using
HEEB, E. B69-10337 06
the transfer-function concept
NPQ-11162

Finite element formulation for linear
HEEHEEN, J. B. B69-10660 03
thermosoelastic materials
FPO-11229

Monocostal circuit with tunnel diode has fast
HEFFNER, P. B66-10660 03
recovery
GSFC-132

Two-color holography
HEFLINGER, L. O. B69-10662 02
HQ-10349

Fine-line sensitivity for holographic
HEFLINGER, L. O. B69-10663 02
interferograms
HQ-10348

System measures unidirectional forces,
HEGLAND, R. N. B65-10158 05
excludes extraneous forces
LEWIS-170

Cryogenic liquid transfer system reduces
LEWIS-274
residual bollof
B66-10157 02
Rubber-coated bellows improves vibration damping in vacuum lines

B66-10187 02

HEINRICH, E. C.

Automatic calorimetry system monitors RF power

NPO-10133 B69-10384 01

HEINZ, W. C.

Improved compression molding process

LANGLEY-T0027 B67-10302 03

Molding a high-density laminate

LANGLEY-T0051 B68-10092 03

Improved molding process ensures plastic parts of higher tensile strength

LANGLEY-T0033 B68-10132 05

HEINRICHE, P. L.

Multilayer infrared beamsplitter film

XGS-11036 B69-10260 02

HEINRICH, R. H.

Vanadium diaphragm electrode serves as hydrogen diffuser in lithium hydride cell

ARG-10048 B67-10499 01

HEINSCHEL, W. J.

RICO – Newt-Teperson calculus of variation with automatic transversalities

M-FS-14648 B68-10232 06

HEISP, P. C.

Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes

NWC-10143 B67-10665 06

HEIDAN, H. N.

Tube dippling tool assures accurate dip-brased joints

M-533 B68-10036 05

System remotely inspect, measures, and records internal irregularities in piping

M-FS-14545 B68-10149 01

Microwave interferometer controls cutting depth of plastics

M-FS-14673 B69-10012 01

HEID, C.

Development of helical seal for high temperature /2000 degrees F/ application

N-FS-13304 B67-10555 05

HELF, J. C.

Development of biaxial test fixture includes cryogenic application

M-FS-14185 B68-10070 01

HELFICH, W. J.

A rapid stress-corrosion test for aluminum alloys

M-FS-20175 B68-10536 03

HELSTROM, M. J.

Integrated circuit with multiple collector current source

M-FS-20177 B69-10126 01

HENDEL, F. J.

Thermoplastic rubberlike material produced at low cost

JPL-793 B66-10453 03

Cold solid propellant motor has stop-start capability

JPL-836 B66-10673 03

Addition of solid oxidizer increases liquid fuel specific impulse

JPL-861 B67-10058 03

HENDERSHON, R. B.

Rectilinear accelerometer possesses self-calibration feature

M-FS-1480 B66-10452 01

HENDRICKSON, R. B.

Inflatable holding fixture permits X-rays to be taken of inner weld areas

M-FS-1556 B66-10327 03

HENDRIS, J. M.

Cryogenic pressure transducer

M-FS-10907

HENGSTENBERG, T. F.

Fatigue tester achieves true axial motion through flex plates and bars

NO-0021 B66-10164 01

Friction loading device enables accurate testing of brittle materials

NO-0051 B66-10345 05

HENYK, G. B.

Reaction rates of graphite with ozone measured by etch decoration...
Land landing couch dynamics computer program
M-SC-1240
B67-10023
06

Electron beam seals outer surfaces of porous bodies
M-PS-562
B66-10033
03

Cold cathode ionization gage has rigid metal housing
GSFC-445
B66-10061
01

Monopole ann array spectrometer with improved sensitivity and reduced background
HO-10476
B69-10666
01

Detector monitors transfer of liquid helium
LANGLEY-229
B66-10580
01

Boolet is automatically stopped at low acceleration rate
M-PS-1639
B66-10545
05

Rubber and alumina gaskets retain vacuum seal in high temperature EMF cell
ARC-17
B66-10472
05

New bimetallic EMF cell shows promise in direct energy conversion
ARC-10183
B66-10415
01

Technical report on galvanic cells with fused-salt electrolytes
ARC-10297
B69-10155
01

Self-discharge in bimetallic cells containing alkali metal
ARC-10347
B69-10631
01

Technique simulates effect of reduced gravity
LANGLEY-64
B64-10146
04

Detection system ensures positive alarm activation in digital message loss
WOD-208
B66-10287
01

Crossed-beam technique for measuring horizontal winds
M-PS-20160
B69-10447
02

Analog device simulates physiological waveforms
ESC-51
B64-10109
01

Labyrinth-type valve seat increases valve life by decreasing fluid velocity
M-PS-1051
B66-10424
05

Spiraled channels improve heat transfer between fluids
JPL-694
B65-10251
02

Improved cryogenic refrigeration system
JPL-731
B67-10128
02

Highly stable microwave delay line
NPO-09628
B67-10642
01

Renewal of corrosion protection of coated aluminum after welding
M-PS-20361
B69-10150
05

Design of printed circuit coils
HQ-10431
B69-10665
01

TFE-fluorocarbon liners for flexible hoses
M-PS-16480
B69-10288
05

Means for improving apparent resolution of television
ESC-65
B67-10152
01

Luminescent screen composition for cathode ray tubes
ESC-19
B68-10056
01

Fluorocarbon-thermocline display devices
ESC-10034
B68-10350
01

Cryogenic filter method produces super-pure helium and helium isotopes
JPL-374
B63-10235
03

Supercool technique duplicates magnetic field in second superconductor
JPL-374
B66-10327
05

Shaped superconductor cylinder retains intense magnetic field
JPL-381
B66-10238
01

Superconductor shields test chamber from ambient magnetic fields
JPL-527
B66-10297
02

Soluble undercoating facilitates removal of bonded-in-place insulation
LEWIS-193
B66-10344
03

Cryogenic flux-concentrator
ARG-10494
B66-10187
01

Soldering fixture facilitates pipe thread gage measurements
M-PS-2009
B67-10066
05

Mechanical shielding reduces weld surface cracking in 6061 T6 aluminum
ESC-11209
B66-10222
05

Inlet muffler with beryllia washer improves transistor heat dissipation
GSFC-82
B66-10303
01

Shaft encoder presents digital output
JPL-SC-191
B66-10436
01

Performance statistics of the FORTRAN 4 library for the IBM system/360
ARG-10299
B67-10157
06

Rocket nozzle modulate measurements of ozone in the upper atmosphere
GSFC-10580
B66-10077
02

High-temperature, high-pressure spherical segment valve provides quick opening
ARC-13
B63-10431
05

A method for using surface tension to determine the size of holes in hardware
MSC-15194
B67-10595
03

Electrochemical milling removes burrs and solder from tubing ends
M-PS-744
B66-10358
03

Fluorescent photography of spray droplets using a laser light source
LEWIS-10777
B67-10122
02

Dispensing graduate for butadiene
ND-10070
B66-10524
03

High pressure cryogenic liquid flow sight assembly provides streamlined flow for easy observation
LEWIS-340
B66-10389
01

Mosbauer vibration calibration system evaluated
M-PS-20014
B66-10125
01

Recessant frequency can be adjusted on vibration mount
JPL-SC-134
B66-10672
05

Hydr1 data display system
ESC-11594
B66-10155
01

Versatile impact hand tool
M-PS-20140
B66-10505
01

Solid state anemometer facilitates complex system troubleshooting
M-PS-1239
B66-10505
01

High temperature thermocouple operates in reduced atmosphere
ND-0046
B66-10134
01

Cobalt-tungsten, ferromagnetic high-temperature alloy
LEWIS-10378
B68-10095
03

I-780
Design concept for nonarcing electrical connector
M-PS-14937
B68-10404
01

Special tool kit aids heavily garmented workers
MSC-163
B66-10403
05

Hole saw drill attachment has zero force reaction
MSC-543
B66-10604
05

Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ABS-232
B67-10032
03

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons
MSC-12148
B69-10220
02

Concealed hinge permits flush mounting of doors and hatches
MSC-623
B66-10336
05

Latching mechanism operates in limited access area
MSC-230
B66-10338
05

Connect-disconnect coupling for preadjusted rigid shafts
MSC-15470
B69-10375
05

Circuit enhances vertical resolution in raster scanning system
ESC-12123
B68-10121
01

Earth orbit rendezvous evaluation program
ESC-13016
B67-10407
06

Shaker slip-plate adapter
ESC-14063
B69-10785
05

Concealed hinge permits flush mounting of doors and hatches
MSC-623
B66-10336
05

Latching mechanism operates in limited access area
MSC-230
B66-10338
05

Synthesis of various highly halogenated monomers and polymers
M-PS-2143
B67-10100
03

Synthesis of polyethers of hexafluorobenzene
M-PS-14962
B66-10636
03

Rapid and precise analysis for calcium in blood serum
MSC-543
B69-10160
04

Concentrations of the naturally occurring radionuclides Pb-210, Po-210, andRa-226 in aquatic fauna
MSC-10385
B67-10258
02

Magentic forming studies
M-PS-14217
B67-10186
06

Scan rate converter for tape recording and playback of TV pictures
MSC-10166
B67-10676
01

Study of vortex valve for medium temperature solid propellants
LANGLEY-204
B68-10524
01

Extendible column can be stowed on drums
JPL-686
B65-10191
05

Solid state single-ended switching converter
ESC-15296
B67-10558
01

Simple scale interpolator facilitates reading in microphosphate copper plating
LEWIS-92
B67-10630
05

Tests show that aluminum welds are improved by bead removal
ESC-15296
B67-10023
05

Ultrasonic water column probe speeds up testing of welds
LEWIS-92
B67-10577
01

Extensometer automatically measures elongation in elastomers
ESC-517
B66-10284
05

Photocell shadowing technique improves light source detector
JPL-609
B66-10564
01

Frennel diffraction plates are simple and inexpensive
ESC-12731
B67-10297
02

Guide for extrusion dies eliminates straightening operation
LEWIS-152
B68-10014
05

Mechanical device accurately measures rf phase differences in vhf or uhf ranges
ESC-15296
B69-10694
05

Automatic system nondestructively monitors and records fatigue crack growth
Circuit detects voltage decrease in burst diaphragm protects vacuum vessel from transmutation. Combination ranging system and mapping contact stresses calculated for miniature slip rings. Parallel line raster eliminates ambiguities in resistivity measurements of EOUAED. Burst diaphragm protects vacuum vessel from internal pressure transients. Computer/PERT technique monitors actual versus allocated costs. Hot metal models ARC-6. High purity electroforming yields superior metal models. Fast Fourier Transform Spectral Analysis Program. Extendible mast in one shot soil penetrometer. Rigid-body motion extracted from total motion of a flexible body.
Multi-feed cone for Cassington's antenna
AB-10025 B67-10484 03

HUGHES, L. F. Acceleration insensitive fluid expansion
compensator
EBC-10152 B68-10559 01

HUGHES, R. S. Coaxial cable stripping device facilitates
the fibering cable
BF-10315 B67-10419 05

HULBERG, R. R. Disk calculator indicates legible lettering
size for slide projection
GSPC-409 B65-10339 05

HUFFERT, F. T. Sprayable birefringent coating enables
strain measurements on large surfaces
M-FS-1484 B66-10578 03

HUFFERTS, T. S. Study made of procedures for externally
loading and corrosion testing stress corrosion
specimens
E-FS-12064 B67-10451 03

HUNJ, J. C. Study of optimum discrete estimators in
measurement analysis
M-FS-18915 B68-10348 02

HUNGERFORD, W. J. Ellipsoidal optical reflectors reproduced by
electroforming
GSPC-92 B63-10547 05

HUTT, D. G. Electronic component reliability analysis
by data reduction system
NF-10243 B68-10507 05

HUTT, W. J. Tensile testing grips ensure uniform loads on
bielastic tubing specimens
LWPST-10267 B68-10248 05

HUTTLEY, J. R. Cooling of 2 kW subscript 2 -0 subscript 2 fuel cell
M-FS-12823 B68-10153 03

HUTZ, C. P. Laser action from a terbium beta-ketoconolate
at room temperature
GSPC-10593 B69-10324 02

HUSCHKE, E. G., Jr. Brazing process provides high-strength bond
between aluminum and stainless steel
H-FS-803 B66-10352 05

HUSCHLER, E., Jr. New brazing alloy eliminates metal-stress
cracking
W00-249 B65-10397 03

HUSK, C. C. Logic circuit exhibits optimum performance
LANGLEY-129 B65-10193 01

HUSTED, J. M. Solid state zero-bias bilateral switch
GSPC-532 B67-10559 01

HUTCHISON, J. B. Quality-weld parameters for microwelding
techniques and equipment
M-FS-20404 B69-10303 05

HUTTER, E. Remotely operated gripper provides vertical
control rod movement
ABS-10160 B68-10359 05

HUTTER, J. R. A theoretical study of radar backscatter
from distributed targets with emphasis on
polarization dependence
M-FS-13775 B69-10560 02

HYDE, W. R. Method of measuring thermal conductivity of
high performance insulation
M-FS-13896 B68-10013 02

HYDE, W. R. Xenon fluoride solutions effective as
fluorinating agents
ARG-217 B67-10133 03

HYMAN, L. G. Improved liquid-level sensor for cryogenics
ABG-10162 B69-10210 02

HYMAN, L. L. High conductance vapor thermal switch
GSPC-10109 B68-10519 02

IANNIETTI, A. Pressure-sensitive bonded junction
transducers
EBC-18087 B69-10563 01

ICELAND, W. F. System remotely inspects, measures, and
records internal irregularities in piping
M-FS-18545 B68-10149 05

IMPERI, I. J. Microwave interferometer controls cutting
depth of plastics
M-FS-14673 B69-10012 01

IRBOKOMOS, W. Eutectic fuse provides current and thermal
protection under high vibration
M-FS-13664 B67-10535 01

IXDA, H. T. Computational procedure for finite difference
solution of one-dimensional heat conduction
problems reduces computer time
NF-1120 B66-10566 01

ICKWITZ, F. H. Rapid and precise analysis for calcium in
blood serum
AGR-2110 B69-10160 04

ILLG, W. Infrared shield facilitates optical pyrometer
measurements
LANGLEY-133 B65-10272 02

IRIS, E. H. Lightweight hinged bellows restraint has
high load capacity
W00-151 B65-10341 03

irit, D. Blade valve isolates compartment in pipe,
opens to allow free flow
JPL-892 B68-10148 05

INGRAM, J. D. Isostatic compression process converts
polyaromatics into structural material
NPS-321 B66-10579 01

INGRAHAM, R. L. An orthornormalization procedure for
multivariable function approximation
LANGLEY-133 B65-10313 01

INMAN, N. S. Automatic systems nondestructively monitors
and records fatigue crack growth
LANGLEY-10091 B68-10379 02

IPPOLITO, L. J. Traveling-wave tube circuit simplifies
microwave relay
GSPC-299 B65-10127 01

IRWIN, J. D. Study of optimum discrete estimators in
measurement analysis
M-FS-14915 B68-10348 02

JACK, J. R. Technique for measuring absorptance and
emittance by using cyclic incident radiation
LEWIS-321 B66-10630 02
PERSONAL AUTHOR INDEX

JACKSON, K.
- Dual regulator controls two gases from a single reference
- Channel-wall limitations in the magnetohydrodynamic induction generator
- Study made of anodized aluminum circuit boards
- New camera tube improves ultrasonic inspection system
- Instrument continuously measures density of flowing fluids
- Improved gyro-flotation /damping/ fluids
- Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
- Offset lenses add versatility to photoprinting machine
- Silicon surface barrier detectors used for liquid hydrogen density measurement
- Pickup device reads pressures from ports in rotating mechanisms
- Rhodium-plated barrier against high-temperature fusion bonding
- Synchronized pulse generator needs no external power
- Continuous wave detector has wide frequency range
- Experiments shed new light on nickel-fluorine reactions
- Computer program aids dual reflector antenna system design
- Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
- Magnetic forcing studies
- Power arc welder touch-started with consumable electrode
- Surface profiler for examining grain-boundary grooves
- Electro pneumatics rheostat regulates high current
- Computer programs calculate potential and charge distributions in a plasma

JACKSON, R. B.
- Dual regulator controls two gases from a single reference
- Channel-wall limitations in the magnetohydrodynamic induction generator
- Study made of anodized aluminum circuit boards
- New camera tube improves ultrasonic inspection system
- Instrument continuously measures density of flowing fluids
- Improved gyro-flotation /damping/ fluids
- Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
- Offset lenses add versatility to photoprinting machine
- Silicon surface barrier detectors used for liquid hydrogen density measurement
- Pickup device reads pressures from ports in rotating mechanisms
- Rhodium-plated barrier against high-temperature fusion bonding
- Synchronized pulse generator needs no external power
- Continuous wave detector has wide frequency range
- Experiments shed new light on nickel-fluorine reactions
- Computer program aids dual reflector antenna system design
- Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
- Magnetic forcing studies
- Power arc welder touch-started with consumable electrode
- Surface profiler for examining grain-boundary grooves
- Electro pneumatics rheostat regulates high current
- Computer programs calculate potential and charge distributions in a plasma

JACKSON, W. D.
- Dual regulator controls two gases from a single reference
- Channel-wall limitations in the magnetohydrodynamic induction generator
- Study made of anodized aluminum circuit boards
- New camera tube improves ultrasonic inspection system
- Instrument continuously measures density of flowing fluids
- Improved gyro-flotation /damping/ fluids
- Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
- Offset lenses add versatility to photoprinting machine
- Silicon surface barrier detectors used for liquid hydrogen density measurement
- Pickup device reads pressures from ports in rotating mechanisms
- Rhodium-plated barrier against high-temperature fusion bonding
- Synchronized pulse generator needs no external power
- Continuous wave detector has wide frequency range
- Experiments shed new light on nickel-fluorine reactions
- Computer program aids dual reflector antenna system design
- Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
- Magnetic forcing studies
- Power arc welder touch-started with consumable electrode
- Surface profiler for examining grain-boundary grooves
- Electro pneumatics rheostat regulates high current
- Computer programs calculate potential and charge distributions in a plasma

JENKINS, K. H.
- Fused diode provides visual indication of fuse condition
- Indexing device ensures proper mating of electrical connectors
- Thermally conducting electron transfer polymers
- Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system
- White primer permits a corrosion-resistant coating of minimum weight
- Dual regulator controls two gases from a single reference
- Channel-wall limitations in the magnetohydrodynamic induction generator
- Study made of anodized aluminum circuit boards
- New camera tube improves ultrasonic inspection system
- Instrument continuously measures density of flowing fluids
- Improved gyro-flotation /damping/ fluids
- Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
- Offset lenses add versatility to photoprinting machine
- Silicon surface barrier detectors used for liquid hydrogen density measurement
- Pickup device reads pressures from ports in rotating mechanisms
- Rhodium-plated barrier against high-temperature fusion bonding
- Synchronized pulse generator needs no external power
- Continuous wave detector has wide frequency range
- Experiments shed new light on nickel-fluorine reactions
- Computer program aids dual reflector antenna system design
- Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
- Magnetic forcing studies
- Power arc welder touch-started with consumable electrode
- Surface profiler for examining grain-boundary grooves
- Electro pneumatics rheostat regulates high current
- Computer programs calculate potential and charge distributions in a plasma

JENKINS, R. A.
- Thermally conducting electron transfer polymers
- Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system
- White primer permits a corrosion-resistant coating of minimum weight
- Dual regulator controls two gases from a single reference
- Channel-wall limitations in the magnetohydrodynamic induction generator
- Study made of anodized aluminum circuit boards
- New camera tube improves ultrasonic inspection system
- Instrument continuously measures density of flowing fluids
- Improved gyro-flotation /damping/ fluids
- Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
- Offset lenses add versatility to photoprinting machine
- Silicon surface barrier detectors used for liquid hydrogen density measurement
- Pickup device reads pressures from ports in rotating mechanisms
- Rhodium-plated barrier against high-temperature fusion bonding
- Synchronized pulse generator needs no external power
- Continuous wave detector has wide frequency range
- Experiments shed new light on nickel-fluorine reactions
- Computer program aids dual reflector antenna system design
- Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
- Magnetic forcing studies
- Power arc welder touch-started with consumable electrode
- Surface profiler for examining grain-boundary grooves
- Electro pneumatics rheostat regulates high current
- Computer programs calculate potential and charge distributions in a plasma

JENKINS, R. S.
- Thermally conducting electron transfer polymers
- Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system
- White primer permits a corrosion-resistant coating of minimum weight
- Dual regulator controls two gases from a single reference
- Channel-wall limitations in the magnetohydrodynamic induction generator
- Study made of anodized aluminum circuit boards
- New camera tube improves ultrasonic inspection system
- Instrument continuously measures density of flowing fluids
- Improved gyro-flotation /damping/ fluids
- Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
- Offset lenses add versatility to photoprinting machine
- Silicon surface barrier detectors used for liquid hydrogen density measurement
- Pickup device reads pressures from ports in rotating mechanisms
- Rhodium-plated barrier against high-temperature fusion bonding
- Synchronized pulse generator needs no external power
- Continuous wave detector has wide frequency range
- Experiments shed new light on nickel-fluorine reactions
- Computer program aids dual reflector antenna system design
- Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
- Magnetic forcing studies
- Power arc welder touch-started with consumable electrode
- Surface profiler for examining grain-boundary grooves
- Electro pneumatics rheostat regulates high current
- Computer programs calculate potential and charge distributions in a plasma

JENKINS, R. P.
- White primer permits a corrosion-resistant coating of minimum weight
- Dual regulator controls two gases from a single reference
- Channel-wall limitations in the magnetohydrodynamic induction generator
- Study made of anodized aluminum circuit boards
- New camera tube improves ultrasonic inspection system
- Instrument continuously measures density of flowing fluids
- Improved gyro-flotation /damping/ fluids
- Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop
- Offset lenses add versatility to photoprinting machine
- Silicon surface barrier detectors used for liquid hydrogen density measurement
- Pickup device reads pressures from ports in rotating mechanisms
- Rhodium-plated barrier against high-temperature fusion bonding
- Synchronized pulse generator needs no external power
- Continuous wave detector has wide frequency range
- Experiments shed new light on nickel-fluorine reactions
- Computer program aids dual reflector antenna system design
- Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
- Magnetic forcing studies
- Power arc welder touch-started with consumable electrode
- Surface profiler for examining grain-boundary grooves
- Electro pneumatics rheostat regulates high current
- Computer programs calculate potential and charge distributions in a plasma
Precisely repeatable rotary mechanism
Precisely repeatable rotary mechanism
JOHNSON, K. L.
Performance analysis of electrical circuits
/ANS/
E-PS-15001
B69-10484 06

JOHNSON, L. D.
Butterfly valve with metal seals controls flow of hydrogen from cryogenic through high temperatures
M-S-1034
B67-10567 05

JOHNSON, L. L.
Quick-acting backup tool for welding ducts
M-PS-10404
B69-10396 05

JOHNSON, O. W.
Quick-hardening problems are eliminated with spray gas modification which mixes resin and accelerator liquids during application
LANGLEY-6A
B63-10318 03

JOHNSON, R. C.
Venturi meter with separable diffuser
LEWIS-10583
B66-10295 05

Computer program for high pressure real gas effects
JOHNSON, R. D.
LEWIS-10820
B69-10222 05

High pressure real gas effects for helium and nitrogen
LEWIS-10819
B69-10669 05

JOHNSON, R. H.
Mechanical program for high pressure real gas effects
LEWIS-11031
B66-10031

JOHNSON, R. L.
Lead oxide ceramic makes excellent high-temperature lubricant
LEWIS-144
B66-10116 03

Nuclear gases flow through critical nozzles
JOHNSON, R. W.
LEWIS-11032
B69-10712 02

JOHNSON, T. R.
Induction probe determines levels of liquid metals
AZG-10368
B69-10256 03

JOHNSON, V. R.
Noise figure measurement concept for acoustic amplifiers
GSPC-10066
B66-10272 01

Power consumption in acoustic amplifiers under conditions of maximum stable gain
GSPC-10067
B69-10327 01

JOHNSON, W. C.
Adjustable wrench for electronic connectors
M-PS-18547
B69-10184 05

Device for reserving electrodeposited solder on terminals
M-PS-10321
B69-10670 01

JOHNSON, W. E.
 Brazing process using Al-Si filler alloy reliably bonds aluminum parts
MISC-448
B66-10241 05

JOHNSON, W. R.
Miniature servo accelerometer is force-balanced
JPL-155
B65-10300 01

Polarimeter provides transient response in nanosecond range
JPL-890
B67-10021 02

JOHNSON, A. S.
Computer program calculates the effective temperature for a crystalline solid /BETS/
M-PS-1014
E-PS-10146
B69-10036 06

JOHNSON, L. L.
Multiple test chamber exposes materials to various environments
MSC-179
B65-10260 01

JONES, L.
Standard surface grinder for precision machining of thin-wall tubing
B66-10071 01

JONES, A. G.
Roll diffusion bonding of titanium alloy panels
M-PS-10763
B66-10161 05

JONES, A. S., JR.
Bench vise adapter grips tubing securely and safety
MSC-279
B66-10056 05

JONES, C. R.
Multisource fixture permits easy grinding of tool bit angles
M-PS-586
B66-10171 05

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill
M-PS-1084
B66-10411 05

JONES, D. D.
Portable tool cleans pipes and tubing
MSC-230
B66-10375 05

Pipe cutting tool is useful in limited space
MSC-36
B66-10102 05

JONES, D. J.
Welded repairs of punctured thin-walled aluminum pressure vessels
M-PS-1083
B69-10051 05

Combination spacer and gasket provides effective static seal
M-PS-1397
B66-10485 05

JONES, H. R., JR.
Pressure transducers dynamically tested with sinusoidal pressure generator
LEWIS-268
B66-10031 01

JONES, I.
Shock absorber operates over wide range
MSC-168
B65-10241 05

JONES, J. F.
New rapid-curing, stable polyamide polymers with high-temperature strength and thermal stability
LEWIS-10576
B69-10118 03

JONES, J. S.
Liquid oxygen-compatible insulation system
M-PS-16113
B69-10599 03

JONES, L. K.
Machine tests create durability of sheet materials
JPL-604
B64-10178 05

JONES, N. H.
Survey of fracture toughness test methods
LEWIS-10379
B66-10046 03

JONES, W. D.
Improved mouse cage provides versatility and ease in handling laboratory mice
MSC-12250
B69-10124 04

JONES, R. G.
Hand-operated plug insertion valve
M-PS-12019
B67-10466 05

JONES, R. L.
One-piece transparent shell improves design of helmet assembly
MSC-187
B66-10390 05

JONES, A. A.
Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232
B67-10032 03

JONESBERG, M. B.
Uppercase and lowercase computer printout increases readability
HO-12
B65-10286 01

JOHNSON, I.
Mass transport mechanism in porous fuel cell electrodes
HO-10383
B69-10135 01

JORDAN, R. A.
Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems
M-PS-14447
B69-10158 06

JUDD, J. H.
Device measures fluid drag on test vehicles
LANGLEY-34
B65-10195 01

JUNG, E. A.
Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110
B66-10328 01
Flexible high-voltage supply for experimental electron microscope
KASPAR, M. B69-10603 01

KAMPURTH, J. K. 

KASCAK, A. 

KABBO, J. 

KAIRATB, P. 

KADISE,.D. 

KARKAIBE, R. 

KABASELLA, B. 

KARCEER, P. 

KAPESJAB, A. 

KAIIBRER, P. 

KALLIB, E. 

KABASELLA, B. 

KARASTAS, R. 

KANBEL, E. 

KAMI, T. 

Computer program determines inventory size
KASPAREK, E. B. 

High-torque precision stepping drive
KASTNER, M. 

Neutron activation analysis traces copper artifacts to geographical point of origin
KATSANIS, T. 

Computer program performs flow analysis through turbine

Technique for predicting temperature

Conceptual dead weight device to provide

Hydrogen peroxide etching proves useful for

Compound

Consolidation and fabrication techniques

Study of dynamic response of

Flexible high-voltage supply for

Bmultiple correlation computer program
determines relationships between several independent and dependent variables

Mechanisms of superconductivity
KELLY, K. M.
Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces
EBC-10254
B69-10689 01

KELLY, L. P.
High-voltage pulse generator developed for wide-gap spark chambers
ARO-10136
B68-10283 01

KELLY, O. P.
High-pressure regulating system prevents pressure surges
JPL-231
B63-10170 05

KELLY, R. C.
Heat-treatment of metal parts facilitated by sand embedment
E-PS-1543
B66-10616 03

KELLY, W. R.
Simple device facilitates inert-gas welding of tubes
E-PS-558
B66-10155 05

KELLY, W. C.
Modified McLeod pressure gage eliminates measurement errors
ARC-62
B66-10481 01

KELLY, A.
Visual task analysis /VISTA/
E-PS-14716
B69-10394 06

KELLY, B.
JPKYFIC - General key word in context and subject index report generator
MPO-10589
B68-10208 06

KELLY, M. E.
Development of biaxial test fixture includes cryogenic application
E-PS-14185
B68-10070 01

KELLY, R. W.
Improved inorganic ion exchange membranes
LEWIS-10737
B69-10451 03

KELLY, R. N.
Tool samples subsurface soil free of surface contaminants
MSC-10998
B67-10473 05

KEMP, J. J.
Program computes equilibrium normal shock and stagnation point solutions for arbitrary gas mixtures
LANGLER-10930
B67-10509 06

KEMP, S. E.
T-handle wrench has torque-limiting action
MSC-280
B66-10065 05

KEMPSON, A., JR.
Junction connectors permit strategic placement of television cameras
MSC-66-22
B66-10391 01

KENDALL, J. W., SR.
Improved cavity-type absolute total-radiation radiometer
MPO-1007
B67-10557 01

KENDALL, W. B.
Data processing method for a weak, moving telemetry signal
NPO-11003
B69-10639 01

KENDRICK, W. R.
New rapid-curing, stable polysilane polymers with high-temperature strength and thermal stability
LEWIS-10576
B69-10118 03

KENNEDY, B. W.
UV detector monitors organic contamination of optical surfaces
E-PS-20246
B68-10413 01

KENNEL, R. P.
Study made of application of stereoscopic display system to analog computer simulation
E-PS-1263
B66-10590 01

KEON, T.
Simple, one transistor circuit boosts pulse amplitude
GSFC-501
B66-10480 01

KEMPLE, C. R.
Perforations in jet engine supersonic inlet increase shock stability
NGO-6
B66-10530 05

KELLEY, J. J., JR.
Wire mesh isolator protects sensitive electronic components
GSFC-397
B65-10216 05

KEEN, B. D.
Repair of weld defects in thin-walled stainless steel tubes
E-PS-16293
B69-10305 05

KEEN, W.
Irradiated gases transferred without contamination or dilution
LEWIS-278
B67-10044 03

KERNICH, A.
Electronic bidirectional valve circuit prevents crossover distortion and threshold effect
MSC-193
B66-10420 01

KEEN, R. A.
Development of biaxial test fixture includes cryogenic application
E-PS-14185
B68-10070 01

KEESLAKE, W.
Wire winding increases lifetime of oxide coated cathodes
LEWIS-154
B65-10032 03

KERN, V. J.
Thermal motor positions magnetometer sensors
ARC-51
B66-10078 05

KIRKLAND, A.
Complementary system vaporizes subcooled liquid, improves transformer efficiency
E-PS-550
B66-10045 02

KETCHEMAN, J. J.
A design procedure for the weight optimization of straight finned radiators
GSFC-547
B66-10018 05

KETTLE, R. M.
Visco seal design offers zero-leakage and wear-free characteristics
E-PS-329
B67-10047 05

KETTON, P. G.
Possible correlation between work-hardening and fatigue-failure
ARG-10371
B69-10413 04

KIESLER, K. S.
Hydraulic servo system increases accuracy in fatigue testing
LANGLY-217
B67-10637 01

KIGORE, A. E.
Welding, brazing, and soldering handbook
E-PS-20504
B69-10264 05

KILMA, S. J.
New cobalt alloys have high-temperature strength and long life in vacuum environments
LEWIS-47
B63-10351 03

KILPATRICK, E.
Reaction of steam with molibdenum is studied
ARG-295
B67-10502 02

KINSELLA, R.
Computer program provides linear sampled-data analysis for high order systems
E-PS-12821
B67-10287 06

KINNELL, W.
Encapsulation technique eliminates thermal stresses in welded electronic modules
E-PS-14581
B68-10307 01
**PERSONAL AUTHOR INDEX**

| M-FS-69 | 863-10568 05 |
| KNOWLTON, P. E. | JPL/JPL FORTRAN language with interval pre-processor |
| NPO-10885 | 869-10187 06 |
| KNUTSEN, E. H. | Computer program developed for flowsheet calculations and process data reduction |
| 869-10023 06 | Direct indication of particle size in fluidized beds |
| 869-10083 | KOCH, L. J. |
| KOCH, G. P. | Remote operated gripper provides vertical control rod movement |
| 869-10035 05 | KOCHET, C. |
| KOCHET, W. M. | Solenoid permits remote control of stop watch and assures restarting |
| 863-10024 01 | KOHLS, E. L. |
| KOI ELS, N. L. | Welding, brazing, and soldering handbook |
| 869-10264 05 | Handbook for design of containers of fluids and gases for spacecraft |
| 869-10279 05 | KOELLE, F. |
| KOELLE, L. R. | Roll diffusion bonding of titanium alloy panels |
| 869-10161 05 | KORBBA, W. K. |
| KORBBA, R. A. | Automatic star-horizon angle measurement system |
| 869-10597 01 | KOLBA, W. M. |
| KOLBA, R. W. | Design of a strain-gage probe |
| 869-10343 05 | KOLBER, J. M. |
| KOLBER, J. N. | Dual photocathode replenisher system reduces chemical losses |
| 867-10485 02 | KOBELI, R. B. |
| KOBELI, R. B. | High-power microwave power divider concept |
| 869-10290 01 | Automatic frequency control of voltage-controlled oscillators |
| 869-10569 01 | KOKI, B. |
| KOKI, B. | Computer program for optical systems ray tracing |
| 869-10549 06 | KOOS, E. E. |
| KOOS, E. E. | Scoop attachment makes helicopter recoveries easier and safer |
| 869-10229 05 | KOPF, R. S. |
| KOPF, R. S. | Remote Operating System/360 |
| 869-10386 01 | KOPP, L. B. |
| KOPP, L. B. | Computer program developed for flowsheet calculations and process data reduction |
| 869-10023 06 | KOPP, R. T. |
| KOPP, R. T. | Calibrated water tank facilitates proof-loading of cranes and derricks |
| 869-10109 05 | KOBREICH, J. |
| KOBREICH, J. | Separation of traces of metal ions from sodium halides |
| 869-10341 | KOSKINSAN, H. G. |
| KOSKINSAN, H. G. | Calculations enable optimum design of magnetic brake |
| 866-10073 05 | KOSO, A. A. |
| KOSO, A. A. | Automatic star-horizon angle measurement system |
| 869-10597 01 | KOTHE, J. |
| KOTHE, J. | The compatible conversion system |
| 869-10031 06 | KOTLER, L. A. |
| KOTLER, L. A. | Replacement of fluid-filter elements without interruption of flow |
| 869-10245 05 | KOTORA, J. J. |
| KOTORA, J. J. | Traveling wire electrode increases productivity of electrical discharge machining /EDM/ equipment |
| 867-10238 05 | Standard surface grinder for precision machining of thin-wall tubing |
| 867-10400 05 | KOLBBA, W. |
| KOLBBA, W. | Static structural analysis of shell-type structures |
| 868-10066 03 | KOSLANSKY, F. J. |
| KOSLANSKY, F. J. | Maintenance methodology and maintenance analyses |
| 868-10075 05 | KRAHNER, A. R. |
| KRAHNER, A. R. | Improved relay optical element for spectroradiometer using cryogenically cooled detector |
| 868-10245 02 | KRAFTSMAN, J. |
| KRAFTSMAN, J. | Silicon oxide films grown in microwave discharge |
| 868-10171 01 | KRAM, R. |
| KRAM, R. | Control circuit maintains unity power factor of reactive load |
| 869-10431 03 | KRAMER, P. J. |
| KRAMER, P. J. | Antechamber facilitates loading and unloading of vacuum furnace |
| 868-10135 02 | KRAMER, W. C. |
| KRAMER, W. C. | Tungsten-chromium alloy thermocouples effective for high-temperature measurement |
| 869-10109 03 | Consolidation and fabrication techniques for vanadium-20 w/o titanium /TV-20/ |
| 868-10368 03 | KRAJKOSNY, J. E. |
| KRAJKOSNY, J. E. | Metallically plated on fluorocarbon polymers JPL-584 |
| 863-10612 03 | KRAKAL, J. |
| KRAKAL, J. | Thermal neutron image intensifier tube provides brightly visible radiographic pattern |
| 867-10296 02 | KRAUS, R. M. |
| KRAUS, R. M. | Fiberglass container shells form contamination-free storage units |
| 866-10217 05 | KRAUS, F. R. |
| KRAUS, F. R. | Study of hot wire techniques in low density flows with high turbulence levels |
| 866-10687 01 | KRAUSE, R. G. L. |
| KRAUSE, R. G. L. | Theory of a refined earth model |
| 869-10473 02 | KRAUS, L. E. |
| KRAUS, L. E. | High-pressure gas facilitates calibration of turbine flowmeters for liquid hydrogen |
| 869-10405 01 | Venturi meter with separable diffuser LEWIS-10483 |
| 868-10295 05 | A mass flux probe for measurement in a supersonic stream LEWIS-10695 |
| 868-10533 02 | Combination probe for airflow measurements LEWIS-10821 |
| 868-10558 01 | Flow direction measurement with fixed probes LEWIS-11048 |
| 869-10714 02 | KREBS, R. B. |
| KREBS, R. B. | Magnetoresistor monitors relay performance |
| 866-10650 01 | Test instrumentation evaluates electrostatic hazards in fluid system LEWIS-2277 |
| 867-10145 01 | KREISMAN, W. S. |
| KREISMAN, W. S. | Food-through connector withstands high temperatures in vacuum environment GSPC-842 |
| 868-10320 01 | Baking enables McLeod gauge to measure in ultrahigh vacuum range GSPC-840 |
| 865-10329 01 | Cold cathode ionization gage has rigid metal housing GSPC-845 |
| 866-10041 01 |
RBBJSA.

