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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**
- **ABSTRACT**
- **INNOVATOR**
- **ORIGINATING SOURCE NUMBER**

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.

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

- **SUBJECT HEADING**
- **TITLE**
- **ORIGINATING SOURCE NUMBER**
- **TECH BRIEF NUMBER**
- **CATEGORY**

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

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 Index Diagram]

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

![Third Index Diagram]

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

![Fourth Index Diagram]
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.
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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.

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.

Two crystal-controlled oscillators, each with an associated buffer stage, provide an output at a constant frequency and amplitude.

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.

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.

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.

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.

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.

A unidirectional camera shutter employing a solenoid and mechanical linkages permits uniform exposure and minimizes distortion of the image focused in the camera.

The subreflector of a microwave antenna has been redesigned so that its outer edge has a conical flange. This reduces noise by causing ground electromagnetic energy radiation to cancel out before entering the antenna.

The curve of the inner walls of 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.

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.

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 arithmetic section of the computer.

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.
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 SOND ANTENNA REDUCES SIDE LOBES, IMPROVES RADIATION PATTERN
POTTER, P. D. DATE- APR. 1964
JPL-425
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
METER ACCURATELY MEASURES FLOW OF LOW-CONDUCTIVITY FLUIDS
LOVE, E. G. DATE- MAY 1964
JPL-00021
An electromagnetic flowmeter has been adjusted to minimize the errors inherent in measuring the flow of low conductivity fluids. By 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, E. L. DATE- MAY 1964
JPL-00020
A small digital recording head consists of closely spaced parallel wires, embedded 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.

B63-10281
IMPROVED VARIABLE-RELUCTANCE TRANSDUCER MEASURES TRANSIENT PRESSURES
KUSEK, A., JR. TIEPERMAN, M. DATE- DEC. 1964
LANGLEY-10
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.

B63-10339
OPTICS USED TO MEASURE TORQUE AT HIGH ROTATIONAL SPEEDS
KUSEK, A., JR. TIEPERMAN, M. DATE- DEC. 1964
LANGLEY-13
In measuring torque transmitted by a high speed rotation shaft, an apparatus has been devised which includes a shaft, an optical system and readout servomechanisms. This highly accurate method uses only optical contact with moving part and is statically calibrated.

B63-10342
RADIANT HEATER FOR VACUUM FURNACES OFFERS HIGH STRUCTURAL RIGIDITY, LOW HEAT LOSS
VART, A. DATE- MAY 1964
LANGLEY-39
Some problems associated with high temperature heaters for vacuum furnaces have been eliminated by the use of shaped refractory metal. These filaments, supported in cylindrical array by ceramic spacers, operate at high voltage, low current power.

B63-10404
NEW APPARATUS INCREASES ION BEAM POWER DENSITY
Baldwin, L. V. SANDSOM, V. A. DATE- JUN. 1964
LANGLEY-14
To increase ion engine or rocket power, an ion source and emitter, an ion beam focusing electrode, and an ion accelerator are incorporated into the system. In operation the space charge surrounding the ion emitter decreases, the ion beam density accelerates, and engine power increases.

B63-10483
IMPROVED SENSOR COUNTS MICROMETEOROID PENETRATIONS
DAVIS, B. H. DATE- MAY 1964
LEWIS-76
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.

B63-10508
TWO-STAGE Emitter FOLLOWER IS TEMPERATURE STABILIZED
SCHMIDT, R. E. /MCDONNELL AIRCRAFT CORP./ DATE- MAY 1964
MSC-20
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.

B63-10511
FREQUENCY-SHIFT-KEYER CIRCUIT IMPROVES PCM CONVERSION FOR RADIO TRANSMISSION
MIESER, B. P. /WESTINGHOUSE ECC. CORP./ DATE- JUN. 1964
GSFC-80
A data logic circuit employing a fixed frequency, square-wave oscillator and flip-flop gates allows for the shifting from one frequency to the other at the end of a whole number of cycles of one shift frequency and at the beginning of a cycle of the second shift frequency.

B63-10512
LOW-COST TAPE SYSTEM MEASURES VELOCITY OF ACCELERATION
HARTENSTEIN, R. DATE- JUN. 1964
GSFC-85
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
JPL-513
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. H. DATE- APR. 1964
LANGLEY-26
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
HOT-AIR SOLDERING TECHNIQUE PREVENTS OVERHEATING OF ELECTRICAL COMPONENTS

SIMPLE CIRCUIT PROVIDES ADJUSTABLE VOLTAGE

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.

TINY SENSOR-TRANSMITTER CAN WITHSTAND EXTREME ACCELERATION, GIVES DIGITAL OUTPUT

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.

SIMPLE CIRCUIT CONTINUOUSLY MONITORS THERMOCOUPLE SENSOR

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.
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
SPON: INNOVATOR NOT GIVEN /ECA/ DATE-OCT. 1964
GSFC-137
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
CEROMIC WAVEGUIDE WINDOW IS SEALED WITH PLASTIC FOAM
CLAUSSE, R. STELZMANN, C. T. DATE-JUN. 1964
JPL-550
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
PERRY, W. B. DATE-MAR. 1964
JPL-447
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 TRANSUDER ADVANCES MICRO-MEASUREMENT RANGE
BROGLIO, V. L. DATE-MAY 1964
ARC-26
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
BREEN, G. D. DATE-JUL. 1964
GSFC-48
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 EF COAXIAL CONNECTOR ENDS VACUUM CHAMBER WIRING PROBLEM
WEBER, D. DATE-MAY 1964
GSFC-150
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, F. Z. DATE-MAY 1964
MSC-57
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
SPON: INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ DATE-DEC. 1964
MSC-59
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
ELLIS, G. S. /WESTINGHOUSE ELEC. CORP./ DATE-JUN. 1964
WOO-062
A new method for fabricating photovoltaic devices, which involves the order of zinc diffusion, produces a P-type surface layer and a photovoltaic junction.

B64-10024
EFFICIENT CIRCUIT TRIGGERS HIGH-CURRENT, HIGH-VOLTAGE PULSES
GREEN, Z. 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
CHAMBER SENSORS DEPLETION OF LUBRICANT IN JOURNAL BEARINGS
ROSS, A. O. DATE-DEC. 1964
LEWIS-37
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
MSC-68
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
An improved test method accurately measures the insertion loss of EF 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
EICKRAT, D. M. DATE-NOV. 1964
MSC-57
An analog physiological simulator generates representative waveforms for a wide range of physiological conditions. Direct comparison of these waveforms with those from telemetric inputs permits quick detection of signal parameter degradation.

B64-10114
ANALOG SILVER ELECTRODE ELIMINATES TWO-STEP VOLTAGE DISCHARGE CHARACTERISTIC OF SILVER-ZINC CELLS
CHEETMAD, E. M. /ELEC. STORAGE BATTERY CO./ DATE-JUN. 1964

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.

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 sidereal rate output from mean solar rate input is derived from a sidereal generator that uses digital division and multiplication techniques.

A sidereal system generates sidereal rate from standard solar rate.

A master linearity of video cameras calibrated with precision tester.

A compact cartridge drives coded tape at constant readout speed.

A temperature-compensation circuit stabilizes performance of vidicons.

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

An apparatus, operating on the principle of wet and dry bulb thermometry, permits interattent or continuous measurement of the concentration of droplets dispersed in a gas stream over a wide range of gas pressure.

An oscillator circuit and a thermistor, in close proximity to a light bulb, periodically alter the heat output of the bulb by varying the voltage across its filament. Use of this simulator permits checkout tests on pneumographs.

To compute the heartbeat rate from the waveform output of an electrocardiogram, a digital
cardiometer with solid state circuit elements has been developed. This computer the beat every 15 seconds and visually presents the data on numerical display tubes.

B64-10259

PNEUMOTACHOMETER COUNTS RESPIRATION RATE OF HUMAN SUBJECT
GRAGGM, 0. DATE- NOV. 1964

A device for monitoring the respiratory rate of a subject is described. It is based on the principle of a pneumotachometer, which measures the rate of airflow through the subject's respiratory tract. The device is designed to be portable and easy to use.

B64-10271

IMPROVED TECHNIQUE FOR LOCALIZING ELECTROPOLISHING FEATURES NOVEL NOZZLES
SPOR- INNOVATOR NOT GIVEN /GEN. DSN.
/ASTRONAUTICS/ DATE- NOV. 1964

An improved technique for localizing electro-polishing features is described. This technique uses a novel nozzle design that allows for more precise control of the electro-polishing process.

WGO-101

TIME AND ELECTROPOLISHING
LEVERONE, PTC /POSITIVE-TEMPERATURE-COEFFICIENT/ -64-1028/

A time and electro-polishing technique is described. This technique uses a combination of time and electro-polishing to achieve a desired surface finish.

B64-10280

SERVO SYSTEM FACILITATES PHOTOELASTIC STRAIN MEASUREMENTS ON RESINS
OTTIS, J. W. DATE- NOV. 1964
JPL-594

A servosystem to facilitate photoelastic measurements of the strains developed by stresses applied to birefringent resins is described. This system employs a servomechanism to control the applied stresses.

B64-10281

PTC THERMISTOR PROTECTS MULTILAODED POWER SUPPLIES
LEVERONE, N. MANDELL, H. DATE- NOV. 1964
GSFC-236

A PTC /Positive-Temperature-Coefficient/ thermistor placed in series with each branch load of a multiloaded circuit prevents power loss in parallel branches. This thermistor may be used in any circuit requiring current limiting or intended overload resetting.

B65-10283

SHIELDING FOR DIODES PROVIDES EFFICIENT HEAT SINK
SPOR- INNOVATOR NOT GIVEN /RCA/ DATE- NOV. 1964
M-PS-157

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
SPOR- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC.
CORP./ DATE- JAN. 1965
GSFC-251

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 activated side of the detector. Its form may be either a rectangular coordinate or a polar coordinate system.

B64-10305

TRANSISTORIZED CONVERTER PROVIDES NONDISSIPATIVE REGULATION
SPOR- INNOVATOR NOT GIVEN /DUKE UNIV./ DATE- DEC. 1964
GSFC-238

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 REGULATORS IMPROVES QUALITY OF WELDS, OFFERS OTHER ADVANTAGES
SPOR- INNOVATOR NOT GIVEN /MARSHALL/ DATE- DEC. 1964 M-PS-152

An improved procedure for argon welding uses the SIGMA /Submerged Inert Gas Welding/ method. This has resulted in welds of higher quality than are obtainable by conventional arc welding.

B65-10320

VOLTAGE GENERATOR SWEEPS OSCILLATOR FREQUENCY LINEARLY WITH TIME
SPOR- INNOVATOR NOT GIVEN /MELPAR, INC./ DATE- JAN. 1965
M-PS-219

A voltage-tuned oscillator circuit is described which sweeps the output signal frequency linearly exponentially with time.

B65-10330

ECONOMIC FABRICATION PROCESS PRODUCES HIGH QUALITY JUNCTION TRANSISTORS
SPOR- INNOVATOR NOT GIVEN /IBT/ DATE- DEC. 1964
JPL-SC-065

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-bipolar p-n-p transistors. These are of high quality with good injection efficiency and low capacitance.

B65-10349

BANDWIDTH SWITCHING IS TRANSIENT-FREE, AVOIDS LOSS OF LOOP LOCK
SPOR- INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ DATE- DEC. 1964
WGO-054

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.

B65-10001

CIRCUIT CONVERTS AN SIGNALS TO FM FOR MAGNETIC RECORDING
SPOR- INNOVATOR NOT GIVEN /RCA/ DATE- JAN. 1965
GSFC-227

Convert AM signals to FM for magnetic recording 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
RUSH, D. E. DATE- JUN. 1965
GSFC-241

Tunnel-diode circuit starts clipping action as input voltage crosses zero axis. This clipper circuit is effective as a limiter in FM receiver.

B65-10005

COMPUTER MODIFICATION REDUCES TIME OF PERFORMING ITERATIVE DIVISION
SPOR- INNOVATOR NOT GIVEN /IBA/ DATE- FEB. 1965
M-PS-164

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.

B65-10006

MODIFICATION INCREASES LIGHT OUTPUT OF INJECTION-LUMINESCENT DIODES
SPOR- INNOVATOR NOT GIVEN /RCA/ DATE- JAN. 1965
BAS-SEE ALSO B64-10203
M-PS-192

Removing a section of the electrode area from the N-face of injection-luminescent diodes for pumping lasers substantially 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 RATE

VICK, R. A. DATE- JAN. 1965

MSC-95

Inexpensive transistor circuit provides reliable analog indications of heart rate in response to preamplified electrocardiograph signal applied to its input.

B65-10011

CIRCUIT IMPROVEMENT PRODUCES NONOSTABLE MULTIVIBRATOR WITH LOAD-CARRYING CAPABILITY

GOLDMAN, N. E. SCHAPPERT, J. C. DATE- JAN. 1965

GSFC-341

Improved circuit provides greater reliability and load-carrying capabilities for nonostable multivibrator.

B65-10012

HELICAL COAXIAL-RESONATOR MAKES EXCELLENT RF FILTER

SPON- INNOVATOR NOT GIVEN / RCA/ 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

SILVER DIODE FUNCTION GENERATOR REQUIRES NO EXTERNAL REFERENCE VOLTAGE

BOLTE, G. BURNS, 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.

B65-10018

CARBON ARC IGNITION IMPROVED BY SIMPLE AUXILIARY CIRCUIT

SPON- INNOVATOR NOT GIVEN / ECA/ 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

SANCUGEL, A. SILVER, A. 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

SPON- INNOVATOR NOT GIVEN / STANFORD RES. INST./ DATE- FEB. 1965

JPL-SC-069

Redundant-channel system automatically corrects any single error in a set of three binary signal channels. This system is especially applicable to digital computers where data is transmitted in parallel channels.

B65-10026

STEPPING MOTOR DRIVE CIRCUIT DESIGNED FOR LOW POWER DRIVE

SPON- INNOVATOR NOT GIVEN / HEBRD Coll./ DATE- FEB. 1965

GSFC-196

High power drain is eliminated by a circuit consisting of a divide-by-two stage, two identical inputs, a wide amplifier, driver, and power output stages to drive the step motor.
Metal sheath improves thermocouple using graphite in one leg.

Sponsor: Innovator Not Given /WESTINGHOUSE ELEC.
Corps./ Date- Mar. 1965

Thermocouple using graphite in one leg is sealed in a moistureproof metal sheath which permits high heat output and good mechanical strength.

Zener diode is starter for transistor regulated power supply.

Sponsor: Innovator Not Given /WESTINGHOUSE ELEC.
Corps./ Date- Feb. 1965

Zener diode in parallel with a silicon transistor supplies the starting current for a transistor-regulated power supply.

Pulse generator permits nondestructive testing of component breakdown voltage.

Sponsor: Innovator Not Given /HOROWELL/ DATE- Mar. 1965

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.

Frequency control is obtained by variation of the second base current of the tetrode.

Vibrating-membrane transducer in a circuit can measure current below 10 to-the-minus 17 ampere. This electrometer has a high conversion gain and a minimum internal power consumption.

Feed-through has polythermal feature.

JPL-82

Feed-through connector with individual solder pots in the polythermal slide provides good connections with small amounts of solder and permits visual inspection of bonds. Polythermal also provides a friction mechanical bond to position conductors prior to soldering.

Metal diaphragm used to calibrate miniature transducers.

Sponsor: Innovator Not Given /ASTRO-SPACE LABS./ DATE- Mar. 1965

Dynamic comparative calibration system measures response of miniature pressure transducers. The system is composed of an electromechanically driven metal diaphragm, a calibrated and an uncalibrated transducer and an oscillator.

Simple control device senses solar position.

JPL-636

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.

Pulsed plasma accelerator operates repetitively without complex controls.

Sponsor: Defense, A. F. DATE- Mar. 1965

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.

Fuel cell serves as oxygen level detector.

Sponsor: Innovator Not Given /GE/ DATE- Mar. 1965

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.

Sensitive level sensor made with spirit level gives electrical output.

Sponsor: Defense, 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.

Automatic thermal switch accelerates cooling-down of cryogenic system.

Sponsor: Defense, H. E. DATE- Mar. 1965
JPL-25

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.

Feedback oscillator functions as low-level pulse stretcher.

Sponsor: Innovator Not Given /SERRP ELEC. CORP./ DATE- Mar. 1965
GSFC-261

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.

Synchronized pulse generator needs no external power.

GSFC-274

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.

System measures angular displacement without contact.

Sponsor: Defense, 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.

Light-sensitive potentiometer measures product of two variables.

GSFC-240

The output voltage from a photoconductive potentiometer coupled using a galvanometer mirror reflecting the light beam is directly proportional to the product of the input voltage.
SPON- INNOVATOR NOT GIVEN

B65-10079
PHOTORELECTRIC SENSOR OUTPUT CONTROLLED BY EYEBALL MOVEMENTS
SPON- INNOVATOR NOT GIVEN /SPACEC/ DATE- MAR. 1965

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 CORP./ DATE- MAR. 1965

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
TRANSODER SENSES DISPLACEMENTS OF PANELS SUBJECTED TO VIBRATION
SPON- INNOVATOR NOT GIVEN /M. OPT. CO./ DATE- MAR. 1965

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
TINTER SELECTS FRAMING RATE FOR SPECTROGRAPH CAMERA
SPON- INNOVATOR NOT GIVEN /M. OPT. CO./ DATE- MAR. 1965

Camera using zero-order light is reflected to a photomultiplier in the incoming radiation of a spectrograph monitor to provide an error signal which controls the advancing and driving rate of the film through the camera.