RBESSIB,

KBBJCI,

KBISTOPP,

KBIBGBR,

RBBJCI.

KBOPP.

KBSBK,

KEUGEE,

KROPSKI,

KUIMEBPBLD,

KOBICBK.

KOLSRU~,

KULPA.

KUEU,

KOBHL,

KIIBIK,

KIBATA,

KORTZ,

KOUBAIAUH.

KYLE, I.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,

L.

KUOBIAUH.

KUOBG,
heat source
LEWIS-10131 B66-10062 03

LANAR, J. R.
Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
LANGLEY-10191 B67-10666 06

Modified Multithopp mean center computer program
LANGLEY-10376 B68-10466 06

Modified Multithopp lifting surface loading program
LANGLEY-10375 B68-10452 06

LANE, J. M.
Electron beam welding of copper-Monel facilitated by circular magnetic shields
M-75-569 B66-10215 05

LANDRETH, D. J.
Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing
NUC-10010 B67-10542 02

LAROCHE, H.
Nondispersive X-ray emission analysis for geochronological exploration
GSPC-10568 B69-10011 02

LAROEY, R. M.
Technique for assessing potential fire hazards
ARC-10279 B69-10287 03

LARKINER, D. J.
Soft metal plating enables hard metal seal to operate successfully at low temperature, high pressure environment
NUC-10083 B67-10350 03

LANDAVER, F. P.
TV synchronization system features stability and noise immunity
JPL-915 B67-10118 01

LANDEL, R. P.
Process for preparing dispersions of alkali metals
JPL-734 B66-10639 03

Static electricity of polyesters reduced by treatment with iodine
KPO-10062 B67-10132 03

LANDS, L. E.
Analysis of filament reinforced metal-shell pressure vessels
LEWIS-10352 B68-10405 06

LANDIS, D. C.
Closed loop operation eliminates need for auxiliary gas in high pressure pumping station
M-PS-693 B66-10408 05

LAN, Z. J.
Pressure-control purge panel for automatic butt welding
M-PS-18665 B69-10403 05

LAN, S. B.
Tool provides constant purge during tube welding
M-PS-547 B66-10093 05

LANG, K. T.
Precision CW laser automatic tracking system investigated
M-PS-1606 B66-10629 01

LANDON, W. M.
System automatically supplies precise analytical samples of high-pressure gases
M-PS-1814 B67-10090 01

LANGE, G. H.
Development of detonation reaction engine
M-PS-14020 B67-10652 01

Continuous detonation reaction engine
M-PS-14019 B68-10034 03

LARKINSKI, J. P.
Diffusion bonding makes strong seal at flanged connector
M-PS-637 B66-10250 05

LARKPOEY, H.
Keyed plugs and sockets prevent improper connections
MSC-231 B65-10381 01

LANTS, P. A.
Shortened horn-reflector antenna
GSPC-502 B67-10017 01

LANZI, C. D.
Internal cooling increases range of immersion-type temperature probe

PERSONAL AUTHOR INDEX
LEWIS-171 B65-10157 02

LAFIRESKI, R. F.
Shortened processing time technique for color industrial radiography
ARG-10235 B69-10001 02

LAKEN, R. D.
Binary fluid amplifier solves stability and loud problems
BESC-15 B66-10177 01

LAKNER, J. W.
Ellipsoidal optical reflectors reproduced by electroforming
GSPC-92 B63-10547 05

LATHE converted for grinding aspheric surfaces
GSPC-115 B63-10356 05

LARSEN, B. W.
Pulse stretcher has improved dynamic range and linearity
ARG-82 B66-10509 01

Transistor biased amplifier minimizes diode discriminator threshold attenuation
ARG-163 B67-10311 01

Tunnel diode circuit used as nanosecond-range time marker
ARG-90164 B68-10173 01

High resolution Ge/Li/ spectrometer reduces rate-dependent distortions at high counting rates
ARG-10144 B68-10420 01

Current-switching technique for analog pulse circuits
ARG-10479 B69-10445 01

Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ARG-90261 B69-10623 01

Pulse-height defect due to electron interaction in dead layers of Ge/Li/ gamma-ray detectors
ARG-10362 B69-10767 02

LARSON, A. V.
Past-acting calorimeter measures heat output of plasma gun accelerator
LEWIS-388 B67-10192 01

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135 B67-10623 05

Eddy current disk valve
LEWIS-10123 B67-10638 05

LARSON, E. W.
Honeycomb seal backing ring increases turbopump disk life
M-PS-13303 B67-10607 05

LARSON, L. L.
Single-element coaxial injector for rocket fuel
WPO-11095 B69-10547 01

LARSON, H. A.
A calibration means for spectrum analyzers
MSC-10987 B67-10254 01

LARSEN, R. E.
Study of hot wire techniques in low density flows with high turbulence levels
M-PS-1269 B66-10687 01

LARSEN, R. W.
Food products for space applications
MSC-11697 B68-10324 04

LARSON, W. J.
Monte Carlo simulation by computer for life-cycle costing
M-PS-14754 B69-10590 05

LARSEY, P. A.
Microprobe investigation of brittle segregation in aluminum MIG and TIG welds
M-PS-14720 B68-10334 03

LASHE, S. M.
Training course for radiation safety technicians
ARG-248 B67-10877 02

LAUB, J. E.
Slit feeds reduce unbalanced torques in gas-lubricated bearings
JPL-264 B65-10099 01

LAUB, J. L.
Elastic orifice automatically regulates gas bearings
JPL-135 B63-10123 05

LAUG, R. G.
Fresnel cup reflector directs maximum energy from light source

I-791
LAUGELIU, C. R., JR.

JPL-424  B63-10263  03  LEVAY, K. H.
Small digital recording head has parallel bit channels, minimizes cross talk JPL-424  B63-10286  01

LAUGELIU, C. R., JR.

Diversity IF receiving system with improved phase-lock characteristics XSG-01222  B68-10068.  01

LAUGELIU, J. C.

Heated die facilitates tungsten forming LWIS-25A  B66-10047  05

LAUMANN, R. A.

Simple transducer measures low heat-transfer rates JPL-466  B64-10122  01

LAVES, R. E.

System measures response time of photosensitive tubes LWIS-10437  B68-10382  01

LAVES, R. E.

Microphone multiplex system provides multiple outputs from single source GSF-426  B66-10308  01

LAVENDER, C. B.

Knob linkage permits one-hand control of several operations SESC-1040  B65-10022  05

LAVENDER, D. E.

Independently doubly truncated gamma variables M-PS-20143  B68-10345  02

LAVRICH, C.

Rectangular configuration improves superconducting cable AGO-90086  B68-10098  02

LAVRETTY, J. L.

Depth indicator and stop aid machined to precise tolerances N-PS-553  B66-10149  05

LAVRITY, A. L.

Nosepiece respiration monitor BCC-10136  B68-10438  01

LAVIGHTY, R. C.

Variable voltage supply uses Zener diode as reference GSF-262  B65-10097  01

Complementary nonohmic circuits achieve low power drain and high reliability GSF-433  B66-10179  01

LAWRENCE, B. D.

An efficient, temperature-compensated subcarrier oscillator JPL-SC-091  B67-10251  01

LAWSON, C.

Computer program utilizes FORTRAN 4 subroutines for contour plotting WFO-10127  B67-10323  06

LAWSON, D. D.

Isostatic compression process converts polyacrylate into structural material JPL-892  B67-10168  03

LAWSON, J. R.

Improved gas ring laser SFC-11558  B66-10304  02

High-speed pulse camera SNC-11533  B66-10329  02

Ring laser angle encoder MSC-10399  B69-10115  01

LAYMAN, W. E.

Lightweight load support serves as vibration damper JPL-661  B65-10144  05

LAYTON, J. P.

Special mount improves remote transducer accuracy LWIS-269  B66-10021  01

LAX, L.

Foil bearing support for high-speed rotor HQ-10315  B69-10061  01

LASHGIN, J. L.

Bypass rod transfers heat developed in thermionic diode JPL-SC-138  B66-10303  05

LE BUS, D.

Foot-operated cell-counter ABO-10315  B69-10351  01

LE DOUZ, F. W.

Bacteriostatic conformal coating for electronic components GSF-10007  B67-10599  03

LE, A. Y.

Computer program MCP-TGSS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid NUC-10042  B67-10456  06

LE, G. S.

Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry ARG-210  B67-10236  03

LEE, K.

Studies of cycles for liquid-metal magnetohydrodynamic generation of power ARG-10250  B69-10194  02

LEE, P.

Nanoprobe gain control for ring laser M-PS-14041  B67-10653  02

LEE, R. C.

Fully automatic telemetry data processor GSF-10576  B68-10336  01

LEE, R. D.

Recoated-actuated biomedical switch ABC-10105  B69-10117  01

LEE, R. H.

Study of tribos corrosion resistance of stainless steel and nickel alloys in nuclear reactor superheaters ARG-230  B67-10051  03

LEE, S. Y.

Shock and vibration response of multisstage structure M-PS-14972  B68-10353  05

LEE, W. B.

Study of pipe nickel technology M-PS-2054  B67-10208  03

LEE, W. S.

Method for reinforcing tubing joints MSC-11108  B68-10115  05

LEFEBREL, J. C.

Computer program simplifies design of rotating components of turbomachinery NUC-10046  B67-10235  06

LEG ALLOW, R. A.

Electrochemical study of aluminum corrosion in boiling high purity water ARG-10306  B69-10033  03

LEGER, L. J.

Heat-shrinkable jacket holds fluid in contact with tensile test specimen MSC-13195  B69-10495  05

LEHMAN, R. E.

Seismometer designed for remote operation in random orientation JPL-320  B67-10085  01

LEHREB, S.

Piezoelectric linear actuator MSC-13194  B69-10469  02

LEHREB, H. F.

Refractory-metal compound impregnation of polytetrafluoroethylene LWIS-10713  B69-10072  03

LEHDT, R. A.

Heated die facilitates tungsten forming LWIS-25A  B66-10047  05
LEIGH, J. D.
Electroplating eliminates gas leakage in brazed areas
N-PS-192
B69-10556 05
LEIFOLD, M. R.
Removable preheater elements improve oxide induction furnace
JPL-288
B67-10193 01
LEISS, A.
Device measures fluid drag on test vehicles
LANGLEY-34
B67-10195 01
LEV, R. A.
Probabilistic approach to long range planning of manpower
MSC-11524
B67-10510 06
LEMONS, C. R.
Flowmeter determines mix ratio for viscous adhesives
N-PS-2308
B67-10378 01
LEO, P. J.
Multiple test tubes stirred mechanically
JPL-92
B67-10120 01
LEONARD, R.
Device measures reaction engine thrust vector deviations
JPL-SC-163
B66-10642 05
LEONARD, W. F.
Microwave technique measures plasma characteristics
LANGLEY-134
B65-10122 02
LEANERI, S. J.
Novel methods for size reclassification of microfog particles
LEWIS-10705
B69-10076 05
LEPPIN, F. E.
Artificial on-site tracking prediction program
HPO-10836
B69-10103 06
LEHNER, S. R.
Cobalt improves nickel hydroxide electrodes for batteries
LEWIS-10760
B69-10228 01
LESCO, D. J.
Fatigue cracks detected and measured without test interruption
LEWIS-266
B66-10178 02
LESSMAN, C. G.
Tubo-to-header joint for bimetallic construction
LEWIS-10282
B67-10464 05
LEWIS, J. L.
Improved torch increases weld quality in refractory metals
LEWIS-324
B66-10041 05
LESOFF, R.
Adding calcium improves lithium ferrite core
EBC-10036
B69-10686 06
LEVERMORE, R.
PTC thermostator protects multiloaded power supplies
GSC-236
B64-10201 01
LUDER, R.
Automatic solar lamp intensity control system
I-PS-10017
B68-10399 01
LEV, R. P.
Ultraviolet photographic pyrometer used in rocket exhaust analysis
N-PS-499
B66-10095 02
LEVINE, P.
Shortened procedure for obtaining reproducible copies of 35 mm color slides
ESC-09957
B68-10560 02
LEVINE, S. H.
Synthesis of polyesters of hexafluorobenzene and hexafluoropentanediol
N-PS-14962
B66-10636 03
LEVINE, R.
Automatic tuning of hydrogen masers
GSC-10127
B69-10452 01
LEVING, D. J.
Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures
NRC-10521
B67-10617 02
LEVINGSON, N.
Ellipsoidal optical reflectors reproduced by electroforming
GSC-92
B63-10547 05
Laite converted for grinding aspheric surfaces
JPL-170
B63-10139 05
LEVY, G. S.
Data processing method for a weak, moving telemetry signal
NPO-11003
B69-10639 01
LENWALD, G. R.
Trajectory optimization using regularized variables
ESC-13370
B69-10810 02
LENAWOWSKI, K.
Properties of air and combustion products of fuels with air
LEWIS-11030
B69-10711 03
LENICKI, G. W.
Development of Curie point switching for thin film, random access, memory device
HPO-10402
B67-10633 02
LEWIS, C. E., Jr.
Electrocardiograph transmitted by RF and telephone links in emergency situations
PFC-10031
B68-10233 01
LEWIS, D. R.
CINDA - Chrysler Improved Numerical Differentiating Analyzer computer program
N-PS-2298
B67-10278 06
LEWIS, R. E.
Planetary camera control improves microfiche production
HQ-1
B65-10313 01
LEWIS, J. C.
Prefabricated stiffeners used to fabricate structural components for pressurized tanks
N-PS-1796
B66-10688 05
LEWIS, R. E.
High voltage potential divider calibrated by simple device
ABS-83
B66-10497 01
Precision capacitor has improved temperature and operational stability
ABS-189
B67-10313 01
Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ABS-10110
B66-10328 01
Flexible high-voltage supply for experimental electron microscope
ABP-10482
B69-10603 01
LIBBY, J. W.
Ring counter may be advanced or retarded by command signal
GSC-101
B64-10144 01
LIBERTI, J.
Control for maintaining constant level of a cryogenic liquid
NPO-11177
B65-10573 05
LIBERTON, C.
Modified drill permits one-step drilling operation
N-PS-559
B66-10169 05
LIEB, D. P.
Collector-collector guard ring balancing circuit eliminates edge effects
JPL-SC-149
B66-10563 01
LIEB, J. H.
Evaluation of a fluorocarbon plastic used in cryogenic valve seals
N-PS-10188
B66-10523 03
LIBING, L.
Fast-acting calorimeter measures heat output
Flow ring valve is simple, quick-acting
Conversion of continuous-direct-current
Coaxial cable stripper for confined areas
Astronaut space suit communication antenna
Inexpensive insulation is effective for
Control system maintains compartment at
Improved head-controlled
Integrated circuit with multiple collector
Stereo photomacrography system
Self-aligning fixture used in lathe chuck
Computer routine adds plotting capabilities
Glass bead shot peening retards stress
of plasma gun accelerator
Conversion of continuous-direct-current
Water-glycol system volume calculation
Torque system for creep testing with
Integrated circuit with multiple collector
Multiarray analyzer detects low-energy
ing. ARS-128
Control system maintains compartment at
Laser measuring system accurately locates
Flow ring valve is simple, quick-acting
Inexpensive insulation is effective for
cryogenic transfer lines
Mass transport mechanism in porous fuel cell
Astronaut space suit communication antenna
Laser interferometer micrometer system
Self-aligning fixture used in lathe chuck
Computer routine adds plotting capabilities
to existing programs
Laser measuring system accurately locates
Flow ring valve is simple, quick-acting
Inexpensive insulation is effective for
Self-aligning fixture used in lathe chuck
Laser measuring system accurately locates
Flow ring valve is simple, quick-acting
Inexpensive insulation is effective for
Control system maintains compartment at
Laser measuring system accurately locates
Flow ring valve is simple, quick-acting
Inexpensive insulation is effective for
Self-aligning fixture used in lathe chuck
Computer routine adds plotting capabilities
Glass bead shot peening retards stress
of plasma gun accelerator
Conversion of continuous-direct-current
Water-glycol system volume calculation
Torque system for creep testing with
Integrated circuit with multiple collector
Stereo photomacrography system
Self-aligning fixture used in lathe chuck
Computer routine adds plotting capabilities
Glass bead shot peening retards stress

PERSONAL AUTHOR INDEX

LISTER, J. L.  Thermally conducting electron transfer
polymers
GSFC-10703
B69-10511 03
LISTER, R. W.  High-efficiency step-up regulator
M-PS-20045
B68-10432 01
LITAN, E.  Improved method of dioxide integrated circuit
wavers into chips
EFC-10138
B69-10441 01
LIU, L. S.  Analysis of stability-critical orthotropic
cylinders subjected to axial compression
M-PS-12869
B67-10375 03
LITKOS, J. C.  Shock and vibration response of multistage
structure
M-PS-14972
B68-10353 05
LORBEIL, G.  Rectangular configuration improves
superconducting cable
B68-10090 02
LOCKE, J. R.  Lead plated aluminum ring provides static
high pressure seal for large diameter
pressure vessel
NKC-10008
B67-10539 05
LOCKE, R. O.  Exact minimal-state system reliability
analysis
K-PS-16551
B69-10409 06
LOCKWOOD, J. A.  Improved pulse shape discriminator for fast
neutron-gamma ray detection system
K-PS-10151
B69-10481 01
LOBB, M. B.  Study made of pneumatic high pressure piping
materials /10,000 psi/
KSC-10133
B67-10437 03
Handbook of cryogenic data in graphic form
KSC-10009
B67-10610 02
LOESS, R. E.  Study of corrosion of 1100 aluminum
ARC-10045
B67-10578 03
Study of crevice-galvanic corrosion of
aluminum
ARC-10013
B67-10583 03
Instrumentation for potentiostatic corrosion
studies with distilled water
ARC-10409
B69-10413 03
LOFTUS, W. D.  Electronic circuit provides accurate
sensing and control of dc voltage
NU-0089
B66-10591 01
LOGSDON, T. S.  Algebraic Monte Carlo procedure reduces
statistical analysis time and cost factors
M-PS-19687
B57-10434 01
LOGUR, S. H.  Laser interferometer micrometer system
M-PS-14747
B69-10633 02
LOGUR, S. S.  System converts optical phase changes to
RF phase changes
M-PS-20091
B68-10430 01
LOHRE, J. J.  Mechanical properties of plastics
predetermined by empirical method
ARC-28
B64-10068 03
Concept for design of variable stiffness
damper
B67-10483 05
LORANDSON, D. C.  MOSFET improves performance of power
supply regulator
GSFC-10222
B67-10569 01
Linear voltage-to-frequency converter
GSFC-10546
B69-10220 01
LONGBORG, Jider.  Simple control device meters solar position
JPL-363
B65-10601 01
Electrostatically driven dynamic capacitor
JPL-771
B65-10293 01
LONG, R. J. R.  Safety switch permits emergency bridge crane
shutdown
M-PS-1549
B66-10168 05
LOUGHEED, A.

Concept for using laser beams to measure electron density in plasmas
M-PS-965
B66-10645 01

LOCK, G. P.

Organic reactants rapidly produce plastic foam
LANGLEY-37
B65-10286 03

LOBENSTEIN, H. C.

Chemical milling solution produces smooth surface finish on aluminum
M-PS-549
B66-10314 03

LOBENSTEIN, C. F.

Computer program determines system stability/DSST/LEWIS-10395
B66-10216 06

LOBERT, C. E.

Compensation of pulse-rebalanced inertial instruments
M-PS-13098
B69-10216 01

LOSEK, W. A.

Detecting hydrogen-containing contaminants on metal surfaces
M-PS-20456
B69-10192 02

LOTHER SCHULZ, F. X.

Orthopedic stretcher with average-sized person can pass through 18-inch opening
M-PS-811
B66-10573 05

LOTT, S. K.

Reaction of steam with molybdenum in studied
B67-10502 03

Reaction studied of steam with niobium and tantalum
ABS-10051
B68-10189 03

LOVE, E. G.

Neter accurately measures flow of low-conductivity fluids
JPL-0021
B63-10280 01

LOVE, T. H.

Shoulder adapter steadies spot welding gun
M-PS-321
B66-10076 05

LOVELEY, R. N.

System locates randomly placed remote objects
LANGLEY-209
B66-10315 01

LOVING, D. R.

Oil-sealed models aid wind tunnel measurements
LANGLEY-8
B63-10311 03

LOVETT, T. F.

Electroprospective transducer automatically limits motor current
LEWIS-252
B66-10160 01

LOVITT, C. W.

Heat treatment study of aluminum casting
M-PS-2397
B67-10159 03

Stress-corrosion characteristics of aluminum casting alloy M-45
M-PS-14817
B68-10184 03

LOWDEN, E. S.

Gas-injection valve operates at high speed
NO-49
B66-10381 05

LOWDENHILL, W. H.

Rotating magnetic poles used to pump mercury
LEWIS-276
B66-10404 05

LOW, E. H.

Opaque microfiche masterhead permits easy reading
NO-7
B65-10306 01

LOWRIE, A. E.

Study of fast response thermocouple measurement of temperatures in cryogenic gases
M-PS-1659
B66-10661 01

LOY, J. L.

Magnetic latches provide positive overpressure control
NU-0057
B66-10279 05

LOY, R. E.

Determination of permissible applied load stress in structural elements
M-PS-16556
B69-10823 02

LOY, J. E.

Substituting gold for silver improves electrical connections
M-PS-2390
B67-10228 03

This thin film heat transfer gage is stable at higher temperatures
M-PS-12396
B68-10951 01

LUBACK, W.

Digital computer program predicts effects of local pressure transients on deformation and stress in cylindrical ducts
M-PS-13058
B67-10631 06

LUBOWITZ, H. E.

New class of thermosetting plastics has improved strength, thermal and chemical stability
LEWIS-10108
B67-10197 03

New rapid-curing, stable polyester polyesters with high-temperature strength and thermal stability
LEWIS-10576
B69-10118 03

LUCAS, E.

Evaluation of superconducting magnets, a study
LEWIS-10396 02

LUCAS, H.

Beam profiles measured with thermoluminescent dosimeters
ARG-10229
B69-10124 02

LUCY, R. F.

Optical superheterodyne receiver uses laser for local oscillator
B66-10584 01

Precision CW laser automatic tracking system investigated
M-PS-18606
B66-10169 01

LUDWIG, A.

Computer program for antenna feed system design and analysis
M-PS-10559
B67-10504 06

Computer program aids dual reflector antenna system design
M-PS-10501
B69-10139 06

LUDWIG, C. R.

Prediction of thermal radiation from a rocket's exhaust plume
M-PS-20414
B69-10371 02

LUDWIG, L. P.

Spiral-grooved shaft seals substantially reduce leakage and wear
LEWIS-10397
B68-10270 05

Hermetically sealed pump
LEWIS-10837
B69-10320 05

LUEBBERS, S. S.

Thermionic diode switching has high temperature application
WAG-10048
B67-10672 01

LUJ, K.

Mixed ether bath for electrodeposition of aluminum
LANGLEY-10200
B69-10737 03

LUKE, R. F.

Weight Control System
M-PS-15028
B69-10041 06

LUM, J. Y.

Soldering iron temperature is automatically reduced
M-PS-20414
B66-10203 01

LUNDQUIST, J. R.

Preparation of high purity copper fluoride by fluorinating copper hydroxidefluoride
LEWIS-10796
B69-10136 03

LUND, C.

Emission tester for high-power vacuum tubes
JPL-0628
B66-10158 01

LUOON, W. L.

High-maintenance coatings on metal substrates
LEWIS-10325
B68-10381 03

LUSCROCHE, W.

Improved circuit minimizes generation time of pseudonoise check bits
JPL-628
B66-10158 01

BUILD, T. K., JR.

Hand tool facilitates extraction of circuit
JPL-0021
B66-10160 01
Glassy materials investigated for nuclear specimen holder design improves accuracy

A computer program for a line-by-line ARG-10226

Logic realization of simple majority voting

Bellows design features low spring rate and long life

Experiments with ceramic coatings

Solid-state time-to-pulse-height converter

Ultrasonic temperature measuring device

Vented piston seal prevents fluid leakage between two chambers

High-pressure regulating system prevents pressure surges

Packless valve with all-metal seat handles wide temperature, pressure range

Filter for high-pressure gases has easy take-down, assembly

New package for Belleville spring permits rate change, easy disassembly

Improved fluid control valve extends diaphragm life

PERSONAL AUTHOR INDEX

Tensile-strength apparatus applies high strain-rate loading with minimum shock

MAC NAUGHTON, R. G.\n
Note: Proszpliter circuit maintains stability over wide temperature range

MACKEY, R. E.\n
Neon isotopes cancel errors in gas laser

MACK, R.\n
Specimen holder design improves accuracy of X-ray powder analysis

MACKAY, T. L.\n
Flame sprayed dielectric coatings improve heat dissipation in electronic packaging

MACKAY, R. T., SR.\n
Numerical Control Machine Data Manual

MAGURA, P.\n
Simplest fixture permits precision alignment of an optical target

MAHER, R. C.\n
Suppressor plate eliminates undesired arcing during electron beam welding

MAHUB, R. A.\n
Glow discharge density sensor probe life is extended

MAHER, H.\n
Vacuum test fixture improves leakage rate measurements

MAJER, S. J.\n
Quick-closing valve is actuated by explosive discharge

MANNERT, L. A.\n
Automatic fluid separator supplies own driving power

MALLET, A. A.\n
Adjustable hinge permits movement of knee in plaster cast

MALLIE, D. F.\n
New method for critical failure prediction of complex systems

MALLE, W. N.\n
Blood oxygen saturation determined by transmission spectrophotometry of hemolysed blood samples

MALLING, L. R.\n
Design concept for improved photo-acen tube

MALK, J. G.\n
Xenon forms stable compound with fluorine

MALLO, P. E.\n
Pure xenon hexafluoride prepared for thermal properties studies
PERSONAL AUTHOR INDEX

MATT, S. L.
An improved nuclear magnetic resonance spectrometer
JPL-762 B67-10234 01

MELLE, J. A.
Nylon shock absorber prevents injury to parachute jumpers
MSC-226 B66-10080 05

MENDES, S.
Large volume continuous counterflow dialyzor has high efficiency
EQ-10055 B67-10395 04

MENDEL, W.
PTC thermistor protects multiloaded power supplies
GSPC-236 B64-10281 01
Automatic solar lamp intensity control system
JPL-10017 B68-10399 01

MENDY, J.
The compatible conversion system
M-PS-15010 B69-10031 06

MENGUS, J.
Selective vignetting of Type 1 X-ray telescopes
GSPC-10682 B69-10075 02

MENCOVITZ, E. J.
Circuit exhibits power efficiency greater than 75 percent
MSC-254 B66-10034 01
Computer program simulates physical system by solving the simultaneous differential equations describing the systems
NPS-10019 B67-10193 06

MREE, H. M.
High resolution Ge/Li/ spectrometer reduces rate-dependent distortions at high counting rates
ARG-10144 B68-10420 01

MANNING, C. R.
Glass bead shot peening retards stress corrosion failure of titanium tanks
LANGLEY-319 B67-10198 05

MANNING, R. C., JR.
Thoriated nickel bonded by solid-state diffusion method
E-PS-1220 B65-10220 03

MAPLE, W. E.
Apparatus enables accurate determination of alkali oxides in alkali metals
LEWIS-256 B66-10296 03

MAPLES, H. G.
Light-intensity modulator withstands high heat fluxes
MSC-246 B66-10532 02

MARCOWITZ, S. N.
Beam profiles measured with thermoste present detectors
ARG-1022 B69-10024 02

MARGASON, R. J.
Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
LANGLEY-10191 B67-10666 06

MARIMAN, H. A.
Positive displacement cylinder measures corrosive liquid volume
MSC-1038 B66-10589 05

MARION, C. W.
High transients suppressed in electromagnetic devices
MSC-66-13 B67-10031 01

MARIS, S. J.
Logic system aids in evaluation of project readiness
MSC-753 B66-10457 05

MARR, D. A.
A new method for producing optical mirrors
HQ-10227 B69-10529 02
Airborne Fraunhofer Line Discriminator
MSC-13146 B69-10594 02

MARKLEY, F. W.
Sputtering erosion produces improved plastic scintillators
MSP-241 B67-10596 03

MARKOWITZ, I. M.
Circuit increases capability of hysteresis synchronous motor
MSC-1080 B67-10084 01

MARLETT, S. L.
Leads integral with the internal interconnection that penetrate the molded wall of a package
LANGLEY-10228 B69-10436 01

MAROITIS, N.
Ultrasonic wrench produces leaktight connections
M-PS-12561 B67-10353 05

MARRIOTT, G. E.
Binary counter accumulates time by complementary preset
MSC-242 B65-10399 01

MARS, R. W.
Pressure responsive seal handles static and dynamic loads
GSPC-441 B65-10327 05

MARSHALL, J. R.
Field effect transistor presents high input impedance in an amplifier
JPL-500 B65-10232 01

MARSHALL, T. C.
Semiautomatic device tests components with bi axial leads
M-PS-1256 B66-10337 03

MARSIS, S. J.
Production of metals and compounds by radiation chemistry
LEWIS-10231 B69-10123 03

MARTONIEN, A. J.
Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
E-PS-640 B66-10247 05

MARUTI, C. T.
Conditioning of pulses from aerosol-particle detectors
M-PS-1256 B69-10691 01

MARTIN, R. C.
Welding of commercial base plates is investigated
M-PS-1256 B68-10192 03

MARTIN, G.
Nondestructive testing techniques used in analysis of honeycomb structure bond strength
M-PS-1214 B67-10574 01
Instrumentation for nondestructive testing of composite honeycomb materials
M-PS-20405 B69-10366 03

MARTIN, K. R.
Cryogenic seal remains leaktight during thermal displacement
ARG-96 B67-10134 02

MARTIN, N. C.
Novel clamps align large rocket cases, eliminate back-up bars
M-PS-1 B63-10376 05

MARTIN, R. H., JR.
Solution of differential equations by application of transformation groups
M-PS-14902 B68-10276 02

MARTIN, W. H.
Life detection
M-PS-10510 B69-10475 04

MARZIANI, L. B.
Control circuit maintains unity power factor of reactive load
MSC-192 B66-10431 01

MARINECK, H. G.
Contact-spring forming machine for flat conductor cable receptacles
M-PS-20126 B68-10550 05

MARBART, J. S.
Inexpensive check valve is installed in standard AN fittings
JPL-29 B65-10222 05

MARTINO, J.
One-handed hammer-spanner for clucks
M-PS-18571 B69-10398 05

MARTUCHI, V. J.
Magneton tuner has locking feature
M-PS-09771 B69-1119 05

MARY, R.
Vacuum test fixture improves leakage rate measurements
MSP-271 B66-10286 01

MARZULLO, R. A.
Removal of retaining washers of the waffle-spring type

J-797
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maserjian, J.</td>
<td>Thin film thermal detector</td>
<td>B69-10350 05</td>
</tr>
<tr>
<td>Maserjian, J.</td>
<td>Oxygen-hydrogen torch is a small-scale steam generator</td>
<td>B67-10505 01</td>
</tr>
<tr>
<td>Maseke, C. E.</td>
<td>Corrosion of metal samples rapidly measured</td>
<td>B66-10120 03</td>
</tr>
<tr>
<td>Basilevsky, E. A.</td>
<td>Positive and negative output circuits</td>
<td>B66-10140 01</td>
</tr>
<tr>
<td>Mason, K. A.</td>
<td>Oculometer for remote tracking of eye movement</td>
<td>B69-10444 02</td>
</tr>
<tr>
<td>Massagli, J. L.</td>
<td>Internal velocity factors</td>
<td>B68-10403 06</td>
</tr>
<tr>
<td>Masters, R. H.</td>
<td>Magnetic field mapper</td>
<td>B69-10476 01</td>
</tr>
<tr>
<td>Hatchett, R. W.</td>
<td>Simple, one transistor circuit boosts pulse amplitude</td>
<td>B66-10480 01</td>
</tr>
<tr>
<td>Matters, R. W.</td>
<td>Study made of dielectric properties of promising materials for cryogenic capacitors</td>
<td>B67-10366 03</td>
</tr>
<tr>
<td>Matheron, R. P.</td>
<td>Modified filter prevents conduction of microwave signals along high-voltage power supply leads</td>
<td>B65-10400 01</td>
</tr>
<tr>
<td>Matras, N.</td>
<td>Metallographic holding fixture permits polishing of soft metals on vibratory lapping machine</td>
<td>B66-10562 05</td>
</tr>
<tr>
<td>Mattox, D. M.</td>
<td>Ion plating technique improves thin film deposition</td>
<td>B68-10212 03</td>
</tr>
<tr>
<td>Matis, T. C.</td>
<td>Digital logic elements provide additional functions from analog input</td>
<td>B68-10064 01</td>
</tr>
<tr>
<td>Mathis, S. T.</td>
<td>J-beveling of pipe ends with a hand-held tool</td>
<td>B69-10229 05</td>
</tr>
<tr>
<td>Bauch, H. E.</td>
<td>Deployable lattice column</td>
<td>B68-10082 05</td>
</tr>
<tr>
<td>Bauchly, J.</td>
<td>Application of cryptanalytic techniques to the analysis of BIC space batteries</td>
<td>B69-10731 01</td>
</tr>
<tr>
<td>Baudekin, A. L.</td>
<td>Insertion device for pressure testing</td>
<td>B69-10061 03</td>
</tr>
<tr>
<td>Bader, R. E., Jr.</td>
<td>Point-source detection system rejects spatially extended radiation sources</td>
<td>B68-10145 05</td>
</tr>
<tr>
<td>Bay, J. L.</td>
<td>Mixing weld gases offers advantages</td>
<td>B66-10622 01</td>
</tr>
<tr>
<td>Bayler, H. W.</td>
<td>Special coatings control temperature of structures</td>
<td>B65-10337 03</td>
</tr>
<tr>
<td>Bayfield, R. H.</td>
<td>Hydraulic fluid serves as mandrel for small diameter refractory tube drawing</td>
<td>B66-10523 05</td>
</tr>
<tr>
<td>Bayfield, R. H.</td>
<td>Ductile mandrel and parting compound facilitate tube drawing</td>
<td>B66-10571 05</td>
</tr>
</tbody>
</table>

**Personal Author Index**

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sato, J. W.</td>
<td>threaded split ring connector separates structural sections</td>
<td>B65-10383 05</td>
</tr>
<tr>
<td>Hiltz, L.</td>
<td>Tester automatically checks paper tape punch and reader after maintenance</td>
<td>B67-10267 01</td>
</tr>
<tr>
<td>Affe, D. F.</td>
<td>High-pass IF coaxial filter rejects dc and low frequency signals</td>
<td>B65-10300 01</td>
</tr>
<tr>
<td>Allister, J. W.</td>
<td>Rock anchors restore broken swamp anchors economically</td>
<td>B67-10488 05</td>
</tr>
<tr>
<td>Avov, N.</td>
<td>Laser action from a terbium beta-ketoneolate at room temperature</td>
<td>B69-10324 02</td>
</tr>
<tr>
<td>Beide, B. J.</td>
<td>Computer program for calculation of ideal gas thermodynamic data</td>
<td>B66-10025 06</td>
</tr>
<tr>
<td>Call, A. J.</td>
<td>Function generator eliminates necessity of series summation</td>
<td>B66-10351 01</td>
</tr>
<tr>
<td>Campbell, W. M.</td>
<td>Generation of sonic power during welding</td>
<td>B69-10404 05</td>
</tr>
<tr>
<td>Carn, D. H.</td>
<td>Electronic aperture control devised for solid state imaging system</td>
<td>B68-10028 01</td>
</tr>
<tr>
<td>Carn, J. J.</td>
<td>Colloidal suspension simulates linear dynamic pressure profile</td>
<td>B66-10214 05</td>
</tr>
<tr>
<td>Carty, J. B.</td>
<td>Clamps provides efficient connection for high-density currents</td>
<td>B67-10140 01</td>
</tr>
<tr>
<td>Carty, R. D.</td>
<td>Thermodynamic properties of saturated liquid parahydrogen charted for important temperature range</td>
<td>B67-10346 03</td>
</tr>
<tr>
<td>Carty, P.</td>
<td>Improved circuit for measuring capacitive and inductive reactances</td>
<td>B67-10150 06</td>
</tr>
<tr>
<td>Caudle, P.</td>
<td>Binary system generates sidereal rate from standard solar rate</td>
<td>B64-10200 01</td>
</tr>
<tr>
<td>Cauley, D. L.</td>
<td>Light-controlled resistors provide quadrature signal rejection for high-gain servo systems</td>
<td>B69-10756 01</td>
</tr>
</tbody>
</table>
Telescopy of instrumentation tubing eliminates swaging

Polarnic film helps locate objects in inaccessible areas quickly

Niobium-uranium alloys with voids of predetermined size and total volume

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel

Epoxy-coated containers easily opened by wire band

Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area

Lathe converted for grinding aspheric surfaces

Computer circuit calculates cardiac output

Method for determining properties of microinstabilities of a magnetized plasma

Cone and column solar energy concentrator

Tungsten fiber-reinforced copper composites for high strength electrical conductors

Emergency escape system uses self-braking mechanism on fixed cable

Frequency divider is free of spurious outputs

Coolants with selective optical filtering characteristics for ruby laser applications

High- and low-pressure pneumostaters measure respiration rates accurately in adverse environments

Electrocardiograph transmitted by RF and telephone links in emergency situations

Accurate nine-decade temperature-compensated logarithmic amplifier

Orbit locating system operated from field test tool steel proves satisfactory

Computer program resolves radiative, conductive, and convective heat transfer problems for variety of geometries
jigs and tool structures 866-10458 03
MURV, R. E. Magnetic forming studies M-FS-14217 B68-10186 02
REINHARD, K. W. Thermal and bias cycling stabilizes planar silicon devices M-E-171 E67-10176 01
REITHEWÖLDER, G. W. Solar-angle sensor has no moving parts JPL-419 B63-10260 02
REISSNER, C. W., JR. Local readout of identification signals in Horse code LANGLEY-10222 B69-10479 01
REITTER, K. Laser-Doppler gas-velocity instrument M-FS-20039 B68-10349 02
RELICK, J. E. Synchronous charge-constrained electroquasistatic generator EQ-10231 B69-10377 06
RELLE, J. E. Axysymmetric reacting gas nonequilibrium performance program M-17591 B63-10461 01
REMP, L. T. Rapid helium-air analyzer can measure other binary gas mixtures LANGLEY-16 B63-10557 03
RELLINGER, R. E. Plastic tubing protects flexible copper hose M-FS-772 B66-10588 05
RELLIO, C. E. Protective coating withstands high temperature in oxidizing atmosphere M-FS-529 B66-10044 03
RELMER, D. E. Fluid-pressure meter can be calibrated without removal from flow line M-FS-90 B63-10505 02
RELLER, W. H. Multichip packaging with thermal insulation M-FS-14076 B69-10119 02
RUMSEYALL, M. B. Mixing weld gases offers advantages M-FS-16413 B69-10145 05
RHEE, J. E. Electronic filter discriminates between true and false reflections EQ-55 B67-10071 02
RHEY, J. F. Computer program determines performance efficiency of remote measuring systems M-FS-11377 B66-10503 01
RHEIN, R. L. Liquid-metal heat transfer in a countercurrent-flow, double-pipe heat exchanger is investigated ARC-1026 B69-10091 02
RHEITZ, R., JR. Visual task analysis /VISTA/ M-FS-14716 B69-10394 06
RHS, R. J. Dynamics of soring bubbles in single and binary component systems M-FS-10885 B68-10339 02
RHEZ, K. W. Dynamic linearity measurement technique KSC-10186 B66-10290 01
RHEZ, R. E. Dynamic linearity measurement technique KSC-10186 B66-10290 01
RHEZ, R. E. Optimum PM pre-emphasis KSC-10151 B69-10359 01
RHEZ, R. H. Intermediate rotating ring improves
Mechanical properties of a lap joint under uniform clamping pressure

A simplified tunnel diode circuit for accurate zero crossing timing

Reduction by monovalent zinc, cadmium, and high-pressure spherical vapor deposition provides quick opening

Hand-tightened, high-pressure seal

High-temperature, high-pressure spherical valve provides quick opening

Improvement process for making thin-film sodium niobate capacitors

Large diameter metal ring seal prevents gas leakage at 5000 psi

Insulation for cryogenic tanks has reduced thickness and weight

X-ray film holder permits single continuous picture of tubing joint

Frequency-shift-keyer circuit improves PCM conversion for radio transmission

Silicon surface barrier detectors used for liquid hydrogen density measurement

Solid state high-voltage pulser operates with low supply voltage

Direction indicator system does not require complicated optics

Concept for passive system to control gas flow independently of temperature

Automated drafting system uses computer techniques

Instrument continuously measures density of flowing fluids

Metabolic and toxicological effects of water-soluble xenon compounds are studied

A polar graphic method for determining the attitude of rocket vehicles

Necessary HP probe eliminates need for calibration in plasma accelerators

The reliability of dynamic shaft seal

Body-fitted harness provides safe and easy component handling

Microprobe investigation of brittle segregates in aluminum MIG and TIG welds

Technique for pinpointing submicron particles in the electron microscope

Legibility of electroluminescent instrument panels investigated

Connector for thermocouple leads saves costly wire, makes reliable connections

Technique for pinpointing submicron particles in the electron microscope

Stepping switch with simple actuator provides many contacts in small space

Apparatus of small size can be extended into long, rigid booms

Automatic reel controls filler wire in welding machines

Tool separates sleeve-type unions without heat

Transfer circuit amplifies sensing current for computer memories

Antechamber facilitates loading and unloading of vacuum furnace

Dual-mode operation of a neutron source, a daughter growth in freshly separated Ra-226, Ac-227 and 0-232

Neutron activation analysis traces copper artifacts to geographical point of origin

Technique for pinpointing submicron particles in the electron microscope

Equivalent circuit for a field effect transistor established for computer
Ignition system uses modulated laser beam

Study made of dielectric properties of

Gas leak detector is simple and

Ultrasonic hand tool allows convenient

Plug-in connector socket accepts coaxial

Improved electromechanical master-slave

Rotary-knife stripper facilitates removal

Computer program determines thermal

An electrical connector pin protector

Training course for radiation safety

Silicon carbide diode for increased light

Digital cardiometer computes and

Simple circuit provides adjustable voltage

I-IIBGBSZ, I-IIBKIB.

I-IITCHBLL, HITCHBLL, HITCHELL.

I-IITCEBLL.

I-IITCHBLL, K.

HLAVSKY, MITCHELL.

I-OCKBR, EOBDB, HOBEBLY, IOACANIB, IOB,

Communication system uses modulated laser beam

Study made of dielectric properties of

Gas leak detector is simple and

Ultrasonic hand tool allows convenient

Plug-in connector socket accepts coaxial

Improved electromechanical master-slave

Rotary-knife stripper facilitates removal

Computer program determines thermal

An electrical connector pin protector

Training course for radiation safety

Silicon carbide diode for increased light

Digital cardiometer computes and

Simple circuit provides adjustable voltage

I-IIBGBSZ, I-IIBKIB.

I-IITCHBLL, HITCHBLL, HITCHELL.

I-IITCEBLL.

I-IITCHBLL, K.

HLAVSKY, MITCHELL.

I-OCKBR, EOBDB, HOBEBLY, IOACANIB, IOB,

Communication system uses modulated laser beam

Study made of dielectric properties of

Gas leak detector is simple and

Ultrasonic hand tool allows convenient

Plug-in connector socket accepts coaxial

Improved electromechanical master-slave

Rotary-knife stripper facilitates removal

Computer program determines thermal

An electrical connector pin protector

Training course for radiation safety

Silicon carbide diode for increased light

Digital cardiometer computes and

Simple circuit provides adjustable voltage

I-IIBGBSZ, I-IIBKIB.

I-IITCHBLL, HITCHBLL, HITCHELL.

I-IITCEBLL.

I-IITCHBLL, K.

HLAVSKY, MITCHELL.

I-OCKBR, EOBDB, HOBEBLY, IOACANIB, IOB,

Communication system uses modulated laser beam

Study made of dielectric properties of

Gas leak detector is simple and

Ultrasonic hand tool allows convenient

Plug-in connector socket accepts coaxial

Improved electromechanical master-slave

Rotary-knife stripper facilitates removal

Computer program determines thermal

An electrical connector pin protector

Training course for radiation safety

Silicon carbide diode for increased light

Digital cardiometer computes and

Simple circuit provides adjustable voltage

I-IIBGBSZ, I-IIBKIB.

I-IITCHBLL, HITCHBLL, HITCHELL.

I-IITCEBLL.

I-IITCHBLL, K.

HLAVSKY, MITCHELL.
Insignificant text content for natural representation.
MULLER, F. N.

MULLER, F. M.
EOP /Matrix Operation Programs

MULLER, F. M.
Substituting transistor for diode improves rectifying means

MULLER, F. M.
Digital system detects binary code patterns containing errors

MULLER, F. M.
Concept for automatic Doppler compensation in two-way communication systems

MULLER, G. E.
Jet engine powers large, high-temperature wind tunnel

MULLINS, R. E.
Chromatographic detection and analysis of traces of hydrocarbons

HUNDFORD, W. A.
Areas of irregular, discontinuous patterns rapidly and accurately measured

MOWES, R. M.
Field-effect transistor improves electrometer amplifier

MURA, T.
Wall-thickness changes predicted in hollow-drawn tubing

MURPHY, C. L.
A piezobar pressure probe

MURPHY, D. W.
Combined actuator and latch for cartridge powered actuator

MURPHY, J. R.
Advances in light-gun technology

MURRAY, S. F.
High temperature coatings for gas bearings

MUSHER, C.
Soil diffusion bonding of titanium alloy panels

MUSHER, C. W.
Eddy current probe measures size of cracks in nonmetallic materials

MUSSET, E. E.
High-reluctance rotor rings improve homopolar generator performance

MYERS, B. A.
Improved chlorate candle provides concentrated oxygen source

MYERS, W. J.
Instrument calculates moments of inertia of complex plane figures

MYLES, R. B.
Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-eflussion technique

NICE, D. A.
Traveling-wave tube circuit simplifies microwave relay

NAGAKURA, R. H.
Improved thermal insulation materials made of foamed refractory oxides

MURAKISHI, S.
Glass coated single grid for charged particle accelerator

MANNING, A. I.
Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectroscopy

MANKOWONG, B. J.
Study made of heat transfer and pressure drop through tubes with internal interrupted films

MARELLE, P. C.
Automatic star-horizon angle measurement system

MASH, J. B.
Improved pH buffering agent for sodium hypochlorite

MASON, G. H.
Astronaut space suit communication antenna

MASSOS, G. F.
Propagation of density disturbances in air-water flow

MAYNE, R.
Digital computer processing of x-ray photos

MAYOR, T. R.
Computer program for video data processing system /VDFS/

MEADOR, C. A.
Improved thermal insulation materials made of foamed refractory oxides

NICKEL, J. W.
Automatic star-horizon angle measurement system

NIBBLETT, J.
Thermal conductivity probe

NAY, D. L.
Flexible fastener effects airtight material closure

NAYLOR, T. K.
Digital data averager improves conventional measurement system performance

NEAL, F. F.
Emergency escape system uses self-braking mechanism on fixed cable

NEARY, K. J.
Inflatable O-ring seal would ease closing of hatch cover plate

NECKER, D. E.
Toggle operated double latch

NEEL, C. B.
Reference black body is compact, convenient to use

NEFF, G. A.
Amplifier provides dual outputs from a single source with complete isolation

NEFF, H.
Improved YIG direction finding system

NEFF, J. E.
Camera shutter is actuated by electric signal

NEW, E. J.
Device damps fluid pressure oscillations in vent valve

NEWLANDS, H. W.
Neutron therapy of cancer

NELSON, B.
Simple switch actuated by force applied over wide solid angle

NELSON, C. A.
Bipolar current driver for memory circuits
Low level accelerometer test methods are used to determine high-frequency phase stability of electromechanical drive systems.

A method for observing gas evolution during reaction in thin films is described. The technique involves the use of a quartz crystal microbalance and a high vacuum system.

Study made of resistance of stainless steels to zinc-vapor corrosion.

A new shield for gamma-ray spectrometry is described. The shield consists of a lead panel with a thin aluminum window.

A new microelectronic power amplifier is described. The amplifier is designed for use in high-power applications.

Computer program performs statistical analysis for random processes.

New shield for gamma-ray spectrometry.

Radiation tolerant silicon nitride insulated gate field effect transistors are studied. The devices are capable of withstanding high temperatures.

Computer program performs statistical analysis for random processes.

Detection and location of metallic objects using a glancing incidence telescope for far ultraviolet and soft X-rays is described. The telescope is designed to detect metallic objects at a range of distances.

A new microelectronic power amplifier is described. The amplifier is designed for use in high-power applications.

Detection and location of metallic objects using a glancing incidence telescope for far ultraviolet and soft X-rays is described. The telescope is designed to detect metallic objects at a range of distances.

Use of steel and tantalum apparatus for study of molten Cd-Ifg-Zn alloys.

New microelectronic power amplifier is described. The amplifier is designed for use in high-power applications.

Shotgun timer provides quick opening of segment valve.

Screen of cylindrical lenses produces stereoscopic television pictures. The technique involves the use of cylindrical lenses to produce a three-dimensional image.

Computer program performs statistical analysis for random processes.

New microelectronic power amplifier is described. The amplifier is designed for use in high-power applications.

New shield for gamma-ray spectrometry is described. The shield consists of a lead panel with a thin aluminum window.

Radiation tolerant silicon nitride insulated gate field effect transistors are studied. The devices are capable of withstanding high temperatures.

New shield for gamma-ray spectrometry is described. The shield consists of a lead panel with a thin aluminum window.

Direct force-measuring transducer used in blood pressure research.

Bimetallic strain gage provides audible signal to facilitate checkout of connector pins.

Technique for abrasive cutting of thick-film conductors for hybrid circuits is described. The technique involves the use of a abrasive wheel to cut the conductors.
BOSCH, R. E.
Dual wire weld feed proportioner
M-PS-18037
B68-10332 05

BOERSCH, R.
Flow-test device fits into restricted
access passages
KSC-1076
B67-10074 01

BOEHM, T. J.
Logic system aids in evaluation of project
readiness
MSC-753
B66-10457 05

OCCIDENTAL, G. C.
Mechanized X-ray inspection system for
large tasks
M-PS-12867
B67-10564 02

OCNW, J.
Optical system facilitates inspection of
printed circuit boards
GSFC-07971
B68-10021 02

ODLE, F. L.
Pocket-size manual tape reader device aids
computer tape checking
KSC-10058
B67-10361 01

ODONNELL, R. M.
Beryllium fluoride film protects beryllium
against corrosion
LEWIS-363
B67-10026 03

ODON, R. E.
Hand tool permits shrink sizing of assembled
tubing
MSC-504
B66-10239 05

Wedge chilled by liquid coolant manifold
M-PS-679
B66-10354 05

ODARLLE, R. O.
Assembly jig assures reliable solar cell
modules
GSFC-655
B66-10040 05

OFFK, W. C.
Emergency escape system protects personnel
from explosion and fire
KSC-66-12
B66-10634 05

OGILVIE, K. W.
Multiaxial analyzer detects low-energy
electrons
GSFC-329
B65-10213 01

OKAM, J. H.
One-piece transparent shell improves design of
helmet assembly
MSC-187
B66-10390 05

OGLE, K. P.
Aluminous oxide filler prevents obstructions
in tubing during welding
MSC-222
B66-10125 05

OIJERIAK, C. E.
Portable machine welding head automatically
controls arc
M-PS-12743
B67-10272 05

OLIVARI, H.
Iris-leaf core retainer for a surface drill
M-PS-11402
B69-10496 05

OLIVY, D. H.
Improved table for cutting and welding
MSC-15537
B67-10346 05

OLSOON, A. E.
Valve seat pores sealed with thermosetting
monomer
M-PS-900
B66-10322 03

OLINCHER, B. T.
Automatic channel switching device
MSC-832
B67-10086 01

OLSEN, E.
Neutron activation analysis traces copper
artifacts to geographical point of origin
ARG-119
B67-10036 02

OLSEN, E. G.
Effects of heat input rates on T-1 and
T-1A steel welds
M-PS-2875
B67-10163 03

OLSEN, E. P.
Direct indication of particle size in
fluidized beds

PERSONAL AUTHOR INDEX

ARG-10130
B69-10083 05

OLSW, G. A.
Portable fixture facilitates pressure
testing of instrumentation fittings
M-PS-2032
B67-10121 03

Conceptual dead weight device to provide
pressure calibration
M-PS-14672
B66-10264 01

OLTHUES, E. W.
Neon isotopes cancel errors in gas laser
M-PS-1476
B66-10583 02

OLTHURS, B. A.
K-w wave power meter mount
MPO-10348
B68-10152 01

OMANN, E. L.
Earth orbit rendezvous evaluation program
M-PS-13016
B67-10407 06

OMANN, E. S.
Computer program for mass optional solutions
of some endpoint trajectory problems
M-PS-12976
B67-10310 06

OPEHARN, P. L.
Limit circuit prevents overdriving of
operational amplifier
KSC-10082
B67-10343 01

OPEHARN, R. L.
Simple circuit provides reliable multiple
signal average and reject capability
MU-0069
B66-10282 01

O'NEAL, T. W.
Crack growth measured on flat and curved
surfaces at cryogenic temperatures
LEWIS-389
B67-10384 01

O'REILLY, E. A.
Separation of traces of metal ions from
sodium matrices
ARG-10341
B69-10168 03

ORE, J.
Composite bulkhead fabrication development
M-PS-1264
B66-10582 05

ORET, N. W.
Antechamber facilitates loading and
unloading of vacuum furnace
LEWIS-10265
B68-10135 02

O'SDORFEN, D. W.
Pure xenon hexafluoride prepared for thermal
properties studies
ARG-10056
B67-10577 03

O'BODRIS, D. B.
Hydra 1 data display system
B67-10155 01

OMBEK, R. B.
Hollow plastic hoops protect thermocouple
in storage and handling
MU-0023
B65-10256 05

OSTRUM, G. E.
Isostatic compression process converts
polyarcas into structural material
JPL-892
B67-10168 03

OSWALD, W. J., JR.
Variable-transparency wall regulates
temperatures of structures
LANGLEY-25
B63-10528 03

OSWALD, P. W.
Apparatus automatically measures soluble
residue content of volatile solvents
SAR-10032
B69-10292 03

OSWALD, L.
Check valve installation in pilot operated
relief valve prevents reverse pressurization
M-PS-1025
B66-10655 05

OTOSHI, T. Y.
The effect of mismatched components on
microwave noise-temperature calibrations
NPO-11163
B66-10333 01

A compact rotary vane attenuator
NPO-10562
B69-10427 01

OTTS, J. W.
Servo system facilitates photoelastic strain
measurements on resins
JPL-509
B64-10280 01

OTUS, E. A.
Auxiliary titanium sublimation pump produces
ultrahigh r/t0 to the minus 11 torr vacuum
LANGLEY-212
B66-10388 02

OWEN, J. R., III
Short circuit protection for a power
Distribution system
H-FS-14993 B68-10443 01

PACKARD, J. R.
Laser communication system is insensitive to atmospherically induced noise
GSPC-10396 B67-10587 01

PACKER, D. E.
Pump simulator provides variable pressure-flow characteristics
LWIS-10122 B67-10453 05

PACULLA, V. E.
Portable tool removes burrs from pipe and tubing
MSC-237 B65-10360 05

PALLOG, J.
Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts
H-FS-13058 B67-10631 06

PAIZIS, M. S.
Leak enables measurement of oxygen concentration in presence of water vapor
MSC-10043 B67-10387 01

PAIK, W. W.
Microbiological aspects of sterilization development laboratories
NPO-11197 B69-10593 04

PALKYO, J. S.
Technique for abrasive cutting of thin-film conductors for hybrid circuits
MSC-13242 B69-10235 03

PALMER, G. B.
Combustion chamber struts can be effectively transpiration cooled
H-FS-1630 B66-10643 03

PALMER, J. P.
Liquid-metal-piston MHD generator
ARG-10500 B69-10771 02

PALUMBO, J. L.
Computer program offers new method for constructing periodic orbits in nonlinear dynamical systems
H-FS-14654 B68-10217 06

PALMOS, R.
Fabrication method produces high-grade alumina crucibles
H-FS-216 B65-10078 05

PALOS, G.
Production of crystalline polymers via liquid crystal monomers
H-FS-10254 B69-10744 04

PAN, C. H. T.
Squeeze-film gas bearing technology
H-FS-14921 B68-10180 05

PANSOR, P. L.
Data processing method for a weak, moving telemetry signal
NPO-11103 B69-10639 01

PAG, T. H.
Problems of oscillating cone in supersonic flow is solved by small perturbation techniques
H-FS-1609 B66-10700 02

PAOLETTI, C. J.
Determination of quadratic equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas
H-FS-15043 B69-10435 06

Spacecraft Thermal Radiation Environment Computer Program
M-FS-15054 B69-10574 06

PAPELL, S. S.
Magnetic fluid readily controlled in zero gravity environment
LWIS-126 B65-10335 03

PARK, C. E.
A concept for missile basin processor
KSC-06786 B69-10275 02

PARK, J. J.
Colored sheet metal strip opens into tubular configuration
GSPC-425 B66-10009 03

PARK, E.
Strain gage circuitry provides fatigue testing machine with accurate cycle count
H-FS-14993 B68-10443 01

PAUL, R. D.
Retention of ductility in high-strength steels
ARG-10497 B69-10616 03

PAUL, H. I.
Liquid oxygen dicting cleaned by falling film method
H-FS-1118 B67-10299 03

PAUL, R. F.
New electrical plethysmograph monitors cardiac output
KSC-19447 B68-10220 01

PAUL, E.
Improving perceptual-motor performance measurement system
QQ-10235 B69-10385 01

PATTERSON, A.
Mechanisms of superconductivity investigated by nuclear radiation
NFS-1948 B67-10057 02

PATTERSON, J. H.
Alpha particle backscattering measurements used for chemical analysis of surfaces
ARC-116 B67-10186 03

PATTERSON, J. L.
Improved variable-reluctance transducer measures transient pressures
LANGLEY-10 B63-10321 01

PATTERSON, K. L.
Refractory coating protects intricate graphite elements from high-temperature hydrogen
ND-0027 B66-10084 01

PATTERSON, R. F.
New electrical plethysmograph monitors cardiac output
KSC-19447 B68-10220 01

PATTERSON, W.
Saturn S-2 Automatic Software System
S/NSS/ AFS-1741 B67-10405 06

PATTERSON, W.
Improved cameras for better X-ray powder photographs
H-FS-10426 B69-10537 01

PASCALL, C.
Small, high-intensity flasher permits continuous close-in photography
H-FS-10043 B66-10119 03

PASCALLA, J. A.
Burst diaphragm leak detector
H-FS-14500 B69-10543 03

PASS, C.
Midcourse maneuver operations program
NPO-10735 B69-10105 06

PATEL, B.
Surface-renewal model for heat-transfer between walls and fluidized beds
LRN-10372 B69-10772 02

PATTON, R.
Battery case shear
GSPC-10783 B69-10127 05

PATTERSON, J. G.
Newly developed foam ceramic body shows promise as thermal insulation material at 3000 deg F
I-807
PAUL, V. N.

- Accurate nine-decade temperature-compensated logarithmic amplifier
  - Electronic asymmetric hour-integrator is accurate to one percent
  - Control circuit ensures solar cell operation at maximum power
  - Battery charge regulator is coulometer controlled
  - Converter provides constant electrical power at various output voltages
  - Charge control of nickel-cadmium batteries by coulometer and third electrode method

PAUL, L. L.

- Method for X-ray study under extreme temperature and pressure conditions

PAULOVIC, D. M.

- Gage of 6.5 per cent Si-Fe sheet is chemically reduced
- Evaluation of magnetic materials for static inverters and converters

PAUL, S.

- Variable frequency magnetic multivibrator generates stable square-wave output

PAUL, W. E.

- Balloon large concept for underwater structures
- Transducer senses displacements of panels subjected to vibration

PAUSE, L. L.

- Run numbering system for use with data recorders

PASCH, W. A.

- Variable-speed, portable routing skate
- Lathe converted for grinding aspheric surfaces

PETERS, C. J.

- Precision CW laser automatic tracking systems investigated

PETES, G. A.

- Tool facilitates installation of Marson clasps
- Power torque wrench concept for precision torque application
- Connector shorting cap provides pin alignment, inspection, and stray voltage protection

PHILLIPSON, A. J.

- Jig protects transistors from heat while tinning leads

PICTO, E. W.

- Assembly processor program converts symbolic programming language to machine language

PICK, J. C.

- Color-television medical microscopy

PICK, E. R.

- Tracker of electrical conduit or pipes

PETERS, C. J.

- Precise atomic hydrogen frequency and time standard

PERSONAL AUTHOR INDEX

-PERKINS, G. S.  Sleeve and cutter simplify disconnecting welded joint in tubing

-PERKINS, R. D.  Teleprinter uses thermal printing technique

-PERKINS, T. G.  Temperature-controlled resistor

-PERKINS, W. E.  Proposed method of dynamic balancing by laser

-PERSO, L. N.  Large-amplitude inviscid fluid motion in an accelerating container

-PETE, K.  Binary sequence detector uses minimum number of decision elements

-PETERSON, G. A.  Tool facilitates installation of Marson clasps

-PETERSON, R. G.  Thick transducers used for generating short-duration stress pulses in thin specimens

-PETERSON, R. W.  Improved system for documenting measurement data

-PETERSON, R. E.  Calibrating ultrasonic test equipment for...
PERSONAL AUTHOR INDEX

checking thin metal strip stock
NRC-10009 B67-10127 01

Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing
NRC-10010 B67-10542 02

PATTERSON, V. S.
Millivolt signal limiter
LEWIS-90297 B67-10015 01

Flow angle sensor and readout system
LEWIS-90298 B67-10050 01

PETRAS, D. W.
Tungsten fiber-reinforced nickel superalloy
LWIS-10424 B68-10369 03

PETREY, J. A.
Pulse technique provides more accurate checkout of exploding bridge wire device
HQ-62 B66-10561 01

PETREY, R.
Magnetohydrodynamic generators using two-phase liquid-metal flows
ARG-10168 B69-10162 01

Studies of cycles for liquid-metal magnetohydrodynamic generation of power
ARG-10250 B69-10198 01

PHITT, B. G.
Cryogenic seal remains leaktight during thermal displacement
ARG-96 B67-10136 02

PFEIFFER, A. F.
Two-way digital driver/receiver uses one set of lines
SBC-10055 B68-10437 01

PFEIFFER, C. G.
Crystal measures short-terms, large-magnitude forces
JPL-77 B65-10187 01

PFEIFFER, R. J.
Bootstrap unloader
XRF-09768 B69-10120 01

PFLUGER, R. G.
External linkage tie permits reduction in ducting system flange thickness
N-FS-023 B66-10326 05

Spherical pipe joint delivers loads equally to mating flange
N-FS-007 B66-10665 05

PFLUGER, N. L.
Separator for alkaline batteries
GSFC-10173 B68-10557 03

PHABES, R. L.
Design of dispersive linear phase filters
KFC-14698 B68-10572 01

PHILLIPS, W. M.
Production of metals and compounds by radiation chemistry
LWIS-10231 B69-10123 03

PHILLIPS, A.
Technique for pinpointing submicron particles in the electron microscope
HQ-10043 B69-10465 01

PHILLIPS, B. H.
Voltage regulator/amplifier is self-regulated
MSC-1240 B67-10156 01

PHILLIPS, L. E., JR.
Copper foil provides uniform heat sink path
MSC-262 B66-10004 02

PHILLIPS, J. D.
Pneumatic separator gives quick release to heavy loads
MSC-10050 B66-10294 05

PHILLIPS, R. D.
Workmanship standards for fusion welding
B67-10200 05

PHILANT, R. K.
Rocket engine analog simulation
N-FS-14517 B67-10511 01

PHILDEQER, G. A., JR.
Separation simulator
MSC-67-15 B69-10315 05

PICCIONE, V. A.
Electrically controlled optical latch and switch requires less current
JPL-SC-111 B66-10414 01

PICK, R. E.
Two techniques enable sampling of filtered and unfiltered molten metals
ARG-150 B67-10033 04

Titanium-nitrogen reaction investigated for application to gettering systems
ARG-10208 B68-10414 03

Induction probe determines levels of liquid metals
ARG-10348 B69-10256 03

PIERCE, N. E.
Circuit reliability boosted by soldering pins of disconnect plugs to sockets
JPL-447 B69-10002 01

PIERSON, K. E.
Channel-wall limitations in the magnetohydrodynamic induction generator
ARG-10128 B69-10255 02

PIERRE, E. T.
Predicting surface heating rates and pressures resulting from hot exhaust gases
MSC-971 B66-10633 05

PIELICH, C. A.
Compact monitoring and control console for pressurized gas bottles
N-FS-18874 B68-10401 05

PIELICH, A.
Gage monitors quality of cross-wire resistance welds
GSFC-90549 B68-10002 01

PIPKES, B.
Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers
MSC-15611 B69-10552 03

PIPERSEY, E.
Technique for determining hinging forces
MSC-12178 B69-10548 01

PIERSEY, K. T.
Quantum mechanical calculations of reactive scattering cross sections in biomolecular encounters
N-FS-11594 B67-10527 03

PISCOPO, A.
Double emitter suppressed carrier modulator uses commercially available components
N-FS-2494 B67-10101 01

PIYUS, R. G.
Simple motor drive system operates heavy binged door
N-FS-1299 B66-10712 05

Swing-out rail system separates overhead crane rails
N-FS-0094 B66-10713 05

PIZZO, J.
Braking mechanism is self actuating and bidirectional
N-FS-1299 B67-10488 05

PLAHWODEN, J. A., JR.
Improved cavity-type absolute total-radiation radiometer
JPL-807 B67-10557 01

PLATNER, J. L.
Reaction heat used in static water removal from fuel cells
N-FS-532 B66-10013 01

PLATT, N. W.
Low energy cherrimeter can be used to test sensitive circuits, other meters
SAR-10013 B68-10269 01

PLATT, P. K.
Connector seals fluid lines at cryogenic temperatures and high vacuums
GSFC-253 B64-10327 05

PLATTUS, D. L.
Torus elements used in effective shock
I-809
absorber
PLITT, R. N.
JPL-464 - General key word in context and subject index report generator
WGO-118
B66-10318
05

PLESSER, I.
POLAKOWSKI, N.
POEDEL, W.
POZEL, R. F.
Composite seal reduces alkaline battery leakage
GSFC-337
B66-10271
01

PLOTT, R. N.
Geometry and design point performance of axial flow turbines
LEWIS-10471
B66-10111
06

PLOTT, W. O.
Low level accelerometer test methods are investigated
N-PS-908
B66-10510
01

POPP, D. J.
Properties of air and combustion products of fuels with air
LEWIS-11030
B66-10711
03

POHL, R. O.
Two-step rocket engine bipropellant valve concept
MSC-10951
B66-10820
05

POHLEN, J. C.
Land landing couch dynamics computer program MSC-1210
B67-10233
06

POIRAINTHUR, A. N.
Aluminum-titanium hydride-boron carbide composite provides lightweight neutron shield material
N-PS-1069
B67-10265
03

POLAKOWSKI, M. H.
Ductile sandrel and parting compound facilitate tube drawing
ARG-43
B66-10571
05

POLAKOWSKI, F. C.
Study made to establish parameters and limitations of explosive welding
N-PS-13006
B67-10393
05

POLACKE, F. G.
Surface temperature mapping with infrared photographic pyrometry
LEWIS-10763
B69-10113
01

POLACKE, R. A.
Land landing couch dynamics computer program MSC-1210
B67-10233
06

POLAM, W. D.
Real-Time Operating System/360
MSC-12198
B69-10386
01

POLAND, R. A.
Buoyant stokes litter assembly used for sea rescue operations
MSC-131
B66-10019
05

POND, J. E.
Determination of quadratic equation coefficients describing three-dimensional surfaces, their constraint and skewed planes, and view point areas
N-PS-15043
B69-10435
06

POOBHIIH, B. J.
Tube welding and brazing
N-PS-20348
B69-10085
05

POPE, J. M.
Cardiographometer with linear beat-to-beat frequency response
ARG-10033
B67-10598
01

Automatic patient respiration failure detection system with wireless transmission
ARG-10174
B68-10635
01

POPE, B.
Laser system used for dynamic balancing of gyro
N-PS-12328
B66-10235
05

POPPER, G. S.
Refactory oxide insulated thermocouple designed and analyzed for high temperature applications
ARG-10202
B69-10053
03

POPOFSKY, R. G.
Live-timer method of automatic dead-time correction for precision counting
ARG-10478
B69-10612
01

POPOFSKY, K. G. A.
Manganese-56 coincidence-counting facility precisely measures neutron-source strength
ARG-90261
B69-10621
01

PORTER, R. W.
Device transmits rotary motion through hermetically sealed wall
JPL-303
B63-10198
05

POSAKONY, G. J.
Nondestructive testing of welds on thin-walled tubing
N-PS-10144
B69-10402
01

POSVENER, F. C.
Determination of permissible applied load stress in structural elements
N-PS-16556
B69-10823
02

POULAIN, R. W.
Daper reduces effects of resonance on force transducer
WGO-321
B66-10550
05

POTTER, W. B.
Circuit prevents overcharging of secondary cell batteries
GSFC-454
B66-10492
01

Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid
GSFC-10764
B69-10227
05

POTTER, F. P.
Flange on microwave antenna subreflector cuts ground noise
JPL-362
B63-10229
01

Novel horn antenna reduces side lobes, improves radiation pattern
JPL-105
B69-10264
01

Computer program for machine design of Cassegrain feed systems
NPS-10588
B68-10421
06

POTTS, C.
Improved head-controlled TV system produces high-quality remote image
ABG-128
B67-10317
01

Improved electromechanical master-slower manipulator
ARG-10027
B68-10372
05

POTTS, G. L.
Fluid-bed fluoridation volatility process recovers uranium from spent uranium alloy fuels
ABG-232
B67-10032
03

POWELL, B. A.
Translator program converts computer printout into braille language
N-PS-2061
B67-10087
01

POWERS, B. L.
Radiation effects on bacterial cells
ARG-10064
B68-10169
04

PFAFF, R.
Seat treatment procedure to increase ductility of degraded nickel alloy
N-PS-12410
B68-10029
03

Pre-weld heat treatment improves weld in Rene 41
N-PS-10178
B68-10285
03

Strain-age cracking in Rene 41 alloy
N-PS-18650
B69-10605
03

PRATER, L.
Device facilitates centering of workpieces in lathe chuck
N-PS-685
B66-10277
05

PRESS, G. L.
Direct force-measuring transducer used in blood pressure research
ARG-53
B65-10325
01

PRESTON, C. C.
A fast-neutron spectrometer of advanced design
N-PS-1664
B66-10555
01

PRINS, W.
Hydrogen-peroxide etching proves useful for germanium
ARG-10170
B68-10454
03

Determination of the absolute contours of optical flats
ARG-10352
B69-10209
05

PRICE, D. C.
Computer programs calculate potential and charge distributions in a plasma
N-PS-871
B68-10553
01

PRITZKOFF, L.
GENERAL EXCLUSIVE-OR combining paths and loops of electrical networks
REINIE,  G. A.