B65-10087
APPARATUS MEASURES SWELING OF MEMBRANES IN ELECTROCHEMICAL CELLS
HENDIGAN, T. J. DATE- APR. 1965

Apparatus consisting of a pressure plate unit, four springs of known spring constant and a micrometer measures the swelling and force exerted by the polymer membranes of alkaline electrochemical cells.

B65-10089
TRANSODER MEASURES TEMPERATURE DIFFERENTIALS IN PRESENCE OF STRONG ELECTROMAGNETIC FIELDS
SPON- INNOVATOR NOT GIVEN /MRS/ DATE- APR. 1965

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
ERICKSON, S. DATE- MAR. 1965

Physiological waveform simulator is capable of producing signals to simulate an arterial and a venous electrocardiogram, blood pressure, respiratory rate and body temperature. This may be used to check out bioinstrumentation.

B65-10093
COMPUTER PROGRAMS SIMULATE OPTICAL SYSTEM ANALYSIS
SPON- INNOVATOR NOT GIVEN /HONEYWELL/ 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
NICHOLS, G. B. DATE- APR. 1965

GSFC-287

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
KLEINBERG, L. L. DATE- APR. 1965

GSFC-262

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 PFM SIGNALS
BILLSWIGLEY, J. DATE- APR. 1965

GSFC-267

Simple circuit monitors the frequency of PFM/False Frequency Modulated/ telemetry signals. This discriminator can be used as a constant current integrator in such circuits as linear sweep and time delay.

B65-10103
IMPROVED MAGNETOMETER USES TOROIDAL GATING COIL
SPON- INNOVATOR NOT GIVEN /CORNELL UNIV./ DATE- APR. 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
VARIABLE LOAD AUTOMATICALLY TESTS DC POWER SUPPLIES
BURKE, R. C., JR. SULLIVAN, R. M. DATE- APR. 1965

GSFC-291

Continuously 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 /HCA/ DATE- APR. 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
FAIRBANKS, A. F. DATE- APR. 1965

JPL-W00-010

Simple frequency divider composed of relaxation oscillators uses unjunction 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 /HCA/ DATE- APR. 1965

GSFC-296

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

SPOLO-INNOVATOR NOT GIVEN/DOE UNIV./DATE-APR. 1965

GSPC-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, S. J. STRING, A. J. DATE-APR. 1965

ARC-42

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

BISCU, A. H. DATE-APR. 1965

GSPC-299

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

GSPC-1E-21

Variable frequency magnetic multivibrator operates in 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 ELECTROCHEMICAL TESTS HAS EXCELLENT OPERATING CHARACTERISTICS

BRANEK, S. K. DATE-MAY 1965

JPL-843

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

B65-10127

TRAVELING-WAVE TUBE CIRCUIT SIMPLIFIERS

ROBERTS, W. W. M. DATE-MAY 1965

GSPC-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

PIEZORESISTIVE 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-FLOW FLOWMETERS

COPELAND, L. C. FULTON, W. C. SMITH, 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

GSPC-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

FIFER, R. C. VERONE, R. H. DATE-MAY 1965

LSW-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 SIGNALS

SPOLO-INNOVATOR NOT GIVEN/TEX. INST. FOR REHABILITATION AND BVS/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, H. 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 cardiometers.

B65-10185

LOGARITHMIC AMPLIFIER USES FIELD EFFECT TRANSISTORS

STUART, J. L. DATE-MAY 1965

JPL-509

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

B65-10146

FREQUENCY OFFSET IN Linear FM/CW TRANSPONDER ELIMINATES CLUTTER

SPOLO-INNOVATOR NOT GIVEN/HULLS/DATE-MAY 1965

MSC-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

ROTATIONAL SENSOR SWITCHES CURRENTS IN BRUSHLESS DC MOTORS

SPOLO-INNOVATOR NOT GIVEN/WESTINGHOUSE ELEC.

CORP./DATE-MAY 1965

GSPC-315

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

B65-10152

CIRCUIT REDUCES DISTORTION OF FM MODULATOR

MSC-134

Modulator circuit reduces distortion of an 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
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
RERCOM. A. L., JR. DATE- JUN. 1965
LANGLEY-104
Capacitive integrator circuit using silicon controlled switches/SCT/ 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
SPOW- INNOVATOR NOT GIVEN /CIA/ DATE- JUN. 1965
MSC-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
SPOW- INNOVATOR NOT GIVEN /SCA/ 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
SPOW- INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ DATE- JUN. 1965
n-FS-250
Phase shift frequency synthesizer produces suppressed-carrier signals at the sum and difference frequencies. All unwanted frequencies are suppressed by this small-sized synthesizer.

B65-10178
DC TO AC CONVERTER OPERATES EFFICIENTLY AT LOW INPUT VOLTAGES
SPOW- INNOVATOR NOT GIVEN /DUKE UNIV./ DATE- JUN. 1965
n-FS-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.

B65-10182
FORCE CONTROLLED SOLENOID DRIVES MICROWAVE TESTER
SPOW- INNOVATOR NOT GIVEN /N. AM. 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.
B65-10199
MODULAR THERMOELECTRIC CELL IS EASILY PACKAGED
IN VARIOUS ARRAYS
EISENBIRG, 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 evenly 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
DE WITT, R. L. SCRIEDT, R. 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
TINY BIOMEDICAL AMPLIFIER COMBINES HIGH PERFORMANCE, LOW POWER DRAIN
DENOH, G. J. DATE- JUL. 1965
ARC-61

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
HEANH, C. P. DATE- JUL. 1965
LANGLEY-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-286

Four-stage transistorized electrocysteresis eliminates the need for a logarithmic compressing 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
CAPISON, N. 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-FS-245

Oscillator circuits automatically measure 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-FS-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- JUN. 1965
M-FS-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-FS-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
STDBOR, H. L. DATE- AUG. 1965
JUL-510

Voltage Controlled Oscillator /VCO/, represented by an equivalent RFP 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 ECD CIRCUIT ACCURATELY COUNTS TO 24
STAFFORD, M. 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
B65-10228
SIMPLE CIRCUIT PRODUCES HIGH-SPEED, FIXED DURATION PULSES
GARRAHAN, N. M. DATE- AUG. 1965
JPL-720
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 communication equipment design.

B65-10232
FIELD EFFECT TRANSISTOR PRESENTS HIGH INPUT IMPEDANCE IN AC AMPLIFIER
MARRSHALL, 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
SPOW- INNOVATOR NOT GIVEN /LAMKO SCI./ DATE- AUG. 1965
JFL-SC-073
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
SPOW- INNOVATOR NOT GIVEN /WESTINGHOUSE ELECTRIC CORP./ DATE- AUG. 1965
GSPC-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 COMPARATOR
SPOW- R. P. DATE- AUG. 1965
GSPC-346
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
DILLBERGER, R. DATE- AUG. 1965
MSC-123
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
SPOW- INNOVATORS NOT GIVEN /APPLIED PHYSICS CORP./ DATE- AUG. 1965
GSPC-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.

B66-10263
NOVEL PROBE SIMPLIFIES ELECTRONIC COMPONENT TESTING
SYKE, W. F. DATE- AUG. 1965
GSPC-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
BRONCH, A. G., JR. DATE- AUG. 1965
JFL-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 system designs.

B65-10247
SERVO CALORIMETER MEASURES MATERIAL HEATING RATE
GILBOG, G. W. DATE- WESTINGHOUSE ELECTRIC 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 OSCILLOGRAPHR OUTPUT
REBETZ, J. /WESTINGHOUSE ELECTRIC 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.

B65-10250
HORMON TRIFLOROBIDE NUCLEAR DETECTOR
SPOW- INNOVATOR NOT GIVEN /WESTINGHOUSE ELECTRIC CORP./ DATE- AUG. 1965
LEWIS-178
Preamplifier for a nuclear particle detector operates with a single interconnecting cable. Isolating and bypass networks permit this single cable operation.

B65-10257
INDUCTOR FLYBACK CHARACTERISTIC GIVES VOLTAGE REGULATOR FAST RESPONSE
SPOW- R. E. DATE- AUG. 1965
GSPC-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
SPOW- G. B. DATE- AUG. 1965
GSPC-370
Gapped toroid magnetically coupled to a delay line provides continuous adjustment of the time 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
SPOW- J. G. /RCA/ DATE- SEP. 1965
GSPC-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
SIMPLE PULSE COUNTING CIRCUIT COMPUTES SUM
OF SQUARES
SCHAPP, D. H. DATE- SEP. 1965
GSPC-391
Pulse counting circuit with an extra chain of
capacitors, 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
INDUCTION DEVICE ENSURES PROPER MATING OF
ELECTRICAL CONNECTORS
JENKINS, L. M. 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
SHAPERHOCHER, W. M. /GE/ DATE- SEP. 1965
PFC-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
SPOR- INNOVATOR NOT GIVEN /BOEING CO./ DATE- SEP. 1965
M-PS-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
ELECTRODEFETTER FREERAMILLER HAS DRIFT CORRECTION
FEEDBACK
LABASTIE, L. C. /LIBRO SCI./ DATE- SEP. 1965
JPL-6078
Negative feedback circuit corrects output drift in
an electroretter. 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
SPOR- INNOVATOR NOT GIVEN /LOCKHEED MISSILES AND
SPACE CO./ DATE- SEP. 1965
M-PS-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.

B65-10271
COMPOSITE SEAL REDUCES ALKALINE BATTERY
LEAKAGE
CLATTERBUCK, C. E. FLETCH, K. F. DATE- SEP. 1965
GSPC-337
Composite seal consisting of rubber or plastic
washers and a metal washer reduces alkaline
battery leakage. Adhesive is applied to each
washer interface, and the washers are held
together mechanically.

B65-10273
ELECTROMECHANICAL FLOWMETER ACCURATELY
MONITORS FLUID FLOW
GRANT, D. J. DATE- SEP. 1965
GSPC-357
Electromechanical flowmeter remotely and
accurately monitors the flow rate and total volume
of a transparent liquid discharged from a
dispensing system. A dual dispensing tube system
provides a relative reference level which permits
compensation for temperature variations.

B65-10274
ELECTRONIC OMMETER PROVIDES DIRECT DIGITAL
OUTPUT
SEMYAN, J. DATE- SEP. 1965
GSPC-361
Self-balance wheatstone bridge acts as
an all-electronic digital readout ohmmeter.

B65-10275
IMPROVED CIRCUIT MINIMIZE GENERATION TIME OF
PSEUDONOISE CHECK BITS
ANDERSON, T. O. LOBDAUGH, W. A. DATE- SEP. 1965
JPL-696
Computer switching network consists of parallel
and series combinations of mod 2 adders using the
minimum number of gating levels. This network
minimizes the propagation time in which a sequence
of pseudonoise check bits are generated.

B65-10276
ADDED DIOXIDES INCREASE OUTPUT OF BALANCED
MIXER CIRCUIT
ROBINSON, G. B. DATE- SEP. 1965
GSPC-358
Two diodes added to a conventional balanced mixer
circuit increase the output signal level. The
resulting half-wave carrier switch balanced
modulator is used in radio equipment.

B65-10277
NONLINEAR FEEDBACK REDUCES ANALOG-TO-DIGITAL
CONVERTER ERRORS
RUNGOL, R. M. DATE- SEP. 1965
ARC-46
Nonlinear analog-to-digital converter measures the
analog input level and continuously adjusts the
digital readout scale sensitivity to effectively
increase the accuracy. It is able to acquire
more accurate low-level data.

B65-10278
MODIFIED DEVELOPER INCREASES LINE RESOLUTION
IN PHOTOSENSITIVE RESIST
SPOR- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC.
CORP./ DATE- SEP. 1965
GSPC-386
Standard developer solution is mixed with dipropyl
carbonate. This reduces swelling in the
photosensitive resist and permits application of
relatively thick films with minimal pinhole
formation and increased line resolution.

B65-10279
INFLATABLE BLADDER PROVIDES ACCURATE
CALIBRATION OF PRESSURE SWITCH
RUTT, W. J. /BOEING CO./ DATE- SEP. 1965
M-PS-367
Calibration of a pressure switch is accurately
checked by a thin-walled circular bladder. It is
placed in the pressure switch and applies force to
the switch diaphragm when expanded by an external
pressure source. The disturbance to the normal
operation of the switch is minimal.

B65-10281
CIRCUIT MAINTAINS DIGITAL DECISION THRESHOLD
CONSTRAINT CURRBIT AT PRESET LEVEL
SPON- INNOVATOR NOT GIVEN /AVCO CORP./ DATE- SEP. 1965
M-PF-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 TRANZISTOR REPLACES BULKY TRANSFORMER IN ANALOG-GATE CIRCUITS
SPON- INNOVATOR NOT GIVEN /RADIATION, INC./ DATE- SEP. 1965
GSFC-351
Metal-Oxide Semiconductor Field-Effect Transistor /MOSFET/ analog-gate circuit adapts well to integrated circuits. It provides better element isolation than a transformer, while size and weight are appreciably reduced.

B65-10286
UPPERCASE AND LOWERCASE COMPUTER PRINTOUT INCREASES READABILITY
BAND, W. W. /DOC., INC./ JONSEEGER, M. B. DATE- SEP. 1965
W-O-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
PHOTOELECTRIC ANALOG MULTIPLIER HAS WIDE BANKE
HARTSTEIN, 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 TECHNOLOGY LABS./ DATE- SEP. 1965 REAS- SEE ALSO B63-10033 AND B65-10186
W-O-079
Boron nitride ceramic heat sink-cooled 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
FM/CW SYSTEM MEASURES AIRCRAFT ATTITUDE
SPON- INNOVATOR NOT GIVEN /BELERAR/ DATE- SEP. 1965
M-FS-276
FM/CW radar system measures attitude of an approaching aircraft relative to a ground station. The FM/CW transmitter on board the aircraft transmits through two antennas to a ground-based receiver.

B65-10293
ELECTROSTATICALLY DRIVEN DYNAMIC CAPACITOR EMPLOYS CAPACITIVE FEEDBACK
LONGBURG, J. O. DATE- OCT. 1965
JFL-771
Three-part signal electrode provides capacitive feedback to an oscillator driven dynamic capacitor in an electrometer circuit.

B65-10298
TITANIUM DIAPHRAGM MAKES EXCELLENT AMPLIFIER CATHODE SUPPORT
TEICH, W. W. /RAYTHEON CORP./ 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 in a very primary and secondary emission medium.

B65-10299
ELECTROPHORETIC RHENOSTAT REGULATES HIGH CURRENT
HAICEE, J. F. JEDLICKA, J. R. WAGNER, C. B. DATE- OCT. 1965
ARC-54
Electrophoretic rheostat 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 thermally, 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
LOUSKI, R. M. /WESTINGHOUSE ELECTRIC CORP./ DATE- OCT. 1965
GSFC-397
Impurity diffusion process produces precise silicon semiconductor junctions economically and fast. Oxygen is deposited on a silicon wafer and a controlled concentration of impurity atoms in gaseous form is simultaneously introduced into the reaction.

B65-10301
REMOTE RAPIDLY VARYING PRESSURES ACCURATELY MEASURED
SPON- INNOVATOR NOT GIVEN /GE/ DATE- OCT. 1965
PFC-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 FLOWMETER HAS FAST RESPONSE TIME
DILLON, R. C. /DUKE/, W. R. DATE- OCT. 1965
LIB-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 ELECTRIC CORP./ DATE- OCT. 1965
GSFC-380
Vapor-deposited thin-film resistors replace diffused resistors in B-C 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 MICROFICHE MASTERED PERMITS EASY READING
LOWE, E. B. /DOC., INC./ DATE- OCT. 1965
NO-7
White-pigmented backing applied to the reverse side of microfich masterheads 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
SCHAFER, D. DATE- OCT. 1965
SSPC-268
Signal acquisition and tracking system covering a wide range of frequencies uses a digital circuit 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-HOUR INTEGRATOR IS ACCURATE TO ONE PERCENT
PAULOTICH, 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
SSPC-369
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 REPETITION RATES
GARRAHAN, R. M. DATE- OCT. 1965
SSPC-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
SSPC-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
AGGERSON, W. L. LEWIS, B. B. /DOC., INC./ DATE- OCT. 1965
Hq-1 Hq-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
CABRIO, A. DATE- OCT. 1965
SSPC-362
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 direct coupled, it functions as a gated oscillator.

B65-10315
MAGNETOMETER MEASURES ORTHOGONAL COMPONENTS OF MAGNETIC FIELDS
SPON- INNOVATOR NOT GIVEN /SPECTRA PHYS./ DATE- OCT. 1965
GSFC-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 TELEMETRIZED
TURKSTIC, A. /CHICAGO UNIT./ 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
X-PS-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
BROKEN PRESSED DISK ELECTRODE HAS LOW CONTACT POTENTIAL
DATE- NOV. 1965
GSFC-189
G. L. DATE- NOV. 1965
RSC-216
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. /MCDONELL AIRCRAFT CORP./ DATE- OCT. 1965
RSC-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
SELENIUM BOND DECREASES ON RESISTANCE OF LIGHT-ACTIVATED SWITCH
SPON- INNOVATOR NOT GIVEN /IBM/ DATE- NOV. 1965
JPL-SC-101
Vitrified 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, devitrification, and overdrawing.

B65-10325
DIRECT FORCE-MEASURING TRANSDUCER USED IN BLOOD PRESSURE RESEARCH
FINK, J. J. /STANFORD RES. INST./ NEWGARD, P. M. DATE- NOV. 1965
ARC-53
Direct force measuring transducer acts as an arterial tonometer, gives a direct readout to instrumentation, 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
FREEMAN, W. S. /GEOPHYS. CORP. OF AR./ DATE- NOV. 1965

16
COMMUNICATION SYSTEM USES MODULATED LASER BEAM

J CHSTON, A.