REILLY,  G. A.

RHO,  G. A.

REIBOLDS.

REISTER,  G. A.

RESEL,  G. A.

RICHARDS,  G. A.

RICCITIELLO,  G. A.

RICE,  G. A.

REODBS.

RICHARDS,  G. A.

RICKS,  G. A.

RICKS,  G. A.

RICEAEDSON,  G. A.

RICRARD,  G. A.

RICEARD,  G. A.

RICE,  G. A.

RICHARDSON,  G. A.

COGENT programming manual

Floating device aligns blind connections

Heavy-duty staple remover operated by hand

Vapor deposition process provides new

Heparin

Photo voltaic effect in organic

donor-iodine complex

NPO-10373  B67-10639  03

Heparin immobilized with crosslinking

gene

NPO-10834  B69-10299  03

Vapor deposition process provides new

method for fabricating high temperature

thermocouples

SNC-10152  B67-10616  01

Device for obtaining separation of

oxygen

LANGLEI-11007  B69-10477  01

Heavy-duty staple remover operated by hand

B63-10292  05

Concept for modifying drafting instruments

using semiautomatic means

KSC-10056  B67-10283  05

PLINT device aligns blind connections

MSC-256  B66-10007  05

Electron interaction in matter

MF-14886  B69-10674  02

Automatic computation of data-set

definitions

ARG-10475  B69-10608  06

COBOL programming manual

ARG-10463  B69-10656  06

Automated urine analysis technique determines

concentration of creatine and creatinine by

colorimetry

KSCP-10149  B67-10245  04

Optically exciting a magnetic memory - A

feasibility study

MF-14885a  B69-10600  02

Fire retardant foams developed to suppress

fuel fires

ARC-10098  B68-10358  03

Respirator respirator monitor

KSCP-10136  B68-10438  01

Brass alloys used as temperature indicators

MCF-0063  B66-10274  01

Logic circuit detects both present and

missing negative pulses in superimposed

wave forms

MF-12518  B67-10565  01

Mass culture of photobacteria to obtain

luciferase

GSFC-10563  B69-10294  04

Coincident switch closing reduces error in

motor-driven timer

JUL-182  B63-10143  05

Subroutines GEORGE and DRASTC simplify

operation of automatic digital plotter

NDC-10044  B67-10222  06

Angular acceleration measured by deflection

in sensing ring

KSC-250  B66-10105  01

Potassium plasma cell facilitates thermionic

energy conversion process

ARG-10010  B67-10399  01

Performance of low-pressure thermionic

converters is evaluated

ARG-10276  B69-10090  01

Optically induced free carrier light

modulator

GSFC-10216  B69-10114  01

Seal surfaces protected during assembly

MCF-0067  B66-10266  05

Two-functional seal for home connection

MPS-14062  B69-10588  05

Richardson, R. E.

Accurate depth control provided for

thermocouple junction locations

LANGLEY-289  B66-10632  01

Richardson, R. J.

Tungsten thermal neutron dosimeter

LEWIS-10880  B69-10249  02

Richardson, R. C.

Controlled substrate cooling improves

reproducibility of vapor deposited

semiconductor composites

MSC-10161  B69-10732  01

Richardson, J. C.

Ellipsoidal-mirror reflectometer accurately

measures infrared reflectance of materials

GSFC-566  B67-10444  01

Rickets, R. L.

Low speed, long term tracking electric

drive system has zero backlash

B67-10220  01

Ricker, E. C.

Concept for passive system to control gas flow

independent of temperature

MPS-10928  B68-10345  03

Ricks, R. O.

SOCCS computer code provides tool for
design evaluation of homogeneous

two-material nuclear shield

GSC-10142  B67-10537  06

Computer program calculates gamma ray

source strengths of materials exposed to

neutron fluxes

MSC-10163  B67-10665  06

Rieling, R. W.

Two-valved, impinging-sheet injector

NPO-10547  B68-10338  05

Rix, R. W.

Water cooled anode increases life of high

temperature arc lamp

WPO-10180  B67-10247  02

Riley, R. R., Jr.

Rivet drill attachment has zero force

reaction

MSC-543  B66-10604  05

Riley, T.

Study made of destructive sectioning of

complex structures for examination

LEWIS-341  B66-10676  05

Rinear, G.

Apparatus alters position of objects to

facilitate demagnetization

GSFC-234a  B64-10277  05

Rindfleisch, T.

VIRI-DIGITAL image processing system

NPO-10770  B69-10139  06

Rinberg, E.

Pressure-sensitive bonded junction

transducers

MSC-10087  B68-10563  01

Miniature backward-e-injection pressure sensor

features stability and low power consumption

MSC-10229  B69-10690  01

Rish, R. L.

Static structural analysis of shell-type

structures

MSC-11555  B68-10066  03

Ritchie, W.

Averaging probe reduces static-pressure

sensing errors

LANGLEY-36  B65-10114  05

Rivard, J. G.

Study of vortex valve for medium

temperature solid propellants

LANGLEY-204  B65-10524  01

Rivet, R. J.

Method for copper staining of germanium

crystals

ARG-10403  B69-10257  03

Rodd, R. A.

Portable machine welding head automatically

controls arc

MPS-1276-7  B69-10257  03

Roberts, D. L.

Laser system used for dynamic balancing of

gyro

MPS-12218  B66-10225  05

Roberts, J. A., Jr.

Digital data averager improves conventional

I-813
measurement system performance
MSC-12078

ROBERTS, J. S.
Thin film process forms effective electrical contacts on semiconductor crystals
M-PS-2343

Process facilitates photoresist mask alignment on SiC crystals
M-PS-2394

ROBERTS, L. A.
A positive taper traveling-wave tube
LANGST-10263

ROBERTS, W. W.
Modified cryogenic storage tank subsystem
KSC-10380

Ambient temperature catalyst for hydrogen ignition
LEWIS-10551

ROBERSON, J. D.
X-Y plotter adapter developed for SDS-930 computer
NNO-10220

ROBERSON, J. R.
Experimental program to investigate transonic flow around protuberances
M-PS-20037

ROBERSON, R. D.
Gas chromatograph injection port protective device
M-PS-18585

ROBERTSON, S. J.
Study of theory and application of long duration heat flux transducers
M-PS-1265

ROBERTSON, T. L.
Hand-held instrument should relieve hemotors pressure
MSC-999

ROBERTSON, W. D.
Improved anode design for metal-oxygen cells
LEWIS-10871

ROBINSON, C. C.
Study of fast response thermocouple measurement of temperatures in cryogenic gases
M-PS-1659

ROBINSON, D. A.
Improved fire resistant radio frequency anechoic materials in military use
M-PS-16600

ROBINSON, G.
Tiny sensor-transmitter can withstand extreme acceleration, give digital output
ARC-22

ROBINSON, G. B.
Gapped toroid provides infinite resolution of delay-line pickup
GSPC-370

Added diode increase output of balanced mixer circuit
GSPC-354

ROBINSON, G. P.
Heat flux sensor design reduces extraneous source effects
MSC-400

ROBINSON, J. S.
Feasibility study of wireless power transmission systems
M-PS-14691

ROBINSON, J. J.
Accelerometer for shaft encoder
M-PS-13599

RODICK, G. G.
Solid-state time-to-pulse-height converter developed
ARG-170

RODIN, W. A.
Electron beam welder X-rays its own welds
LEWIS-10111

RODIN, H. M.
Thermodynamic properties of saturated liquid parahydrogen charted for important temperature range
NUC-10018

Computer program for thermodynamic and transport properties of hydrogen
NUC-10537

ROGERS, J. D.
Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSPC-422

ROBIECK, J. L., JR.
Integrated mobility measurement and notation system
MSC-726

ROEDER, E. R.
New brazing alloy eliminates metal-stress cracking
WDO-269

ROEDING, J. R.
Absolute low-pressure calibration system
M-PS-13065

ROESER, P. W.
Inductive system detects level of conducting fluids
LEWIS-322

ROESCH, J.
Radioactive method enables determination of surface areas rapidly and accurately
MU-0088

ROGALLO, F. L.
Ultra-sensitive transducer advances micro-measurement range
ARC-26

Method provides mechanical and electrical check-out of piezoelectric transducers while installed in a system
ARC-73

Miniature piezoelectric triaxial accelerometer measures cranial accelerations
ARC-71

ROGER, R. S., JR.
Shock mount isolates pressure transducers from vibration
JPL-631

ROGERS, G. L.
Lithium-tellurium bimetallic cell has increased voltage
ARG-10141

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
ARG-10452

ROELL, H. E.
Radial inflow turbine design charts
LEWIS-10720

ROBERENSEN, E. G.
Flexible drive allows blind machining and welding in hard-to-reach areas
MSC-526

ROBERT, J. A.
Magnetically controlled torque wrench prevents overtorquing
SAN-10002

Compressible sleeve provides automatic centering for grinding or turning of cylinders
SAN-10021

ROJEC, E.
High-speed camera synchronization
M-PS-18062

ROKOP, S.
Fusion, characterization and transport properties of deuterated deuterium
ARC-1034

RÖHL, E.
Laser-Doppler gas-velocity instrument
M-PS-20039

ROLL, J. A.
Radioactive method enables determination of surface areas rapidly and accurately
MU-0088

ROLLON, R.
Electronic skewing circuit monitors exact position of object underwater
NUC-10146

Deflection circuit monitors force on object underwater
NUC-10147

ROLLINS, C. T.
Experiments with ceramic coatings
M-PS-18150

ROM, P. E.
Fuel element concept for long life high power nuclear reactors
LEWIS-10309
One hundred angstrom niobium wire fixture facilitates helium leak testing of Aigh- and low-pressure pneumotachometers

Sniffer Multiple-orifice throttle valve

Improved Hand-operated plug insertion valve

Thick transducers used for generating Study made of mechanics of deformation and

Nonwoven glass fiber mat reinforces
electronic dummy for acoustical testing

Apparatus enables accurate determination of

Analysis of transient thermal stress in

Ohmmeter senses depletion of lubricant in

Image position sensor

Inhibition of browning in foodstuffs

Negative feedback system reduces

Damping models in beam vibrations

Ball and socket joints provide

Electrically controlled optical latch and

Oscilloscope used as X-Y plotter or

Electrolysis and silvery coating of

Evaluation of ignition mechanisms in

selected nonmetallic materials
SAIDBOCK, G. R.

Cooling method prolongs life of hot-wire transducer
LEWIS-41 B63-10344 02

SAIDBOCK, R. E.

New apparatus increases ion beam power density
LEWIS-73 B63-10440 01

SAIDBOCK, A. A.

Recording and time expansion technique for high-speed, single-shot transient video signal
ARC-10003 B67-10139 01

SAIDBOCK, E. M.

Feed-through has polyterminal feature
M-PS-25 B65-10057 01

SAIDBOREN, E. W., JR.

The thermodynamic properties of the wustite phase are studied
ARG-10200 B68-10408 03

SAIDBOREN, G. E.

Cobalt-tungsten, ferromagnetic high-temperature alloy
LEWIS-10378 B68-10095 03

SAPOLSKY, E.

Effects of surface preparation on quality of aluminum alloy weldments
H-PS-13152 B68-10302 03

SARNOFF, B. J.

F-SAP and G-SAP neutron and gamma-ray albedo model scatter shield analysis program
MOC-10126 B67-10536 06

SARKIN, A. A.

Multichannel pulse height analyzer is inexpensive, features low power requirements
HQR-00200 B67-10258 01

SARTER, R. L.

Fluid-pressure measurement apparatus uses short-length manometer tubes
LEWIS-28 B65-10027 05

SAUR, W.

Qualitative and quantitative analysis of mixtures of compounds containing both hydrogens and deuterium
ARG-10312 B69-10177 04

SAVAGE, R.

Isothermal drop calorimeter provides measurements for alpha active, pyrophoric materials
ARG-10186 B69-10002 02

SAVAGE, C. E.

Study made of acoustical monitoring for mechanical checkout
M-PS-13372 B67-10430 02

SAVAGE, J. H.

Improved 6C voltage multiplier
H-PS-14042 B68-10074 01

SAYLOR, J. H.

A method for predicting interfacial freezing of a liquid flowing over a cold surface
LEWIS-10813 B69-10321 02

SAVICH, S. G.

Calibration technique for electromagnetic flowmeters
LEWIS-10328 B67-10255 01

SALTZMAN, T. R.

Adhesives for laminating polysilicon insulated flat conductor cable
M-PS-12066 B67-10429 03

SALCOTT, L. L.

Computer program determines system stability/DIGSTA/
LEWIS-10395 B68-10216 06

SADCICHEK, A. J.

Improved method of dicing integrated circuit wafers into chips
ERG-10191 B68-10441 01

SCATES, J. H.

Monte Carlo direct view factor and generalized radiative heat transfer programs
M-PS-15053 B69-10038 06

Spacecraft thermal radiation environment
Computer Program
M-PS-15054 B69-10574 06

Engineering thermal analyzer /BETA 2/
M-PS-15055 B69-10760 06

SCHANDLE, G. C.

Water-glycol system volume calculation
MSC-15193 B69-10563 02

SCHARRER, D. E.

Simple pulse counting circuit computes sum of squares
GSPC-391 B65-10260 01

Frequency correction device utilizes digital circuitry
GSPC-268 B67-10307 01

Simple circuit performs binary addition and subtraction
GSPC-399 B65-10355 01

Digital voltage-controlled oscillator
GSPC-512 B67-10449 01

SCHARRER, J. R.

Flat cable insulation stripping machine
M-PS-13776 B67-10581 05

SCHARRER, J. L.

Rating of electrical wires in vacuum environments
MSC-15108 B68-10362 01

SCHARRER, G. E.

Electroformed screens with uniform hole size
LEWIS-10117 B68-10107 05

SCHARRER, M. J.

Submicron metal powders prepared by ball milling with grinding aids
LEWIS-188 B66-10223 03

SCHARRER, W. G., JR.

Modified soldering iron speeds cutting of synthetic materials
M-PS-725 B66-10246 05

SCHARRER, W. L.

Submicron deflection circuit operates integrated sweep circuits in TV camera
MSC-1263 B67-10155 01

High efficiency, high frequency magnetic deflection driver
MSC-11597 B68-10116 01

SCHARRER, R. J.

Pressure transducer 3/8-inch in size can be faired into surface
WOO-006 B64-10021 05

SCHARRER, J. C.

Circuit improvement produces monostable multivibrator with load-carrying capability
GSPC-391 B65-10011 01

SCHARRER, K. H.

Sealing a rubber bladder between two sections of an accumulator
M-PS-20403 B69-10355 05

SCHARRER, R. E.

Bearing puller facilitates removal and replacement of bearings assemblies
M-PS-1538 B66-10418 05

SCHERR, J. T.

Insulation for cryogenic tanks has reduced thickness and weight
M-PS-326 B66-10183 02

SCHILLING, R. B.

Digital data averager improves conventional measurement system performance
MSC-12078 B66-10570 01

SCHILLING, J. B.

Neon isotopes cancel errors in gas laser
M-PS-1476 B66-10583 02

SCHMIT, E. G.

Electrical upsetting of metal sheet forms weld edge
M-PS-720 B65-10248 05

Boron fiber-reinforced aluminum alloy tubing/experimental/
MSC-15633 B69-10509 05

SCHMIT, R. J.

Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide
ARG-10154 B68-10293 02

SCHMIT, W. F.

Improved method of producing oxide-dispersion-strengthened alloys
H-PS-1061 B65-10536 03

SCHWABE, R. D.

Tools made of ice facilitate forming of soft, sticky materials
KSC-10262 B69-10199 05
SCHLEIH, F.
Ultraviolet microscopy aids in cytological and biomedical research
ARG-178
B67-10590 04

SCHLOSS, A. L.
Hybrid solid state switch replaces motor-driven power switch
JPL-931
B67-10165 01

SCHMIDT, M. R.
Study made of corrosion resistance of stainless steel and nickel alloys in nuclear reactor superheaters
ARC-230
B67-10051 03

SCHMIDT, K.
Numerical least-square method for resolving complex pulse height spectra
GSFC-10142
B67-10480 06

SCHMIDT, H.
Non-dispersive X-ray emission analysis for geochronological exploration
GSFC-10568
B67-10011 02

SCHMIDT, A.
Computer program performs stiffness matrix structural analysis
NRO-10252
B68-10096 06

SCHMIDT, A.
Thermal neutron image intensifier tube provides brightly visible radiographic pattern
ARG-420
B67-10296 02

SCHMIDT, E. N.
Boron-deoxidized copper withstands brazing temperatures
M-PS-762
B66-10273 03

SCHMIDT, F.
Cryogenic fatigue data developed for Inconel 718
M-PS-702
B67-10049 03

SCHMIDT, F. C.
Effect of surface irregularities on bellows fatigue life
M-PS-10480
B68-10229 05

SCHMIDT, S.
Tensile and fatigue properties of Inconel 718 at cryogenic temperatures
M-PS-10192
B69-10068 03

SCHMIDT, H. W.
Design of valve permits sealing even if the stem is misaligned
LEWIS-38
B63-10381 05

SCHMIDT, I.
Quick-disconnect coupling safe transfer of hazardous fluids
LEWIS-125
B65-10202 01

SCHMIDT, K.
Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions
NRO-447
B67-10294 01

SCHMIDT, L. P.
Solar-angle sensor has no moving parts
JPL-418
B66-10260 02

SCHMIDT, L. P.
Automatic design of optical systems by digital computer
NRO-10265
B67-10632 06

SCHMIDT, M. E.
Two-stage emitter follower is temperature stabilized
NRO-20
B63-10493 01

SCHMIDT, R. P.
Antenna simulator permits preinstallation system checkout
GSFC-522
B66-10518 01

SCHMIDT, W. C.
Star/horizon simulator used to test space guidance system
NASA-807
B67-10110 02

SCHMIDT, F.
Dispersion of borax in plastic is excellent fire-retardant heat insulator
ARG-5
B67-10016 03

SCHMIDT, G.
Multi-feed cone for Cassagrainian antenna
ARC-10225
B67-10484 03

SCHMIDT, G.
Ultrasonic emission method enables testing of adhesive bonds
M-PS-799
B66-10341 01

SCHMIDT, P.
Dot patterns provide reproducible flaw areas for study of adhesive bonds
M-PS-862
B66-10367 05

SCHNITZ, F.
Computer program performs aerothermodynamic flight test data correlation
NRO-10075
B67-10494 06

SCHNARR, F.
White primer permits a corrosion-resistant coating of minimum weight
M-PS-404
B66-10207 03

SCHNASS, E. R.
Infrared viewing permits human iris response studies
ECC-10003
B68-10206 04

SCHNEDER, W. E.
Threaded pilot insures cutting tool alignment
M-PS-527
B68-10074 05

SCHNEIDER, I. E.
{} Valve effectiely controls amount of contaminant in flow stream
B66-10683 05

SCHNIELEIN, J. G.
{} Ignition of binary alloys of uranium
B68-10280 01

SCHOFHEIDE, P. F.
{} Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes
ARG-10274
B68-10067 02

SCHOPPMAN, A.
{} Portable tool removes burs from pipe and tubing
MSC-237
B65-10360 05

SCHROEDER, A.
{} Improvised tool easily removes brazed tube connectors
MSC-263
B66-10003 05

SCHROEDER, J. H.
{} Square tubing reduces cost of telescoping bridge crane hoist
ARG-13
B67-10293 05

SCHROEDER, E. R.
{} Self-starting circuit for switching regulator
LEWIS-10686
B69-10128 05

SCHWEITZER, F. A.
{} Copper foil provides uniform heat sink path
MSC-262
B66-10004 02

SCHWEITZER, F.
{} Xenon hexafluoride prepared for thermal properties studies
ARC-10056
B67-10577 03

SCHOCH, J. W.
{} Control system maintains selected liquid level
M-PS-470
B66-10039 01

SCHULBER, P. H.
{} Integral ribs formed in metal panels by cold-press extraction
M-PS-230
B65-10181 05

SCHULLEN, E. B.
{} Dynamic-reservoir lubricating device
M-PS-14652
B68-10261 05

SCHULLEN, F. T.
{} Low cost techniques for fabricating lobed bearings
LEWIS-10256
B68-10441 05

SCHULTZ, F. E.
{} Computer simulation program is adaptable to industrial processes
LEWIS-240
B66-10426 01

SCHUMACHER, C. N.
{} Antenna configurations provide polarization diversity
GSFC-74
B66-10066 01

SCHUMACHER, P. E.
{} Probe samples components of rocket engine exhaust
M-PS-485
B65-10384 03

SCHUMACHER, P. E.
{} Modified blackbody device emits high-density radiation
M-PS-12748
B67-10388 02

SCHUMACHER, P. E.
{} Foil radiometer accessory improves measurements
M-PS-12748
B67-10388 02

I-818
SCHNEIDER, J. A.
Video signal processing system uses gated
current mode switches to perform high speed
multiplication and digital-to-analog
conversion
B66-10448 01

SCHNEIDER, D.
Improved insertion-loss tester
JPL-358 01

SCHNEIDER, M. A.
Method of improving contact bonds in
silicon integrated circuits
B66-10229 01

SCHNEIDER, D.
Electronic gating circuit and ultraviolet
laser excitation permit improved dosimeter
sensitivity
AEG-10109 02

SCHNEIDER, J. R.
Inorganic paint is durable, fireproof, easy
to apply
GSFC-366 03

SCHNEIDER, C. D.
Nondestructive method for measuring residual
stresses in metals, a concept
KSC-10237 03

SCHNEIDER, B. J.
Electromagnetic hammer removes weld
distortions from aluminum tanks
B66-10342 05

Magnetostatic forming for precision sizing
and joining of large-diameter tubes
B66-10461 05

SCHNEIDER, J. B.
Rough surface improves stability of air-
sounding balloons
B66-10326 05

SCHNEIDER, J. E.
A magnifying scratch-gage force transducer
LANL-10496 01

SCHNEIDER, J. E.
Development of Electronic Data Processing
/EDP/ augmented management system
B66-10287 06

SCHNEIDER, J. B.
Conceptual techniques for reducing
parasitic current gain of lateral pnp
transistors
NSC-13199 01

SCHNEIDER, S. G.
Thermal motor positions magnetometer sensors
ARC-51 05

SCHNEIDER, W. H.
Bemurs use dry self-lubricating cage
materials
LEWIS-10432 05

SCHRANK, F. D.
Coating method enables low-temperature
brazing of stainless steel
NO-0030 03

SCHRANK, G. W.
Precision gage measures ultrahigh vacuum
levels
GSPC-114 01

SCHRANK, A. Y.
Energy-storage of a prescribed ispedance
WPO-10303 01

Phase multiplying electronic scanning array
B66-10380 01

Improved circularly polarized planar-array
antenna
NO-10301 03

SCHRANK, R. C.
Aluminum heat sink enables power transistors
to be mounted integrally with printed
circuit board
B66-10363 01

SCHREH, J.
Ion exchange determines iodine-131
concentration in aqueous samples
ARG-208 04

Direct determination of lead-210 by
liquid-scintillation counting
ARG-10462 03

SCHREH, J.
One-handed hammer-spanner for chucks
B66-10398 05

SCHREH, J.
Glass formulation has high coefficient of
thermal expansion
B66-10705 03

SCHREH, L. I.
Image position sensor
B66-10783 02

SCHREH, H. M.
Cobalt improves nickel hydroxide electrodes
for batteries
LEWIS-10760 01

SCHREH, H. M.
New computer system simplifies programming of
mathematical equations
K-FS-481 01

SCHREH, V. F.
Air-cured ceramic coating insulates against
high heat fluxes
B66-10357 03

SCHREH, H. M.
Xenon forms stable compound with fluorine
B65-10049 03

SCHREH, J. E.
Electronic shutter gates image orthicon on
leakage
B66-10253 04

SCHREH, M. A.
Electronic shutter gates image orthicon
on and off
B66-10270 01

SCHREH, M. A.
Temperature controlled strain gaged
extensometer
B66-10543 01

SCHREH, J.
Materials data handbook, Inconel alloy 718
K-FS-2348 02

Materials data handbook, aluminum alloy
7075
B66-10301 03

Materials data handbook, aluminum alloy
6061
B66-10065 03

SCHREH, E. J.
Portable sandblaster cleans small areas
KSC-529 05

SCHREH, L. L.
Computer program analyzes whirl critical
speeds and bearing loads for shafts coupled
by nonlinear springs to machine housing
WSC-10308
B66-10334 06

SCHREH, A. W.
Remotely operated clamping tool has positive
grip
NO-0020 05

SCHREH, M. H.
The Quantasyn, an improved quantum
detector
B66-10048 03

SCHREH, E.
Study made of anodized aluminum circuit
boards
K-FS-13580
B66-10425 01

SCHREH, R. B.
Glass bead shot peening retards stress
corrosion failure of titanium tanks
LANL-319
B66-10198 05

SCHREH, C. T.
Active rc filter permits easy trade-off
of amplifier gain and sensitivity to gain
ARC-10042 01

Tunable bandpass filter with variable
selectivity
ARC-10191 01

SCHREH, W. B.
Precise gage measures ultrahigh vacuum
levels
GSPC-114 01

SCHREH, A. W.
Glass bead shot peening retards stress
corrosion failure of titanium tanks
LANL-319
B66-10198 05

SCHREH, C. T.
Active rc filter permits easy trade-off
of amplifier gain and sensitivity to gain
ARC-10042 01

Tunable bandpass filter with variable
selectivity
ARC-10191 01

SCHREH, W. B.
Precise gage measures ultrahigh vacuum
levels
GSPC-114 01

SCHREH, A. W.
Glass bead shot peening retards stress
corrosion failure of titanium tanks
LANL-319
B66-10198 05

SCHREH, C. T.
Active rc filter permits easy trade-off
of amplifier gain and sensitivity to gain
ARC-10042 01

Tunable bandpass filter with variable
selectivity
ARC-10191 01

SCHREH, W. B.
Precise gage measures ultrahigh vacuum
levels
GSPC-114 01

SCHREH, A. W.
lightweight gas sampling system

Pulsed high-voltage dc RF sputtering

A piezo-bar pressure probe

Test device prevents molecular bounce-back

Heater decomposes oil backstreaming from high-vacuum pumps

Fastener distributes stress evenly from sandwich-panel-hung items

Rugged switch responds to minute pressure differentials

Tester automatically checks insulation of individual conductors in multiple-strand cables

Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi

Neutron therapy of cancer

Effect of surface irregularities on yellow fatigue life

Tunnel diode circuit used as a nanosecond-range time marker

Monitor senses amount of contamination deposited on surfaces

Distillation device supplies cesium vapor at constant pressure

Xenon fluoride solutions effective as fluorinating agents

Thermionic diode switching has high temperature application

Lithium-tellurium bimetallic cell has increased voltage

New bimetallic EMF cell shows promise in direct energy conversion

Technical report on galvanic cells with fused-salt electrolytes

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte

Self-discharge in bimetallic cells containing alkali metal

Thermal cycle deviations

X-ray source uses interchangeable target anodes to vary X-ray wavelength

Fluid properties handbook

Pigmeat

Optimum structural design based on reliability and proof-load testing

Analysis of problems related to slingshot shock machine high-velocity shock testing

Weld microfissuring in Inconel 718 minimized by minor elements

Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle
<table>
<thead>
<tr>
<th>AUTHOR INDEX</th>
<th>PAPER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHLICHTA, P. J.</td>
<td>Attachment converts microscope to point source autocollimator</td>
<td>JPL-499 B66-10124 05</td>
</tr>
<tr>
<td></td>
<td>Micromanipulation tool is easily adapted to many uses</td>
<td>JPL-129 B67-10004 05</td>
</tr>
<tr>
<td>SHOGAN, B. P.</td>
<td>Polystyrene cryostat facilitates testing tensile specimen under liquid nitrogen</td>
<td>NUC-10522 B67-10613 02</td>
</tr>
<tr>
<td>SHOCK, R. M.</td>
<td>Improved system measures output energy of mass Hicromanipulation</td>
<td></td>
</tr>
<tr>
<td>SHULBR, C. B.</td>
<td>Panelized high performance multilayer insulation</td>
<td>E-PS-14023 B68-10031 03</td>
</tr>
<tr>
<td></td>
<td>A new method for fabrication of flexible vacuum purple jackets</td>
<td>E-PS-12646 B69-10564 03</td>
</tr>
<tr>
<td>SHUCK, A. H.</td>
<td>Remote balance weighs accurately amid high radiation systems</td>
<td>ARG-10387 B69-10242 05</td>
</tr>
<tr>
<td>SHULLER, B. B.</td>
<td>Principles of optical-data processing techniques</td>
<td>GSC-10271 B68-10069 01</td>
</tr>
<tr>
<td>SHUMAK, B. E.</td>
<td>Boron trifluoride nuclear detector prosplifier uses single-cable connection</td>
<td>LEW-178 B65-10255 01</td>
</tr>
<tr>
<td>SHUMATE, E. S.</td>
<td>Method of directing a laser beam with very high accuracy</td>
<td>NIO-11087 B69-10508 02</td>
</tr>
<tr>
<td>SHURLEY, L. A.</td>
<td>Braze alloys used as temperature indicators</td>
<td>NIO-0063 B66-10274 01</td>
</tr>
<tr>
<td>SIEBOLD, J. E.</td>
<td>Practical new method of measuring thermal-neutron fluence</td>
<td>NUC-10086 B67-10332 02</td>
</tr>
<tr>
<td>SINGEL, B.</td>
<td>A method for predicting interfacial freezing of a liquid flowing over a cold surface</td>
<td>LEW-10813 B69-10321 02</td>
</tr>
<tr>
<td>SIEGFRIED, J.</td>
<td>Pipe joints reinforced in place with fitted aluminum sleeves</td>
<td>MSC-11109 B67-10271 05</td>
</tr>
<tr>
<td>SIEGEL, E. B.</td>
<td>Absolute frequency stabilization of laser oscillator against laser amplifier</td>
<td>E-PS-2559 B67-10255 01</td>
</tr>
<tr>
<td>SIGNORELLI, R. A.</td>
<td>Tungsten fiber-reinforced copper composites form high strength electrical conductors</td>
<td>LEW-338 B66-10572 03</td>
</tr>
<tr>
<td></td>
<td>Tungsten fiber-reinforced nickel superalloy</td>
<td>LEW-10426 B66-10369 03</td>
</tr>
<tr>
<td>SIKORA, S. F.</td>
<td>Apparatus facilitates high-temperature-tensile testing in vacuum</td>
<td>LEW-42 B63-10345 03</td>
</tr>
<tr>
<td>SILK, J. L.</td>
<td>Laser-Doppler gas-velocity instrument</td>
<td>E-PS-20039 B68-10349 02</td>
</tr>
<tr>
<td>SILK, R.</td>
<td>Plated nickel wire mesh makes superior catalyst bed</td>
<td>MSC-216 B65-10321 01</td>
</tr>
<tr>
<td>SILVER, R. E.</td>
<td>Miniature stress transducer has directional capability</td>
<td>JPL-591 B65-10023 01</td>
</tr>
<tr>
<td></td>
<td>Simple circuit positions film frames in projector</td>
<td>JPL-508 B65-10132 02</td>
</tr>
<tr>
<td>SINGH, B. J.</td>
<td>Predicting surface heating rates and pressures resulting from hot exhaust gases</td>
<td></td>
</tr>
</tbody>
</table>
Solid-film lubricant is effective at high temperatures in vacuum. Lead oxide ceramic makes excellent composites of porous metal and solid lubricants. Evaluation of lubricants for ball bearings at high temperatures shows a new solid lubricant effective. 