FOECE - GSFC-440

GSFC-377

JPL-155

BANDWIDTH REQUIREMENTS

LANGLEY-87

ELIIINAT

FREQUENCY DISCRIMINATOR UITB BINARY OUTPUT

B65-10349

FOSTER, L.

SUITE

COEPACT

B65-10347

VAHIABLE

B65-10345

DELAYED RIPPLE COUNTER SIMPLIFIES SQUARE-ROOT

MINIATURE SERVO ACCELEROMETER IS

FORCE-BALANCED

JOHNSON, A. H. /CALIF. INST. RES. FOUND./ DATE -

NOV. 1965

B65-10340

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 electromagnetically force-

balanced environment. It is used in gravity

surveys for exploring mineral deposits.

B65-10343

DELETED RIPPLE COUNTER SIMPLIFIES SQUARE-ROOT

COMPUTATION

CLIFF, R. DATE - NOV. 1965

GSFC-398

Ripple subtract technique simplifies the logic

circuitry required in a binary computing device to

drive the square root of a number. Successively

higher numbers are subtracted from a register

containing the number out of which the square root

is to be extracted. The last number subtracted

will be the closest integer to the square root of

the number.

B65-10345

VARIABLE WORD LENGTH ENCODER REDUCES TV

BANDWIDTH REQUIREMENTS

SIVERSTON, W. E., JR. DATE - NOV. 1965

LANGLEY-87

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

FOSTER, L. E. DATE - NOV. 1965

B65-10349

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, R. /IBM/ DATE - NOV. 1965

B65-10347

Frequency discriminator has a binary output and

permits microinstrumented packaging techniques.

It uses a bandpass amplifier and standard logic

elements that convert two input frequencies into

two discrete logic pulses.

B65-10350

ZERO Diode CONTROLS SWITCHING OF LARGE

DIRECT CURRENTS

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

B65-10352

VIBRATING DIAPHRAGM MEASURES HIGH

ELECTROSTATIC FIELD STRENGTHS

SPON- INNOVATOR NOT GIVEN /ELECTRO-OPTICAL

SYSTEMS/ DATE- NOV. 1965

B65-10353

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

SPON- INNOVATOR NOT GIVEN /LANGLEY/ DATE -

NOV. 1965

B65-10361

HIGH-INTENSITY FLASHING BEACON POWERED BY

MERCURY CELLS

SPON- INNOVATOR NOT GIVEN /

B65-10362

TEMPERATURE TRANSUDER HAS HIGH OUTPUT, IS

TIME STABLE

FOLLETT, W. H. /BALL BROTHERS RES. CORP./ DATE-

NOV. 1965

GSFC-397

Compact, lightweight temperature transducer

requires no amplification of its output signal and

is time stable. It uses the temperature-dependent characteristics of a silicon

transistor to provide a zero-to-five-volt signal

proportional to temperature.
B65-10363
REGENERATIVE FUEL CELL COMBINES HIGH EFFICIENCY WITH LOW COST
DOLY, H. FRANK, H. STEPHENS, C. W. /ELECTRO-OPT. SYSTEMS/ DATE- DEC. 1965
W00-000
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
RESPIRATORY TRANSFER VALUE HAS FALL-SAFE FEATURE
PUCINELLI, 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 canted piston arrangement that is driven by a remote controlled reversible rotary solenoid or reversible electric motor.

B65-10376
THREE-POSITION ROCKER SWITCH ACTUATOR HAS POSITIVE CENTERING
BOGLEY, R. L. /N. AM. AVIATION/ DATE- DEC. 1965
MSC-26-31
Three-position rocker switch actuator provides positive center positioning to inhibit possible override. Switch position is visually identified by rocker position, and functions can be shown on tabs and bars.

B65-10377
BINARY COUNTER USES FLUID LOGIC ELEMENTS
SPON- INNOVATOR NOT GIVEN /HARD CORP./ DATE- DEC. 1965
H-PF-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
SPON- INNOVATOR NOT GIVEN /GARRETT CORP./ DATE- DEC. 1965
WOO-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 UNBOUND AREAS IN PLASTIC LAMINATES
SPON- INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ DATE- DEC. 1965
W00-206
Device generates an acoustic signal whose frequency changes disclose the presence of delaminated or unbound areas in plastic laminates. A microphone makes the frequency change audible.

B65-10381
KEYED PLUGS AND SOCKETS PREVENT IMPROPER CONNECTIONS
SCHYT, D. L. LAKEFORD, 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
SPON- INNOVATOR NOT GIVEN /BOEING CO./ DATE- DEC. 1965
M-PF-417
Irradiation probe presents a depth-sensitive optical transmission path between a light source and a photoelectric cell to continuously monitor the level of a transparent liquid in a tank. This system operates automatically, without moving parts, and provides output signals to a remote recorder.

B65-10387
SHRINKABLE SLEEVE ELIMINATES SHIELDING GAP IN RF CABLE
SPON- INNOVATOR NOT GIVEN /GEN. DYN./CONVAIR/ DATE- DEC. 1965
W00-207
RF shielding gap between an RF cable and a multipin connector is eliminated by a sleeve assembly installed 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
SPON- INNOVATOR NOT GIVEN /WESTINGHOUSE ELECTRIC CORP./ DATE- DEC. 1965
MSC-14-3
Held insulating spacer with one or more cavities is used as an insulated holder for mounting metal-case 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 TRANSDUCER HAS CONSTANT SENSITIVITY
FLAGLE, 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
SPON- INNOVATOR NOT GIVEN /N. AM. 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.

B65-10399
BINARY COUNTER ACCELERATES TIME BY COMPLEMENTARY PRESENT
ZARENDER, G. E. /N. AM. 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 PYROTECHNICS
MATHERSON, R. C. /N. AM. AVIATION/ DATE- DEC. 1965
MSC-241
Membrane-type diaphragm 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.
B66-10002
DUAL-VOLTAGE POWER SUPPLY HAS INCREASED EFFICIENCY
STURM, J. C. DATE- JAN. 1966
LEWIS-107A
Simple circuit provides two different dc output voltages from an ac source. It employs a full-wave rectifier connected to two parallel branches from which the separate dc voltages are taken. The outputs have low ripple and good voltage regulation.

B66-10006
COMPUTER CIRCUIT CALCULATES CARDIAC OUTPUT
BC CULLOUGH, C. E. /KANAN AIRCRAFT CORP./ DATE- JAN. 1966
MSC-27A
Electronic circuitry automatically calculates cardiac output. This computer is used for basic research in physiology and as a diagnostic instrument by doctors.

B66-10012
THIN-FILM SEMICONDUCTOR RECTIFIER HAS IMPROVED PROPERTIES
SPON- INNOVATOR NOT GIVEN /HELPAR/ DATE- JAN. 1966
MSC-207
Cadmium selenide-zinc selenide film is used as a thin film semiconductor rectifier. The film is vapor-deposited in a controlled concentration gradient onto a glass substrate to form the required junctions between vapor-deposited gold electrodes.

B66-10013
REACTION HEAT USED IN STATIC WATER REMOVAL FROM FUEL CELLS
PLATNER, J. L. /ALLIS-CHALMERS MFG. CO./ DATE- JAN. 1966
M-FS-532
Reaction heat is used for removal of water formed at the hydrogen fuel electrode in a hydrogen-oxygen fuel cell. A portion of the heat inherent in the fuel cell current generation reaction is used to transfer excess water into a vapor phase and cause it to be exhausted from the cell by a porous vapor transport membrane adjoining a vapor cavity.

B66-10015
ELECTROLESS DISCHARGE LAMP IS EASILY STARTED, HAS HIGH STABILITY
W00-030
Electroless discharge borosilicate glass lamp is used in various high-resolution optical systems. It is partially charged with krypton, contains small amounts of rubidium, and is enclosed in a hermetically sealed envelope that maintains the lamp at an optimum temperature during discharge. The lamp is quickly started by its excitation cell.

B66-10021
SPECIAL BOAT IMPROVES REMOTE TRANSUDER ACCURACY
LATTON, J. F. /PRINCETON UNIV./ DATE- JAN. 1966
LEWIS-269
Transducer-mounting device allows measurement of transient pressure in a hostile environment. The device provides free passage areas and a controlled environment for the measuring instrument.

B66-10025
CUPROUS SELENIDE AND SULFIDE FORM IMPROVED PHOTOVOLTAIC BARRIERS
SPON- INNOVATOR MC/SC GIVEN /BEC/ DATE- JAN. 1966
W00-212
Photovoltaic barriers formed by depositing a layer of polycrystalline cuprous sulfide or cuprous selenide on gallium arsenide are chemically and electrically stable. The stability of these barrier materials is significantly greater than that of cuprous iodide.

B66-10026
IMPROVED CARBON ELECTRODE REDUCES ARC SPUTTERING
SPON- INNOVATOR NOT GIVEN /UNION CARBIDE CORP./ DATE- JAN. 1966
MSC-219
Carbon rod cores with a smaller proportion of rare earth compounds than in standard cores reduce arc sputtering 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 ELECTRIC CORP./ DATE- JAN. 1966
W00-0019
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.

B66-10031
PRESSURE TRANSDUCERS DYNAMICALLY TESTED WITH SINEOHDIAL PRESSURE GENERATOR
JONES, H. B., JR. /PRINCETON UNIV./ DATE- JAN. 1966
LTFS-268
Sinusoidal pressure generator assembly dynamically tests and calibrates pressure transducers by using a chamber whose lowest resonant mode is above the audiofrequency range.

B66-10034
CIRCUIT EXHIBITS POWER EFFICIENCY GREATER THAN 75 PERCENT
MANKOVITZ, E. 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
MSC-215
Positive-displacement flowmeter measures low gas-flow rates by gauging 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
BOHART, Z., JR. /N. AM. AVIATION/ DATE- FEB. 1966
MS-S-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
BERGESON, R. L. SCHUCK, J. W. DATE- FEB. 1966
MSC-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
HERSoug, H. KREISMAN, W. S. /GEOHYD. CORP. OF AM./ DATE- FEB. 1966
GSMC-464
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
Optical gyro pickup operates at cryogenic temperatures. The compact system operates efficiently at cryogenic temperatures.

Digitally controlled pulse-level discriminator operates over wide voltage range. This discriminator generates an output pulse when an input pulse exceeds a discrete, digitally controlled threshold voltage.

Materials physically tested in variable-environment chamber. 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.

High temperature thermocouple operates in reduction atmosphere. Thermocouple continuously measures a flowing gas up to 4500 degrees F in a hazardous environment. The thermocouple combines rhenium and tungsten in a test panel and insulation.

Optically driven switch turn-off time reduced by opaque coating. Turn-off response time of an optically driven switch is reduced by placing an opaque coating over the passivating silicon dioxide members. The coating prevents photon absorption so that carriers are not trapped or stored in the base region, thus shortening turn-off time.

Diffusion technique stabilizes resistor values. 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.

Mounting improves heat-sink contact with beryllia washer. This compact system operates at cryogenic temperatures.

Polymer deformation gage measures thickness change in tensile tests. Lightweight deformation gage 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.

Teeter periodically registers dc amplifier characteristic. Motor-driven switcher-recorder periodically registers the zero drift and gain drift signals of a dc amplifier subjected to changes in temperature. A time coding method is used since several measurements are shared on a single recorder trace.

Switching mechanism senses angular acceleration. 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 detent when the case in which the detent is mounted reaches the predetermined angular acceleration.

Improved system measures output energy of pyrotechnic devices. 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.

Electropneumatic transducer automatically limits motor current. 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 electromechanical transducer monitoring the motor input current sends out air signals which indicate changes in the current to the pneumatic controller.
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**

**HOSS, H. 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 WIRING**

**WILK, E. W. /N. AM. AVIATION/ DATE- APR. 1966**

**NSC-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.

**B66-10164**

**DETERMINES ATMOSPHERIC LOAD THROUGH FLEX PLATES AND BARS**

**BROSTENGEBERG, T. F. /WESINGHOUSE ASTRONUCLEAR LAB./ KOFELT, C. D. 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, R. /MIT/ DATE- APR. 1966**

**NSC-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 useful to determine visibility ceilings at airports.

**B66-10177**

**BINARY FLUID AMPLIFIER SOLVES STABILITY AND LOAD PROBLEMS**

**LARITA, R. D. /READER, R. 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**

**KLIEBER, L. L. /BATCHELOR, R. C. DATE- MAY 1966**

**GSPC-433**

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. R. DATE- MAY 1966**

**LANGLBY 205**

Low heat-transfer gage facilitates determination of the transition between laminar and turbulent conditions, in the boundary layer surrounding slender and moderately slender cones 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**

**WILKETE, W. F. DATE- MAY 1966**

**JPL-735 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**

**SOLE STATE THERMOSTAT HAS INTEGRAL PROBE AND CIRCUITRY**

**SPOR- INNOVATOR NOT GIVEN /METRO PHYS. INC./ DATE- MAY 1966**

**K-FS-94**

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. /K. 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**

**SHERMER, F. R. DATE- MAY 1966**

**JPL-665**

Apparatus provides 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 MONITORED**

**LAM, 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.

**B66-10205**

**WIDE-RANGE INSTRUMENT MONITORS FLOW RATES OF CHEMICALLY ACTIVE FLUIDS**

**SPOR- INNOVATOR NOT GIVEN /SPACELABS/ DATE- MAY 1966**

**K-FS-596**

Strain gage installation covered with a three-layer coating of commercial materials makes measurements in water and liquid hydrogen. It consists of a selected foil strain gage bonded with a modified commercial heat-curing epoxy cement. The outer protective layer of the gage installation may develop cracks when immersed in liquid hydrogen.
In-like transducers system measures 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 WEAlL INSPECTION
SPOR- INNOVATOR NOT GIVEN /BOEING CO./ DATE- MAY 1966 SEE- ALSO B66-10178 E-FS-284 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 STROBOEPE RIFTS RESONANCES IN VIBRATING COMPONENTS
SPOR- INNOVATOR NOC GIVEN /CALIF. INST. RES. FOUND./ DATE- MAY 1966 JPL-0033 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 E-FS-503 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 flip-flop 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. /RCA/ DATE- MAY 1966 900-076 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-LGOP SPEED CONTROL SYSTEM IS STABLE
STORE, P. A. /RAYMOND ENG. LAB./ DATE- JUN. 1966 JPL-SC-084 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 noise dynamic from the control loop so that the loop is stable without damping.

B66-10245
RIGID MICROELECTRONIC NODULE PACKAGE SUPPORTS CIRCUITRY ON HEAT SINK
JOHNSON, A. L. /MINNEAPOLIS-HONEYWELL REGULATOR CO./ DATE- JUN. 1966 MSC-812 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 RECEPCTACLES
CHIAPPUSI, A. /N. A. AVIATION/ DATE- JUN. 1966 MSC-443 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. W. /DATE- JUN. 1966 GSPC-485 In a multitemperature sampling system where the reference thermocouples are a distance from the test 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 JPL-673 Corrective 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.

B66-10264
BINARY SEQUENCE DETECTOR USES MINIMUM NUMBER O F DECISION ELEMENTS
PERMAN, R. /DATE- JUN. 1966 JPL-673 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 WEARING
STEINBER, R. /N. A. AVIATION/ DATE- JUN. 1966 MSC-422 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 forms a magnetic and electrically conductive circuit with a ferrous-metal armature.

B66-10271
PW ACQUISITION DEMODULATOR ACHIEVES AUTOMATIC SYNCHRONIZATION OF A TELEMETRY CHANNEL
CONVILLIS, L. /DATE- JUN. 1966 JPL-612 Data demodulator for automatic sync acquisition provides an 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
BATE, W. G. /DATE- JUN. 1966 LANGLI-21a 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.

B66-10274
BRAZE ALLOYS USED AS TEMPERATURE INDICATORS
RICE, R. E. /AEROJET-GEN. CORP./ SHIBLEY, L. A.
DATE- JUN. 1966
NU-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

COPPOLING, 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

GOSHAW, A. L. /AEGUST-GEN. CORP./ DATE- JUN. 1966

NU-0069

Summation 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

NATIE, H. MARX, H. /AHMAN AIRCRAFT CORP./ DATE- JUN. 1966

MSC-271

Cylindrical chamber, consisting of two half-foils, 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 ENSURES POSITIVE ALARM ACTIVATION IN DIGITAL MESSAGE LOSS

ROKOS, P. BURSTIN, A. HEITTY, B. D. /RCA/ DATE- JUN. 1966

W0-200

Last word Detection System /LOWDS/ 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 transmission request was not fulfilled and activate an alarm.

B66-10291

LARGE CAPACITOR PERFORMS AS A DISTRIBUTED PARAMETER PULSE LINE

GOODING, T. J. /GEN. ELS./ASTRONOMICS/ DATE- JUN. 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

ALBRIGHT, R. B. /WESTINGHOUSE ELEC. CORP./ DATE- JUN. 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
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

DEPT PARTICLE INJECTOR FOR HYPERVERL WICY
ACCELERATORS PROVIDE HIGHER CHARGE-TO-MASS
RATIO

BENG., O. E. DATE- AUG. 1966
GSFC-509

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

ELECTROSTATICALLY CONDUCTIVE FIBERS THERMALLY
ISOLATE TEMPERATURE SENSOR

DE WAARD, H. M. DATE- AUG. 1966
GSFC-456

Mounting assembly provides thermal isolation and an electrical path for an unheated 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 conductive material and connected to electrically conductive coatings on the ring.