Circuitry selectively limits data storage in general purpose computer. Cardiotachometer will fit on single silicon chip. 

Calculation of resonance neutron absorption in two-region problems/the GMOL code/LEWIS-10065. 

A theoretical model for determining turbine efficiency—production of iodine-123.

Rubber-coated bellows improves vibration damping in vacuum lines.

A new low-level a-c amplifier provides improved frequency response in passive nonreciprocal networks. 

A new solid lubricant increases bearing life at high temperatures. 

Rubber-coated bellows improves vibration damping in vacuum lines.

A new experimental laser is effective at high temperatures. 

A new design concept for pressure switch calibrator reduces costs. 

A new fluid film damper provides accurate calibration of pressure switch. 

A new electronic module is effective at high temperatures.

A new solid lubricant increases bearing life at high temperatures.

A new solid lubricant increases bearing life at high temperatures.
PERSONAL AUTHOR INDEX

JPL-962 B66-10515 04

SOCH, G. Self-starting circuit for switching regulators LEWIS-10686 B69-10128 05

SOLTESZ, E. G. Synthesis of calculational methods for design and analysis of radiation shields for nuclear rocket systems arg-10301 B69-10155 06

SOEBLOCK, C. E. Long time constant timer requires no recovery time GSPC-10091 B67-10487 01

SOON, P. A. Computer program performs frequency analysis of nonuniform turbine disk subjected to temperature gradients MSC-10301 B69-10006 06

SOPPETY, F. E. Mathematical relation predicts achievable densities of compacted particles ARG-10082 B67-10592 03

SORENSEN, H. C. Hydrodynamics of a new concept of primary containment by energy absorption TEC-10242 B66-10046 05

SORKIN, A. B. Effects of sterilization on the energy-dissipating properties of balsa wood HCO-11207 B69-10592 03

SOWDEN, N. M. Computer program calculates the effective temperature for a crystalline solid /B125/ MSC-10161 B69-10036 06

SOWERS, D. A. Computer program performs aerothermodynamic flight test data correlation MSC-10075 B67-10494 06

SOWLS, E. Fluorescent photography of spray droplets using a laser light source LEWIS-10777 B69-10122 02

SPADY, A. A., Jr. Technique simulates effect of reduced gravity LANGLEY-44 B64-10146 08

SPAFFORD, M. L. Simple BCD circuit accurately counts to 24 GSPC-317 B65-10225 01

SPAGNOLO, A. C. Thermal radiation shields for piping in vacuum environments LEWIS-10899 B69-10262 03

SPANDERLI, A. E. Technique for anchoring fasteners to honeycomb panels SWIS-10880 B69-10265 03

SPAIR, G. H. Field Effect Transistor /FET/ circuit for variable gain amplifiers GSPC-10116 B69-10322 01

SPARKESI, A. E. Spherical zone provides visual aid for cubic crystal study LEWIS-108 B65-10065 03

SPARKES, T. Complex surfaces plated by thin-film deposition in one operation LEWIS-292 B67-10006 05

SPARKES, T. Application of the solid lubricant polysilane disulfide by sputtering LEWIS-1054 B68-10340 03

SPANGER, E. Test and inspection for process control of monolithic circuits MFS-13084 B67-10507 01

SPRECHIK, C. Segmented ball valve is easy to open and close WO-260 B66-10195 05

SPERE, T. M. Inflatable holding fixture permits X-rays to be taken of inner weld areas MFS-1306 B66-10327 03

SPERRI, D. E. Magnetic tape transport controlled by rotating transducer heads GSPC-403 B68-10079 01

SPERRI, R. A. Portable power tool machines weld joints in field MFS-258 B66-10145 05

SPICKER, J. K. Heat-shrinkable jacket holds fluid in contact with tensile test specimen MFS-1306 B69-10495 05

SPINO, D. Circuit measures hysteresis loop areas at 30 Hz MFS-1306 B67-10519 01

SPINK, E. Improved liquid-level sensor for cryogenics ARG-10162 B69-10210 02

SPINOLO, L. W. Argon purge gas cooled by chill box MFS-1306 B66-10153 02

SPITZER, C. R. Ceramic-coated boat is chemically inert, provides good heat transfer LANGLEY-90 B65-10063 05

SPINNICK, A. T. Thin-film gage measures low heat-transfer rates LANGLEY-205 B66-10180 01

SPRAFKE, C. W. Proposed gas generation assembly would recover deeply submerged objects GSPC-10087 B68-10211 05

SPRAFKE, E. R. Computer program conducts facilities utilization and occupancy survey WO-10326 B67-10476 06

SPRAFKE, E. R. Computer program conducts facilities utilization and occupancy survey WO-10438 B68-10137 06

SPREDA, R. Improved torch increases weld quality in refractory metals LEWIS-324 B66-10045 01

SPRING, T. B. Toroidal ring prevents gas ignition at vent stack outlet MFS-2042 B67-10098 05

SPROSS, E. H. Biological isolation garment M-12206 B68-10500 04

SPULITS, I. S. Automatic fluid separator supplies own driving power WO-085 B66-10008 02

SQUALEN, J. E. Survey of fracture toughness test methods LEWIS-10379 B68-10046 03

ST. CLY, R. C. Solvent permits solid curing agents to be used at room temperatures MFS-13834 B67-10593 03

ST. OHN, R. Improved pulse shape discriminator for fast neutron-gamma ray detection system WO-10151 B69-10481 01

STAFFORD, R. L. Bisnuth alloy potting seals aluminum connector in cryogenic application WO-260 B66-10138 03

STAFFORD, L. M. Single-source mechanical loading system produces biaxial stresses in cylinders MFS-12530 B67-10380 05

STAKLEY, S. D. Quick attach and release fluid coupling assembly is self-aligning, self-sealing KSC-100 B66-10072 05

STALEUP, G. M. Machining heavy plastic sections MFS-12720 B67-10381 03

STALEY, R. U. Unique frequency-shift-keyed demodulation system GSPC-217 B67-10668 01

STANTON, R. E. Machine tests create durability of sheet materials JPL-604 B64-10178 03

STARK, E. Use of photographs speeds inspection of printed-circuit boards LEWIS-10324 B67-10550 01

I-823
STARK, K. W.
Quick-acting clutch disengages idle drive motor
GSFC-143 B64-10028 05

STAKEL, A. V.
Hydrostatic force used to handle oversized, heavy objects
EQ-9C B67-10167 05

STAKEL, D. J.
Torsional tubular disconnect
NPO-10704 B69-10499 05

STAIFFER, W. E.
Cryogenic fluid flow instabilities in heat exchangers
K-FS-20438 B69-10541 02

STAIFFER, W. E.
Improved technique for digital simulation of bending and slosh phenomena
K-FS-14786 B68-10570 02

STEEM, W. J.
Temperature-stabilized, triggerable microelectronic astable multivibrator starts reliably
MSC-1173 B67-10624 01

STEED, C. N.
Tool enables proper mating of accelerometer and cable connector
K-FS-611 B66-10208 05

STEEL, K. R.
Device for diode tuning in a stripline varactor harmonic multiplier
K-FS-20153 B69-10013 01

STEERE, J. L.
Dual rate pressure relief valve
MSC-11606 B68-10237 05

STEEN, K. J.
Refractory coating protects intricate graphite elements from high-temperature hydrogen
NC-0627 B66-10084 01

STEINBURG, G. R.
Electronic circuitry used to automate paper chromatography
JPL-840 B67-10201 01

STEIN, J. A.
Insert sleeve prevents tube soldering contamination
MSC-552 B66-10238 05

STEIN, L.
Redox gas, useful for medical purposes, safely fixed in quartz
ARC-2 B66-10468 04

STEIN, R. J.
Development of detonation reaction engine
K-FS-14020 B67-10652 01

CONTINUOUS DETONATION REACTION ENGINE
K-FS-14019 B66-10034 03

STEINBERG, L. L.
Performance analysis of electrical circuits
/KARS/
K-FS-15001 B68-10448 06

Engineering thermal analyzer /BEKA 2/
K-FS-15005 B69-10760 06

STEINBERG, L. L.
CIRCUS--A digital computer program for transient analysis of electronic circuits
K-FS-15002 B68-10416 06

STEINBERG, M. J.
Technological survey of tellurium and its compounds
ABG-10199 B68-10201 03

Study of fluoride corrosion of nickel alloys
ABG-10224 B69-10048 03

STEINBERG, R.
Magnetically operated limit switch has improved reliability, minimizes arcing
MSC-422 B66-10270 01

STEINGRUBE, O. J.
Hydrogen flash lamps studied
ABG-10419 B69-10411 02

STEELY, J. J.
Evaluation of superconducting magnets, a study
K-FS-18008 B68-10396 02

STEINBERG, C. T.
Double-throw microwave device switches two lines quickly
JPL-410 B63-10258 01

Cryogenic waveguide window is sealed with plastic foam
JPL-259 B63-10613 01

Reflectometer for receiver input system
NPO-10863 B67-10657 01

Em-wave power meter mount
NPO-10348 B68-10152 01

Multi-fed cone for Cassagrainian antenna
NPO-10539 B69-10269 01

A compact rotary vane attenuator
NPO-10562 B68-10427 01

Millimeter-wave atmospheric loss prediction method
NPO-11054 B69-10584 01

STEINBERG, J. T.
Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid
GSFC-10764 B69-10227 05

STENGRA, F. J.
Closed fluid system without moving parts controls temperature
LEWIS-212 B65-10331 02

Magnetic field mapper
LEWIS-10762 B68-10876 01

STEINLUND, S. J.
Rotating mandrel speeds assembly of plastic inflatables
LANGLEY-155 B66-10137 05

STEPHENS, G.
Electronic load for testing power generating devices
NPO-10360 B68-10203 01

STEPS, D. L.
Closed circuit TV system automatically guides welding arc
K-FS-20084 B68-10357 01

STEHVEN, C. W.
Regenerative fuel cell combines high efficiency with low cost
B65-10363 01

STEBBINS, D. G.
Flexible ring baffles for damping liquid slosh
LANGLEY-90194 B68-10064 05

Improved active vibration isolator
LANGLEY-10106 B68-10123 05

STEBBINS, J. B.
Helium tube separates nitrogen gas from liquid nitrogen
JPL-398 B63-10251 05

Crystal microbalance measures condensed molecular fluxes
JPL-645 B67-10012 03

Quartz crystals detect gas contaminants during vacuum chamber evacuation
NPO-10144 B67-10205 01

STEBBINS, J. R.
Improved high-temperature silicide coatings
LEWIS-10807 B69-10266 03

STEBBINS, T. J.
Pulse-code-modulation baseline correction for low signal-to-noise ratio
MSC-13268 B69-10750 01

STEBBINS, L. D.
W-SAP and g-SAP neutron and gamma ray albedo model scatter shield analysis program
MSC-10126 B67-10536 06

STEBBINS, J. A.
Microbiological aspects of sterilization development laboratories
MSC-11197 B69-10593 04

STEBBINS, N.
Electronic dummy for acoustical testing
MSC-206 B67-10298 01

STEBBINS, R.
Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels
ARG-232 B67-10032 03

STEBBINS, R.
Improved high-temperature silicide coatings
LEWIS-10847 B69-10626 03

STEBBINS, R. K.
Magnesium-zinc reduction is effective in...
STEBBINS, R. K.
Isotopically pure magnesium isotope-24 is prepared from magnesium-24 oxide
ARG-10154 B68-10293 02
Preparation of thorium magnesium-zinc reduction
ARG-10245 B69-10079 03
STEVENS, C. A.
Calculation of resonance neutron absorption in two-region problems /the CAROL code/
MUC-10045 B67-10223 06
STEVENS, C. H.
Ion-retarding lens improves the abundance sensitivity of tandem mass spectrometers
ARG-10365 B69-10166 02
STEWART, G. H.
Dynamic calibration of turbine flowmeters
LEWIS-11018 B69-10764 01
STEWART, P. W.
Deep-gamma-ray penetration in thick shields
H-FS-14388 B68-10143 02
STEWART, R. C.
Neutron irradiation of Aa-241 effectively produces curium
ARG-10030 B67-10501 03
Portable, high intensity isotopic neutron source provides increased experimental accuracy
ARG-90250 B68-10243 02
Nitrile acid-organic mixtures surveyed for use in separation by anion exchange methods
ARG-10065 B68-10425 03
Daughter growth in freshly separated Ra-226, Ac-227 and U-232
ARG-10074 B69-10126 02
STEWART, J. L.
Logarithmic amplifier uses field effect transistors
JPL-509 B65-10145 01
STEWART, R. B.
Analytical drafting curves provide exact equations for plotted data
LANGLEY-285 B67-10601 02
STEFFEL, B.
Nondestructive evaluation of printed wiring boards by micros resistance measurements
SAR-10034 B69-10272 01
STEFFEN, L. R.
Adapter assembly prevents damage to tubing during high pressure tests
MSC-563 B66-10330 02
STIER, R. J.
Evaporant feed device facilitates flash vapor deposition process in vacuum
NPO-10232 B67-10320 03
STODER, A. K.
An improved soft X-ray photoionization detector
GSPC-540 B67-10072 02
STOCHWELL, R. D.
Study of high-speed angular-contact ball bearings under dynamic load
M-FS-20562 B69-10367 05
STOLLER, F. W.
Low speed, long term tracking electric drive system has zero backlash
NPO-10173 B67-10220 01
Simulated halite formation and use in testing weatherability of structures
NPO-10763 B68-10552 03
Structural thermal-control coatings
NPO-10785 B68-10553 03
STONE, C. C.
Thermoelectric metal comparator determines composition of alloys and metals
ARG-235 B67-10035 01
STONE, F. A.
Electronic phase-locked-loop speed control system is stable
JPL-SC-084 B66-10231 01
STONE, G. B.
Fluid sample collection and storage device
MSC-10962 B69-10816 05
STONEBAKER, J. C.
Technique for anchoring fasteners to honeycomb panels
LEWIS-10068 B69-10265 03
STONER, E. R.
Studies reveal effects of pipe bends on fluid flow cavitation
N-FS-516 B66-10228 05
STOHrer, D. K.
Tube-to-header joint for bi-metallic construction
LEWIS-10282 B67-10464 05
STOYAN, C. R.
Method for making small pointed thermocouples
SAM-10014 B68-10389 01
STRACK, B.
Standard surface grinder for precision machining of thin-wall tubing
ARG-10014 B67-10400 05
STRAHLE, H. N.
The preparation, identification and properties of chlorophyll derivatives
ARG-10205 B68-10409 03
Comparative chromatography of chloroplast pigment
ARG-10415 B69-10425 03
STRAUD, L. D.
A comparison of two methods of measuring particle size of A1203 produced by a small rocket motor
NPO-11198 B69-10572 03
STRESS, N. K.
Rotating filters permit wide range of optical pyrometry
LANGLEY-33 B65-10100 02
Light-intensity modulator withstands high heat fluxes
MSC-246 B66-10532 02
STRAuss, H. P.
Evaluation of superconducting magnets, a study
N-FS-14608 B68-10396 02
STRAuss, H. G.
Modified univibrator compensates for output timing errors
ARG-85 B67-10130 01
Versatile analog pulse height computer performs real-time arithetic operations
ARG-10052 B67-10626 06
High resolution Ge/Li/ spectrometer reduces rate-dependent distortions at high counting rates
ARG-10164 B68-10420 01
Multichannel analyzers at high rates of input
ARG-10355 B69-10214 02
Pulse-height deficit due to electron interaction in dead layers of Ge/Li/gamma-ray detectors
ARG-10362 B69-10767 02
STREit, E. N.
Design of multilayer insulation systems
ARC-10166 B69-10615 05
STREITFF, R. A.
Programmed schedule holds for improving launch vehicle holds
N-FS-14502 B69-10602 03
STREMHEL, R. L.
Thin plastic sheet eliminates need for expensive plating
N-FS-1096 B66-10681 03
STRENHEIT, N. F.
Single-sideband modulator accurately reproduces phase information in Z-Mc signals
N-FS-664 B66-10437 01
STRIEGE, R. J.
Concept for a multifunctional oscilloscope probe
N-FS-16390 B69-10129 01
STROM, E. R.
Spiral-grooved shaft seals substantially reduce leakage and wear
LEWIS-10357 B68-10270 05
Hermetically sealed pump
LEWIS-10537 B69-10320 05
STROMBERG, R. B.
Bell nozzle kernel analysis program
N-FS-18456 B69-10166 06
STROH, J. J.
Multiple test tubes stirred mechanically
ABC-92 B65-10120 01
Digital voltage-controlled oscillator

Parametric up-converter increases flexibility

Crack growth measured on flat and curved surfaces at cryogenic temperatures

Vacuum gay e system for radiation environment

Electromechanical rotary actuator

Low-cost voltage-level detector

Exploding bridgewire detonator simulator

Variable load automatically tests dc power supplies

Electromechanical rotary actuator operates over wide temperature range

Crack growth measured on flat and curved surfaces at cryogenic temperatures

Vacuum gage system for radiation environments

Panelized apparatus enables automatic microanalysis of body fluids

Low-voltage-level detector

Apparatus presents visual display of semiconductor surface characteristics

Vacuum system for radiation environment

Bioconversion of perbromates

Electron bombardment improves vacuum chamber

Nondestructive test determines overload destruction characteristics of current limiter fuses

Radiator noise summer accurately determines and controls S/N ratio

Vacuum gage system for radiation environments

Ultraviolet microscopy aids in cytological and biochemical research

Torsion of irregular laterally loaded flat plates

Laser calorimeter accurately measures thermal radiation energy

Viscosity and density of methanol/water mixtures at low temperatures

Symbolic reduction of block diagrams using FORTRAN

Microscopes and computers combined for...
SWINDALL, P. R.
Polychart contour plotter enables data
extrapolation from multiple plotting charts
M-FS-37
864-10406 05

SWINDEN, P. H.
Preparation of silver-activated zinc sulfide
thin films
GSFC-10687
868-10271 03

SYDEM, R. L.
Voltage controlled oscillator is easily
aligned, has low phase noise
JPL-510
865-10223 01

SYNER, W. F.
Novel probe simplifies electronic component
testing
GSFC-342
865-10243 01

SABIN, A. J.
High-pressure gas facilitates calibration of
turbine flowmeters for liquid hydrogen
LEWIS-10402
868-10145 01

SCHERER, P. A.
Study of behavior of sterols at interfaces
ABB-1098
868-10281 03

STEBENEL, V.
Trajectory optimization using regularized
variables
MSC-13370
869-10810 02

TAFT, A. R.
Mechanism facilitates coating of inner
surfaces of metal cylinders
GSFC-515
866-10698 05

TAFT, C.
Experimental scaling study of field
applier elements
N-PS-1662
867-10088 02

TAMISI, T. N.
Precision trimer aids in preparing
biomedical specimen blocks for ultrathin
cutting
ARG-242
867-10541 05

TALBOT, J. H.
Steady-state differential calorimeter
measures gama heating in reactor
N-PS-10120
868-10182 01

TALBOT, E.
Fiber conditions temperature of liquified
gas streams
E-PS-1786
866-10565 02

TANG, S. S.
Shock and vibration response of multistage
structure
E-PS-18792
868-10353 05

TANG, S. P.
Improved chlorate candle provides
concentrated oxygen source
MSC-1137
867-10095 03

TAPLEY, B. D.
Trajectory optimization using regularized
variables
MSC-13370
869-10810 02

TANG, R.
Laser system generates single-frequency
light
N-PS-2556
867-10288 02

TAPLEY, B. C.
Expanding bridgewire detonator simulator
N-PS-02191
869-10782 01

TAPLEY, E. C.
Expanding bridgewire detonator simulator
N-PS-02191
869-10782 01

TARR, J.
Portable lightweight cell provides controlled
environment
GSFC-648
866-10370 05

TARR, F. J.
Lathe converted for grinding aspheric surfaces
GSFC-115
863-10556 05

TAYLOR, J. W.
Teleprinter uses thermal printing technique
MSC-11327
867-10572 01

TAYLOR, L. N.
Miniaturized high-resolution mass/charge
spectrograph /design study/
MSC-321
866-10210 05

---

TAYLOR, R. F.
Prediction of friction coefficients for
gases
LWIS-10774
869-10112 02

TAYLOR, R. I.
Adhesives for laminating polystyrene
insulated flat conductor cable
N-PS-12066
867-10429 03

TAYLOR, W. A.
Fuel cell life improved by metallic sinter
activation after electrode assembly
MSC-10365
867-10436 03

TCHERNY, D. I.
Development of Curie point switching for
thin film, random access, memory device
NPO-10402
867-10633 02

TE PEL, H. E.
System converts slow-scan to standard
fast-scan TV signals
MSC-90524
869-10748 01

TEGGE, J. T.
Miniature oxygen resuscitator
MSC-10398
869-10319 04

TEICHL, W. W.
Titanium diaphragm makes excellent aspirator
cathode support
GSFC-994
865-10298 01

TEIGE, S.
Inert gas spraying device aids in repair of
hazardous systems
N-PS-10348
865-10115 05

TEILBAUER, S.
Unique frequency-shift keyed demodulation
system
GSFC-217
867-10668 01

TEILKE, A. G.
Projected schedule holds for improving
launch vehicle holds
N-PS-18502
869-10602 03

TENBERG, W. N.
Level of super-cold liquids automatically
maintained by levelometer
JPL-397
863-10250 01

TENBERG, A. H.
Frictional wedge shock mount is inexpensive,
has good damping characteristics
JPL-IT-1001
863-10289 05

TENBELL, A. M.
Union would facilitate joining of tubing,
minimize braze contamination
MSC-777
866-10311 05

TENSELIC, R. A.
Cantilever springs maintain tension in
thermally expanded wires
LEWIS-136
865-10149 05

TENDEHILL, A. G.
Technical report on galvanic cells with
fused-salt electrolytes
ARG-10297
869-10155 01

THALBERG, C. E.
Study of acticide chemistry in saturated
potassium fluoride solution
ARC-10204
869-10004 03

THARRE, R. S., Jr.
Digital system detects binary code patterns
containing errors
GSFC-541
866-10516 01

THARAXA, N. F.
Oil-damped mercury pool makes precise
optical alignment tool
GSFC-353
864-10252 03

THIEL, A. B.
Modified sine bar device measures sine
angles with high accuracy
GSFC-438
868-10322 02

THIEL, A. N.
Adjustable cutting guide aligns and positions
stacks of material
MSC-321
866-10210 05
TBOME, R. A.

Performance statistics of the FORTRAN 4
Library for the IBM system/360
286-10577

THOMAS, G. D.

Teleprinter uses thermal printing technique
RSC-11227

THOMAS, R. F., Jr.

Solid-state recoverable fuse functions as circuit breaker
GSFC-560

DC pin-to-pin testing of integrated circuits
GSFC-10284

THOMAS, G.

Nondestructive testing techniques used in analysis of honeycomb structure bond strength
M-PS-1214

THOMAS, J. A.

Electronic device simulates respiration rate and depth
ASC-89

THOMAS, J. W.

Production of solvated electrons
AGE-10416

THOMAS, W. J.

Transient analysis Generator /TAG/ simulates behavior of large class of electrical networks
NFO-10031

THORE, H.

Evaluation of superconducting magnets, a study
M-PS-14808

THOMPSON, C.

Simple wrench separates nuts from free-floating bolts
MFC-10113

THOMPSON, D. C.

Nondestructive determination of cohesive strength of adhesive-bonded composites
M-PS-20397

THOMPSON, E. G.

Hot-cracking studies of Inconel 718 weld-heat-affected zones
M-PS-18211

THOMPSON, F. E.

Cutter and stripper reduces coaxial cable connection time
ARC-40

THOMPSON, L. J.

Fast method for obtaining scale dimensions on tape-controlled milling machine
ASC-11609

THOMPSON, R. E.

Masking of aluminum surface against anodizing
M-PS-12964

THOMPSON, W. E.

Safety restraints prevents whipping of ruptured high-pressure hose
LEWIS-99

THOMSON, J. P.

Experimental study and evaluation of radioprotective drugs
ARG-10196

THORBJORNSEN, A. R.

General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions
M-PS-12904

THORNWALL, J. C.

Analog-to-digital converter has increased reliability and reduced power consumption
GSFC-286

Regulated dc-to-dc converter features low power drain
GSFC-03629

TROPH, R. L.

Plasma-heating by induction
LEWIS-10526

TROPH, H. E.

New rapid-curing, stable polyamide polymers with high-temperature strength and thermal stability
LEWIS-10576

TROHALL, L. H.

Vibrator improves spark erosion cutting process
MO-0071

TROYER, A. I.

PCI bit detection with correction for intersymbol interference
GSFC-10153

TUBBETS, W. C.

Rocket engine nozzle photographic system
EFO-10174

TUFNER, B.

Optics used to measure torque at high rotational speeds
LEWIS-13

TUFJEREN, J.

Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites
EBC-10161

TULLINGSTON, R. M.

Drill bit design assures clean holes in laminated materials
56-10386

TURN, J. B.

Circuit counts pulses and indicates time of occurrence of slow pulses
XNP-06234

TURGEON, R. W.

Self-supported aluminum thin films produced by vacuum deposition process
ABC-58

TURBAN, D. P.

Harmonic distortion analyzer speeds setup of magnetic tape recorders
HDI-10254

TURKAM, J. P.

Ferromagnetic core valve gives rapid action on minimum energy
LEWIS-10135

TURKAN, J.

Eddy current disk valve
LEWIS-10123

TURBIA, R. A.

Two techniques enable sampling of filtered and unfiltered molten metals
ARG-150

TURBIA, R. A.

Coaxial cable stripping device facilitates RF cabling fabrication
NPO-10315

TOCCOLI, E.

Electrothermal linear actuator
EPO-10637

TODD, C. A.

Computer program for off-design performance of radial inflow turbines
LEWIS-10764

TODD, W. H.

Wire bundle forced into grids with minute interstices
WGO-089

Process reduces pore diameters to produce superior filters
WGO-093

Grain growth inhibitor for porous tungsten materials
LEWIS-10535

Method for controlling density and permeability of sintered powdered metals
LEWIS-10536

TOKAR, B. A.

Thermophysical properties of sodium
ARG-10363

TOKUDA, M.

Dynamics of moving bubbles in single and binary component systems
M-PS-14805

TOLSON, R. H.

The x square statistic and goodness of fit test
GSFC-10547

TON, R. S.

Ionomer membrane battery separator
NPO-11091

TOPKIN, D. B., Jr.

One-dimensional Coulomb-damped wave motion
MINUMIZED KING FURNACE
PROCESS CONTROLS INTRODUCTION OF SELECTED
COUNTERSUNK HEADSCREW RETAINER
HIGH
ELECTRONIC DUMMY FOR ACOUSTICAL TESTING
SHOCK-ABSORBENT MOUNTINGS FOR BEARINGS
ELASTIC GUIDES REDUCE HYSTERESIS EFFECT
STUDY OF MECHANICAL PROPERTIES OF URANIUM
COMPATIBLE VALUES OF THE THERMOUSICAL
OPTICAL FREQUENCY WAVEGUIDE AND ION
ALUMINUM AND STAINLESS STEEL TUBES JOINED
CLAMP PROVIDES EFFICIENT CONNECTION
FAILURE RATES FOR ACCELERATED ACCEPTANCE
TESTING OF SILICON TRANSISTORS
SIMULATOR EFFECTS PARTIAL GRAVITY CONDITIONS
CLAMP PROVIDES EFFICIENT CONNECTION FOR
HIGH-DENSITY CURRENTS
ULTRA-HIGH-FLUX HEAT EXCHANGER
AIRIAL-IMAGE ENABLES DIAGRAMS AND ANIMATION
TO BE INSERTED IN MOTION PICTURES
SELECTIVE VIDEO BLANKING TECHNIQUE
PROCESS PRODUCES CHLORINATED AROMATIC
ISOXYANES IN HIGH YIELD
SYNTHESIS OF VARIOUS HIGHLY HALOGENATED
MONOAMINES AND POLYMERS
SYNTHESIS OF POLYETHERS OF HEXAFLUOROBENZENE
AND HEXAFLUOROPROPANEDIOL
NUMERICAL LEAST-SQUARE METHOD FOR RESOLVING
COMPLEX PULSE HEIGHT SPECTRA
NONDISPERSIVE X-RAY EMISSION ANALYSIS
FOR GEOCHEMICAL EXPLORATION
PERSONAL AUTHOR INDEX
An improved magnetic tape recorder
UHBIK, R. E.

In-transmission glasses formed from oxides of bismuth and tellurium
ULICH, B. R.

High dielectric thick films for screened circuit capacitors
UNBEIT, W.

Automated microorganism Sample Collection Module
UNDEED, W.

Substitution of stable isotopes in Chlorella
UPHAUS, E. A.

Chromium oxide coatings improve thermal emissivity of aluminosilicates
UPSHAW, Y.

Simple test indicates degree of cure of polyside coatings
URBE, J. A.

Heat exchanger tubes supported in high vibration environment
URQUID, B.

A general purpose computer program for the equilibrium problems of linear structures
UTEK, S.

--

A new management training concept
VACCABO, J.

Improved camera for better X-ray powder photographs
VADDA, R. N.

Setting of angles on machine tools speeded by magnetic protractor
VALE, L. R.

Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes
VALVENR, R. A.

Study shows effect of surface preparations on improving thrasonic emission
VAN SCHEUN, J. A.

Multidimensional Reaction Kinetic Ablation Program /KEAP/
VAN ARMAD, D. E.

Instrument quickly transposes ground reference target to eye level
VAN DEVENTER, R. L.

Plug-in connector socket accepts coaxial cable end
VAN LOON, J. A.

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
VAN LOON, L. S.

Flexible high-voltage supply for experimental electron microscope
VAN SANT, B. W.

Real-Time Operating System/360
VEDEER, L. N.
Improved pH buffering agent for sodium hyposulfite
MSC-253 B66-10398 03

VELLETTE, L. J.
Bidirectional torque filter eliminates backlash
GSPC-335 B66-10148 05
Magnetic-shift-register circuit controls step motor operation
GSPC-240 B66-10226 01
Analysis of magnetically-controlled processes in pulse-modulation systems
GSPC-10241 B69-10070 01

VELLEUX, B. D.
Thermal resistances of solder-boss/potting compound combinations
MSC-12074 B69-10157 01

VENDITTI, R. A.
Programmed schedule holds for improving launch vehicle holds
M-PS-14502 B69-10602 03

VENDL, G. J.
Positive displacement cylinder measures corrosive liquid volume
MSC-1038 B66-10589 05
Synchronized circuit improves accuracy of fluid transfer measurements
MSC-11167 B66-10057 05

VERMILION, C. H.
Facsimile video enhancement device
GSPC-10105 B69-10207 01

VERNON, R. N.
Study of cryogenic container thermodynamics during propellant transfer
M-PS-14310 B66-10108 02

VERRETTE, R. N.
Static structural analysis of shell-type structures
MSC-11555 B69-10066 03

VESCO, D.
Upsetting butt edge increases weld joint strength
M-PS-175 B64-10164 05

VISSET, O.
Hydrogen maser as a highly stable frequency reference
M-PS-2437 B67-10146 01
Automatic tuning of hydrogen masers
GSPC-10127 B69-10452 01

VETROV, R. M.
Spherical electrode eliminates high-voltage breakdown
LNIS-155 B65-10139 01

VETTER, D. L.
Design of a strain-gage probe
ABQ-10336 B69-10343 05

VICK, B. A.
Inexpensive, stable circuit measures heart rate
MSC-175 B66-10501 00
Digital output cardiograph measures rapid changes in heartbeat rate
MSC-133 B65-10143 01
Blood pressure reprogramming adapter assists signal recording
MSC-265 B67-10475 01

VILES, F. J.
Health hazards of ultrafine metal and metal oxide powders
LNIS-10078 B69-10268 04

VINCAL, A. W.
New sintering process adjusts magnetic value of ferrite cores
GSPC-129 B63-10606 01

VICENT, R. R.
Multiple port pressure scanner valve features greater accuracy, quicker data
JPL-555 B64-10031 05

VINSKOV, B. J.
Investigation of the development of cracks in solder joints
M-PS-20444 B69-10807 01

VISSCHER, J.
New passive telemetry system
BG-10214 B69-10312 01

WAGNER, W. R.
Technological survey of tellurium and its compounds
ARC-10119 B68-10201 03
Computer program simplifies selection of structural steel columns
NU-0044 B66-10097 01
Economical and maintenance-free gas system operates railroad switches
NU-0045 B66-10124 05
Bench test applied to measurement of surface roughness
M-PS-12583 B67-10636 02
Refractory coating protects intricate graphite elements from high-temperature hydrogen
NU-0027 B66-10084 01
Computer program developed for flow sheet calculations and process data reduction
ABC-10134 B69-10023 06
Tool pre-tensions covers prior to lacing
MSC-631 B66-10301 05
Plume radiation program
M-PS-13202 B66-10225 01
Laser measuring system accurately locates point coordinates on photograph
ABQ-74 B66-10302 02
Bosslager-effect data-collection system
ABQ-10282 B69-10027 01
A new method for producing optical mirrors
EQ-10227 B69-10529 02
Semiconductor ac static power switch
LEWIS-10265 B68-10135 00
Identification of thermocouple material
NPS-18540 B69-10560 01
Testers automatically check insulation of individual conductors in multiple-strand cables
NRC-10068 B67-10260 01
Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi
NRC-10067 B67-10263 01

WADA, K. K.
Computer program performs stiffness matrix structural analysis
NPO-10502 B66-10096 06

WADDELL, E.
Miniature oxygen resuscitator
KSC-10398 B69-10319 04

WADDINGTON, E. B.
Development of Electronic Data Processing / EDP suggested management system
KPS-14715 B69-10286 07

WADDELL, E.
Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings
KPS-14715 B69-10178 05
Antechamber facilitates loading and unloading of vacuum furnace
LEWIS-10265 B69-10135 02
NPS-10356 01

WAGNER, D. A.
Magnetic position X-ray film for weld inspection
KPS-253 B69-10110 05

WEISS, D. R.
Heat transfer coefficients for liquid hydrogen turbopumps
ABQ-19845 B68-10517 02

WEISS, H. S.
Hydrogen-cooled, ultrahigh-speed ball bearings
NPS-18453 B69-10178 05

WEISS, J. G.
Augmented management system
KPS-14715 B69-10286 07

WEISS, L. S.
Design and testing of liquid hydrogen-cooled, ultrahigh-speed ball bearings
KPS-14715 B69-10178 05

WIRCHMANN, K.
Cryostat performs stiffness matrix structural analysis
NPO-10502 B66-10096 06

INDEX

MSC-253 B66-10398 03
VELLETTE, L. J. B66-10084 03
VENDITTI, R. A. B66-10157 01
VENDL, G. J. B69-10602 03
VERRETTE, R. N. B66-10108 02
VETROV, R. M. B65-10139 01
VETTER, D. L. B69-10343 05
VICK, B. A. B66-10164 05
VISESSER, J. B69-10143 01
WAGNER, W. R. B69-10143 01
WEISS, D. R. B66-101828 07
WEISS, H. S. B69-10178 05
WEISS, J. G. B69-10135 02
WIRCHMANN, K. B69-10286 07
WAGNER, C. B.

Electropneumatic rheostat regulates high current
AEC-44  B65-10299  01

WAHLGREN, M. A.
Compilation of detection sensitivities in thermal-neutron activation
AEC-10068  B67-10641  03

Portable, high intensity isotopic neutron source provides increased experimental accuracy
AEC-90250  B66-10243  02

Detection sensitivities in 3-8 MeV neutron activation
AEC-10210  B68-10298  02

WAHLQUIST, H.
Shaped superconductor cylinder retains intense magnetic field
JPL-381  B63-10238  01

WALTER, J.
Application of cryoanalytic techniques to the analysis of NiCd space batteries
GSFC-10569  B69-10731  01

WALCH, A. J.
Micromachining produces optical apertures to micron dimensions
GSFC-206  B64-10211  05

WALDRON, C. R.
Development of biaxial test fixture includes cryogenic application
N-FS-14185  B66-10070  01

WALKER, N. J.
High-emittance coatings on metal substrates
LEWIS-10325  B66-10361  03

WALKER, D. E.
Thermoelectric metal comparator determines composition of alloys and metals
ACS-235  B67-10035  01

WALKER, J.
Improved combustion chamber optical probe
MSC-10953  B69-10142  02

WALKER, J. D.
Computer/PERT technique monitors actual versus allocated costs
LEWIS-260  B67-10025  01

WALKER, L. A.
New technique for determination of cross-power spectral density with damped oscillators
N-FS-14022  B67-10602  02

WALKER, A. J.
Abrasion and fracture testing in a high-pressure hydrogen environment
N-FS-18480  B69-10457  03

WALKER, R. R.
Spiral spring/strain gage combination accurately measures shock induced deflection
MSC-769  B66-10488  01

Web belt load measuring instrument has excellent stability
MSC-921  B67-10242  01

Miniature pressure transducer for stressed member application
MSC-11869  B68-10246  01

WALL, B. B.
Fluidic transducer gives pressure output as function of temperature
ESC-10993  B68-10537  05

WALL, W. A., Jr.
Fire angles measured with ball gage
N-FS-18660  B68-10030  01

Automatic contour welder incorporates speed control system
N-FS-1477a  B68-10091  01

Closed circuit TV system automatically guides welding arc
N-FS-2000a  B68-10357  01

Welding skates with computerized controls
N-FS-20224  B68-10566  01

WALLACE, R. D.
Improved poppet valve provides positive damageproof seal
N-FS-293  B65-10346  05

Weld preparation tool for pipes and tubing
ERC-09955  B68-10551  05

WALLACE, R. L.
PET capacitor detects analog signal levels without loading analog device
N-FS-293  B65-10346  05

WALKER, J. B.
Simple test indicates degree of cure of polyamide coatings
MSC-15447  B69-10330  03

WALSH, R. G.
High-voltage pulse generator developed for wide-gap spark chambers
AEC-10136  B68-10283  01

WALSH, F. D.
Fatigue zones in metals identified by polarized light photography
W00-286  B67-10062  02

WALSH, G. B.
Accumulator isolator prevents malfunctioning of faulty hydraulic system
N-FS-1745  B67-10528  05

Conceptual apparatus for detecting leaks of nonconductive liquids
N-FS-17415  B66-10303  01

WALSH, T. R.
Electro-optic modulator for infrared laser using gallium arsenide crystal
GSFC-10568  B68-10525  02

WALSH, V. J.
Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LEWIS-263  B66-10104  03

WALKER, L. D.
Standards for electron probe microanalysis of silicates prepared by convenient method
LEWIS-469  B66-10234  03

WALTSER, R. J.
Purification train produces ultrapure hydrogen gas
N-FS-1913  B67-10078  03

Effects of high-pressure hydrogen on storage vessel materials
N-FS-18605  B65-10730  03

WALTERS, C. T.
Study of high-speed angular-contact ball bearings under dynamic load
N-FS-20562  B66-10367  05

WALTON, W. C., Jr.
Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLEY-10093  B67-10531  06

WEBB, R. H.
Identification and evaluation of linear damping models in beam vibrations
ESC-10275  B66-10196  03

WANG, H. T.
Detector measures power in 50 to 30,000 GHz radiation band
ERC-26  B66-10581  01

WANEK, R. W.
Magnetic forcing studies
N-FS-18217  B66-10166  02

Magnetic forcing of resistive materials
N-FS-20417  B69-10397  03

WARD, B. F.
Swing arm carrier protects flexible lines during test item rotation
ESC-11464  B66-10337  05

WARD, J. B.
Accumulator isolator prevents malfunctioning of faulty hydraulic system
N-FS-1745  B67-10528  05

WARD, R. R.
Acquisition of pseudonoise signals by sequential estimation
MSC-13898  B68-10258  01

WARD, R. J.
Computer optimization program finds values for several independent variables that minimize a dependent variable
N-FS-13030  B66-10328  06

WARNER, R. A.
Practical new method of measuring thermal-neutron fluence
MSC-10086  B67-10352  02

WARNER, R.
Tool facilitates installation of Marnon clamps
N-FS-2039  B67-10105  05

Power torque wrench concept for precision torque application
N-FS-13546  B67-10547  05

X-832
Connector shorting cap provides pin alignment, inspection, and stray voltage protection.

WATERS, W. J. High strength nickel-base alloy with improved oxidation resistance up to 2200 degrees F. LEWIS-10115 B68-10094 03 Nickel-base superalloys excellent properties promote its service to 2200 degrees F. LEWIS-10355 B68-10380 03 High strength, superplastic superalloy LEWIS-10605 B69-10293 03 Improved high-temperature-strength nickel-base superalloy LEWIS-10674 B69-10352 03

Continuous wave detector has wide frequency range
MSC-1059  B69-10638  01

Electronically sealed vibration damper
MSC-10599  B69-10634  05

PERSONAL AUTHOR INDEX

WHEELER, R. V.
Beam profiles measured with thermoluminescent dosimeters
ARG-10229  B69-10024  02

WHEELER, S. R.
Self-sealing closure enables access to several fluid containers
NPO-10123  B67-10207  04

WHITFORD, R. N.
Welds chilled by liquid coolant manifold
NPS-679  B66-10354  05

WHITFORD, E. L.
Special mandrel permits uniform welding of out-of-round tubing
NPS-706  B66-10323  05

WHITAKER, R. E.
Quick-release hook-and-loop fastener
MSC-10950  B66-10388  05

WHITE, C. R.
Fixture facilitates soldering operations
NPS-10486  B66-10573  05

WHITE, D. R.
Precision bolometer bridge
MSC-11973  B66-10156  01

WHITE, G. R.
A simplified PERT system
NPS-2267  B67-10241  05

WHITE, R. W.
Application of distorted models in developing scaled structural models
NPS-2540  B67-10321  05

WHITE, W. I.
High power dc/dc and dc/ac electrical power conversion techniques developed
NPS-13227  B67-10396  05

WHITFIELD, S. E.
Areas of irregular, discontinuous patterns rapidly and accurately measured
MSC-10184  B67-10674  01

WHITFIELD, W. J.
Vacuum probe sampler removes micron-sized particles from surfaces
SAM-10003  B68-10231  04

WHITING, L. R.
A computer program for a line-by-line calculation of spectra from diatomic molecules and atoms assuming a Voigt line profile
ARC-10221  B69-10232  06

WICKES, D. W.
Computer program samples digital data for CRT display
MSC-999  B67-10249  01

WICKHAM, C. G.
Miniature pressure transducer for stressed member application
MSC-11869  B68-10246  01

WIDNALL, W. S.
Design techniques - Stochastic controllers
MSC-11554  B68-10234  02

WINKER, D. L.
Automatic thermal switch accelerates cooling-down of cryogenic systems
DPL-655  B65-10068  01

SPIRALED CHAMBERS IMPROVE HEAT TRANSFER BETWEEN FLUIDS

Spiraled channels improve heat transfer between fluids
DPL-694  B65-10291  02

WINGARD, D. E.
Concept for sleeve induction motor with 1-msec mechanical time constant
ARG-10124  B68-10105  01

WINGARD, D. E.
Quick-response servo amplifies small hydraulic pressure differences
ARG-99  B66-10498  05

WILCOX, R. F.
Multifunction tool mitten
DQ-10047  B69-10483  05

WILSON, R. M.
RF inductor has high Q, is stable at higher temperatures
DPL-1019  B67-10106  01

WILSON, T. J.
Novel terminal strips for transformers
NPO-10662  B69-10246  01

WIGUS, C. A.
Method reduces computer time for smoothing functions and derivatives through ninth order polynomials
MSC-10334  B69-10524  06

I-834
WISE, T. E.

Polychart contour plotter enables data extrapolation from multiple plotting charts

WISE, T. E.

Radiation rates

WISE, T. E.

Polychart contour plotter enables data extrapolation from multiple plotting charts

WISNER, J. P.

Refractory metals welded or brazed with tungsten inert gas equipment

WISNER, J. P.

Inert-gas welding and brazing enclosure fabricated from sheet plastic

WITSON, D. A.

New electrical plethysmograph monitors cardiac output

WOOD, T. E.

Weld joint strength and mechanical properties in 2219-T61 aluminum alloy

WOOD, W. N.

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons

WOODG, O. A.

Pneumatic power is transmitted through air bearing

WOLFE, N. G.

An infrared television system for hydrogen flame detection

WOHL, E. F.

Computer program uses Monte Carlo techniques for statistical system performance analysis

WOHL, J. G.

Phase plane displays detect incipient failure in servo system testing

WOLF, M.

Scanning photometer system automatically determines atmospheric layer below

WOLF, R. A.

Line adapter provides quick disconnect under moderate side loading

WOLFA, S. G.

New method for critical failure prediction of complex systems

WOLPEN, E. G.

Optical output enhances flowmeter accuracy

WONG, R. Y.

Improved television signal processing system

WOO, K. E.

A sterilizable high-impact antenna

WOOD, A. D.

Gage measures total radiation, including vacuum UV, from ionized high-temperature gases

WOOD, C. R., JR.

Thread cutting with 3-axis N/C milling machine

WOOD, C. M.

Beryllium fastener technology

PERSONAL AUTHOR INDEX

WOLFSON, N. G.

Pulse generator using transistors and silicon controlled rectifiers produces high current pulses with fast rise and fall times

WOOSTER, C. W., JR.

Asbestos and Inconel combined to form hot-gas seal

WORD, J. C.

Improved process for epitaxial deposition of silicon on prediffused substrates

WORD, J. L.

Method for reducing snap in magnetic amplifiers

WOOD, R. W.

Effects of heat input rates on T-1 and T-1A steel welds

WRENCE, E. B.

Solenoïd hammer valve developed for quick-opening requirements

WRIGHT, J. S.

Effect of welding position on porosity formation in aluminum alloy welds

WURSCHE, E. F.

Conceptual hermetically sealed elbow actuator

WULFE, J.

One hundred angstrom niobium wire

WYSSOCKI, J. J.

Simplified method introduces drift fields into cells

YAGER, S. P.

Feed-thru flange is useful in vacuum

I-836
applications to cryogenic temperatures
JPL-846 B66-10615 02
Combination double door high-vacuum valve provides access to vacuum chamber
JPL-849 B66-10697 05
Feed-thru conduit minimizes heat pickup
JPL-847 B67-10619 05

TANG, J. E.
On the bound of first excursion probability
NRO-11758 B69-10334 06
Optics structural design based on reliability and proof-load testing
NRO-11228 B69-10723 31

TANG, W. C.
Xenon fluoride show potential as fluorinating agents
A5S-113 B67-10185 03

TANG, P.
Fluid power-transmitting gas bearing
HRC-10097 B68-10503 05

TANG, P. E.
Analysis of stability-critical orthotropic cylinders subjected to axial compression
N-FS-12733 B67-10375 03

TANG, W. J.
Dynamic of moving bubbles in single and binary component systems
N-FS-14845 B68-10339 02

TAP, R. E.
Wideband, high efficiency optical modulator requires less than 10 watts drive power
N-FS-12733 B67-10289 01

TAYLORBURGE, J. M.
Technique developed for measuring transmittance of optical birefringent networks
N-FS-14267 B68-10260 02
Synthesis of electro-optic modulators for amplitude modulation of light
N-FS-14268 B68-10275 02

TAYLOR, R.
Electronic skewing circuit monitors exact position of object underwater
HDC-10146 B67-10629 01
Deflection circuit monitors force on object under water
HDC-10147 B68-10147 01

TASUI, R. K.
Solar cell submodule design facilitates assembly of lightweight arrays
JPL-728 B66-10231 02
Composite solar cell matrix is reliable, lightweight and flexible
NE-10821 B67-10503 01

TATES, J. E.
Aerodynamic forces of fluttering cylindrical and/or planar structures
N-FS-20497 B69-10701 02

TATTON, G. O.
Environmental control system for cryogenic testing of tensile specimens
HUC-10523 B67-10618 02

TEAGUE, N.
The compatible conversion system
H-FS-15010 B69-10031 06

TEAGUE, J. N.
Noise figure measurement concept for acoustic amplifiers
GSPC-10066 B66-10272 01

TEAGUE, R. P.
Rapid helium-air analyzer can measure other binary gas mixtures
LANCE-16 B63-10557 03

TCH, T. T.
Electrically controlled optical latch and switch requires less current
JPL-SC-171 B66-10414 02
Improved method of fabricating planar gallium arsenide diodes
KNP-04225 B69-10271 01

THOM, S. K.
Automatic transducer switching provides accurate wide range measurement of pressure differential
HUC-10001 B67-10540 01

THORNE, A. L.
Semirotoidal-diaphragm cavitating valve designed for bipropellant flow control
KNP-09704 B69-10016 05

TUNG, F. L.
Photomicroscopy
N-FS-14556 B69-10736 01

TUNG, H. J.
Vertical boring mill capacity is increased
N-FS-16196 B68-10530 05
Vibration damper for miles vertical boring mill ram
ESC-15529 B69-10348 05

TUN, S.
An improved soft X-ray photoionization detector
GSPC-540 B67-10072 02
Laser-Doppler gas-velocity instrument
N-FS-20039 B68-10349 02

TUN, S.
Fixed tool seals conductors with combination of plastic sleeves
N-FS-579 B66-10209 05

TUN, E. J.
Phonocardiograph microphone is rugged and moistureproof
GCC-212 B66-10314 04

TUNWhEIN, C. L.
Fresnel cup reflector directs maximum energy from light source
JPL-424 B63-10263 03

TUNDAHL, C. A.
Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam
B66-226 B67-10050 03
Oxide film on metal substrate reduced to form metal-oxide-metal layer structure
AGS-48 B67-10187 03
Instrumentation for potentiostatic corrosion studies with distilled water
AGS-10409 B69-10413 03

TU, Y.
An unconventional magnetically-coupled multivibrator
H-01026 B69-10480 01

ZACKAY, Y. F.
Retention of ductility in high-strength steels
ARG-10897 B69-10616 03

ZAPP, R.
Oscillating-filter method for obtaining flashing-light visibility data
GSPC-10305 B69-10107 02

ZAREMBA, J. G.
Gibbs angle sensor
GSPC-10305 B69-10315 01

ZARETSKY, E. V.
Control of component differential hardness increases bearing life
LEWIS-190 B65-10251 05
Tester for study of rolling element bearings
LEWIS-305 B67-10089 01
High-temperature bearing-cage materials
LEWIS-10463 B68-10176 05
High-temperature bearing lubricants
LEWIS-10468 B69-10249 03

ZAVADA, R.
Break-up of metal tube makes one-time shock absorber, bars rebound
LANGLEY-11 B63-10304 05

ZAWADSE, G. E.
Friction brake cushions acceleration and vibration loads
ESC-715 B66-10608 05

ZEBROWSKI, S. T.
Superconductivity in zirconium-rhodium alloys
ARG-10233 B69-10910 03

ZEHNTEBKE, T.
Imaging slitless spectrometer for X-ray astronomy
N-FS-14309 B69-10456 02

ZELDEN, R.
Effect of surface irregularities on bellows fatigue life
N-FS-14480 B68-10229 05

ZELDEN, R.
Beam splitter used in dual filtering technique
N-FS-501 B66-10072 02

PERSONAL AUTHOR INDEX

YOUNG, K. L.
Photomicroscopy
N-FS-14556 B69-10736 01

YOUNG, K. J.
Vertical boring mill capacity is increased
N-FS-16196 B68-10530 05
Vibration damper for miles vertical boring mill ram
ESC-15529 B69-10348 05

YOUNG, S.
An improved soft X-ray photoionization detector
GSPC-540 B67-10072 02
Laser-Doppler gas-velocity instrument
N-FS-20039 B68-10349 02

YOUNG, S.
Fixed tool seals conductors with combination of plastic sleeves
N-FS-579 B66-10209 05

YOUNG, E. J.
Phonocardiograph microphone is rugged and moistureproof
GCC-212 B66-10314 04

YOUNG, C.
Fresnel cup reflector directs maximum energy from light source
JPL-424 B63-10263 03

YOUNG, C.
Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam
B66-226 B67-10050 03
Oxide film on metal substrate reduced to form metal-oxide-metal layer structure
AGS-48 B67-10187 03
Instrumentation for potentiostatic corrosion studies with distilled water
AGS-10409 B69-10413 03

Yu, Y.
An unconventional magnetically-coupled multivibrator
H-01026 B69-10480 01

Z

ZACKAY, Y. F.
Retention of ductility in high-strength steels
ARG-10897 B69-10616 03

ZAPP, R.
Oscillating-filter method for obtaining flashing-light visibility data
B69-10107 02

ZAREMBA, J. G.
Gibbs angle sensor
GSPC-10305 B69-10315 01

ZARETSKY, E. V.
Control of component differential hardness increases bearing life
LEWIS-190 B65-10251 05
Tester for study of rolling element bearings
LEWIS-305 B67-10089 01
High-temperature bearing-cage materials
LEWIS-10463 B68-10176 05
High-temperature bearing lubricants
LEWIS-10468 B69-10249 03

ZAVADA, R.
Break-up of metal tube makes one-time shock absorber, bars rebound
LANGLEY-11 B63-10304 05

ZAWADSE, G. E.
Friction brake cushions acceleration and vibration loads
ESC-715 B66-10608 05

ZEBROWSKI, S. T.
Superconductivity in zirconium-rhodium alloys
ARG-10233 B69-10910 03

ZEHNTEBKE, T.
Imaging slitless spectrometer for X-ray astronomy
N-FS-14309 B69-10456 02

ZELDEN, R.
Effect of surface irregularities on bellows fatigue life
N-FS-14480 B68-10229 05

ZELDEN, R.
Beam splitter used in dual filtering technique
N-FS-501 B66-10072 02

X-837
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>ORIGINATOR/TECH BRIEF NUMBER INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZELEZNIK, F. J.</td>
<td>Computer program determines chemical equilibrium in complex systems</td>
<td>B66-10671 03</td>
</tr>
<tr>
<td>ZELLER, J. E.</td>
<td>Low-cost, fast-response drive circuit for electromagnetic torque motors</td>
<td>B66-10386 01</td>
</tr>
<tr>
<td>ZELLER, G. J.</td>
<td>Multipurpose instrumentation cable provides integral thermocouple circuit</td>
<td>B67-10046 01</td>
</tr>
<tr>
<td></td>
<td>High temperature thermocouple design provides gas cooling without increasing overall size of unit</td>
<td>B67-10497 01</td>
</tr>
<tr>
<td></td>
<td>Vapor deposition process provides new method for fabricating high temperature thermocouples</td>
<td>B67-10616 01</td>
</tr>
<tr>
<td></td>
<td>Thoriated tungsten tube provides improved high temperature thermocouple sheath</td>
<td>B67-10627 03</td>
</tr>
<tr>
<td></td>
<td>Silicon solar cell monitors high temperature furnace operation</td>
<td>B68-10148 01</td>
</tr>
<tr>
<td>ZEBE, T. E.</td>
<td>Refractory oxide insulated thermocouple designed and analyzed for high temperature applications</td>
<td>B69-10053 03</td>
</tr>
<tr>
<td>ZEITLER, B. F. E.</td>
<td>Aerodynamic forces of fluttering cylindrical and/or planar structures</td>
<td>N-FS-20497 02</td>
</tr>
<tr>
<td>ZINKOSKI, G.</td>
<td>Friction loading device enables accurate testing of brittle materials</td>
<td>NQ-0051 05</td>
</tr>
<tr>
<td>ZIEGELMEIER, F.</td>
<td>Cold machining of high density tungsten and other materials</td>
<td>B69-10110 05</td>
</tr>
<tr>
<td>ZIMMERMAN, J. N.</td>
<td>Computer program simulates design, test, and analysis phases of sensitivity experiments</td>
<td>B67-10077 01</td>
</tr>
<tr>
<td></td>
<td>Computer program reduces calculation time of normal response functions</td>
<td>N-FS-1517 01</td>
</tr>
<tr>
<td>ZIMMERMAN, J. S.</td>
<td>Computer program conducts facilities utilization and occupancy survey</td>
<td>B67-10476 06</td>
</tr>
<tr>
<td></td>
<td>Computer program conducts facilities utilization and occupancy survey</td>
<td>B68-10137 06</td>
</tr>
<tr>
<td>ZIMMERMAN, R. A.</td>
<td>Rack mount device quickly inserts or extracts chassis units</td>
<td>M-SC-264 05</td>
</tr>
<tr>
<td>ZIRIN, M. H.</td>
<td>Radon gas, useful for medical purposes, safely fixed in quartz</td>
<td>B65-10385 05</td>
</tr>
<tr>
<td>ZOEKE, H. M.</td>
<td>Surface irregularities detected by flare inspection instrument</td>
<td>B69-10152 01</td>
</tr>
<tr>
<td>ZOTTARELLI, L. J.</td>
<td>Current steering commutator offers versatility</td>
<td>B67-10410 01</td>
</tr>
<tr>
<td></td>
<td>Computer memory access technique</td>
<td>B67-10585 01</td>
</tr>
<tr>
<td>ZUBERK, W. E.</td>
<td>Schmitt trigger multivibrator</td>
<td>B69-10143 01</td>
</tr>
<tr>
<td>ZUCCAGNO, J. J.</td>
<td>Helset system broadcasts</td>
<td></td>
</tr>
</tbody>
</table>

I-830
Originator/Tech Brief Number Index

The left hand column identifies the originator number; to the right of each originator number is the Tech Brief number, e.g., B69-10063, followed by a two-digit number, e.g., 01, which identifies the subject category containing the entire citation.

<table>
<thead>
<tr>
<th>Originator</th>
<th>Brief Number</th>
<th>Index</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC-1</td>
<td>B65-10369</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-2</td>
<td>B63-10003</td>
<td>04</td>
<td></td>
</tr>
<tr>
<td>ARC-3</td>
<td>B63-10006</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>ARC-5</td>
<td>B63-10055</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-6</td>
<td>B63-10079</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-7</td>
<td>B63-10086</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-8</td>
<td>B63-10099</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-9</td>
<td>B63-10348</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>ARC-10</td>
<td>B63-10351</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-11</td>
<td>B63-10429</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>ARC-12</td>
<td>B63-10431</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-13</td>
<td>B63-10435</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-14</td>
<td>B63-10560</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-15</td>
<td>B63-10561</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-16</td>
<td>B63-10562</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>ARC-17</td>
<td>B63-10564</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-18</td>
<td>B64-10006</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-21</td>
<td>B65-10089</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-22</td>
<td>B65-10364</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>ARC-23</td>
<td>B65-10383</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-25</td>
<td>B65-10438</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-26</td>
<td>B65-10445</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-27</td>
<td>B65-10504</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>ARC-28</td>
<td>B65-10520</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-29</td>
<td>B65-10529</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-30</td>
<td>B65-10546</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-31</td>
<td>B65-10554</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-32</td>
<td>B65-10571</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-33</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-34</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-35</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-36</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-37</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-38</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-39</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-40</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-41</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-42</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-43</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-44</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-45</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-46</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-47</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-48</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-49</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-50</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-51</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-52</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-53</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-54</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-55</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-56</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-57</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-58</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-59</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-60</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-61</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-62</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-63</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-64</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-65</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-66</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-67</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-68</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-69</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-70</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-71</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-72</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-73</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>ARC-74</td>
<td>B65-10946</td>
<td>01</td>
<td></td>
</tr>
</tbody>
</table>