B66-10350

TRANSISTOR CIRCUIT INCREASES RANGE OF
LOGARITHMIC CURRENT AMPLIFIER

DE WIT, W. /WESTINGHOUSE ASTRONUC. LAB./ DATE-
AUG. 1966
8F-0088

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 NEECESSITY
OF SERIES SUBBATION

CALLAW, J. D. DATE- AUG. 1966
GSFC-214

A new type of diode 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-SENSITIVE PRESSURE TRANSDUCER
HAS FAST RESPONSE

SPOON- INNOVATOR NOT GIVEN /CORNELL AERON. LAB./
DATE- AUG. 1966
LANGLEY-113

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

DARAN, T. H. DATE- AUG. 1966

B66-10340

PHASE INVERTER PROVIDES VARIABLE REFERENCE

PUSH-PULL OUTPUT

SPOON- INNOVATOR NOT GIVEN /RCA/ DATE- AUG. 1966
HG-23

B66-10348

ULTRASONIC EMISSION METHOD ENABLES TESTING OF
ADHESIVE BONDS

FRANK, L. SCHMIDT, G. /GEN. AM. TRANSITION/ CONG.- DATE- AUG. 1966
N-70-799

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.

B66-10344

SOLVENT RESIDUE CONTENT MEASURED BY LIGHT
SCATTERING TECHNIQUE

DAKOWE, M. J. DATE- JUL. 1966
N-70-850

Photometric analyzer measures NFE /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, H. H. DATE- JUL. 1966
MSC-2674

Intrument transmits the vanishing point of an illustration to a point on the illustration on a diminishing scale that also serves as a straightedge.
Sniffer type portable monitor detects hydrogen in air, oxygen, nitrogen, or helium. It indicates the presence of hydrogens in contact with activated palladium by a change in color of a thiochrome paint, and indicates the quantity of hydrogen by a sensor 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.

Automated drafting system uses computer techniques.

Infrared television used to detect hydrogen fires.

Hydrogen fire detection system features sharp discrimination.

Pneumatic binary encoder replaces multiple solenoid system.

Pneumatic binary encoder replaces solution 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.

Efficient dc to dc converter eliminates large stray magnetic fields.

Single channel pulse-height analyzer operates in subnanosecond range.

Human transfer functions used to predict system performance parameters.

Feedback loop compensates for rectifier nonlinearity.

Parallel line raster eliminates ambiguities in reading timing of pulses less than 500 microseconds apart.

Computer system monitors inputs from checkout devices. The comparing, addressing, and controlling functions are performed in the I/O unit. This leaves the computer main frame free to handle memory, access priority, and interrupt instructions.
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 any high temperature liquid-metal system. It shows fast response and is relatively insensitive to temperature fluctuations.

B66-10393

COMPOSITE FILTER STEEPENS REJECTION SLOPES IN MICROWAVE APPLICATION

SPO- INNOVATOR NOT GIVEN /DOENRE AND MARGOLIS/
DATE- AUG. 1966

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.

B66-10398

HIGH PRESSURE CRYOGENIC LIQUID FLOW SIGHT ASSEMBLY PROVIDES STREAMLINED FLOW FOR EASY OBSERVATION

ROBART, H. E. MINKIN, H. L. DATE- AUG. 1966

Window assembly facilitates observation of cryogenic liquids flowing through a mowing 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 DETECTORS MONITOR RELAY CONTACTS

QUTBN, J. D. DATE- SEP. 1966

JPL-785

A 10-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

MINKIN, J. L. /N. AM. AVIATION/ DATE- SEP. 1966
N-FS-244

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

SPO- INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ DATE- SEP. 1966
N-FS-355

Dielectricometer 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

Bowen 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

MILICK, J. W. /GEN. DIN./CONVAI/ DATE- SEP. 1966
W-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.

B66-10405

MODULAR POROUS PLATE SUBLIMATOR /IBNS/ REQUIRES ONLY WATER SUPPLY FOR COOLANT

HATHORN, H. J. /IBN/ DATE- SEP. 1966
N-FS-1794

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

LABORATORY FOR VACUUM JACKETED PIPELINES ELIMINATES NEED FOR REMOVAL OF OUTER JACKET

WILLS, G. H. /N. AM. AVIATION/ DATE- SEP. 1966
N-FS-668

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 a mass spectrometer. The outer jacket of the pipeline does not need to be removed for the locator to be used.

B66-10413

ANALOG SOLAR SATELLITE MODEL RELATES CELESTIAL MOTIONS SPATIALLY

MINKIN, J. 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

PIECZONKA, J. A. ROY, I. M. YEN, T. H. /IBM/ DATE- SEP. 1966
JPL-SC-111

Electrically controlled optical latch consists of a sensitive phototransistor and a solid-state light source. This design 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

DEBOO, G. J. DEVINS, E. J. DATE- SEP. 1966
ARC-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 CROSSOVER DISTORTION AND THRESHOLD EFFECT

KERWIN, A. /WESTINGHOUSE ELEC. CORP./ DATE- SEP. 1966
MSC-193

Four-terminal network forms a bidirectional 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

DYE, 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 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.

The reaction kinetics ablation program /REKAP/, 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.

Video signal processor uses special-purpose integrated circuits with nonsaturating current mode switching to accept texture and color information from a digital camera in a visual spaceflight simulator and to combine these, for display on color CRT with analog information concerning fading.

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 micrologic circuits.

Control circuit maintains unity power factor of reactive load automatically corrects the power factor of a reactive load. It maintains power supply efficiency where negative load reactance changes and varies by providing corrective error signals to the control windings of a power supply transformer.

Remote preamplifier circuit maintains stability over 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 emitter BPN stage followed by a PMF emitter.
purposes. This method provides maximum flexibility in a wide range of voltages and currents.

B66-10462
AN IMPROVED METHOD FOR TESTING PERFORMANCE OF VIDICONS DURING VIBRATION
CORSON, B. E. /HUGHES AIRCRAFT CO/. DATE- OCT. 1966
JPL-SC-113
Vidicon electron beam modulation is 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.

B66-10464
THERMIOMATIC SCANNER PINPOINTS WORK FUNCTION OF EMITTER SURFACES
BASON, H. L. /THORO ELECTRON ENG. CORP/. DATE- OCT. 1966
JPL-SC-177
In the electron tube testing, a thermionic scanner makes accurate spatial resolution measurements of the metallic surface work functions of emitters. The scanner determines the emitter function and its local departures from the mean value on a point-by-point basis for display on an oscilloscope.

B66-10467
SEMICONDUCTORS CAN BE TESTED WITHOUT REMOVING THEM FROM CIRCUIT
ALLEN, R. C. /NASA/ DATE- NOV. 1966
M-PS-1163
Oscilloscope, with specially developed test circuitry, quickly checks semiconductors without removing them from the circuitry. For transistors, approximate gain and linearity, as well as PNP or NPN determinations are made, when testing doped, open or short circuits, and reverse polarity show up plainly.

B66-10469
BASIC SUPPRESSION TECHNIQUES ARE EVALUATED
DAWERS, R. N. /RECON, INC/. DATE- OCT. 1966
M-PS-367
Investigation of standard suppression methods facilitates switching of inductively loaded circuits which causes interference in adjacent electronic equipment. The data are reduced to tabular form and rapid selection of components by the designer can be made without lengthy calculations or trial and error manipulations.

B66-10452
RECTILINEAR ACCELEROMETER POSSESSS SELF-CALIBRATION FEATURES
HENDERSON, R. B. /SAUNDERS ASSOC, INC/. DATE- OCT. 1966
M-FS-1160
Rectilinear accelerometer operates from an ac source with a phase-sensitive ac voltage output proportional to the applied accelerations. The unit includes an independent circuit for self-test which provides a sensor output simulating an acceleration applied to the sensitive axis of the accelerometer.

B66-10456
PULSE GENERATOR USING TRANSISTORS AND SILICON CONTROLLED RECTIFIERS PRODUCES HIGH CURRENT PULSES WITH FAST RISE AND FALL TIMES
WOOLFSON, R. G. DATE- OCT. 1966
MSC-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 power consumption of the circuit is equal to zero.

B66-10461
MODIFIED THERMOCOUPLE IS EFFECTIVE FROM MINUS 250 DEG TO 5000 DEG F
MORN, W. W. /NASA/ DATE- NOV. 1966
MSC-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 is used in metal treating furnaces in high temperature technology, and in certain corrosive environments.

B66-10462
INSTRUMENT AUTOMATICALLY SELECTS PEAK ACCELERATION SIGNAL FROM SEVERAL ACCELEROMETERS
CHAPMAN, C. P. DATE- OCT. 1966
JPL-48
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. P. 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
STAY COMPARES METHODS FOR THE NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS
M-PS-620
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.

B66-10469
DIPOLAR CURRENT DRIVER FOR MEMORY CIRCUITS
CHENG, C. F. NELSON, C. A. /SPERRY RAND CORP/. DATE- NOV. 1966
GSFC-213
Circuit which logically determines the state of a flip-flop and amplifies the current from a clock pulse provides a bipolar driving current to a memory circuit, the polarity of which is determined by the state of a flip-flop. This principle may be applied to various memory driving circuits where power dissipation must be minimized.

B66-10476
DEVICE TO COLORED MODULATE A STATIONARY LIGHT BEAM GIVES HIGH INTENSITY
GANTZ, W. A. /CALIF. UNIV/. DATE- DEC. 1966
S0-44
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.

B66-10478
PLUG-IN CONNECTOR SOCKET ACCEPTS COAXIAL CABLE END
MITCHELL, D. VAN LOON DATE- NOV. 1966
ABS-9
Connector which includes a spring-loaded contact to receive 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 BOOSTS PULSE AMPLITUDE
EGO, T. NATCHERT, R. W. /CUTLER HAMMER/ DATE- OCT. 1966
30
Simple circuit that uses a single transistor to accomplish capacitor storage by means of a single battery. Higher than that normally available for series-capacitor circuits, to drive a 100-watt transmitter.

**B66-10481**

MODIFIED McLEOD PRESSURE GAGE ELIMINATES MEASUREMENT ERRORS

**GELLI, R. C.**

DATE- NOV. 1966

ABC-62

Modification of a McLeod gage eliminates errors in measuring absolute pressures 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 CYCLOGENIC LIQUID LEVEL CONTROLLER

**LEWIS, 1.**

DATE- OCT. 1966

**LEWIS-236**

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

**HANNA, H. 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 controlled by the SCR thyristor to short circuit the reverse voltage generated by reversal of motor rotation.

**B66-10488**

SPIRAL SPRING/STRAIN GAGE COMBINATION

**BIBBEN, B. A., WALKER, R. R.** /

**HARV. AVIATION** /

**DATE- OCT. 1966**

**MSC-789**

Spiral springs equipped with strain gages which are hard-wired to readout instrumentation, measure deflection between two relatively stable surfaces in a drop test that causes them to close near flatness. This technique has been successfully used on Apollo droop tests to measure deflection between aft bulkhead and heatshield.

**B66-10490**

SOLENOID MAGNETIC FIELDS CALCULATED FROM SUPERPOSED SEMI-INFINITEN SOLENOIDS

**BROWN, G. V., FLOY, L.**

DATE- NOV. 1966

**NASA-TH-2494**

**LEWIS-138**

Calculation of a thick solenoid coils 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., RAPPION, D. R.**

DATE- NOV. 1966

**NASA-TH-2495**

**ABC-72**

Capacitive accelerometer design enables the construction of highly miniaturized instruments having full-range scales 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

**HARRIS, T. J., POTTER, N. H., STEINER, K. O.**

DATE- NOV. 1966

**GSFC-45a**

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 SORBERB, L., VAN SORBERB, L.** /

**R. F.** /

**LEWIS-249**

**DATE- NOV. 1966**

**JPL-2C-740**

Specimen thermionic 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 tungsten 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

**KATSUOKS, T.**

**DATE- NOV. 1966**

**NASA-TH-2546**

**NASA-TH-2549**

**LEW-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, mean, and shroud surfaces in a single computer run.

**B66-10497**

HIGH VOLTAGE POTENTIAL DIVIDER CALIBRATED BY SIMPLE DEVICE

**LEWIS, R. W.**

**DATE- NOV. 1966**

**ABC-63**

Resistance bridge device incorporates a potentiometer, switcher, and a null detector to calibrate high potential dividers under high voltage operation conditions. Calibration can be performed with this device in less than 1 minute at an accuracy of 0.001 percent.

**B66-10500**

DIGITAL SYSTEM PROVIDES SUPERREGULATION OF NANOSECOND AMPLIFIER-DISCRIMINATOR CIRCUIT

**FORBES, S. 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 INTENSITY STABILITY

**FISHER, B.** /

**HARV. AVIATION** /

**DATE- NOV. 1966**

**MSC-671**

Circuit generates a pulse of high-intensity stability with a complexity level considerably below systems of comparable stability. This circuit is being used as a linear frequency

31
JPL-778

INSENSITIVE TO BACKGROUND LIGHT

POINT-SOURCE LIGHT SENSOR CIRCUIT IS

DAVIS, E. S. DATE- NOV. 1966

Circuit incorporating a bisynchronous demodulator

JPL-776

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.

B66-10503

COMPUTER PROGRAM DETERMINES PERFORMANCE

EFFICIENCY OF REMOTE MEASURING SYSTEMS

M-R-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.

B66-10504

SUBROUTINE ALLOWS EASY COMPUTATION IN

EXTENDED PRECISION ARITHMETIC

HUBBERG, R. L. /M. AVIATION/ DATE- NOV. 1966

N-FS-1136

Subroutine called NPESC allows relatively simple

computation of very large numbers or very small

fractions with extreme accuracy. This subroutine

handles numbers that consist of 35 binary bits/word

for the exponent and 70 bits/2 words/for the

fraction.

B66-10505

SOLID STATE ANNUNCIATOR FACILITATES COMPLEX

SYSTEM TROUBLESHOOTING

HOEFS, H. P. /M. AVIATION/ DATE- NOV. 1966

N-FS-1125

Solid state annunciator monitors up to 60

pixels 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.

B66-10506

COMPUTER PROGRAM DETERMINES INVENTORY SIZE

KASPAR, R. /M. AVIATION/ DATE- NOV. 1966

N-FS-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.

B66-10508

PULSE STRETCHER HAS IMPROVED DYNAMIC RANGE

AND LINEARITY

LARSEN, R. N. DATE- NOV. 1966

AGW-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.

B66-10510

LOG LEVEL ACCELEROMETER TEST METHODS ARE

INVESTIGATED

NELSON, R. H., JR. /ELECTRO/ DATE- NOV. 1966

N-FS-308

Problems associated with testing accelerometers to

an accuracy where the standard error is less than

.0000001 g are centered around the elimination of

calibration and maintenance techniques to maintain

equipment in an industry such as the petrochemical

industry.*

Similar programs can be written for other test

equipment in an industry such as the petrochemical

industry.*

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.

B66-10511

COMPUTER ROUTINE ADDS PLOTTING CAPABILITIES

TO EXISTING PROGRAMS

HARNTS, J. C. LINNEMAN, J. S. /PITTON IND./

DATE- NOV. 1966

GSFC-490

PLOTAN, a generalized plot analysis routine

written for the IBM 7094 computer, minimizes the

difficulties in adding plot capabilities to large

existing programs. PLOTAN 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.

B66-10512

MIXIE TUBE DISPLAY UNIT EMPLOYS TIME-SHARED

LOGIC

GRAY, J. DATE- NOV. 1966

ABG-117

Cathodes of display tubes wired in parallel

achieve input switching simplification of a Mixie

tube display system. Use of time- shared logic

enables the appropriate anode and inhibits all

uncnecessary cathodes.

B66-10516

DIGITAL SYSTEM DETECTS BINARY CODE PATTERNS

CONTAINING ERRORS

MULLER, R. M. TRAPP, H. B., JR. DATE- NOV. 1966

GSFC-547

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.

B66-10518

ANTENNA SIMULATOR PERMITS REINSTALLATION

SYSTEM CHECKOUT

ELIA, A. D. SCHMITZ, R. P. 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.

B66-10520

PYROMETER HANDBOOK DESCRIBES PRACTICAL

ASPECTS OF SURFACE TEMPERATURE MEASUREMENTS

OF OPAQUE MATERIALS

BRASSETTER, J. E. Buchel, D. R. DATE- NOV.

1966

BEAN- SEE ALSO NASA-29-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.

B66-10521

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 then 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.
COMPUTER PROGRAM PERFORMS STATISTICAL ANALYSIS FOR RANDOM PROCESSES

B66-10525

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 would be capable of providing secondary injection thrust vector control using 2000 deg F gas.

B66-10526

IMPROVED DESIGN PROVIDES FASTER RESPONSE TIME IN PHOTOMULTIPLIER

SPORE - INNOVATOR NOT GIVEN /HALLICAPITORS CO. /

DATE - NOV. 1966

GSPC-451

Dynamic Crossed-Field Electron Multiplying /DECIM/ light demodulator avoids the normal response time limitations inherent in static field devices by using time varying crossed electric and static magnetic fields. This eliminates the transit time spread that affects electrons as the arrive along the secondary emission stages of the tube.

B66-10529

COMPUTER PROGRAM SEARCHES CHARACTERISTIC DATA OF DIODES AND TRANSISTORS

SPORE - INNOVATOR NOT GIVEN /BOOZ-ALLEN APPL. RES. CORP. /

DATE - NOV. 1966

GSPC-463

Semiconductor information storage and retrieval system provides a comprehensive, accurate, and readily available to characteristic data of diode and transistors. The system can be used to supply a complete listing of technical component information necessary for circuit designers, reliability engineers, and quality assurance personnel.

B66-10531

HEAT FLUX SENSOR DESIGN REDUCES EXTRAREGIOUS SOURCE EFFECTS

CREFTS, E. D. ROBINSON, S. D. /MCDONEL/ AIRCRAFT CORP. /

DATE - NOV. 1966

MSC-400

Heat flux sensor isolates the sensor and its transmitting thermocouple from undesirable heat sources by incorporating a radiator section that forms a radiation shield between mounting cup and sensor. Bonding of the thermocouple cable to the underside of the radiator provides a conductive path to dissipate extraneous heat that might otherwise reach the sensor.

B66-10533

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

JENKINS, E. S. ROGALLO, V. L. DATE - NOV. 1966

IAB - SEE ALSO B66-10534

ARC-73

Known dc voltage is applied and then removed suddenly in a method to permit checkout of the mechanical and electrical condition of piezoelectric transducers, of the cantilever beam type, while installed in a system.

B66-10534

MINIATURE PIEZOELECTRIC TRIAXIAL ACCELEROMETER MEASURES CRANIAL ACCELERATIONS

DEMO, G. J. ROGALLO, V. L. DATE - NOV. 1966

IAB - SEE ALSO B66-10004 AND B66-10533

ARC-71

Tiny triaxial accelerometer whose sensing elements are piezoelectric ceramic beams measures cranial accelerations when a subject is exposed to a centrifuge or other simulators of g environments. This device could be considered for application in dental, medical, and automotive safety research.

B66-10536

HELMET SYSTEM BROADCASTS ELECTROENCEPHALOGRAMS OF BEARS

WESTBROOK, B. W. ROZCOCAR, J. J. DATE - NOV. 1966

IAB - SEE ALSO B66-10203

ARC-70

EEG monitoring system consisting of nonirritating sponge-type electrodes, amplifiers, and a battery-powered wireless transmitter, all mounted in the subjects helmet, obtains electroencephalograms /EEGs/ of pilots and astronauts performing tasks under stress. After a quick initial fitting, the helmet can be removed and replaced without adjustments.

B66-10539

COMPUTER PROGRAMS PERFORM SPECTRAL ANALYSES OF UP TO SEVEN TIME SERIES

HARRIS, T. C. /GE/ DATE - NOV. 1966

IAB - 1500

Computer program automatically directs a numerically controlled milling machine through a series of cutting and trimming actions. It accepts engineering data points, passes smooth curve segments through the points, breaks the resulting curve into a series of closely spaced points, and transforms these points into the form required by the mechanisms.

B66-10542

PREREGULATOR FEEDBACK CIRCUIT UTILIZES LIGHT ACTUATED SWITCH

HAUSER, T. P. /IB/ DATE - NOV. 1966

IAB - 700

Preregulator feedback circuit employing a light actuated switch /LAS/ provides a simple and efficient feedback device in a power supply preregulator which maintains dc isolation between input and output grounds. The LAS consists of a diode PN junction infrared source close to, but electrically isolated from, a photodetector.

B66-10543

HIGH-RELUANCE ROTOR RINGS IMPROVE HOMOPOLAR GENERATOR PERFORMANCE

MUSSET, E. E. DATE - NOV. 1966

ARC-404

Nonmagnetic metal rings imbedded in a homopolar generator rotor normal to its axis keep the induction flux entering the rotor in a radial path. Use of the rings permits optimum rotor design for any given set of operating requirements and simplifies the task of predicting the operation characteristics of the generator.

B66-10544

ULTRASONIC QUALITY INSPECTION OF BONDED HONEYCOMB ASSEMBLIES IS AUTOMATED

MARTINEZ, C. C. /R. & M. AVIATION/ DATE - NOV. 1966

MSC-859

Inspection system for bonded honeycomb assemblies is accurate, fast, and automated. The ultrasonic system consists of inner and outer transducer positioning assembly with suitable motor controls, a centerless turntable assembly, water squirter assemblies, and an inspection program completely encoded on tape suitable for use on a...
Fifteen security system 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 commutator and decoder, allowing time-multiplexed video transmission. This security system could be used in industrial and retail establishments.

Miniature electrophoretic preamplifier effectively compensates 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 biologic potentials. Applications would include use as an pickup plate video amplifier in storage tube tests and for pH and ionization chamber measurements.

Nonelectrolytic tantalum capacitors developed.

Large area, nonelectrolytic tantalum foil capacitor has capacitance of approximately 1 microfarad and is capable of operating at 125 deg C at 150 volts with an insulation resistance of at least 1 megohm. In tests at a potential of 100 volts, capacitors remained stable through a temperature range from 25 deg to 125 deg C.

Computer program calculates 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 plane, cylindrical, and spherical geometries are determined and density distributions are found for each of these configurations over a range of conditions.

A fast-neutron spectrometer of advanced design is used to solve ablation problems for which the method of finite differences operations required for a given maximum space mesh size is reduced.

Simplified fixture permits precision alignment of an optical target.

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

Triosphere spark gap actuates overvoltage relay.

Triosphere spark gap and high voltage relay provide a positive, fast-acting, high current capacity device that will sense an overvoltage condition and resolve power from the circuit before insulation 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 mode 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.

Exploding 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 ring 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 amperes in the guard circuit and 200 amperes in the collectors circuit.

Protocol 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 minimal 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 is used 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 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
DEBBIE, 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 BELLO 500 ANGSTROM
SPOR- INNOVATION NOT GIVEN /SPACE SCI. INC./ DATE- DEC. 1966
GSCF-545
Duo plasma 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 FOR SPEEDS UP TESTING OF WELDS
HOOP, J. R. MC DONALD, J. A. /GE/ DATE- DEC. 1966
H-Q-58
Ultrasonic device consisting of a coaxial rod and transducer enclosed in a cylindrical probe which is filled with deionized or distilled water speeds up the testing of welds. A rubber diaphragm is added to produce the desired test beam angle.

B66-10579
AN ORTHONORMALIZATION PROCEDURE FOR MULTIVARIABLE FUNCTION APPROXIMATION
STROM, R. DATE- DEC. 1966
K-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 carbon resistor at the liquid helium temperature distinguished 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
ABARR, F. R. HANG, M. T. /AIRSORE INSTR. LAB./ DATE- DEC. 1966
RING-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-film radiation absorbers. The detector is effective with either coherent or incoherent radiation.

B66-10584
OPTICAL SUPERHETEROLOGY RECEIVER USES LASER FOR LOCAL OSCILLATOR
LACY, R. F. /SILVANIA ELECTRON. SYS./ DATE- DEC. 1966
K-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
K-FS-1263
Stereoscopic 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
LOFTUS, W. D. /WESTINGHOUSE ASTRONUC. LAB./ DATE- DEC. 1966
HU-0008
Electronic circuit uses 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
RUSSEL, J. R., III DATE- DEC. 1966 REAR- SEE ALSO NASA-TR-D-3686
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 ablating surface erodes to the location of a sensing point. Sensor depth and activation time determine ablating surface erosion rate.

B66-10598
DESIGN CONCEPT FOR PRESSURE SWITCH CALIBRATOR
LINGERLUND, M. G. /GE/ DATE- DEC. 1966
H-Q-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 COMPARES FOR DIMENSIONAL TOLERANCE VARIATIONS
DINNER, R. A. /AEREOGET-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 small coaxial cable creates a high frequency wideband transformer. This transformer has a high coupling coefficient, and a flat broadband response.

B66-10603
MOSFET ANALOG MEMORY CIRCUIT ACHIEVES LONG
01 ELECTRICAL (ELECTRONIC)

DURATION SIGNAL STORAGE
SPOR- INNOVATOR NOT GIVEN /JRM/ DATE- DEC. 1966
M-1060

Memory circuit maintains the signal voltage at the output of an analog signal amplifier when the input signal is interrupted or removed. 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 WIRING FOR SOLIDIFYING TO CONNECTORS
BOULTON, H. C./ HICLIENTS, R. A./ W. AR.
AVIATION/ DATE- DEC. 1966
NRC-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 RADIOMETER-PYROMETER
DATE- DEC. 1966 RBAF- SEE ALSO NASA-TN-D-2405
LWMS-284

Radiometer-pyrometer measures the spectral absorption, emission, and temperature of gases. The major problems involved in spectroradiometric 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
SPOR- INNOVATOR NOT GIVEN /VOLT, BERNAN, AND NEWMAN, INC./ DATE- DEC. 1966
SQ-57

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
KUZIE, 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 HEAT FLUX TRANSDUCERS
HEAL, J. H./ ROBERTSON, S. J./ HEAT TECHNL.
LAB./ DATE- DEC. 1966
KPS-1265

Theory and application of transducers used to measure heat flux in tests of more than one second duration.

B66-10615
IMPROVED MEMORY WORD LINE CONFIGURATION ALLOWS HIGH STORAGE DENSITY
SPOR- INNOVATOR NOT GIVEN /UNIVAC/ DATE- DEC. 1966
GSPC-559

Plated wire memory word drive line allows high storage density, good plated wire transmission 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
GEBLER, K. W./W. AM. AVIATION/ DATE- DEC. 1966
MSC-989

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
BECKCH, 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 milled in the inner shells are rotated 95 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 REDUCES SPATIALLY EXTENDED RADIATION SOURCES
MAXWELL, R. P., JR./ WESTINGHOUSE ELECTR. CORP./ DATE- DEC. 1966
GSPC-846

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
SPOR- INNOVATOR NOT GIVEN /REP. AVIATION CORP./ DATE- DEC. 1966
LANGLEY-182

Constant current source is connected across the input of the millivolt measuring system to monitor the electrical continuity and resistance of multiplex 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 rescue packages.

B66-10624
MINIATURE TELEMETRY SYSTEM ACCURATELY MEASURES PRESSURE
FITE, T. B./ DATE- DEC. 1966 RBAF- SEE ALSO B66-10771 AND B66-10257
ARC-74

Miniature, low power, telemetry 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 MICROFACE MIXER HAS HIGH CONVERSION EFFICIENCY
PERKUS, S. J./ ROSES, 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
KPS-1606

36
Precision laser tracker capable of tracking a low acceleration target to an accuracy of about 20 microradians rms 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


LARGLE-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 minimum feasible disturbance of local heat flow with accurate depth control of the thermocouple junction locations.

B66-10636

AUTOMATIC SYSTEM DETERMINES MOMENTS OF INERTIA OF ASTEROIDAL OBJECTS

SPON- INNOVATOR NOT GIVEN /SPACECO, INC./ DATE- DECEMBER 1966

M-FS-1708

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


LARGLE-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- DECEMBER 1966

LEWIS-303

Volume-ratio calibration system consists of a gas source, high 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

THERM-X ATTITUDE AND DIRECTION REFERENCE INSTRUMENT HAS ONLY ONE MOVING PART

BOSSLER, F. B. /BELLE AEROSPACE CORP./ DATE- DECEMBER 1966

M-FS-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- DECEMBER 1966

M-FS-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

MAGNETORESISTOR MONITORS RELAY PERFORMANCE

KEEB, D. G. /BOEING CO./ DATE- DECEMBER 1966

M-FS-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

GREGG, F. G. /N. A. A. AVIATION/ DATE- DECEMBER 1966

M-FS-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 nickel, chrome, Inconel, and stainless steel wires to nickel, beryllium, iron, steel, Inconel, and stainless steel.

B66-10658

DIGITAL FREQUENCY COUNTER PERMITS READOUT WITHOUT DISTURBING COUNTING PROCESS

WIEBE, F. DATE- DECEMBER 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

M-60, G. /GR/ DATE- DECEMBER 1966

HQ-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 OF FAST RESPONSE THERMOCOUPLE MEASUREMENT OF TEMPERATURES IN CRYPTOGENIC GASES

BALKIWSKI, T. LOWIS, A. B. ROBINSON, C. C. /KING AIRCRAFT CORP./ DATE- DECEMBER 1966

M-FS-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.

B66-10668

PACKAGING OF ELECTRONIC MODULES

FITZGERALD, L. DATE- DECEMBER 1966

JPL-901

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

PHOTOGRAPHIC METHOD MEASURES PARTICLE SIZE AND VELOCITY IN FLUID STREAMS

DICKSON, K. A. /N. A. A. AVIATION/ DATE- DECEMBER 1966

M-FS-1538

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

M-FS-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. /WASHINGTON 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. O. DATE- DEC. 1966

JPL-491

Computer program numerically solves nonlinear algebraic equations for chemical equilibrium based on iteration equations independent of choice of components. This program calculates theoretical performance for frozen and equilibrium composition during expansion and Chapman-Jouguet flame fronts. It converts the output of Fortran and solar cells, thermionic diodes, thermoelectric generators, and electrochemical batteries to a 20 V dc output.

**B66-10675**

GAGE ACCURATELY CONTROLS FORCE FOR PLACING CHIPS ON SUBSTRATES

BREEL, W. F. /IBM/ DATE- DEC. 1966

M-FS-1941

Device is developed to control the force used in manually placing chips on substrates. It controls the compression load between 2 small members to 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

HALY, Y. C. DATE- DEC. 1966

JPL-521

Past response, spectrally linear standard detector of the form of a blackbody cavity radiometer calibrated rapidly responding photodetectors against a calibrated standard detector. A power amplifier with maximum available 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 REPRODUCED PHOTO TONES

GRIFFIN, J. D. /AM. 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 by drafting paint manufacturers name and mixture number, and the gray tone 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 BOLT WIRE TECHNIQUES IN LOW DENSITY FLOWS WITH HIGH TURBULENCE LEVELS

HANSON, A. R. KAASE, P. R. LAASON, R. E. DATE- DEC. 1966

MSC-1227

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

**B66-10690**

LOW INPUT VOLTAGE CONVERTER/REGULATOR MINIMIZES EXTERNAL DISTURBANCES

SURE INNOVATOR HOT GIVES /SOUTHWELL, INC./ DATE- DEC. 1966

Low-input voltage converter/regulator constructed in a coaxial configuration minimizes external magnetic field disturbance, 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 electrochemical batteries to a 20 V dc output.

**B66-10691**

SOLID-STATE RECOVERABLE FUSE FUNCTIONS AS CIRCUIT BREAKER

THOMAS, S. F. JR. DATE- DEC. 1966

GSFC-560

Sewed, conductive-epoxy recoverable fuse protects electronic circuits during overload conditions, and then 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.

**B66-10692**

HERMETICALLY SEALED CELLS PROTECTED FROM INTERNAL GAS PRESSURE

CARGO, 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

DAYS, 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, T. C. 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 Eiectrical CURRENTS ACCURATELY BETWEEN 10 TO THE MINUS 11 AMPERE TO 10 TO THE MINUS 3 AMPERE

WILSON, J. /WESTINGHOUSE ASTRONUC. LAB./ DATE- DEC. 1966

A 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

GRACH, C. M. /RKOJET-GEN. CORP./ DATE- DEC. 1966

A 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 COMPUTER DETECTS TRANSIENT MALFUNCTIONS IN SWITCHING CIRCUITS

BROWN, W. R. /W. AM. AVIATION/ DATE- JAN. 1967

**B67-10002**

COMPUTER PROGRAM DETECTS TRANSIENT MALFUNCTIONS IN SWITCHING CIRCUITS

CALVIN, E. L. /W. AM. AVIATION/ DATE- JAN. 1967

**B67-10009**

TESTER FOR STUDY OF ROLLING ELEMENT BEARINGS

ZARETSKY, E. V. DATE- FEB. 1967

**B67-10011**

SELF-STARTING PROCEDURE SIMPLIFIES NUMERICAL INTEGRATION

DATE- JAN. 1967 REAR- SEE ALSO NASA-TN-D-2936

**B67-10015**

ALUMINIZED THIN-WINDOW PROPORTIONAL-COUNTER TUBE IS STRONGER, MORE RESPONSIVE IN LONG WAVELENGTH REGION

SCHOFIELD, R. W. SHELD, R. A. /CORNELL UNIV./ DATE- JAN. 1967

**B67-10017**

SHORTENED HORN-REFLECTOR ANTENNA

LASS, F. A. DATE- JAN. 1967

**B67-10020**

MINIATURE CAPACITOR FUNCTIONS AS PRESSURE SENSOR

RABEISON, R. G. DATE- FEB. 1967

**B67-10022**

VAR variable-PULSE SWITCHING CIRCUIT ACCURATELY CONTROLS Solenoid-VALVE ACTUATIONS

GILLET, J. D. /W. AM. AVIATION/ DATE- FEB. 1967

**B67-10025**

COMPUTER/PERT TECHNIQUE MONITORS ACTUAL VERSUS ALLOCATED COSTS

HOUST, E. WALKER, J. R. DATE- FEB. 1967

**B67-10027**

FEED-THROUGH CONNECTOR COUPLES RF POWER INTO VACUUM CHAMBER

GRANDY, G. L. /WESTINGHOUSE ASTRONUC. LAB./ DATE- FEB. 1967

**B67-10028**

MONITOR ASSURES AVAILABILITY AND QUALITY OF COMMUNICATION CHANNELS

SMITH, G. P. /MCA/ DATE- FEB. 1967

**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, R. J. DATE- FEB. 1967 NASA-1268
Crossed beam correlation method measures turbulent fluctuations in transonic and supersonic flows. Two collimated 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 ERRITS
HARTON, 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.