Cumulative Index to Tech Briefs

Issue 10
<p>| ARG-10347 | B69-10631 | 01 |
| ARG-10348 | B69-10256 | 03 |
| ARG-10352 | B69-10209 | 03 |
| ARG-10355 | B69-10214 | 02 |
| ARG-10356 | B69-10254 | 03 |
| ARG-10360 | B69-10165 | 03 |
| ARG-10361 | B69-10630 | 01 |
| ARG-10362 | B69-10767 | 02 |
| ARG-10365 | B69-10240 | 02 |
| ARG-10367 | B69-10166 | 02 |
| ARG-10371 | B69-10414 | 03 |
| ARG-10372 | B69-10772 | 01 |
| ARG-10376 | B69-10618 | 01 |
| ARG-10377 | B69-10241 | 03 |
| ARG-10387 | B69-10242 | 05 |
| ARG-10388 | B69-10344 | 02 |
| ARG-10403 | B69-10257 | 03 |
| ARG-10409 | B69-10413 | 03 |
| ARG-10415 | B69-10425 | 03 |
| ARG-10416 | B69-10430 | 03 |
| ARG-10419 | B69-10411 | 02 |
| ARG-10421 | B69-10645 | 02 |
| ARG-10424 | B69-10412 | 03 |
| ARG-10425 | B69-10428 | 02 |
| ARG-10428 | B69-10431 | 02 |
| ARG-10436 | B69-10377 | 03 |
| ARG-10444 | B69-10428 | 01 |
| ARG-10445 | B69-10445 | 02 |
| ARG-10448 | B69-10543 | 06 |
| ARG-10452 | B69-10613 | 03 |
| ARG-10453 | B69-10627 | 03 |
| ARG-10459 | B69-10647 | 03 |
| ARG-10461 | B69-10620 | 03 |
| ARG-10462 | B69-10611 | 03 |
| ARG-10463 | B69-10656 | 06 |
| ARG-10469 | B69-10423 | 03 |
| ARG-10475 | B69-10608 | 06 |
| ARG-10478 | B69-10612 | 01 |
| ARG-10479 | B69-10445 | 01 |
| ARG-10480 | B69-10429 | 01 |
| ARG-10481 | B69-10622 | 02 |
| ARG-10482 | B69-10603 | 01 |
| ARG-10483 | B69-10614 | 01 |
| ARG-10490 | B69-10641 | 03 |
| ARG-10494 | B69-10654 | 02 |
| ARG-10497 | B69-10616 | 03 |
| ARG-10500 | B69-10771 | 02 |
| ARG-10506 | B69-10998 | 02 |
| ARG-10507 | B69-10036 | 01 |
| ARG-10513 | B69-10193 | 06 |
| ARG-10516 | B69-10173 | 01 |
| ARG-10517 | B69-10190 | 03 |
| ARG-10519 | B69-10202 | 06 |
| ARG-10523 | B69-10088 | 01 |
| ARG-10529 | B69-10076 | 01 |
| ARG-10530 | B69-10243 | 02 |
| ARG-10539 | B69-10172 | 03 |
| ARG-10548 | B69-10097 | 01 |
| ARG-10551 | B66-10660 | 02 |
| ARG-10555 | B66-10068 | 02 |
| ARG-10560 | B66-10439 | 01 |
| ARG-10567 | B66-10114 | 02 |
| ARG-10569 | B66-10056 | 01 |
| ARG-10573 | B66-10581 | 01 |
| ARG-10578 | B66-10231 | 01 |
| ARG-10676 | B66-10153 | 01 |
| ARG-10677 | B66-10176 | 01 |
| ARG-10705 | B66-10060 | 02 |
| ARG-10709 | B66-10168 | 02 |
| ARG-10711 | B66-10439 | 01 |
| ARG-10715 | B66-10114 | 02 |
| ARG-10717 | B66-10056 | 01 |
| ARG-10726 | B66-10581 | 01 |
| ARG-10731 | B66-10231 | 01 |
| ARG-10748 | B66-10153 | 01 |
| ARG-10765 | B66-10176 | 01 |
| ARG-10003 | B68-10206 | 04 |
| ARG-10011 | B68-10416 | 01 |
| ARG-10026 | B68-10648 | 02 |
| ARG-10031 | B68-10350 | 01 |
| ARG-10036 | B68-10686 | 06 |
| ARG-10055 | B68-10347 | 01 |
| ARG-10087 | B68-10563 | 01 |
| ARG-10093 | B68-10537 | 05 |
| ARG-10102 | B68-10538 | 05 |
| ARG-10114 | B68-10444 | 02 |
| ARG-10129 | B68-10327 | 01 |
| ARG-10136 | B68-10438 | 01 |
| ARG-10138 | B68-10441 | 01 |
| ARG-10148 | B68-10443 | 01 |
| GSPC-10216 | 869-10114 | 01 | HQ-10031 | 867-10568 | 01 |
| GSPC-10221 | 867-10656 | 01 | HQ-10032 | 867-10569 | 03 |
| GSPC-10222 | 868-10321 | 01 | HQ-10035 | 867-10660 | 01 |
| GSPC-10223 | 867-10651 | 06 | HQ-10037 | 867-10661 | 01 |
| GSPC-10241 | 869-10070 | 01 | HQ-10039 | 869-10547 | 03 |
| GSPC-10271 | 868-10069 | 01 | HQ-10043 | 869-10665 | 01 |
| GSPC-10281 | 868-10035 | 01 | HQ-10047 | 869-10483 | 05 |
| GSPC-10284 | 869-10010 | 01 | HQ-10049 | 869-10483 | 05 |
| GSPC-10305 | 868-10315 | 01 | HQ-10055 | 867-10395 | 04 |
| GSPC-10343 | 868-10104 | 03 | HQ-10073 | 869-10247 | 01 |
| GSPC-10353 | 868-10325 | 01 | HQ-10106 | 869-10248 | 02 |
| GSPC-10360 | 867-10586 | 03 | HQ-10123 | 869-10385 | 01 |
| GSPC-10362 | 868-10009 | 06 | HQ-10165 | 869-10309 | 03 |
| GSPC-10369 | 869-10653 | 01 | HQ-10151 | 869-10841 | 01 |
| GSPC-10375 | 869-10064 | 01 | HQ-10177 | 869-10693 | 04 |
| GSPC-10387 | 869-10063 | 01 | HQ-10200 | 869-10528 | 02 |
| GSPC-10396 | 867-10587 | 01 | HQ-10214 | 869-10312 | 04 |
| GSPC-10413 | 868-10384 | 01 | HQ-10226 | 869-10801 | 01 |
| GSPC-10487 | 868-10431 | 01 | HQ-10227 | 869-10529 | 02 |
| GSPC-10521 | 869-10200 | 01 | HQ-10234 | 869-10819 | 01 |
| GSPC-10563 | 868-10136 | 02 | HQ-10235 | 869-10748 | 03 |
| GSPC-10565 | 869-10715 | 04 | HQ-10273 | 869-10224 | 01 |
| GSPC-10568 | 869-10011 | 02 | HQ-10279 | 869-10207 | 03 |
| GSPC-10569 | 869-10731 | 01 | HQ-10290 | 869-10665 | 02 |
| GSPC-10575 | 869-10171 | 06 | HQ-10315 | 869-10661 | 05 |
| GSPC-10576 | 868-10336 | 01 | HQ-10318 | 869-10516 | 01 |
| GSPC-10580 | 869-10077 | 02 | HQ-10363 | 869-10663 | 02 |
| GSPC-10581 | 869-10253 | 01 | HQ-10368 | 869-10666 | 02 |
| GSPC-10592 | 869-10234 | 02 | HQ-10355 | 869-10663 | 02 |
| GSPC-10603 | 869-10734 | 01 | HQ-10377 | 869-10812 | 01 |
| GSPC-10605 | 869-10121 | 01 | HQ-10391 | 869-10368 | 06 |
| GSPC-10607 | 869-10340 | 01 | HQ-10412 | 869-10827 | 01 |
| GSPC-10614 | 869-10578 | 01 | HQ-10417 | 869-10860 | 01 |
| GSPC-10616 | 869-10274 | 01 | HQ-10418 | 869-10510 | 02 |
| GSPC-10618 | 868-10037 | 01 | HQ-10421 | 869-10537 | 01 |
| GSPC-10628 | 869-10075 | 02 | HQ-10424 | 869-10665 | 01 |
| GSPC-10675 | 869-10037 | 01 | HQ-10431 | 869-10666 | 02 |
| GSPC-10682 | 869-10273 | 01 | HQ-10433 | 869-10550 | 01 |
| GSPC-10703 | 869-10511 | 03 | HQ-10445 | 869-10666 | 01 |
| GSPC-10706 | 869-10341 | 02 | HQ-10446 | 869-10666 | 01 |
| GSPC-10746 | 869-10233 | 01 | HQ-10447 | 869-10662 | 02 |
| GSPC-10764 | 869-10227 | 01 | HQ-10461 | 869-10550 | 01 |
| GSPC-10769 | 869-10505 | 05 | HQ-10476 | 869-10550 | 01 |
| GSPC-10783 | 869-10127 | 02 | HQ-10536 | 869-10550 | 01 |
| GSPC-10830 | 865-10137 | 05 | HQ-10561 | 869-10746 | 01 |
| GSPC-10960 | 869-10591 | 02 | HQ-10576 | 869-10746 | 01 |
| GSPC-90536 | 868-10518 | 01 | GSPC-90549 | 868-10002 | 01 |
| GSPC-90549 | 868-10124 | 01 | I-843 |</p>
<table>
<thead>
<tr>
<th>ORIGINATOR/TECH BRIEF NUMBER INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPI-400-039 ... B65-10212 05</td>
</tr>
<tr>
<td>KSC-66-8                      B66-10627 05</td>
</tr>
<tr>
<td>KSC-66-10                     B66-10294 05</td>
</tr>
<tr>
<td>KSC-66-12                     B66-10634 05</td>
</tr>
<tr>
<td>KSC-66-13                     B66-10034 05</td>
</tr>
<tr>
<td>KSC-66-14                     B66-10628 05</td>
</tr>
<tr>
<td>KSC-66-18                     B66-10496 01</td>
</tr>
<tr>
<td>KSC-66-19                     B66-10537 05</td>
</tr>
<tr>
<td>KSC-66-20                     B66-10626 05</td>
</tr>
<tr>
<td>KSC-66-22                     B66-10391 01</td>
</tr>
<tr>
<td>KSC-66-38                     B66-10266 05</td>
</tr>
<tr>
<td>KSC-66-39                     B66-10548 01</td>
</tr>
<tr>
<td>KSC-66-44                     B66-10575 05</td>
</tr>
<tr>
<td>KSC-67-15                     B67-10230 01</td>
</tr>
<tr>
<td>KSC-67-80                     B67-10244 05</td>
</tr>
<tr>
<td>KSC-67-94                     B67-10239 01</td>
</tr>
<tr>
<td>KSC-67-98                     B67-10104 01</td>
</tr>
<tr>
<td>KSC-67-111                    B67-10835 02</td>
</tr>
<tr>
<td>KSC-67-120                    B68-10209 01</td>
</tr>
<tr>
<td>KSC-67-128                    B68-10275 02</td>
</tr>
<tr>
<td>KSC-69-95                     B68-10251 01</td>
</tr>
<tr>
<td>KSC-70-55                     B68-10560 02</td>
</tr>
<tr>
<td>KSC-70-95                     B68-10515 01</td>
</tr>
<tr>
<td>KSC-70-99                     B68-10361 01</td>
</tr>
<tr>
<td>KSC-70-103                    B68-10925 05</td>
</tr>
<tr>
<td>KSC-70-73                     B68-10240 05</td>
</tr>
<tr>
<td>KSC-70-97                     B68-10445 05</td>
</tr>
<tr>
<td>KSC-70-106                    B68-10061 01</td>
</tr>
<tr>
<td>KSC-70-133                    B68-10437 03</td>
</tr>
<tr>
<td>KSC-70-108                    B68-10359 05</td>
</tr>
<tr>
<td>KSC-70-167                    B68-10494 05</td>
</tr>
<tr>
<td>KSC-70-211                    B68-10209 01</td>
</tr>
<tr>
<td>KSC-70-212                    B68-10220 01</td>
</tr>
<tr>
<td>KSC-70-218                    B68-10392 02</td>
</tr>
<tr>
<td>KSC-70-219                    B68-10188 04</td>
</tr>
<tr>
<td>KSC-70-220                    B68-10396 03</td>
</tr>
<tr>
<td>KSC-70-262                    B68-10199 05</td>
</tr>
<tr>
<td>KSC-70-267                    B68-10520 02</td>
</tr>
<tr>
<td>KSC-70-305                    B68-10173 05</td>
</tr>
<tr>
<td>KSC-70-326                    B68-10229 05</td>
</tr>
<tr>
<td>KSC-70-356                    B68-10229 05</td>
</tr>
<tr>
<td>KSC-70-358                    B68-10527 05</td>
</tr>
<tr>
<td>KSC-70-359                    B68-10231 05</td>
</tr>
<tr>
<td>KSC-70-368                    B68-10354 01</td>
</tr>
<tr>
<td>KSC-70-380                    B68-10556 02</td>
</tr>
<tr>
<td>KSC-70-381                    B68-10316 01</td>
</tr>
<tr>
<td>KSC-70-388                    B68-10716 02</td>
</tr>
<tr>
<td>KSC-70-393                    B68-10323 01</td>
</tr>
<tr>
<td>KSC-70-396                    B68-10319 08</td>
</tr>
<tr>
<td>LA4GLE-4                      B68-10308 03</td>
</tr>
<tr>
<td>LA4GLE-5                      B68-10311 03</td>
</tr>
<tr>
<td>LA4GLE-10                     B68-10318 03</td>
</tr>
<tr>
<td>LA4GLE-16                     B68-10321 03</td>
</tr>
<tr>
<td>LA4GLE-20                     B68-10557 03</td>
</tr>
<tr>
<td>LA4GLE-21                     B68-10558 03</td>
</tr>
<tr>
<td>LA4GLE-23                     B68-10119 03</td>
</tr>
<tr>
<td>LA4GLE-25                     B68-10526 05</td>
</tr>
<tr>
<td>LA4GLE-26                     B68-10528 03</td>
</tr>
<tr>
<td>LA4GLE-27                     B68-10130 05</td>
</tr>
<tr>
<td>LA4GLE-28                     B68-10530 05</td>
</tr>
<tr>
<td>LA4GLE-31                     B68-10437 03</td>
</tr>
<tr>
<td>LA4GLE-32                     B68-10074 05</td>
</tr>
<tr>
<td>LA4GLE-33                     B68-10100 02</td>
</tr>
<tr>
<td>LA4GLE-34                     B69-10235 05</td>
</tr>
<tr>
<td>LA4GLE-36                     B66-10288 03</td>
</tr>
<tr>
<td>LA4GLE-37                     B66-10288 03</td>
</tr>
<tr>
<td>LA4GLE-39                     B65-10042 05</td>
</tr>
<tr>
<td>LA4GLE-40                     B65-10145 05</td>
</tr>
<tr>
<td>LA4GLE-44                     B65-10300 05</td>
</tr>
<tr>
<td>LA4GLE-45                     B65-10272 05</td>
</tr>
<tr>
<td>LA4GLE-46                     B65-10073 05</td>
</tr>
<tr>
<td>LA4GLE-47                     B65-10030 05</td>
</tr>
<tr>
<td>LA4GLE-48                     B65-10062 01</td>
</tr>
<tr>
<td>LA4GLE-49                     B65-10067 01</td>
</tr>
<tr>
<td>LA4GLE-54                     B65-10086 01</td>
</tr>
<tr>
<td>LA4GLE-55                     B65-10086 01</td>
</tr>
<tr>
<td>LA4GLE-56                     B65-10045 01</td>
</tr>
<tr>
<td>LA4GLE-58                     B65-10371 01</td>
</tr>
<tr>
<td>LA4GLE-59                     B65-10361 01</td>
</tr>
<tr>
<td>LA4GLE-67                     B65-10345 05</td>
</tr>
<tr>
<td>LA4GLE-68                     B65-10070 05</td>
</tr>
<tr>
<td>Index</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>M-PS-823</td>
</tr>
<tr>
<td>M-PS-827</td>
</tr>
<tr>
<td>M-PS-830</td>
</tr>
<tr>
<td>M-PS-846</td>
</tr>
<tr>
<td>M-PS-848</td>
</tr>
<tr>
<td>M-PS-850</td>
</tr>
<tr>
<td>M-PS-856</td>
</tr>
<tr>
<td>M-PS-860</td>
</tr>
<tr>
<td>M-PS-862</td>
</tr>
<tr>
<td>M-PS-867</td>
</tr>
<tr>
<td>M-PS-869</td>
</tr>
<tr>
<td>M-PS-871</td>
</tr>
<tr>
<td>M-PS-882</td>
</tr>
<tr>
<td>M-PS-883</td>
</tr>
<tr>
<td>M-PS-888</td>
</tr>
<tr>
<td>M-PS-893</td>
</tr>
<tr>
<td>M-PS-900</td>
</tr>
<tr>
<td>M-PS-902</td>
</tr>
<tr>
<td>M-PS-906</td>
</tr>
<tr>
<td>M-PS-908</td>
</tr>
<tr>
<td>M-PS-909</td>
</tr>
<tr>
<td>M-PS-915</td>
</tr>
<tr>
<td>M-PS-916</td>
</tr>
<tr>
<td>M-PS-925</td>
</tr>
<tr>
<td>M-PS-926</td>
</tr>
<tr>
<td>M-PS-965</td>
</tr>
<tr>
<td>M-PS-975</td>
</tr>
<tr>
<td>M-PS-982</td>
</tr>
<tr>
<td>M-PS-985</td>
</tr>
<tr>
<td>M-PS-1021</td>
</tr>
<tr>
<td>M-PS-1025</td>
</tr>
<tr>
<td>M-PS-1064</td>
</tr>
<tr>
<td>M-PS-1069</td>
</tr>
<tr>
<td>M-PS-1077</td>
</tr>
<tr>
<td>M-PS-1084</td>
</tr>
<tr>
<td>M-PS-1111</td>
</tr>
<tr>
<td>M-PS-1117</td>
</tr>
<tr>
<td>M-PS-1126</td>
</tr>
<tr>
<td>M-PS-1133</td>
</tr>
<tr>
<td>M-PS-1134</td>
</tr>
<tr>
<td>M-PS-1135</td>
</tr>
<tr>
<td>M-PS-1136</td>
</tr>
<tr>
<td>M-PS-1137</td>
</tr>
<tr>
<td>M-PS-1148</td>
</tr>
<tr>
<td>M-PS-1163</td>
</tr>
<tr>
<td>M-PS-1172</td>
</tr>
<tr>
<td>M-PS-1181</td>
</tr>
<tr>
<td>M-PS-1206</td>
</tr>
<tr>
<td>M-PS-1213</td>
</tr>
<tr>
<td>M-PS-1216</td>
</tr>
<tr>
<td>M-PS-1221</td>
</tr>
<tr>
<td>M-PS-1258</td>
</tr>
<tr>
<td>M-PS-1263</td>
</tr>
<tr>
<td>M-PS-1264</td>
</tr>
<tr>
<td>M-PS-1265</td>
</tr>
<tr>
<td>M-PS-1269</td>
</tr>
<tr>
<td>M-PS-1299</td>
</tr>
<tr>
<td>M-PS-1300</td>
</tr>
<tr>
<td>M-PS-1312</td>
</tr>
<tr>
<td>M-PS-1313</td>
</tr>
<tr>
<td>M-PS-1321</td>
</tr>
<tr>
<td>M-PS-1348</td>
</tr>
<tr>
<td>M-PS-1366</td>
</tr>
<tr>
<td>M-PS-1374</td>
</tr>
<tr>
<td>M-PS-1397</td>
</tr>
<tr>
<td>M-PS-1401</td>
</tr>
<tr>
<td>M-PS-1415</td>
</tr>
<tr>
<td>M-PS-1420</td>
</tr>
<tr>
<td>M-PS-1422</td>
</tr>
<tr>
<td>M-PS-1424</td>
</tr>
<tr>
<td>M-PS-1426</td>
</tr>
<tr>
<td>M-PS-1475</td>
</tr>
<tr>
<td>M-PS-1480</td>
</tr>
<tr>
<td>M-PS-1486</td>
</tr>
<tr>
<td>M-PS-1488</td>
</tr>
<tr>
<td>M-PS-1496</td>
</tr>
<tr>
<td>M-PS-1506</td>
</tr>
<tr>
<td>M-PS-1516</td>
</tr>
<tr>
<td>M-PS-1517</td>
</tr>
<tr>
<td>M-PS-1529</td>
</tr>
<tr>
<td>M-PS-1536</td>
</tr>
<tr>
<td>M-PS-1538</td>
</tr>
<tr>
<td>INDEX</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>M-PS-2049</td>
</tr>
<tr>
<td>M-PS-2061</td>
</tr>
<tr>
<td>M-PS-2063</td>
</tr>
<tr>
<td>M-PS-2114</td>
</tr>
<tr>
<td>M-PS-2143</td>
</tr>
<tr>
<td>M-PS-2147</td>
</tr>
<tr>
<td>M-PS-2166</td>
</tr>
<tr>
<td>M-PS-2167</td>
</tr>
<tr>
<td>M-PS-2194</td>
</tr>
<tr>
<td>M-PS-2221</td>
</tr>
<tr>
<td>M-PS-2230</td>
</tr>
<tr>
<td>M-PS-2238</td>
</tr>
<tr>
<td>M-PS-2243</td>
</tr>
<tr>
<td>M-PS-2254</td>
</tr>
<tr>
<td>M-PS-2259</td>
</tr>
<tr>
<td>M-PS-2267</td>
</tr>
<tr>
<td>M-PS-2277</td>
</tr>
<tr>
<td>M-PS-2297</td>
</tr>
<tr>
<td>M-PS-2298</td>
</tr>
<tr>
<td>M-PS-2308</td>
</tr>
<tr>
<td>M-PS-2309</td>
</tr>
<tr>
<td>M-PS-2334</td>
</tr>
<tr>
<td>M-PS-2336</td>
</tr>
<tr>
<td>M-PS-2343</td>
</tr>
<tr>
<td>M-PS-2348</td>
</tr>
<tr>
<td>M-PS-2349</td>
</tr>
<tr>
<td>M-PS-2390</td>
</tr>
<tr>
<td>M-PS-2394</td>
</tr>
<tr>
<td>M-PS-2397</td>
</tr>
<tr>
<td>M-PS-2417</td>
</tr>
<tr>
<td>M-PS-2427</td>
</tr>
<tr>
<td>M-PS-2434</td>
</tr>
<tr>
<td>M-PS-2437</td>
</tr>
<tr>
<td>M-PS-2442</td>
</tr>
<tr>
<td>M-PS-2443</td>
</tr>
<tr>
<td>M-PS-2446</td>
</tr>
<tr>
<td>M-PS-2448</td>
</tr>
<tr>
<td>M-PS-2455</td>
</tr>
<tr>
<td>M-PS-2477</td>
</tr>
<tr>
<td>M-PS-2478</td>
</tr>
<tr>
<td>M-PS-2494</td>
</tr>
<tr>
<td>M-PS-2519</td>
</tr>
<tr>
<td>M-PS-2549</td>
</tr>
<tr>
<td>M-PS-2556</td>
</tr>
<tr>
<td>M-PS-2557</td>
</tr>
<tr>
<td>M-PS-2558</td>
</tr>
<tr>
<td>M-PS-2566</td>
</tr>
<tr>
<td>M-PS-2573</td>
</tr>
<tr>
<td>M-PS-2576</td>
</tr>
<tr>
<td>M-PS-2577</td>
</tr>
<tr>
<td>M-PS-2578</td>
</tr>
<tr>
<td>M-PS-2579</td>
</tr>
<tr>
<td>M-PS-2590</td>
</tr>
<tr>
<td>M-PS-2594</td>
</tr>
<tr>
<td>M-PS-2601</td>
</tr>
<tr>
<td>M-PS-2608</td>
</tr>
<tr>
<td>M-PS-2609</td>
</tr>
<tr>
<td>M-PS-2615</td>
</tr>
<tr>
<td>M-PS-2621</td>
</tr>
<tr>
<td>M-PS-2624</td>
</tr>
<tr>
<td>M-PS-2626</td>
</tr>
<tr>
<td>M-PS-2633</td>
</tr>
<tr>
<td>MSC-448</td>
</tr>
<tr>
<td>MSC-475</td>
</tr>
<tr>
<td>MSC-486</td>
</tr>
<tr>
<td>MSC-498</td>
</tr>
<tr>
<td>MSC-496</td>
</tr>
<tr>
<td>MSC-497</td>
</tr>
<tr>
<td>MSC-504</td>
</tr>
<tr>
<td>MSC-506</td>
</tr>
<tr>
<td>MSC-508</td>
</tr>
<tr>
<td>MSC-509</td>
</tr>
<tr>
<td>MSC-515</td>
</tr>
<tr>
<td>MSC-516</td>
</tr>
<tr>
<td>MSC-519</td>
</tr>
<tr>
<td>MSC-523</td>
</tr>
<tr>
<td>MSC-524</td>
</tr>
<tr>
<td>MSC-535</td>
</tr>
<tr>
<td>MSC-543</td>
</tr>
<tr>
<td>MSC-552</td>
</tr>
<tr>
<td>MSC-563</td>
</tr>
<tr>
<td>MSC-599</td>
</tr>
<tr>
<td>MSC-600</td>
</tr>
<tr>
<td>MSC-603</td>
</tr>
<tr>
<td>MSC-604</td>
</tr>
<tr>
<td>MSC-616</td>
</tr>
<tr>
<td>MSC-618</td>
</tr>
<tr>
<td>MSC-623</td>
</tr>
<tr>
<td>MSC-626</td>
</tr>
<tr>
<td>MSC-627</td>
</tr>
<tr>
<td>MSC-631</td>
</tr>
<tr>
<td>MSC-647</td>
</tr>
<tr>
<td>MSC-648</td>
</tr>
<tr>
<td>MSC-649</td>
</tr>
<tr>
<td>MSC-673</td>
</tr>
<tr>
<td>MSC-710</td>
</tr>
<tr>
<td>MSC-715</td>
</tr>
<tr>
<td>MSC-720</td>
</tr>
<tr>
<td>MSC-722</td>
</tr>
<tr>
<td>MSC-726</td>
</tr>
<tr>
<td>MSC-740</td>
</tr>
<tr>
<td>MSC-747</td>
</tr>
<tr>
<td>MSC-752</td>
</tr>
<tr>
<td>MSC-753</td>
</tr>
<tr>
<td>MSC-777</td>
</tr>
<tr>
<td>MSC-789</td>
</tr>
<tr>
<td>MSC-798</td>
</tr>
<tr>
<td>MSC-800</td>
</tr>
<tr>
<td>MSC-806</td>
</tr>
<tr>
<td>MSC-831</td>
</tr>
<tr>
<td>MSC-834</td>
</tr>
<tr>
<td>MSC-859</td>
</tr>
<tr>
<td>MSC-871</td>
</tr>
<tr>
<td>MSC-921</td>
</tr>
<tr>
<td>MSC-924</td>
</tr>
<tr>
<td>MSC-925</td>
</tr>
<tr>
<td>MSC-949</td>
</tr>
<tr>
<td>MSC-960</td>
</tr>
<tr>
<td>MSC-971</td>
</tr>
<tr>
<td>MSC-989</td>
</tr>
<tr>
<td>MSC-990</td>
</tr>
<tr>
<td>MSC-1038</td>
</tr>
<tr>
<td>MSC-1065</td>
</tr>
<tr>
<td>MSC-1046</td>
</tr>
<tr>
<td>MSC-1049</td>
</tr>
<tr>
<td>MSC-1063</td>
</tr>
<tr>
<td>MSC-1076</td>
</tr>
<tr>
<td>MSC-1080</td>
</tr>
<tr>
<td>MSC-1093</td>
</tr>
<tr>
<td>MSC-1119</td>
</tr>
<tr>
<td>MSC-1120</td>
</tr>
<tr>
<td>MSC-1125</td>
</tr>
<tr>
<td>MSC-1135</td>
</tr>
<tr>
<td>MSC-1137</td>
</tr>
<tr>
<td>MSC-1157</td>
</tr>
<tr>
<td>MSC-1161</td>
</tr>
<tr>
<td>MSC-1163</td>
</tr>
<tr>
<td>MSC-1165</td>
</tr>
<tr>
<td>MSC-1166</td>
</tr>
<tr>
<td>MSC-1173</td>
</tr>
<tr>
<td>MSC-1176</td>
</tr>
<tr>
<td>MSC-1178</td>
</tr>
<tr>
<td>MSC-1189</td>
</tr>
<tr>
<td>MSC-1193</td>
</tr>
<tr>
<td>MSC-1210</td>
</tr>
<tr>
<td>MSC-1227</td>
</tr>
<tr>
<td>MSC-1240</td>
</tr>
<tr>
<td>MSC-1246</td>
</tr>
<tr>
<td>MSC-1263</td>
</tr>
<tr>
<td>MSC-13013</td>
</tr>
<tr>
<td>MSC-13033</td>
</tr>
<tr>
<td>MSC-13043</td>
</tr>
<tr>
<td>MSC-13064</td>
</tr>
<tr>
<td>MSC-13075</td>
</tr>
<tr>
<td>MSC-13079</td>
</tr>
<tr>
<td>MSC-13085</td>
</tr>
<tr>
<td>MSC-13097</td>
</tr>
<tr>
<td>MSC-13095</td>
</tr>
<tr>
<td>MSC-13051</td>
</tr>
<tr>
<td>MSC-13093</td>
</tr>
<tr>
<td>MSC-13095</td>
</tr>
<tr>
<td>MSC-13096</td>
</tr>
<tr>
<td>MSC-13097</td>
</tr>
<tr>
<td>MSC-13098</td>
</tr>
<tr>
<td>MSC-13099</td>
</tr>
<tr>
<td>MSC-13096</td>
</tr>
<tr>
<td>MSC-13095</td>
</tr>
<tr>
<td>MSC-13096</td>
</tr>
<tr>
<td>MSC-13096</td>
</tr>
<tr>
<td>MSC-13098</td>
</tr>
<tr>
<td>MSC-13097</td>
</tr>
<tr>
<td>MSC-13098</td>
</tr>
<tr>
<td>MSC-13102</td>
</tr>
<tr>
<td>MSC-13104</td>
</tr>
<tr>
<td>MSC-13107</td>
</tr>
<tr>
<td>MSC-13110</td>
</tr>
<tr>
<td>MSC-13110</td>
</tr>
<tr>
<td>MSC-13117</td>
</tr>
<tr>
<td>MSC-13118</td>
</tr>
<tr>
<td>MSC-13122</td>
</tr>
<tr>
<td>MSC-13126</td>
</tr>
<tr>
<td>MSC-13127</td>
</tr>
<tr>
<td>MSC-13128</td>
</tr>
<tr>
<td>MSC-13132</td>
</tr>
<tr>
<td>MSC-13147</td>
</tr>
<tr>
<td>MSC-13147</td>
</tr>
<tr>
<td>MSC-13147</td>
</tr>
<tr>
<td>MSC-13147</td>
</tr>
</tbody>
</table>


ORIGINATOR/TECE BRIEF NUEBER INDEX


<table>
<thead>
<tr>
<th>ORIGINATOR/TECH BRIEF NUMBER INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>XWP-04235</td>
</tr>
<tr>
<td>XWP-05254</td>
</tr>
<tr>
<td>XWP-06234</td>
</tr>
<tr>
<td>XWP-08124</td>
</tr>
<tr>
<td>XWP-08898</td>
</tr>
<tr>
<td>XWP-09698</td>
</tr>
<tr>
<td>XWP-09704</td>
</tr>
<tr>
<td>XWP-09755</td>
</tr>
<tr>
<td>XWP-09763</td>
</tr>
<tr>
<td>XWP-09771</td>
</tr>
<tr>
<td>XWP-09802</td>
</tr>
<tr>
<td>XWP-09808</td>
</tr>
<tr>
<td>XWP-10849</td>
</tr>
</tbody>
</table>
Tech Brief/Originator Number Index

The left hand column identifies the Tech Brief number, e.g., 863-10003, followed by a two-digit number, e.g., 01, which identifies the subject category containing the entire citation. Following the subject category number is the originator number.