THERMOCOLECTRIC METAL COMPARATOR DETERMINES COMPOSITION OF ALLOYS AND METALS
STONE, C. C. WALKER, B. E. DATE- FEB. 1967 ARG-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. DYN./ DATE- MAR. 1967 IPTS-243
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
COLEMA, H. R. HAMILTON, L. G. /HAYES INTENB./ CORP./ DATE- MAR. 1967 NASA-TP-5-5440 M-P-1597
Study indicates the feasibility of explosive cutting and establishes techniques applicable to i.e.-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
PROLES, H. H. DATE- MAR. 1967 JPL-874
An automatic system measures the true average shear viscosity of liquids and viscoelastic 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
GEBBEN, Y. DATE- MAR. 1967 LVTX-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
ZELLNER, G. /WESTINGHOUSE ASTRONUCVL. LAB./ DATE- MAR. 1967 MS-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.

SOLID-STATE TIME-TO-PULSE-BEIGHT CONVERTER DEVELOPED
LYNCH, R. J. RODDICK, R. G. DATE- MAR. 1967 AR-170
Solid-state circuit produces an output pulse with an amplitude directly proportional to the time interval between two input pulses. It uses selected circuit options to achieve variable node operation and a tunnel diode controls the charging time of a capacitor in proportion to the time interval being measured.

CIRCUIT MULTIPLIES PULSE WIDTH MODULATION
CAIISON, A. W. FURBINTI, A. DATE- MAR. 1967 H-56
Modulation multiplier provides a simple means of multiplying the width modulation of a pulse train by a constant factor. It operates directly on a pulse width modulated input signal to generate an output pulse train having a greater degree of width modulation than the input signal.

ELECTRON MULTIPLIER HAS IMPROVED PERFORMANCE AND STABILITY
SPRO- INNOVATOR NOT GIVEN /G.C.A. CORP./ DATE- MAR. 1967 GSPC-546
Electron multiplier contains a series of massive metal dynodes, compactly secured with ceramic rods for operation in a metal housing. The housing is rigidly mounted within a soft steel vacuum enclosure which shields the multiplier from the effects of external electromagnetic fields.

CONTROL CIRCUIT ENABLES SOLAR CELL OPERATION AT MAXIMUM POWER
PAULKOVICH, J. DATE- MAR. 1967 GSPC-432
Control circuit enables a solar cell power supply to deliver maximum electrical power to a load. It senses the magnitude of the slope of the voltage-current characteristic curve and compares it to a reference voltage which represents the slope corresponding to the desired operating limits.

PORTABLE DETECTOR SET DISCLOSES HELIUM LEAK RATES
Portable helium detector measuring helium leak rates makes possible the use of the inert gas helium as a tracer. This helps solve safety and contamination problems in detecting leaks in closed fluid systems.

FLOW-TEST DEVICE FITS INTO RESTRICTED ACCESS PASSENGERS
FITZGERALD, J. J. OEBERSCHMIDT, H. ROSENBAUM, B. J. DATE- APR. 1967 MSC-1078
Test device using a mandrel with a collapsible linkage assembly enables a fluid flow sensor to be properly positioned in a restricted passage by external manipulation. This device is applicable to the combustion chamber of a rocket motor.

CLEANROOM AIR SAMPLER COUNTS, CATEGORIZES, AND RECORDS PARTICLE DATA
NELSON, M. B. /LIT RES. INST./ DATE- JUN. 1967 N-FS-2221
Light scattering particle counter monitors
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.

B67-10077
COMPUTER PROGRAM SIMULATES DESIGN, TEST, AND ANALYSIS PHASES OF SENSITIVITY EXPERIMENTS
ALEXANDER, R. J., ROTHEN, D. ZIMMERMAN, J. M. /N. AM. AVIATION/ DATE- APR. 1967

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, R. H., MACINNIS, J. MILLER, C. Y. /NBS/ DATE- APR. 1967

Electro-chemical densitometer continuously measures the densities of either single-phase or two-phase flowing cryogenic fluids. Measurement is made on actual flow. The instrument 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. /ECA/ DATE- APR. 1967

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 (TMR) /COMPUTER OPERATION IMPROVED
DALL, R. HARDIE, P. H. /IBM/ DATE- APR. 1967

Switching off a failed element plus one of the good elements in the TMR computer operation keeps the reliability curve from crossing the simplex curve. This method increases reliability and prevents system failure.

B67-10086
AUTOMATIC CHANNEL SWITCHING DEVICE
DALL, R. CLABICH, R. T. /IBM/ DATE- APR. 1967

Automatic channel switching device operates with all three triple 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
PINFORD INTO BRAILLE LANGUAGE
POWELL, R. A. /BEEING CO./ DATE- APR. 1967

Computer program converts print 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, W. M. /TIT RES. INST./ DATE- APR. 1967

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. /RCA/ MC CAMPBELL, W. M. DATE- APR. 1967

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
NEW MANAGEMENT TRAINING CONCEPT
DENAU, S. F. VACCARO, M. J. DATE- APR. 1967

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
STRAIN GAGE CIRCUIT PROVIDES FATIGUE TESTING MACHINE WITH ACCURATE CYCLE COUNT
PARK, R. /WESTINGHOUSE ASTROINCL. LAB./ DATE- APR. 1967

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
MASTER CONTROL CIRCUIT PROVIDES BOTH FAST AND PROPORTIONAL CONTROL
BASELIC, R. W. /IBM/ DATE- APR. 1967

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
BURNEW, D. P. /ITZ RES. INST./ DATE- APR. 1967

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 USES COMMERCIALLY AVAILABLE COMPONENTS
HAIST, C. F. FISICOPO, A. /IBM/ DATE- APR. 1967

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- MAY 1967

Linear Systems Design Evaluation Program,
AP-168 combines the many different analysis techniques used to evaluate and manipulate polynomials. The single program is a pseudo instruction abstraction. It allows the user to enter polynomials of the Laplace operators and to manipulate them freely.

B67-10104
PARAMETRIC UP-CONVERTER INCREASES FLEXIBILITY OF MASK
SUNNY, R. H. DATE- APR. 1967
ESC-67-98
Parametric up-converter translates a broad band of signals to the fixed tuned input frequency of an asset. This modified mask 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 INDUCTOR HAS HIGH Q, IS STABLE AT HIGHER TEMPERATURES
WILEY, K. 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, J. J. /BOEING CO./ /SC/ 1967
H-PFS-1547
Forban 2 computer program rapidly calculates parameters of maximum likelihood estimates from 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 BELLOW 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-temperature pressure cycling at elevated temperatures. It is applicable to quality control and reliability programs.

B67-10115
LIQUID HYDROGEN DENSITOMETER UTILIZES OPEN-ENDED MICROWAVE CAVITY
SHEPARD, E. R. /BOEING CORP./ /WB/ 1967
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
HALIFAX, W. H. /NASA AVIATION/ DATE- MAY 1967
ESC-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
LANEBAUER, F. 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 MINIATURIZATION
ATLAS, R. D. /NASA AVIATION/ DATE- MAY 1967
ESC-720 MSC-722
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
DEBRETT, S. L. /BOEING CO./ DATE- MAY 1967
MSC-1176
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.

B67-10130
MODIFIED UNIVIBRATOR COMPENSATES FOR OUTPUT TIMING ERRORS
STRAUB, M. G. 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 EVERSAL
ALEXANDER, E. J. /NASA AVIATION/ DATE- MAY 1967
H-PFS-1020
Forban 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 IN 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 Squires, R. J. Sanders, 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 sample data translator which transforms the transient production time, setting it to an x-y plotter or computer tape recorder use.

B67-10140
CLAMP PROVIDES EFFICIENT CONNECTION FOR HIGH-DENSITY CURRENTS Carter, J. B. Trues, D. M. /N. AM. AVIATION/ DATE- MAY 1967 M-P-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.

B67-10141
THIN FILM PROCESS FORMS EFFECTIVE ELECTRICAL CONTACTS ON SEMICONDUCTOR CRYSTALS Porzig, W. A. Roberts, J. S. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1967 M-P-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. Spattering alternating layers of tantalum and gold forms the alloy filling.

B67-10142
DESIGN CONCEPTS USING RING LASERS FOR FREQUENCY STABILIZATION Sokol, S. /HONEYWELL INC./ DATE- MAY 1967 M-P-2446
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 stabilization laser and a low-coherence line to keep the laser from oscillating and others use a Doppler gain tube.

B67-10143
PROCESS FACILITATES PHOTO RESIST MASK ALIGNMENT ON SIC CRYSTALS Higginson, N. P. Roberts, J. S. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1967 M-P-2394
Growth of silicon dioxide on a silicon carbide crystal ensures proper orientation of photore sist 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
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 Vanier, J. Vessot, R. /VARIAN ASSOC./ DATE- MAY 1967 M-P-2387
Hydrogen maser is a highly stable short-term and long-term frequency reference for precision tracking systems. Its retsetability is expressed as the r.m.s. deviation from the mean.

B67-10150
MULTIPLEXING CONTROL DEVICE ENABLES HANDLING OF WIDE VARIATIONS IN SAMPLING RATES Spoon, Innovation not given. /WESTINGHOUSE ELEC. CORP./ DATE- JUN. 1967 M-P-2436
HSS telecommunication system concept provides the ability to change according to needs indicated by the data without any change to the lunar experiment equipment. The system will include a magnetic core memory as the data multiplexing control device.

B67-10151
ELECTRONIC FREQUENCY DISCRIMINATOR Reed, W. J. /MOTOROLA, INC./ DATE- JUN. 1967 M-P-2436
Technique using short term temporal integration characteristics of the observed 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 uses a switching time delay.

B67-10152
MEANS FOR IMPROVING APPARENT RESOLUTION OF TELEVISION Hillsburg, W. H. DATE- MAY 1967 HRC-65
Technique using short term temporal integration characteristics of the observed 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 uses a switching time delay.

B67-10153
STUDY OF IRON GARNET RODS REVEALS NEW MAGNETOSTATIC ECHO MODE Kedziorek, W. /TEXAS RAD. RES. CENTER/ DATE- JUN. 1967 HRC-37
Echo mode in YIG rods has different behavior in magnetic fields. This mode, discovered at 8.5 gigahertz, experiences a linear variation. The time delay exhibited is a linear function of the applied magnetic field and the input pulse frequency.

B67-10155
SUBLASER DEFLECTION CIRCUIT OPERATES INTEGRATED SWEEP CIRCUITS IN TV CAMERA Schaff, F. L. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1967 MSC-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
Signal modulated, self-regulating voltage regulator/amplifier controls the output h-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 Balling, L. B. DATE- JUN. 1967 JPL-818
Conceptual photo-scan tube avoids complexity of internal lens scanning and beam-current adjustment.
Graphite sensing disk for slug-type radiation TV camera system that has a special epitaxial gallium arsenide diode junction formed by optical scan readout. It differs from a conventional image orthicon in its use of an external oscilloscope tube.

SENSING DISKS FOR SLUG-TYPE CALORIMETERS
HAVE HIGHER TEMPERATURE STABILITY
SPONSOR: INNOVATOR NOT GIVEN /SOUTHERN RES. INST./
DATE: JUN. 1967

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 as repeated temperature cycling does not change its sensitivity.

CLOSED CIRCUIT TV SYSTEM MONITORS WELDING OPERATIONS
GILMAN, N. /F. A. AVIATION/ DATE: JUN. 1967

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.

HYBRID SOLID STATE SWITCH REPLACES MOTOR- DRIVEN POWER SWITCH
BOOTH, P. A. SCHLOSS, A. I. DATE: JUN. 1967
JPL-931

Hybrid solid state switch replaces existing motor-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.

EFFICIENT MILLIMETER WAVE /480 GHE/ DIODE FOR HARMONIC POWER GENERATION
SPONSOR: INNOVATOR NOT GIVEN /ADVANCED TECHNOLOGY 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 low-millimeter wavelength.

DATA RETRIEVAL SYSTEM PROVIDES UNLIMITED HARDWARE DESIGN INFORMATION
RANSON, B. D. SWARCO, R. L. /MA AERONAUTICAL/ DATE: JUN. 1967
MSC-1944

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 initials, 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 /E/ DATE: JUN. 1967
SPONSOR: INNOVATOR NOT GIVEN /PHILCO CORP./

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.
increment identification. This facilitates recording timing marks.

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

B67-10201 ELECTRONIC CIRCUITRY USED TO AUTOMATE PAPER CHROMATOGRAPHY STEPPKIZER, G. B. DATE- JUN. 1967 JVL-860 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- JUN. 1967 NPO-10142 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. G. DATE- JUN. 1967 NPO-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 PIEZOELECTRIC QUARTZ CRYSTALS DETECT GAS CONTAMINANTS STEPHENS, J. B. DATE- JUN. 1967 NPO-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. H. DATE- JUN. 1967 NPO-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 PM CARRIER DEVIATION MEASURED BY DIFFERENTIAL PROBABILITY METHOD DAQUIN, A. F., JR. HADDICAN, J. /BOEING CO./ DATE- JUN. 1967 M-PS-2466 Differential probability PM system measures 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 FOR USE WITH DATA RECORDERS PEASE, L. L. /BOEING CO./ M-PS-2557 New 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, converters, 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- JUN. 1967 NPO-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- JUN. 1967 NUC-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 SBOR- INNOVATOR NOT GIVEN /SYLVANIA ELECTRON. SYSTEMS/ DATE- JUL. 1967 M-PS-1707 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 MARSH, R. A. /BOEING CO./ DATE- JUL. 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, R. E. DATE- JUL. 1967 ESR-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 SMOR- INNOVATOR NOT GIVEN /BLOCK ENG./ DATE- JUL. 1967 ESR-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 KULLEN, D. D. HANNAF, S. L. DATE- JUL. 1967 JFL-762 Cylindrical sample container provides a high
degree of nuclear stabilization to a nuclear magnetic resonance /nmr/ spectrometer. It is placed coaxially about the sar insert and contains reference sample that gives a signal suitable for locking the field and frequency of an sar spectrometer with a simple audio modulation system.

B67-10239
A PHONOCARDIOGRAM SIMULATOR
KEEPER, J. N. DATE- JUL. 1967
KSC-67-94
Simulator calibrates and checks out phonocardiograms 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 phonocardiograms 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. A. AVIATION/ DATE- JUL. 1967
MSC-921
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 gage, installed on one of the support beams, eliminates errors due to uneven loading.

B67-10246
IMPROVED TELEVISION SIGNAL PROCESSING SYSTEM
FRANK, A. J. /J. /DATE- JUL. 1967
Wong, R. Y. DATE- JUL. 1967 SEE ALSO B67-10005
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.

B67-10248
RECTILINEAR DISPLAY GIVES ACCELERATION LOAD FACTOR AND VELOCITY INFORMATION
FRANK, A. J. /J. /DATE- JUL. 1967
Wong, R. Y. DATE- JUL. 1967 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 CRT DISPLAY
DAY, D. J. /DATE- JUL. 1967
DAY, D. J. WICKES, W. H. /W. A. AVIATION/ DATE- JUL. 1967 MSC-999
High volume, multichannel data reduction computer program permits selection of the rates at which digital data is sampled. The program, written in FORTRAN I source language, also permits accessibility to the original mass of data.

B67-10250
EXPERIMENTAL COHERENT FRACTIONAL FREQUENCY MULTIPLIER IN S-BAND
MOSHER, S. A. /SMITH ELECTRONICS CO./ DATE- JUL. 1967
M-PS-2827
Experimental circuit produces an efficient fractional frequency multiplier that will operate on a 5.6 kw. 2101.6 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 SUBCARRIER OSCILLATOR
LAWRENCE, E. B. /M. D. /HUGHES AIRCRAFT Co./ DATE- AUG. 1967
JPL-SC-091
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
NOBREIT, C. L. /MOTOROLA/ DATE- JUL. 1967
MSC-11007
Miniature solid state phase detector using MOSFETs 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 MEANS FOR SPECTRUM ANALYZERS
HURPHY, S. S. DATE- JUL. 1967
MSC-10967
Spectrum analyzer calibration system is rapid and provides an accurate family of adjustable markers at any point in the spectrum. Pulses 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 kc.

B67-10255
ABSOLUTE FREQUENCY STABILIZATION OF LASER OSCILLATOR AGAINST LASER AMPLIFIER
SEIKMAN, A. R. /SYLVANIA ELECTRON. SYSTEMS/ DATE- JUL. 1967
N-PS-2559
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 discriminant to indicate when the laser frequency deviates from the center of its atomic transition.

B67-10257
FAST-RESPONSE FREQUENCY-TO-ANALOG CONVERTER
HAGIHARA, F. S. /W. A. AVIATION/ DATE- JUL. 1967
N-PS-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
Ewald, C. J. SARKAIDY, A. A. /NEW HAMPSHIRE UNIV./ DATE- AUG. 1967
HGR-10020
Conumption multichannel pulse height analyser 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 PIEZO-BAR PRESSURE PROBE
FRIEND, W. H. MURPHY, C. L. SHAFIELD, T. /MC GILL UNIV./ DATE- JUL. 1967
F-PS-393
Piezo-bar 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 usec.

B67-10260
TESTER AUTOMATICALLY CHECKS INSULATION OF INDIVIDUAL CONDUCTORS IN MULTIPLE-STRAND CABLES
SHAW, J. VUCKOVICH, M. /WESTINGHOUSE AERONAUT.
IMPACTS OF OVER 15,000 G

BILES, J. K., JR. FLOYD, E. L. TOPITS, A. N., JR. DATE- AUG. 1967

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

GUPMANN, F. HERMAN, A. M. HEERDMAN, A. DATE- AUG. 1967 REAR- SEE ALSO B66-10682

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

HARCOCK, D. J. /BUNNER-BARCO CORP./ DATE- AUG. 1967

M-PS-1975

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 VIDEOMICRO SCANNERS MONITORS MANY TEST POINTS

FORTIER, R. J. /BOEING CO./ DATE- AUG. 1967

M-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

BEUROWICK, E. A. /NAV. AE. AVIATION/ DATE- AUG. 1967

M-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 clock only when voltage is applied to the vibrator armatures.