<table>
<thead>
<tr>
<th>Tech Brief Number</th>
<th>Originator Number</th>
<th>Subject Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>863-10003</td>
<td>04</td>
<td>ABC-2</td>
</tr>
<tr>
<td>863-10004</td>
<td>03</td>
<td>ABC-3</td>
</tr>
<tr>
<td>863-10005</td>
<td>01</td>
<td>ABC-5</td>
</tr>
<tr>
<td>863-10006</td>
<td>05</td>
<td>ABC-6</td>
</tr>
<tr>
<td>863-10007</td>
<td>05</td>
<td>ABC-7</td>
</tr>
<tr>
<td>863-10008</td>
<td>05</td>
<td>ARC-16</td>
</tr>
<tr>
<td>863-10009</td>
<td>05</td>
<td>ARC-8</td>
</tr>
<tr>
<td>863-10023</td>
<td>01</td>
<td>FPC-17</td>
</tr>
<tr>
<td>863-10024</td>
<td>01</td>
<td>GSFC-36</td>
</tr>
<tr>
<td>863-10027</td>
<td>01</td>
<td>GSFC-92</td>
</tr>
<tr>
<td>863-10033</td>
<td>01</td>
<td>JPL-63</td>
</tr>
<tr>
<td>863-10091</td>
<td>01</td>
<td>JPL-122</td>
</tr>
<tr>
<td>863-10118</td>
<td>01</td>
<td>JPL-135</td>
</tr>
<tr>
<td>863-10123</td>
<td>05</td>
<td>JPL-170</td>
</tr>
<tr>
<td>863-10139</td>
<td>05</td>
<td>JPL-179</td>
</tr>
<tr>
<td>863-10141</td>
<td>05</td>
<td>JPL-182</td>
</tr>
<tr>
<td>863-10193</td>
<td>01</td>
<td>JPL-231</td>
</tr>
<tr>
<td>863-10194</td>
<td>01</td>
<td>JPL-238A</td>
</tr>
<tr>
<td>863-10195</td>
<td>05</td>
<td>JPL-280</td>
</tr>
<tr>
<td>863-10196</td>
<td>05</td>
<td>JPL-303</td>
</tr>
<tr>
<td>863-10200</td>
<td>05</td>
<td>JPL-305</td>
</tr>
<tr>
<td>863-10207</td>
<td>03</td>
<td>JPL-321</td>
</tr>
<tr>
<td>863-10226</td>
<td>05</td>
<td>JPL-354</td>
</tr>
<tr>
<td>863-10227</td>
<td>01</td>
<td>JPL-357</td>
</tr>
<tr>
<td>863-10228</td>
<td>05</td>
<td>JPL-361</td>
</tr>
<tr>
<td>863-10229</td>
<td>01</td>
<td>JPL-362</td>
</tr>
<tr>
<td>863-10234</td>
<td>03</td>
<td>JPL-373</td>
</tr>
<tr>
<td>863-10235</td>
<td>03</td>
<td>JPL-374</td>
</tr>
<tr>
<td>863-10236</td>
<td>05</td>
<td>JPL-375</td>
</tr>
<tr>
<td>863-10237</td>
<td>05</td>
<td>JPL-376</td>
</tr>
<tr>
<td>863-10238</td>
<td>01</td>
<td>JPL-381</td>
</tr>
<tr>
<td>863-10240</td>
<td>05</td>
<td>JPL-384</td>
</tr>
<tr>
<td>863-10241</td>
<td>05</td>
<td>JPL-385</td>
</tr>
<tr>
<td>863-10247</td>
<td>05</td>
<td>JPL-392</td>
</tr>
<tr>
<td>863-10250</td>
<td>01</td>
<td>JPL-397</td>
</tr>
<tr>
<td>863-10251</td>
<td>05</td>
<td>JPL-398</td>
</tr>
<tr>
<td>863-10255</td>
<td>01</td>
<td>JPL-406</td>
</tr>
<tr>
<td>863-10258</td>
<td>01</td>
<td>JPL-410</td>
</tr>
<tr>
<td>863-10260</td>
<td>02</td>
<td>JPL-418</td>
</tr>
<tr>
<td>863-10262</td>
<td>01</td>
<td>JPL-421</td>
</tr>
<tr>
<td>863-10263</td>
<td>03</td>
<td>JPL-424</td>
</tr>
<tr>
<td>863-10266</td>
<td>01</td>
<td>JPL-425</td>
</tr>
<tr>
<td>863-10280</td>
<td>01</td>
<td>JPL-0021</td>
</tr>
<tr>
<td>863-10284</td>
<td>01</td>
<td>JEL-0029</td>
</tr>
<tr>
<td>863-10289</td>
<td>05</td>
<td>JPL-1001</td>
</tr>
<tr>
<td>863-10291</td>
<td>05</td>
<td>JPL-1003</td>
</tr>
<tr>
<td>863-10292</td>
<td>05</td>
<td>JPL-1004</td>
</tr>
<tr>
<td>863-10304</td>
<td>05</td>
<td>LANGLEY-1A</td>
</tr>
<tr>
<td>863-10311</td>
<td>03</td>
<td>LANGLEY-4</td>
</tr>
<tr>
<td>863-10316</td>
<td>03</td>
<td>LANGLEY-5A</td>
</tr>
<tr>
<td>Code</td>
<td>Page</td>
<td>Index</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>B65-10004</td>
<td>02</td>
<td>LANGLEY-93</td>
</tr>
<tr>
<td>B65-10084</td>
<td>01</td>
<td>ARC-37</td>
</tr>
<tr>
<td>B65-10078</td>
<td>01</td>
<td>GSFC-280</td>
</tr>
<tr>
<td>B65-10088</td>
<td>03</td>
<td>M-FS-74</td>
</tr>
<tr>
<td>B65-10090</td>
<td>06</td>
<td>LANGLEY-96</td>
</tr>
<tr>
<td>B65-10100</td>
<td>01</td>
<td>ARC-40</td>
</tr>
<tr>
<td>B65-10091</td>
<td>01</td>
<td>M-FS-600</td>
</tr>
<tr>
<td>B65-10093</td>
<td>01</td>
<td>GCFC-306</td>
</tr>
<tr>
<td>B65-10095</td>
<td>04</td>
<td>RSFC-287</td>
</tr>
<tr>
<td>B65-10097</td>
<td>01</td>
<td>FSFC-262</td>
</tr>
<tr>
<td>B65-10098</td>
<td>05</td>
<td>M-FS-280</td>
</tr>
<tr>
<td>B65-10099</td>
<td>05</td>
<td>JPL-274</td>
</tr>
<tr>
<td>B65-10100</td>
<td>02</td>
<td>LANGLEY-33</td>
</tr>
<tr>
<td>B65-10101</td>
<td>05</td>
<td>LEWIS-185</td>
</tr>
<tr>
<td>B65-10102</td>
<td>01</td>
<td>GCFC-249</td>
</tr>
<tr>
<td>B65-10103</td>
<td>01</td>
<td>GCFC-280</td>
</tr>
<tr>
<td>B65-10104</td>
<td>05</td>
<td>M-FS-260</td>
</tr>
<tr>
<td>B65-10105</td>
<td>01</td>
<td>M-FS-236</td>
</tr>
<tr>
<td>B65-10106</td>
<td>03</td>
<td>LEWIS-139</td>
</tr>
<tr>
<td>B65-10109</td>
<td>05</td>
<td>JPL-101</td>
</tr>
<tr>
<td>B65-10109</td>
<td>05</td>
<td>JPL-101</td>
</tr>
<tr>
<td>B65-10110</td>
<td>05</td>
<td>JPL-101</td>
</tr>
<tr>
<td>B65-10111</td>
<td>05</td>
<td>JPL-101</td>
</tr>
<tr>
<td>B65-10112</td>
<td>01</td>
<td>JPL-101</td>
</tr>
<tr>
<td>B65-10113</td>
<td>05</td>
<td>JPL-101</td>
</tr>
<tr>
<td>B65-10114</td>
<td>05</td>
<td>LANGLEY-16</td>
</tr>
<tr>
<td>B65-10115</td>
<td>05</td>
<td>LEO-194</td>
</tr>
<tr>
<td>B65-10116</td>
<td>05</td>
<td>LEO-211</td>
</tr>
<tr>
<td>B65-10117</td>
<td>03</td>
<td>GSFC-196</td>
</tr>
<tr>
<td>B65-10118</td>
<td>01</td>
<td>GSFC-183</td>
</tr>
<tr>
<td>B65-10119</td>
<td>01</td>
<td>ARC-42</td>
</tr>
<tr>
<td>B65-10120</td>
<td>01</td>
<td>JPL-101</td>
</tr>
<tr>
<td>B65-10121</td>
<td>05</td>
<td>LANGLEY-99</td>
</tr>
<tr>
<td>B65-10122</td>
<td>02</td>
<td>LANGLEY-99</td>
</tr>
<tr>
<td>B65-10123</td>
<td>01</td>
<td>GSFC-AH-21</td>
</tr>
<tr>
<td>B65-10124</td>
<td>01</td>
<td>GP-113</td>
</tr>
<tr>
<td>B65-10125</td>
<td>07</td>
<td>DSFC-252</td>
</tr>
<tr>
<td>B65-10126</td>
<td>05</td>
<td>GSFC-299</td>
</tr>
<tr>
<td>B65-10127</td>
<td>01</td>
<td>JPL-117</td>
</tr>
<tr>
<td>B65-10128</td>
<td>02</td>
<td>M-FS-257</td>
</tr>
<tr>
<td>B65-10129</td>
<td>01</td>
<td>JPL-301</td>
</tr>
<tr>
<td>B65-10130</td>
<td>05</td>
<td>LEWIS-14</td>
</tr>
<tr>
<td>B65-10131</td>
<td>06</td>
<td>LEWIS-14</td>
</tr>
<tr>
<td>B65-10132</td>
<td>02</td>
<td>LEWIS-14</td>
</tr>
<tr>
<td>B65-10133</td>
<td>02</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10134</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10135</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10136</td>
<td>03</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10137</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10138</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10139</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10140</td>
<td>03</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10141</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10142</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10143</td>
<td>07</td>
<td>JPL-117</td>
</tr>
<tr>
<td>B65-10144</td>
<td>05</td>
<td>JPL-301</td>
</tr>
<tr>
<td>B65-10145</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10146</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10147</td>
<td>05</td>
<td>JPL-301</td>
</tr>
<tr>
<td>B65-10148</td>
<td>05</td>
<td>DSFC-335</td>
</tr>
<tr>
<td>B65-10149</td>
<td>05</td>
<td>DSFC-335</td>
</tr>
<tr>
<td>B65-10150</td>
<td>05</td>
<td>DSFC-335</td>
</tr>
<tr>
<td>B65-10151</td>
<td>01</td>
<td>JPL-117</td>
</tr>
<tr>
<td>B65-10152</td>
<td>01</td>
<td>LEWIS-14</td>
</tr>
<tr>
<td>B65-10153</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10154</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10155</td>
<td>03</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10156</td>
<td>03</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10157</td>
<td>02</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10158</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10159</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10160</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10161</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10162</td>
<td>02</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10163</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10164</td>
<td>03</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10165</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10166</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10167</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10168</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10169</td>
<td>01</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10170</td>
<td>05</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10171</td>
<td>02</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>B65-10172</td>
<td>03</td>
<td>M-FS-320</td>
</tr>
<tr>
<td>TECH BRIEF/ORIGINATOR NUMBER INDEX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>866-10213 05</td>
<td>M-FS-513</td>
<td></td>
</tr>
<tr>
<td>866-10214 05</td>
<td>WOO-266</td>
<td></td>
</tr>
<tr>
<td>866-10215 05</td>
<td>M-FS-569</td>
<td></td>
</tr>
<tr>
<td>866-10216 05</td>
<td>WOO-275</td>
<td></td>
</tr>
<tr>
<td>866-10217 05</td>
<td>R-FS-580</td>
<td></td>
</tr>
<tr>
<td>866-10218 05</td>
<td>R-FS-284</td>
<td></td>
</tr>
<tr>
<td>866-10219 05</td>
<td>LEWIS-166</td>
<td></td>
</tr>
<tr>
<td>866-10220 01</td>
<td>LEWIS-176</td>
<td></td>
</tr>
<tr>
<td>866-10221 03</td>
<td>M-FS-503</td>
<td></td>
</tr>
<tr>
<td>866-10222 01</td>
<td>M-FS-526</td>
<td></td>
</tr>
<tr>
<td>866-10223 01</td>
<td>R-FS-573</td>
<td></td>
</tr>
<tr>
<td>866-10224 01</td>
<td>WOO-263</td>
<td></td>
</tr>
<tr>
<td>866-10225 01</td>
<td>NU-0048</td>
<td></td>
</tr>
<tr>
<td>866-10226 05</td>
<td>JPL-729</td>
<td></td>
</tr>
<tr>
<td>866-10227 03</td>
<td>JPL-084</td>
<td></td>
</tr>
<tr>
<td>866-10228 05</td>
<td>ABC-55</td>
<td></td>
</tr>
<tr>
<td>866-10229 05</td>
<td>MSC-419</td>
<td></td>
</tr>
<tr>
<td>866-10230 05</td>
<td>MSC-416</td>
<td></td>
</tr>
<tr>
<td>866-10231 02</td>
<td>MSC-532</td>
<td></td>
</tr>
<tr>
<td>866-10232 01</td>
<td>MSC-488</td>
<td></td>
</tr>
<tr>
<td>866-10233 05</td>
<td>MSC-504</td>
<td></td>
</tr>
<tr>
<td>866-10234 03</td>
<td>MSC-523</td>
<td></td>
</tr>
<tr>
<td>866-10235 05</td>
<td>MSC-486</td>
<td></td>
</tr>
<tr>
<td>866-10236 05</td>
<td>MSC-818</td>
<td></td>
</tr>
<tr>
<td>866-10237 05</td>
<td>M-FS-640</td>
<td></td>
</tr>
<tr>
<td>866-10238 05</td>
<td>M-FS-720</td>
<td></td>
</tr>
<tr>
<td>866-10239 05</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10240 05</td>
<td>MSC-493</td>
<td></td>
</tr>
<tr>
<td>866-10241 05</td>
<td>M-FS-752</td>
<td></td>
</tr>
<tr>
<td>866-10242 05</td>
<td>M-FS-628</td>
<td></td>
</tr>
<tr>
<td>866-10243 05</td>
<td>M-FS-516</td>
<td></td>
</tr>
<tr>
<td>866-10244 05</td>
<td>M-FS-703</td>
<td></td>
</tr>
<tr>
<td>866-10245 01</td>
<td>M-FS-469</td>
<td></td>
</tr>
<tr>
<td>866-10246 05</td>
<td>JPL-084</td>
<td></td>
</tr>
<tr>
<td>866-10247 05</td>
<td>M-FS-601</td>
<td></td>
</tr>
<tr>
<td>866-10248 05</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10249 05</td>
<td>M-FS-322</td>
<td></td>
</tr>
<tr>
<td>866-10250 05</td>
<td>M-FS-497</td>
<td></td>
</tr>
<tr>
<td>866-10251 01</td>
<td>M-FS-522</td>
<td></td>
</tr>
<tr>
<td>866-10252 04</td>
<td>M-FS-628</td>
<td></td>
</tr>
<tr>
<td>866-10253 05</td>
<td>M-FS-516</td>
<td></td>
</tr>
<tr>
<td>866-10254 05</td>
<td>M-FS-703</td>
<td></td>
</tr>
<tr>
<td>866-10255 05</td>
<td>M-FS-469</td>
<td></td>
</tr>
<tr>
<td>866-10256 03</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10257 01</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10258 05</td>
<td>M-FS-522</td>
<td></td>
</tr>
<tr>
<td>866-10259 03</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10260 01</td>
<td>M-FS-401</td>
<td></td>
</tr>
<tr>
<td>866-10261 01</td>
<td>WOO-266</td>
<td></td>
</tr>
<tr>
<td>866-10262 05</td>
<td>JPL-729</td>
<td></td>
</tr>
<tr>
<td>866-10263 01</td>
<td>M-FS-601</td>
<td></td>
</tr>
<tr>
<td>866-10264 01</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10265 05</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10266 02</td>
<td>M-FS-516</td>
<td></td>
</tr>
<tr>
<td>866-10267 05</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10268 01</td>
<td>M-FS-497</td>
<td></td>
</tr>
<tr>
<td>866-10269 05</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10270 01</td>
<td>M-FS-422</td>
<td></td>
</tr>
<tr>
<td>866-10271 01</td>
<td>JPL-612</td>
<td></td>
</tr>
<tr>
<td>866-10272 01</td>
<td>JPL-729</td>
<td></td>
</tr>
<tr>
<td>866-10273 03</td>
<td>M-FS-762</td>
<td></td>
</tr>
<tr>
<td>866-10274 01</td>
<td>NU-0021</td>
<td></td>
</tr>
<tr>
<td>866-10275 05</td>
<td>NU-0087</td>
<td></td>
</tr>
<tr>
<td>866-10276 05</td>
<td>NU-0087</td>
<td></td>
</tr>
<tr>
<td>866-10277 05</td>
<td>NU-0087</td>
<td></td>
</tr>
<tr>
<td>866-10278 05</td>
<td>NU-0087</td>
<td></td>
</tr>
<tr>
<td>866-10279 05</td>
<td>NU-0087</td>
<td></td>
</tr>
<tr>
<td>866-10280 01</td>
<td>M-FS-683</td>
<td></td>
</tr>
<tr>
<td>866-10281 01</td>
<td>M-FS-517</td>
<td></td>
</tr>
<tr>
<td>866-10282 05</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10283 05</td>
<td>M-FS-637</td>
<td></td>
</tr>
<tr>
<td>866-10284 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10285 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10286 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10287 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10288 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10289 02</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10290 02</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10291 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10292 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10293 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10294 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10295 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10296 03</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10297 03</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10298 02</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10299 03</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>866-10300 01</td>
<td>M-FS-735</td>
<td></td>
</tr>
<tr>
<td>Index Number</td>
<td>Agency/Location</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>B66-10389</td>
<td>M-PS-1021</td>
<td></td>
</tr>
<tr>
<td>B66-10390</td>
<td>M-PS-1097</td>
<td></td>
</tr>
<tr>
<td>B66-10391</td>
<td>KSC-56-22</td>
<td></td>
</tr>
<tr>
<td>B66-10392</td>
<td>LEWIS-322</td>
<td></td>
</tr>
<tr>
<td>B66-10393</td>
<td>GSFC-460</td>
<td></td>
</tr>
<tr>
<td>B66-10394</td>
<td>GSFC-85</td>
<td></td>
</tr>
<tr>
<td>B66-10395</td>
<td>M-PS-455</td>
<td></td>
</tr>
<tr>
<td>B66-10396</td>
<td>JPL-785</td>
<td></td>
</tr>
<tr>
<td>B66-10397</td>
<td>M-PS-813</td>
<td></td>
</tr>
<tr>
<td>B66-10398</td>
<td>USC-259</td>
<td></td>
</tr>
<tr>
<td>B66-10399</td>
<td>WOO-271</td>
<td></td>
</tr>
<tr>
<td>B66-10400</td>
<td>M-PS-399</td>
<td></td>
</tr>
<tr>
<td>B66-10401</td>
<td>M-PS-361</td>
<td></td>
</tr>
<tr>
<td>B66-10402</td>
<td>MSC-163</td>
<td></td>
</tr>
<tr>
<td>B66-10403</td>
<td>M-PS-421</td>
<td></td>
</tr>
<tr>
<td>B66-10404</td>
<td>M-PS-403</td>
<td></td>
</tr>
<tr>
<td>B66-10405</td>
<td>WOO-305</td>
<td></td>
</tr>
<tr>
<td>B66-10406</td>
<td>M-PS-893</td>
<td></td>
</tr>
<tr>
<td>B66-10407</td>
<td>M-PS-1376</td>
<td></td>
</tr>
<tr>
<td>B66-10408</td>
<td>M-PS-1088</td>
<td></td>
</tr>
<tr>
<td>B66-10409</td>
<td>M-PS-538</td>
<td></td>
</tr>
<tr>
<td>B66-10410</td>
<td>JPL-195</td>
<td></td>
</tr>
<tr>
<td>B66-10411</td>
<td>JPL-361-11</td>
<td></td>
</tr>
<tr>
<td>B66-10412</td>
<td>M-PS-1069</td>
<td></td>
</tr>
<tr>
<td>B66-10413</td>
<td>ARC-65</td>
<td></td>
</tr>
<tr>
<td>B66-10414</td>
<td>M-PS-1041</td>
<td></td>
</tr>
<tr>
<td>B66-10415</td>
<td>M-PS-656</td>
<td></td>
</tr>
<tr>
<td>B66-10416</td>
<td>M-PS-1064</td>
<td></td>
</tr>
<tr>
<td>B66-10417</td>
<td>M-PS-1344</td>
<td></td>
</tr>
<tr>
<td>B66-10418</td>
<td>M-PS-1271</td>
<td></td>
</tr>
<tr>
<td>B66-10419</td>
<td>MSC-193</td>
<td></td>
</tr>
<tr>
<td>B66-10420</td>
<td>M-PS-1050</td>
<td></td>
</tr>
<tr>
<td>B66-10421</td>
<td>M-PS-1133</td>
<td></td>
</tr>
<tr>
<td>B66-10422</td>
<td>M-PS-1041</td>
<td></td>
</tr>
<tr>
<td>B66-10423</td>
<td>M-PS-1064</td>
<td></td>
</tr>
<tr>
<td>B66-10424</td>
<td>LEWIS-240</td>
<td></td>
</tr>
<tr>
<td>B66-10425</td>
<td>LEWIS-240</td>
<td></td>
</tr>
<tr>
<td>B66-10426</td>
<td>LEWIS-240</td>
<td></td>
</tr>
<tr>
<td>B66-10427</td>
<td>LEWIS-240</td>
<td></td>
</tr>
<tr>
<td>B66-10428</td>
<td>LEWIS-240</td>
<td></td>
</tr>
<tr>
<td>B66-10429</td>
<td>LEWIS-240</td>
<td></td>
</tr>
<tr>
<td>B66-10430</td>
<td>LEWIS-240</td>
<td></td>
</tr>
<tr>
<td>B66-10431</td>
<td>LEWIS-240</td>
<td></td>
</tr>
<tr>
<td>B66-10432</td>
<td>WOO-278</td>
<td></td>
</tr>
<tr>
<td>B66-10433</td>
<td>JPL-SC-1975</td>
<td></td>
</tr>
<tr>
<td>B66-10434</td>
<td>LEWIS-276</td>
<td></td>
</tr>
<tr>
<td>B66-10435</td>
<td>LEWIS-17</td>
<td></td>
</tr>
<tr>
<td>B66-10436</td>
<td>B66-10437</td>
<td></td>
</tr>
<tr>
<td>B66-10438</td>
<td>M-PS-664</td>
<td></td>
</tr>
<tr>
<td>B66-10439</td>
<td>M-PS-909</td>
<td></td>
</tr>
<tr>
<td>B66-10440</td>
<td>JPL-SC-176</td>
<td></td>
</tr>
<tr>
<td>B66-10441</td>
<td>JPL-267</td>
<td></td>
</tr>
<tr>
<td>B66-10442</td>
<td>JPL-SC-191</td>
<td></td>
</tr>
<tr>
<td>B66-10443</td>
<td>JPL-SC-116</td>
<td></td>
</tr>
<tr>
<td>B66-10444</td>
<td>JPL-SC-116</td>
<td></td>
</tr>
<tr>
<td>B66-10445</td>
<td>JPL-SC-116</td>
<td></td>
</tr>
<tr>
<td>B66-10446</td>
<td>JPL-SC-116</td>
<td></td>
</tr>
<tr>
<td>B66-10447</td>
<td>M-PS-1163</td>
<td></td>
</tr>
<tr>
<td>B66-10448</td>
<td>M-PS-1163</td>
<td></td>
</tr>
<tr>
<td>B66-10449</td>
<td>M-PS-867</td>
<td></td>
</tr>
<tr>
<td>B66-10450</td>
<td>LEWIS-288</td>
<td></td>
</tr>
<tr>
<td>B66-10451</td>
<td>LEWIS-288</td>
<td></td>
</tr>
<tr>
<td>B66-10452</td>
<td>LEWIS-288</td>
<td></td>
</tr>
<tr>
<td>B66-10453</td>
<td>JPL-793</td>
<td></td>
</tr>
<tr>
<td>B66-10454</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10455</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10456</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10457</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10458</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10459</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10460</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10461</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10462</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10463</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10464</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10465</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10466</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10467</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10468</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10469</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10470</td>
<td>M-PS-1480</td>
<td></td>
</tr>
<tr>
<td>B66-10471</td>
<td>ARC-2</td>
<td></td>
</tr>
<tr>
<td>B66-10472</td>
<td>ARC-17</td>
<td></td>
</tr>
<tr>
<td>B66-10473</td>
<td>ARC-97</td>
<td></td>
</tr>
<tr>
<td>B66-10474</td>
<td>HQ-94</td>
<td></td>
</tr>
<tr>
<td>B66-10475</td>
<td>M-PS-1795</td>
<td></td>
</tr>
<tr>
<td>B66-10476</td>
<td>M-PS-1795</td>
<td></td>
</tr>
<tr>
<td>B66-10477</td>
<td>M-PS-1795</td>
<td></td>
</tr>
</tbody>
</table>

The table above contains a list of index numbers and corresponding agencies/locations. Each row represents a unique index number and its associated agency/location.
<table>
<thead>
<tr>
<th>TECH BRIEF/ORIGIINATOR NUMBER INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>B67-10381 03</td>
</tr>
<tr>
<td>B67-10382 01</td>
</tr>
<tr>
<td>B67-10383 03</td>
</tr>
<tr>
<td>B67-10384 01</td>
</tr>
<tr>
<td>B67-10385 05</td>
</tr>
<tr>
<td>B67-10386 02</td>
</tr>
<tr>
<td>B67-10387 01</td>
</tr>
<tr>
<td>B67-10388 02</td>
</tr>
<tr>
<td>B67-10389 05</td>
</tr>
<tr>
<td>B67-10390 02</td>
</tr>
<tr>
<td>B67-10391 04</td>
</tr>
<tr>
<td>B67-10392 03</td>
</tr>
<tr>
<td>B67-10393 04</td>
</tr>
<tr>
<td>B67-10394 05</td>
</tr>
<tr>
<td>B67-10395 02</td>
</tr>
<tr>
<td>B67-10396 03</td>
</tr>
<tr>
<td>B67-10397 03</td>
</tr>
<tr>
<td>B67-10398 03</td>
</tr>
<tr>
<td>B67-10399 03</td>
</tr>
<tr>
<td>T-869</td>
</tr>
<tr>
<td>B67-10558 01</td>
</tr>
<tr>
<td>B67-10559 01</td>
</tr>
<tr>
<td>B67-10560 01</td>
</tr>
<tr>
<td>B67-10561 01</td>
</tr>
<tr>
<td>B67-10562 01</td>
</tr>
<tr>
<td>B67-10563 05</td>
</tr>
<tr>
<td>B67-10564 06</td>
</tr>
<tr>
<td>B67-10565 01</td>
</tr>
<tr>
<td>B67-10566 01</td>
</tr>
<tr>
<td>B67-10567 01</td>
</tr>
<tr>
<td>B67-10568 01</td>
</tr>
<tr>
<td>B67-10569 01</td>
</tr>
<tr>
<td>B67-10570 01</td>
</tr>
<tr>
<td>B67-10571 01</td>
</tr>
<tr>
<td>B67-10572 01</td>
</tr>
<tr>
<td>B67-10573 03</td>
</tr>
<tr>
<td>B67-10574 01</td>
</tr>
<tr>
<td>B67-10575 01</td>
</tr>
<tr>
<td>B67-10576 01</td>
</tr>
<tr>
<td>B67-10577 03</td>
</tr>
<tr>
<td>B67-10578 03</td>
</tr>
<tr>
<td>B67-10579 03</td>
</tr>
<tr>
<td>B67-10580 03</td>
</tr>
<tr>
<td>B67-10581 05</td>
</tr>
<tr>
<td>B67-10582 03</td>
</tr>
<tr>
<td>B67-10583 03</td>
</tr>
<tr>
<td>B67-10584 03</td>
</tr>
<tr>
<td>B67-10585 03</td>
</tr>
<tr>
<td>B67-10586 03</td>
</tr>
<tr>
<td>B67-10587 01</td>
</tr>
<tr>
<td>B67-10588 05</td>
</tr>
<tr>
<td>B67-10589 03</td>
</tr>
<tr>
<td>B67-10590 04</td>
</tr>
<tr>
<td>B67-10591 04</td>
</tr>
<tr>
<td>B67-10592 03</td>
</tr>
<tr>
<td>B67-10593 03</td>
</tr>
<tr>
<td>B67-10594 05</td>
</tr>
<tr>
<td>B67-10595 01</td>
</tr>
<tr>
<td>B67-10596 03</td>
</tr>
<tr>
<td>B67-10597 02</td>
</tr>
<tr>
<td>B67-10598 01</td>
</tr>
<tr>
<td>B67-10599 03</td>
</tr>
<tr>
<td>B67-10600 03</td>
</tr>
<tr>
<td>B67-10601 02</td>
</tr>
<tr>
<td>B67-10602 02</td>
</tr>
<tr>
<td>B67-10603 01</td>
</tr>
<tr>
<td>B67-10604 04</td>
</tr>
<tr>
<td>B67-10605 02</td>
</tr>
<tr>
<td>B67-10606 11</td>
</tr>
<tr>
<td>B67-10607 05</td>
</tr>
<tr>
<td>B67-10608 03</td>
</tr>
<tr>
<td>B67-10609 02</td>
</tr>
<tr>
<td>B67-10610 02</td>
</tr>
<tr>
<td>B67-10611 05</td>
</tr>
<tr>
<td>B67-10612 02</td>
</tr>
<tr>
<td>B67-10613 02</td>
</tr>
<tr>
<td>B67-10614 01</td>
</tr>
<tr>
<td>B67-10615 01</td>
</tr>
<tr>
<td>B67-10616 01</td>
</tr>
<tr>
<td>B67-10617 02</td>
</tr>
<tr>
<td>B67-10618 02</td>
</tr>
<tr>
<td>B67-10619 05</td>
</tr>
<tr>
<td>B67-10620 01</td>
</tr>
<tr>
<td>B67-10621 01</td>
</tr>
<tr>
<td>B67-10622 05</td>
</tr>
<tr>
<td>B67-10623 05</td>
</tr>
<tr>
<td>B67-10624 01</td>
</tr>
<tr>
<td>B67-10625 06</td>
</tr>
<tr>
<td>B67-10626 06</td>
</tr>
<tr>
<td>B67-10627 03</td>
</tr>
<tr>
<td>B67-10628 05</td>
</tr>
<tr>
<td>B67-10629 01</td>
</tr>
<tr>
<td>B67-10630 06</td>
</tr>
<tr>
<td>B67-10631 06</td>
</tr>
<tr>
<td>B67-10632 06</td>
</tr>
<tr>
<td>B67-10633 02</td>
</tr>
<tr>
<td>B67-10634 03</td>
</tr>
<tr>
<td>B67-10635 01</td>
</tr>
<tr>
<td>B67-10636 02</td>
</tr>
<tr>
<td>B67-10637 01</td>
</tr>
<tr>
<td>B67-10638 09</td>
</tr>
<tr>
<td>B67-10639 05</td>
</tr>
<tr>
<td>B67-10640 01</td>
</tr>
<tr>
<td>B67-10641 01</td>
</tr>
<tr>
<td>B67-10642 01</td>
</tr>
<tr>
<td>B67-10643 01</td>
</tr>
<tr>
<td>B67-10644 02</td>
</tr>
<tr>
<td>B67-10645 03</td>
</tr>
</tbody>
</table>

---

I-870

TECH BRIEF/ORIGINATOR NUMBER INDEX
<table>
<thead>
<tr>
<th>TECH BRIEF/ORIGINATOR NUMBER INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>66B-10056 01</td>
</tr>
<tr>
<td>66B-10057 05</td>
</tr>
<tr>
<td>66B-10058 001</td>
</tr>
<tr>
<td>66B-10059 01</td>
</tr>
<tr>
<td>66B-10640 02</td>
</tr>
<tr>
<td>66B-10661 01</td>
</tr>
<tr>
<td>66B-10662 03</td>
</tr>
<tr>
<td>66B-10663 01</td>
</tr>
<tr>
<td>66B-10664 025</td>
</tr>
<tr>
<td>66B-10665 01</td>
</tr>
<tr>
<td>66B-10666 03</td>
</tr>
<tr>
<td>66B-10667 01</td>
</tr>
<tr>
<td>66B-10668 01</td>
</tr>
<tr>
<td>66B-10669 01</td>
</tr>
<tr>
<td>66B-10670 01</td>
</tr>
<tr>
<td>66B-10671 02</td>
</tr>
<tr>
<td>66B-10672 05</td>
</tr>
<tr>
<td>66B-10673 01</td>
</tr>
<tr>
<td>66B-10674 01</td>
</tr>
<tr>
<td>66B-10675 05</td>
</tr>
<tr>
<td>66B-10676 04</td>
</tr>
<tr>
<td>66B-10677 02</td>
</tr>
<tr>
<td>66B-10678 05</td>
</tr>
<tr>
<td>66B-10679 05</td>
</tr>
<tr>
<td>66B-10680 05</td>
</tr>
<tr>
<td>66B-10681 02</td>
</tr>
<tr>
<td>66B-10682 05</td>
</tr>
<tr>
<td>66B-10683 01</td>
</tr>
<tr>
<td>66B-10684 01</td>
</tr>
<tr>
<td>66B-10685 01</td>
</tr>
<tr>
<td>66B-10686 01</td>
</tr>
<tr>
<td>66B-10687 01</td>
</tr>
<tr>
<td>66B-10688 01</td>
</tr>
<tr>
<td>66B-10689 01</td>
</tr>
<tr>
<td>66B-10690 02</td>
</tr>
<tr>
<td>66B-10691 02</td>
</tr>
<tr>
<td>66B-10692 03</td>
</tr>
<tr>
<td>66B-10693 01</td>
</tr>
<tr>
<td>66B-10694 01</td>
</tr>
<tr>
<td>66B-10695 03</td>
</tr>
<tr>
<td>66B-10696 06</td>
</tr>
<tr>
<td>66B-10697 06</td>
</tr>
<tr>
<td>66B-10698 02</td>
</tr>
<tr>
<td>66B-10699 05</td>
</tr>
<tr>
<td>66B-10100 01</td>
</tr>
<tr>
<td>66B-10101 03</td>
</tr>
<tr>
<td>66B-10102 03</td>
</tr>
<tr>
<td>66B-10103 03</td>
</tr>
<tr>
<td>66B-10104 03</td>
</tr>
<tr>
<td>66B-10105 03</td>
</tr>
<tr>
<td>66B-10106 01</td>
</tr>
<tr>
<td>66B-10107 02</td>
</tr>
<tr>
<td>66B-10108 02</td>
</tr>
<tr>
<td>66B-10109 03</td>
</tr>
<tr>
<td>66B-10110 05</td>
</tr>
<tr>
<td>66B-10111 05</td>
</tr>
<tr>
<td>66B-10112 01</td>
</tr>
<tr>
<td>66B-10113 02</td>
</tr>
<tr>
<td>66B-10114 01</td>
</tr>
<tr>
<td>66B-10115 05</td>
</tr>
<tr>
<td>66B-10116 01</td>
</tr>
<tr>
<td>66B-10117 05</td>
</tr>
<tr>
<td>66B-10118 01</td>
</tr>
<tr>
<td>66B-10119 02</td>
</tr>
<tr>
<td>66B-10120 05</td>
</tr>
<tr>
<td>66B-10121 05</td>
</tr>
<tr>
<td>66B-10122 05</td>
</tr>
<tr>
<td>66B-10123 05</td>
</tr>
<tr>
<td>66B-10124 01</td>
</tr>
<tr>
<td>66B-10125 05</td>
</tr>
<tr>
<td>66B-10126 02</td>
</tr>
<tr>
<td>66B-10127 06</td>
</tr>
<tr>
<td>66B-10128 06</td>
</tr>
<tr>
<td>66B-10129 01</td>
</tr>
<tr>
<td>66B-10130 01</td>
</tr>
<tr>
<td>66B-10131 01</td>
</tr>
<tr>
<td>66B-10132 05</td>
</tr>
<tr>
<td>66B-10133 01</td>
</tr>
<tr>
<td>66B-10134 01</td>
</tr>
<tr>
<td>66B-10135 02</td>
</tr>
<tr>
<td>66B-10136 02</td>
</tr>
<tr>
<td>66B-10137 06</td>
</tr>
<tr>
<td>66B-10138 01</td>
</tr>
<tr>
<td>66B-10139 06</td>
</tr>
<tr>
<td>66B-10140 01</td>
</tr>
<tr>
<td>66B-10141 01</td>
</tr>
<tr>
<td>66B-10142 03</td>
</tr>
<tr>
<td>66B-10143 02</td>
</tr>
</tbody>
</table>
TECH B R I B P / O R I G I N ~ T O R NUMBER I N D E X


TECB BRIEP/ORIGIUATOR

NUMBER INDEX


<table>
<thead>
<tr>
<th>TECH BRIEF/ORIGINATOR NUMBER INDEX</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B69-10635 03</td>
<td>MSC-13335</td>
</tr>
<tr>
<td>B69-10636 03</td>
<td>MSP-11386</td>
</tr>
<tr>
<td>B69-10638 01</td>
<td>NPO-11003</td>
</tr>
<tr>
<td>B69-10640 01</td>
<td>ARG-10503</td>
</tr>
<tr>
<td>B69-10641 03</td>
<td>ARG-10490</td>
</tr>
<tr>
<td>B69-10642 03</td>
<td>ARG-10506</td>
</tr>
<tr>
<td>B69-10645 02</td>
<td>ARG-10421</td>
</tr>
<tr>
<td>B69-10647 03</td>
<td>ARG-10459</td>
</tr>
<tr>
<td>B69-10649 05</td>
<td>M-PS-19548</td>
</tr>
<tr>
<td>B69-10652 01</td>
<td>M-PS-20208</td>
</tr>
<tr>
<td>B69-10653 01</td>
<td>M-PS-20239</td>
</tr>
<tr>
<td>B69-10654 02</td>
<td>ARG-10649</td>
</tr>
<tr>
<td>B69-10655 01</td>
<td>ARG-10339</td>
</tr>
<tr>
<td>B69-10656 06</td>
<td>ARG-10463</td>
</tr>
<tr>
<td>B69-10660 03</td>
<td>NPO-11229</td>
</tr>
<tr>
<td>B69-10661 05</td>
<td>HQ-10315</td>
</tr>
<tr>
<td>B69-10662 02</td>
<td>HQ-10349</td>
</tr>
<tr>
<td>B69-10663 02</td>
<td>HQ-10348</td>
</tr>
<tr>
<td>B69-10665 01</td>
<td>HQ-10431</td>
</tr>
<tr>
<td>B69-10666 01</td>
<td>HQ-10476</td>
</tr>
<tr>
<td>B69-10669 06</td>
<td>LEWIS-10819</td>
</tr>
<tr>
<td>B69-10670 01</td>
<td>M-PS-13621</td>
</tr>
<tr>
<td>B69-10671 01</td>
<td>MSC-13165</td>
</tr>
<tr>
<td>B69-10673 01</td>
<td>HQ-10412</td>
</tr>
<tr>
<td>B69-10674 02</td>
<td>M-PS-14886</td>
</tr>
<tr>
<td>B69-10676 01</td>
<td>M-PS-20572</td>
</tr>
<tr>
<td>B69-10677 01</td>
<td>M-PS-12799</td>
</tr>
<tr>
<td>B69-10678 01</td>
<td>M-PS-20499</td>
</tr>
<tr>
<td>B69-10682 03</td>
<td>GSPC-10690</td>
</tr>
<tr>
<td>B69-10684 05</td>
<td>LEWIS-10298</td>
</tr>
<tr>
<td>B69-10686 06</td>
<td>EEC-10036</td>
</tr>
<tr>
<td>B69-10687 01</td>
<td>EEC-10322</td>
</tr>
<tr>
<td>B69-10689 01</td>
<td>EEC-10254</td>
</tr>
<tr>
<td>B69-10690 01</td>
<td>EEC-10229</td>
</tr>
<tr>
<td>B69-10691 01</td>
<td>EEC-10250</td>
</tr>
<tr>
<td>B69-10692 03</td>
<td>M-PS-16179</td>
</tr>
<tr>
<td>B69-10695 01</td>
<td>NPO-10688</td>
</tr>
<tr>
<td>B69-10696 05</td>
<td>NPO-10679</td>
</tr>
<tr>
<td>B69-10697 01</td>
<td>NPO-10231</td>
</tr>
<tr>
<td>B69-10699 01</td>
<td>LEWIS-10520</td>
</tr>
<tr>
<td>B69-10700 02</td>
<td>HQ-10350</td>
</tr>
<tr>
<td>B69-10704 05</td>
<td>GSPC-10607</td>
</tr>
<tr>
<td>B69-10705 02</td>
<td>MSC-10330</td>
</tr>
<tr>
<td>B69-10707 02</td>
<td>MSC-10554</td>
</tr>
<tr>
<td>B69-10711 03</td>
<td>LEWIS-11630</td>
</tr>
<tr>
<td>B69-10712 02</td>
<td>LEWIS-11631</td>
</tr>
<tr>
<td>B69-10713 01</td>
<td>LEWES-11032</td>
</tr>
<tr>
<td>B69-10714 02</td>
<td>LEWES-11044</td>
</tr>
<tr>
<td>B69-10715 04</td>
<td>GSPC-10565</td>
</tr>
<tr>
<td>B69-10716 02</td>
<td>EEC-10388</td>
</tr>
<tr>
<td>B69-10720 06</td>
<td>FRC-10615</td>
</tr>
<tr>
<td>B69-10722 01</td>
<td>NPO-10706</td>
</tr>
<tr>
<td>B69-10723 31</td>
<td>NPO-11228</td>
</tr>
<tr>
<td>B69-10725 01</td>
<td>NPO-11100</td>
</tr>
<tr>
<td>B69-10730 03</td>
<td>M-PS-18605</td>
</tr>
<tr>
<td>B69-10731 01</td>
<td>GSPC-10569</td>
</tr>
<tr>
<td>B69-10732 01</td>
<td>EEC-10161</td>
</tr>
<tr>
<td>B69-10733 02</td>
<td>NPO-11220</td>
</tr>
<tr>
<td>B69-10734 01</td>
<td>GSPC-10603</td>
</tr>
<tr>
<td>B69-10736 01</td>
<td>M-PS-14556</td>
</tr>
<tr>
<td>B69-10737 03</td>
<td>LANGLLEY-10200</td>
</tr>
<tr>
<td>B69-10740 03</td>
<td>MSC-10947</td>
</tr>
<tr>
<td>B69-10741 01</td>
<td>MSC-13672</td>
</tr>
<tr>
<td>B69-10742 01</td>
<td>MSC-15569</td>
</tr>
<tr>
<td>B69-10744 03</td>
<td>HQ-10235</td>
</tr>
<tr>
<td>B69-10746 01</td>
<td>HQ-10541</td>
</tr>
<tr>
<td>B69-10747 01</td>
<td>MSC-11336</td>
</tr>
<tr>
<td>B69-10748 01</td>
<td>MSC-90534</td>
</tr>
<tr>
<td>B69-10749 03</td>
<td>MSC-12230</td>
</tr>
<tr>
<td>B69-10750 01</td>
<td>MSC-13268</td>
</tr>
<tr>
<td>B69-10756 01</td>
<td>M-PS-20545</td>
</tr>
<tr>
<td>B69-10760 06</td>
<td>M-PS-15055</td>
</tr>
<tr>
<td>B69-10764 01</td>
<td>LEWES-11014</td>
</tr>
<tr>
<td>B69-10767 02</td>
<td>ARG-10362</td>
</tr>
<tr>
<td>B69-10771 02</td>
<td>ARG-10500</td>
</tr>
<tr>
<td>B69-10772 02</td>
<td>ARG-10372</td>
</tr>
<tr>
<td>B69-10776 01</td>
<td>M-PS-20529</td>
</tr>
<tr>
<td>B69-10779 02</td>
<td>M-PS-20537</td>
</tr>
<tr>
<td>B69-10780 03</td>
<td>M-PS-20566</td>
</tr>
<tr>
<td>B69-10791 02</td>
<td>M-PS-20897</td>
</tr>
<tr>
<td>B69-10782 01</td>
<td>M-PS-20190</td>
</tr>
<tr>
<td>B69-10783 02</td>
<td>M-PS-14101</td>
</tr>
<tr>
<td>B69-10785 05</td>
<td>M-PS-18367</td>
</tr>
<tr>
<td>B69-10788 03</td>
<td>M-PS-15858</td>
</tr>
<tr>
<td>B69-10793 02</td>
<td>HQ-10246</td>
</tr>
<tr>
<td>B69-10804 05</td>
<td>M-PS-20577</td>
</tr>
<tr>
<td>B69-10807 01</td>
<td>M-PS-20848</td>
</tr>
<tr>
<td>B69-10810 02</td>
<td>MSC-13370</td>
</tr>
</tbody>
</table>

NASA-Langley, 1970 – 34
I-877
"The aeronautical and space activities of the United States shall be conducted so as to contribute . . . to the expansion of human knowledge of phenomena in the atmosphere and space. The Administration shall provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof."

— National Aeronautics and Space Act of 1958

NASA TECHNOLOGY UTILIZATION PUBLICATIONS

These describe science or technology derived from NASA's activities that may be of particular interest in commercial and other non-aerospace applications. Publications include:

TECH BRIEFS: Single-page descriptions of individual innovations, devices, methods, or concepts.

TECHNOLOGY SURVEYS: Selected surveys of NASA contributions to entire areas of technology.

OTHER TU PUBLICATIONS: These include handbooks, reports, conference proceedings, special studies, and selected bibliographies.

Details on the availability of these publications may be obtained from:

National Aeronautics and Space Administration
Code UT
Washington, D.C. 20546

Technology Utilization publications are part of NASA's formal series of scientific and technical publications. Others include Technical Reports, Technical Notes, Technical Memorandums, Contractor Reports, Technical Translations, and Special Publications.

Details on their availability may be obtained from:

National Aeronautics and Space Administration
Code US
Washington, D.C. 20546