B67-10289

WIDE-BAND, HIGH-EFFICIENCY OPTICAL MODULATOR

NEEDLES, E. J. /E. B. YOFFETT, R. J. /STYLVANIA ELETRON. SYSTEMS/ DATE- AUG. 1967

M-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 dihydrogen phosphate crystals with laser beam-condensing optics. Optical modulation systems may serve importantly in future space wideband communication systems.

B67-10294

SENSITIVE BRIDGE CIRCUIT MEASURES CONDUCTANCE OF LOW-CONDUCTIVITY ELECTROLYTE SOLUTIONS

SCHEIDT, E. DATE- AUG. 1967

ARG-167

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
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.

B67-10299
ELECTRONIC DUMMY FOR ACOUSTICAL TESTING

MSE-206 MSL-1164 MSE-1165 MSE-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
SKODA, D. J. /ROONEYELL/ 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
GSFC-523

Modified three-step process controls the concentration of lithium diffused as a dopant into the base region of a diffused n-on-p silicon solar cell wafer. Part of the surface layer of the base region of the p-type silicon containing the diffused 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
LARSEN, R. E. DATE- AUG. 1967
ARS-163

Transistor biased amplifier has a biased diode discriminator driven by a high impedance (low noise) current 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 HAS IMPROVED TEMPERATURE AND OPERATIONAL STABILITY
BROOKSHEIR, W. K., LEWIS, R. W. DATE- AUG. 1967
ARS-159

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
SPM- INNOVATOR NOT GIVEN /TYCO LABS./ DATE- AUG. 1967
M-PS-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
GOETZ, R. LINDBERG, J. HLSCH, D. FOTTS, 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
BROOKSHEIR, W. K. DATE- SEP. 1967
ARS-276

Generator produces dynamic test signals in the range from 0.001 μA 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
BEAM JOINT QUALITY TESTED ELECTROMAGNETICALLY
M-PS-1753

Nondestructive electromagnetic method detects the extent of gold/nickel brazc alloy flow in an engine injector sleeve-to-post joint. Voltage is induced in an inductor coil, along with a magnetically permeable material. The effect of altering the quantity of brazc alloy present can then be measured.

B67-10334
FIELD EFFECT TRANSISTORS IMPROVE BUFFER AMPLIFIER
SPM- INNOVATOR NOT GIVEN /DYNATRONICS/ DATE- OCT. 1967
M-PS-916

Unity gain buffer amplifier with a Field Effect Transistor /FET/ differential input stage responds much faster than bipolar transistors 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. /WESTGROUSE ELECTR. CORP./ SCHUSTER, B. A. DATE- SEP. 1967
M-PS-1753

Fabrication method produces stable and reliable metallic systems for interconnections, contact pads, and bonded leads 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
GILLEN, A. /WESTGROUSE ELECTR. CORP./ DATE- SEP. 1967
M-PS-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 PULSED AUTOCORRELATOR ELECTRONIC SYSTEM
CAMPAFELLA, S. J. /BELAR/ 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.
OPERATIONAL CURRENT LIMIT CIRCUIT
SEP. 1967 ATTENUATION SIGNALS
ROUGHTON, N. A. EATE-B67-10343
BUSH, CARLSON, K-PS-11974
DATE- OCT. 1967

VIBRATION ANALYSIS UTILIZING MOSSBAUER EFFECT
BUSH, R. E. /WESTINGHOUSE ASTRONUCL. LAB./ DATE- SEP. 1967
NRC-10062
Cut-off-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.

CURRENT PULSE AMPLIFIER TRANSMITS DETECTOR SIGNALS WITH MINIMUM DISTORTION AND ATTENUATION
BUSH, R. E. /WESTINGHOUSE ASTRONUCL. LAB./ DATE- SEP. 1967
NRC-10055
Amplifier translates the square pulses generated by a beryllium-tellurium 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.

REPAIRABLE, HIGH-DENSITY MICROELECTRONIC MODULE PROVIDES EFFECTIVE HEAT SINK
CARLSON, R. J. /BOEING CO./ RAYBONE, F. F.
DATE- OCT. 1967
M-PS-13075
Repairable modular system is used for packaging microminiaturized functional components. This three-dimensional compartmented structure incorporates etched phosphor bronze sheets and fixtures with etched wire conductors. It provides an effective heat sink for electronic components which are subjected to convective cooling means.

DIGITAL-TO-ANALOG CONVERTER OPERATES FROM LOW LEVEL INPUTS
WINDEKSTEIN, R. A. DATE- OCT. 1967
JPL-907
Circuit controls a voltage controlled oscillator from computing output binary data representing a voltage that can be used as a control signal. It operates with low level output devices such as integrated circuit registers and devices with somewhat variable output levels.

TEST DEVICE PREVENTS WELD JOINT DAMAGE BY ELIMINATING AXIAL PIN FORCES ON UNPOTTED MODULES
CREE, R. E. /GEN. DYN./CONVAIR/ 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 inserted in a partially header, but are free to slide in and out except for restraint of welded wire joints.

POCKET-SIZE MANUAL TAPE READER DEVICE AIDS COMPUTER TAPE CHECKING
CREE, R. E. /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.

NOVABLE RF PROBE ELIMINATES NEED FOR CALIBRATION IN PLASMA ACCELERATORS
MILLER, D. B. /GE/ DATE- OCT. 1967
LEWIS-10127
Novable RF antenna probe in plasma accelerators continuously maps the RF field both within and beyond the target of 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.

SYSTEM AUTOMATICALLY PROVIDES DYNAMIC LAUNCH DECISION CRITERIA
DOUG, J. E. /BOEING CO./ DATE- OCT. 1967
M-PS-13063
Saturn 5 dynamic Launch Decision Criteria model provides instantaneous criteria derived from the parametric behavior of a complex system such as a space launch vehicle plus its payload, for the decision making of launch management personnel.

TRANSDUCER MEASURES EMBEDMENT STRESSES IN ELECTRONIC MODULES
SMITH, R. M. /DOUGLAS AIRCRAFT CO./ DATE- OCT. 1967
M-PS-13046
Strain gage load transducer measures axial embed 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 orientation.

MULTIPLE METER MONITORING CIRCUITS SERVED BY SINGLE ALARM
HAND, U. /GENMAN AIRCRAFT ENG. CORP./ DATE- OCT. 1967
KSC-10904
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.

MECHANICAL PROPERTIES OF WIRE INSULATION AUTOMATICALLY DETERMINED
DAWN, F. S. GILL, W. L. DATE- OCT. 1967
KSC-10983
Three separate mechanisms test the insulation on electrical wire specimens for mechanical resistance to flexure, abrasion or wear, and vibration. The test mechanisms perform the evaluation tests on insulated wire specimens in a chamber which can be controlled to simulate space or spacecraft cabin environments.

CIRCUIT AUTOMATICALLY CALIBRATES FLOWMETERS AGAINST LIQUID-LEVEL GAGE REFERENCE
FIELD, E. J. /N. AR. AVIATION/ DATE- OCT. 1967
M-PS-2124
Turbo-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, monotable
LEAFERS.

PLOUMETER

ORANGE.

KSC-10092

OCT. 1967

ACCELERATES OSCILLOGRAPH CHANNEL SELECTION

CRACK

FREQUENCY RANGE

COUCBUTBATION IN PRESENCE

DEUTSCE,

067-10384

BOUCBLS,

B67-10387

M-PS-1849

BRISCO,

DIPPEREBTIALS

OCT. 1967

COUVBBSIOB

BIGR

M-PS-12704

E.

FRIEND,

BEBRYMAN,

Plowmeter determines mix ratio for continuous flow

Multiple element continuity gage measures plane

Pressure responsive switching device exhibits high

viscosity resin and aliphatic

and bistable multivibrators, and a signal inverter

and pulse output stage.

B67-10378

FLOWMETER DETERMINES MIX RATIO FOR VISCOUS

ADHESIVE

LEMON, C. R. /DOUGLAS AIRCRAFT CO./ DATE- OCT.

1967

H-PS-2308

Flowmeter determines mix ratio for continuous flow

wiring machine used to produce an adhesive from a

high viscosity resin and aliphatic amine hardener

pumped through separate lines to a meter 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

ACCELERATES OSCILLOGRAPH CHANNEL SELECTION

DOUGLAS, T. /BOEING CO./ BOWDEN, P. W. DATE-

OCT. 1967

KSC-10092

Sleeve-type shutters mechanically adjust

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.

B67-10388

CRACK GROWTH MEASURED ON FLAT AND CURVED

SURFACES AT CRYOGENIC TEMPERATURES

ORANGE, T. W. SULLIVAN, T. L. DATE- OCT. 1967

EHP-389

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

DUTSCH, W. P. /AM. AVIATION/ JAHNENSKI, S.

J. WHEATLEY, C. E. DATE- OCT. 1967

H-PS-1849

Portable battery-operated detector indicates the

presence of steady state signals exceeding a

preset value over a wide frequency range by

the closure of output relay contacts. It was

designed to monitor electronic equipment used in

the Sentinel 2 program.

B5-10397

LAMP ENABLES MEASUREMENT OF OXYGEN

CONCENTRATION IN PRESENCE OF WATER VAPOR

BRISCO, F. J. /PERKIN-ELEMER CORP./ BOGNER, J.

E. PAIGE, W. S. DATE- OCT. 1967

MSC-10043

Open-electrode ultraviolet source lamp radiates

sufficient energy at 1800 angstroms and 1970

angstroms for use in a double-beam,

dual-wavelength oxygen sensor. The lamp is

filled with xenon at a pressure of 100 ms of Hg.

B67-10389

ROGUE SWITCH RESPONDS TO MINUTE PRESSURE

DIFFERENTIALS

FRIEND, L. C. /BENDIX CORP./ SHADE, R. D. DATE-

OCT. 1967

H-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

BERHANAN, G. WHITE, W. T. DATE- OCT. 1967

H-PS-13227

Small magnetic amplifiers pass square wave

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

GUSSON, S. S. /BOEING CO./ DATE- OCT. 1967

H-PS-13096

Small lightweight multiplexer incorporates

IG-FETS /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, R. F. DATE- OCT. 1967 RR-4- SEE ALSO

AWL-6802

ARG-60010

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

GEORGES, K. V. /BOEING CO./ DATE- NOV. 1967

H-PS-12580

Telenetry 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

GOODWIN, 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 COMMUTATOR OFFERS

VERSATILITY

NOTABILE, L. J. DATE- OCT. 1967

JPL-812

Novel current steering commutator 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, E. /METALS RES./ DATE- NOV. 1967

H-PS-12219

Torque meter, simulating hysteresis motor

operation, allows rotor ring performance

characteristics to be analyzed. The meter

determines hysteresis motor torque and actual

stresses of the ring due to its mechanical

situation and rotation, aids in the study of

asymmetry or defects in motor rings, and

measures rotational hysteresis.

B67-10416

DIELECTRIC PRISMS WOULD IMPROVE PERFORMANCE

OF QUASI-OPTICAL MICROWAVE COMPONENTS

CARSON, J. W. DATE- OCT. 1967

SNC-10041

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 losses 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
M-FS-13373
Infrared radiometer 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-SENSING CRYOGENIC BLEED MAINTAINS LIQUID STATE IN TRANSFER LINE
LINDGREN, A. E. /N. AM. AVIATION/ DATE- OCT. 1967
M-FS-12681
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 activates a vent valve in the tee stack whenever gaseous nitrogen is present.

B67-10425
STUDY MADE OF ANODIZED ALUMINUM CIRCUIT BOARDS
JACOBI, C. /BOEING CO./ SEWELL, R. DATE- NOV. 1967
M-FS-13580
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
ALUMINUM HEAT SINK ENABLES POWER TRANSISTORS TO BE MOUNTED INTEGRALLY WITH PRINTED CIRCUIT BOARD
SEKARD, R. C. /N. AM. AVIATION/ DATE- OCT. 1967
M-FS-13663
Power transistor is provided with an integral flat plate aluminum heat sink which mounts directly on a printed circuit board containing associated circuitry. Standoff spacers are used to attach the heat sink to the printed circuit board containing the remainder of the circuitry.

B67-10433
CONCEPTUAL NONORTHOGONAL GYRO CONFIGURATION FOR GUIDANCE AND NAVIGATION
GILMORE, J. F. /MIZ/ DATE- NOV. 1967
M5C-11363
Nonorthogonal sensor configuration using six single-degree-of-freedom inertial references, gyroscopes and a complete data processing and self-contained failure detection-and-isolation mechanism provides redundant capabilities to guidance and navigation systems. This system has been formulated in a strap-down configuration to attain maximum redundancy.

B67-10434
ALGEBRAIC MONTE CARLO PROCEDURE REDUCES STATISTICAL ANALYSIS TIME AND COST FACTORS
AFRICANO, R. C. /N. AM. AVIATION/ LGGSDCS, T. S. DATE- NOV. 1967
M-FS-1887
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.

B67-10435
INTERFERENCE EFFECTS ELIMINATED IN RANDOM ORIENTED SPACE STATION ANTENNA SYSTEM
REILLY, R. B. /LOCKEED-CALIF. CO./ DATE- NOV. 1967
M5C-11004
System eliminates destructive interference effects among multiple omnidirectional or semi-omnidirectional antennas on a large space vehicle that is either spin-stabilized or randomly oriented relative to the ground station with which communication is necessary.

B67-10436
BIBLIOGRAPHY OF RESEARCH AND DEVELOPMENT IN FLUID LOGIC ELEMENTS
READER, T. /SHERDT RAND CORP./ DATE- NOV. 1967
M-FS-420
Research and development in multistate fluid logic elements is reviewed in a historical and critical report. The report concludes that there is the development of fluid amplifiers, there are elements with very high gain and poor switching speed, and other elements with very high switching speed and poor gain.

B67-10444
ELLIPTICAL-MIRROR REFLECTOMETER ACCURATELY MEASURES INFRARED REFLECTANCE OF MATERIALS
DUNN, H. A. /N. AM. BUR. OF STDS./ EICHMUND, J. C. DATE- NOV. 1967
GSFC-566
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
BATTERY CHARGE REGULATING CIRCUIT CONTROLED BULB
PILKOVICH, J. DATE- NOV. 1967
GSFC-561
Coulometer controlled battery charge regulator controls nickel/cadmium type primary cells used in space applications. The use of the coulometer as an asper 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.

B67-10447
OSCILLATOR CIRCUIT OPERATES AS DIGITALLY CONTROLLED FREQUENCY SYNTHESIZER
CLIFF, R. A. DATE- NOV. 1967
GSFC-570
Oscillator circuit converts digital data from the format of binary information at several input terminals to the format of discrete frequencies at the output terminals. Each state of the input levels corresponds to one frequency at the output. This device provides a large number of accurately controlled frequencies from a single stable oscillator.

B67-10448
FOIL RADIOMETRY ACCESSORY IMPROVES MEASUREMENTS
SCHWECHTE, P. E. /N. AM. AVIATION/ DATE- NOV. 1967
M-FS-12684 M-FS-12717
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.

B67-10449
DIGITAL VOLTAGE-CONTROLLED OSCILLATOR
GSFC-512
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.

B67-10450
DESIGN FOR HIGH-TEMPERATURE 1800 DEG F LIQUID METAL PRESSURE TRANSUCER
ENGDAHL, F. P. /CONSOLIDATED CONTROLS CORP./
Thermal 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 1800 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
BRECK, R. P./MARTIN CO./ DATE- NOV. 1967

Stable ac phase and amplitude comparator detects excessive engine 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
SWENDALL, F. H./DATE- NOV. 1967

Manually tracked antenna is the most critical part of range recording systems 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 CABLES CORP./ DATE- NOV. 1967

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 nickel alloy conductors. An arc on purge during the TIG weld closure protects internal wires from oxidation and embrittlement.

B67-10467
Automatic Testing Device Facilitates Noise Checks and Electronic Calibrations
HAROLD, J. L./ECONOMARK, C. F./DATE- NOV. 1967

Automatic Digital Noise Checker determines the noise content of the many analog inputs of a data acquisition system and whether the Electronic Calibrations/EIC on some data channels are operating properly.

B67-10468
Series Transistors Isolate Amplifier from Flyback Voltage
DANES, W. J./GEN. DYN. CORP./DATE- NOV. 1967

Circuit enables high sawtooth currents to be passed through a deflection coil and isolate the coil driving amplifier from the flyback voltage. It incorporates a switch consisting of transformers in series with the driving amplifier and deflection coil. The switch disconnects the deflection coil from the amplifier during the retrace time.

B67-10469
Supraminiature Television Camera
DETROYVILLE, R. J./TELEVISION SYSTEMS CO./ DATE- NOV. 1967

Ultra-miniature television cameras with a total volume of 20.25 cubic inches, require 24 volt power, operate on UHF and accommodate 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 Electron-Insulator Contact Area
REALY, G./DATE- NOV. 1967

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 Sensors Development
CASE, J. /FORD. ELEC. CORP./ DATE- NOV. 1967

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, B. A./DATE- DEC. 1967

Blood pressure reprogramming adapter separates the two components of a blood pressure signal, a dc pressure signal and an ac Korotkoff sound 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

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. WRURY, B./DATE- DEC. 1967

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

Timing circuit delivers relatively long pulses, yet requires no recovery time after turnoff. It can be triggered before it has timed out and turned off.

B67-10496
Digital Servo Readout System Increases Recording Accuracy of Servo-Balance Scales
FAPELL, L. C./WESTINGHOUSE ASTRONUC. LAB./ DATE- DEC. 1967

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

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 hydride cell. 

CROWELL, C. R. / GREENE, R. E. / JOHNSON, C. E. 

DATE- DEC. 1967 REAR- SEE ALSO B67-10189

Lithium hydride cells use 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, M. / DATE- DEC. 1967

HFC-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 detector. 

SABBATINI, J. / DATE- DEC. 1967

JPL-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 turbine-type flowmeters in liquid hydrogen. 

DATE- DEC. 1967 REAR- 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. 

SPANGENBERG, E. / 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. / ALA. UNIV. RES. 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-09381

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 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

Cold and column solar energy concentrator. 

MC CUSHER, T. J. / GOODBAR AEROSPACE CORP. / DATE- DEC. 1967

KFC-10002

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.

B67-10519

Circuit measures hysteresis loop areas at 30 Hz. 

HOFFMAN, C. / MIDWEST APPLIED SCI. CORP. / SP10, D. / 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 in electronic packaging. 

MACKAY, T. L. / DOUGLAS AIRCRAFT CO. / MULLER, A. N. / DATE- DEC. 1967

M-FS-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

Biotectic fuse provides current and thermal protection under high vibration. 

ZEROK Om, N. / M. A. AVIATION / DATE- DEC. 1967

M-FS-13664

Biotectic fuses provide current and thermal 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

Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area. 

NC CHAS 41 WJ / AEROJET-GEN. CORP. / DATE- DEC. 1967

NRC-10007

Multiconductor instrumentation cable in which the conducting wires are routed through two concentric copper tube sheaths, employing a compressed insulator between the sheathes, and between the inner and outer sheathes, is durable and easily installed in high thermal or nuclear radiation area. The double sheath is a barrier against moisture, abrasion, and vibration.
01 ELECTRICAL (ELECTRONIC)

B67-10540
AUTOMATIC TRANSDUCER SWITCHING PROVIDES
ACCURATE WIDE RANGE MEASUREMENT OF PRESSURE
DIFFERENTIAL

YODER, S. K. /AEROJET-GEN. CORP./ DATE- DEC. 1967
NRC-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

DESHY, W. A. /DOUGLAS AIRCRAFT Co./ DATE- DEC. 1967
M-FS-13461
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

HENDERSON, R. G. /N. AM. AVIATION/ DATE- DEC. 1967
M-FS-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
BATTERIES

ARMSTRONG, G. /LIVINGSTON ELECTRON CORP./
DATE- DEC. 1967 REAN-SEE ALSO NASA CR-5970,
NASA CR-72173
LEWIS-10326
Self-contained low temperature battery system
consisting of a magnesium anode, potassium
thiocyanate-ammon 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
GMT/LOCAL-TIME CONVERSION CHART

CRVELLING, C. J. DATE- DEC. 1967
GSBC-10521
GMT/local-time conversion is made by a longitude
pocket instrument that automatically indicates
desired information by simply manipulating the
moveable portion of the instrument in accordance
with a set of simple instructions printed on the
reverse side of the instrument.

B67-10550
HIGH-TEMPERATURE /1100 DEGREES F/ CAPACITORS
OPERATE WITHOUT SUPPLEMENTAL COOLING

STAPLETON, E. B. /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
SEISMIC SYSTEMS

MC CAULEY, D. B. /PELICO/ DATE- DEC. 1967
WSD-380
Servo amplifier feedback system, in which the
phase sensitive detection, low pass filtering, and
multiplication functions required for quadrature
rejection, are prefereed by light-controlled
photoresistors, 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

ANDERSSON, T. O. DATE- DEC. 1967
NRO-10339
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

SAWICKA, S. G. /GE/ DATE- DEC. 1967 REAN-SEE
ALSO NASA CR-851
LEWIS-10328
Thermal calorimetric method is used to calibrate
electromagnetic flowmeters for liquid alkaline
metals. The electromagnetic flowmeter is placed
in the liquid metal flow system in series with a
thermocouple standard. 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 RADIOGROMETERS

KENDALL, J. R., SR. FlABONDO, J. A., JR. DATE-
DEC. 1967
JPL-807
Cylindrical 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

HONKEL, R. A. /AUBURN UNIV./ DATE- DEC. 1967
M-FS-13598
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

HUSSEY, J. E. /RCA/ DATE- DEC. 1967
GSBC-1032
Circuit switches a plus or minus 2.5 volt peak, dc
to 300 kHz input to an operational amplifier.
Features is a bilateral transistor which draws a
saturation current of equal amplitude and opposite
polarity to the saturation current of the
dilatational transistor, cancelling the dc bias
effect at the output.

B67-10560
FLAT PACK INTERCONNECTION STRUCTURE
SIMPLIFIES MODULAR ELECTRONIC ASSEMBLIES

KATZIN, L. DATE- DEC. 1967
JPL-819
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

SHAFER, B. E. DATE- DEC. 1967
JPL-649
Slide rule enables the easy 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.

867-10562
IMPROVED DIGITAL TV ENCODING AND DECODING SYSTEM
DUTTREMAAN, 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 modules and is operated in a VDU /Variable Slope Delta Modulation/ mode or in the conventional one-bit DM /Delta Modulation/ mode.

867-10565
LOGIC CIRCUIT DETECTS BOTH PRESENT AND MISSING NEGATIVE PULSES IN SUPERIMPOSED WAVEFORMS
RICE, H. E. /DOUGLAS AIRCRAFT/ DATE- DEC. 1967
M-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.

867-10569
MOSFET IMPROVES PERFORMANCE OF POWER SUPPLY REGULATOR
LOKINSON, D. C. DATE- DEC. 1967
GSFC-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.

867-10571
ANALOG VOICING DETECTOR RESPONDS TO PITCH
ABEL, R. S. WATKINS, H. E. /PHILCO-FORD CORP./ DATE- DEC. 1967
GSFC-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.

867-10572
TELEPRINTER USBS THERMAL PRINTING TECHNIQUE
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.

867-10578
NONDESTRUCTIVE TESTING TECHNIQUES USED IN ANALYSIS OF HONEYCOMB STRUCTURE BOAD STRENGTH
M-FS-12144 M-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.

867-10575
IMPROVED FREQUENCY DIVIDER DEPLOTS

867-10576
MULTIPLE TELEVISION TRANSMISSION SYSTEM
REED, W. R. DATE- DEC. 1967
MSC-11595
Time-multiplexing system enables 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.

867-10585
COMPUTER MEMORY ACCESS TECHNIQUE
SOTTORELLI, 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 core elements of the classic commutator, thereby appreciably reducing the complexity of the memory assembly.

867-10587
LASER COMMUNICATION SYSTEM IS INSENSITIVE TO ATMOSPHERICALLY INDUCED NOISE
PACKARD, J. R. /AIRCRAFT ARMABSE/ DATE- DEC. 1967
GSFC-10396
Angle modulated transmitted reference heterodyne laser communication system is insensitive to atmospherically induced amplitude noise fluctuations and phase distortions.

867-10595
CONCEPTUAL SERVO TECHNIQUE FOR CONTROLLING TAPE DRIVERS
BENTLEY, R. /KINELOGIC CORP./ COWAN, R. DATE- DEC. 1967
M-FS-1295
Electronic speed control design maintains magnetic tape in close synchronism at the airborne and ground stationed devices. Use of the servo system extends the record and reproduce modes results in the minimum amount of frequency distortion and flutter.

867-10598
CARDIACPHOTHERMOMETER WITH LINEAR BEAT-TO-BEAT FREQUENCY RESPONSE
ARC-10033
Cardiometer 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 changes in heart rate, and is relatively free of interfering signals from activities other than the heart rate.

867-10603
MULTIPLE CURRENT SOURCE OFFERS LOW POWER LOSSES AND HIGH RELIABILITY
SPON- INNOVATOR NOT GIVEN /STAFORD RES. INST./ DATE- DEC. 1967
LANGLEY-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.

867-10606
PREDICTION OF RADIATION DAMAGE EFFECTS IN TRANSISTORS
SPON- INNOVATOR NOT GIVEN /MCA/ DATE- DEC. 1967
GSFC-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./ Webber, 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 enthalpy.

**B67-10615**

**IMPROVED CALORIMETER PROVIDES ACCURATE THERMAL MEASUREMENTS OF SPACE BATTERIES**

Foley, R. T. /AM. UNIV./ Webber, 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**


Fabrication techniques for high temperature thermocouples hold 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 thermocouples and thicker insulation can be used to improve temperature measurement accuracy.

**B67-10620**

**BALLPOINT PROBE GIVES OPTIMUM RESULTS IN ULTRASONIC TESTING**


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 eliminates external couplant spray.

**B67-10624**

**TEMPERATURE-STABILIZED, TRIGGERABLE MICHELECTRONIC ASTABLE MULTIVIBRATOR STARTS RELIABLY**

Stebbins, W. J. /WESTINGHOUSE ELEC. CORP./ DATE- Dec. 1967 MCF-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 SEWING CIRCUIT MONITORS EXACT POSITION OF OBJECT UNDERNEATH**

Rollek, R. /WESTINGHOUSE ASTRONUC. LAB./ Taghoss, R. DATE- Dec. 1967 RNC-10146

Linear variable differential transformer /LVDT/ electronic sewing circuit guides a long cylindrical capsule underwater into a larger 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.

**B67-10635**

**CONNECTOR SHORTING CAP PROVIDES PIN ALIGNMENT, INSPECTION, AND STRAY VOLTAGE PROTECTION**


Electrical shorting cap provides pin alignment, protection from stray voltages, and inspection capabilities. A Teflon straightening insert is built in to overcome any problems with bent or misaligned pins. A clear plastic bottom allows for inspection of the presence and condition of the pins.

**B67-10637**

**HYDRAULIC SERVO SYSTEM INCREASES ACCURACY IN FATIGUE TESTING**


Hydraulic servo system increases accuracy in applying fatigue loading to a specimen under test. An error sensing electronic control loop, coupled to the hydraulic proportional closed loop cyclic force generator, provides an accurately controlled peak force to the specimen.

**B67-10642**

**HIGHLY STABLE MICROWAVE DELAY LINE**

Higa, W. H. DATE- Dec. 1967 NPO-09828

Two /traveling wave master/ comb structure serves as a highly stable microwave delay line for determining the short-term stability of the hydrogen maser frequency standards used in the deep space network. Cryogenic cooling is used to minimize signal attenuation and thermal noise.

**B67-10643**

**CONCEPT FOR AUTOMATIC DOPPLER COMPENSATION IN TWO-WAY COMMUNICATION SYSTEM**

Nuller, R. N. DATE- Jan. 1968 GSFC-10213

Automatic Frequency Control system compensates for Doppler shift in two-way communication systems where one or both stations are moving. This automatic correction can be applied to the reply link to eliminate frequency shift for the reply or an excessive bandwidth to accommodate the Doppler.

**B67-10646**

**AN IMPROVED MAGNETIC TAPE RECORDER**

Uhren, P. W. DATE- Jan. 1968 GSFC-08259

Magnatic tape recorder employs a single capstan for simultaneously driving the supply and take-up reels in such a manner that the tape passing between the reels is kept under a predetermined constant tension. This recorder operates with little power and is sufficiently rugged to withstand the severe stresses encountered in high-altitude balloon flight tests.

**B67-10649**

**ELECTRON BEAM DEFLECTED TO DETERMINE FOCAL POINT LOCATION**

Downing, R. D. / GE/ DATE- Jan. 1968 see also B67-10650

H-FS-14107

System locates the focal point of an extremely high-intensity electron beam. The electron beam is swept and scanned cyclically with deflection coils under a focusing lens, causing the beam focal point to move so the locus of its positions is a spherical surface symmetrical to the beam axis.

**B67-10650**

**ELECTRON BEAM STAND-BY ABSORBER SYSTEM**

Downing, R. D. /GE/ DATE- Jan. 1968 see also B67-10649

H-FS-14108

Electron beam energy is absorbed by deflectors which allow beam distribution over an absorber located between the deflectors and workpiece. The undeflected beam passes through a hole in the absorber when the deflection is de-energized, when energized, the beam is kept to a minimum power.
LEVEL BY DEFLACTION 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, R. A. DATE- 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
STEMRIED, C. T. DATE- JAN. 1968
NOO-10843
Reflectometer, built into a microwave input system, measures the match of devices in the waveguide system of tracking receivers. Match measurements can be made on a routine calibration basis. It was installed in the S-band receiving system in the feed cone of the 210-ft antenna.

B67-10658
DAMAGES IN ROLLING ELEMENT BEARINGS MAY BE DETECTED EARLY
WEICHBOOD, B. /GE/ DATE- 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, B. C. /LITTON SYSTEMS/ DATE- DEC. 1967
EQ-10039
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 INCIDENT FAILURE IN SERVO SYSTEM TESTING
AFFENITO, P. J. /DONALD AND ASSOCIATES/ NOBL, J. D. DATE- DEC. 1967
EQ-10018
Computer based data conditioning and display technique detects incipient failure in six-axis servo system testing, for use in prelaunch checkout of complex nonlinear servomechanisms. These phase plane displays enable identification of on line, unusual or abnormal servo responses which can be displayed compactly in the time domain on a cathode ray tube.

B67-10666
UNIQUE FREQUENCY-SHIFT-KEYED DEMODULATION SYSTEM
STALOFF, C. /BCA/ TELITELBAUM. S. DATE- JAN. 1968
GSFC-217
Frequency-Shift-Keyed /FSK/ 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 twice

B67-10669
ULTRAMINISCUTRE 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
LUNDN, S. S., SHIMADA, K. DATE- JAN. 1968
NOO-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 SAFELY AND ACCURATELY MEASURED
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 translucent surface and the proportion of light transmitted to silicon solar cells is determined.

B67-10675
BROADBAND CHOKE SUPPRESSES SPURIOUS CURRENTS IN ANTENNA STRUCTURE
BISHOP, G. L. /MCDONELL-DOUGLAS CORP./ BOLT, C. A. JR. DATE- JAN. 1968
MSC-10113
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 system studied.

B67-10676
SCAN RATE CONVERTER FOR TAPE RECORDING AND PLAYBACK OF TV PICTURES
BOLT, E. J. DATE- JAN. 1968
NOO-10166
Magnetic tape recording and playback equipment converts television pictures, both black and white and color, from 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. DATE- 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-WIRE RESISTANCE WELDS
STALOFF, J. DATE- 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. W. 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
SENSITIVITY 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
DALBY, 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
RADS, R. G. /BOEING AIRCRAFT CO./ DATE- JAN. 1968
GSFC-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
HAAS, T. F. /IBM/ DATE- JAN. 1968
M-PS-14266
Commercially available integrated circuit that is marketed as a digital computer input gate circuit was converted to a linear amplifier in a microphone 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-PS-13954
A small, low-power, high-speed, 8-bit analog-to-digital converter using silicon chip integrated circuits is suitable for use in airborne test 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
TOMBROUL, 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 consumes power intermittently according to load conditions, rather than constantly.
CATHODE RAY TUBES
WILDBRE, F. R. DATE- MAR. 1968
NRC-19
Screen composition for cathode ray tubes exhibits
differential color of emission as a function of
beam current variation at a constant accelerating
voltage. The screen consists of a mixture of phosphors
which exhibit different bases, have
different current saturation values and exhibit a
nonlinear current-brightness characteristic.

B68-10058
SIMPLIFIED, HIGH-SPEED BINARY DATA DECODERS
ANDERSON, T. O. DATE- FEB. 1968
NPO-01116
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
Cryogenically Cooled MASER
CLAUS, E. C. DATE- MAR. 1968
NPO-09757
Te-55 is a quarter-wave thermal short in 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
TURBY, R. R. DATE- MAR. 1968
KSC-10127
Electronic circuit, based on the principle of
increased thermistor 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
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
VIVIER, T. B. DATE- MAR. 1968 READER- SEE ALSO
B64-10171, B66-10057, AND B66-10624
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 multiplex
scheme to communicate between various sensor inputs
and enables the number of channels to be increased or
decreased.

B68-10067
SELF-CORRECTION, SYNCHRONIZING RING COUNTER
USING INTEGRATED CIRCUIT DEVICES
HAASBERG, W. A. /5/1968/ DATE- MAY 1968
N-FS-13901
Three small gate circuits are used to add error
detection and reset logic circuitry for initiating and
returning 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
the circuit loop.

B68-10068
DIVERSITY RF RECEIVING SYSTEM WITH
IMPROVED PHASE-LOCK CHARACTERISTICS
SILLO, V. J. DATE- B. H. DATE- MAR. 1968
10S-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
SULMAN, 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 BIAL-X TEST FIXTURE
INCLUDES CRYOGENIC APPLICATION
HELP, J. C. DATE- APR. 1968
ARG-10114
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
designed greater than the nominal 10 amperes from an
input current drive of 1 ampere.

B68-10073
NEW MICROELECTRONIC POWER AMPLIFIER
NEW; T. C. /WESTINGHOUSE ELECTRIC CORP./ DATE- MAR. 1968
N-FS-13621
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.

B68-10074
IMPROVED DC VOLTAGE MULTIPLIER
STEVENS, C. R. /SPACECRAFT/ 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
MOVING TRANSDUCER HEADS
CHUPITZ, J. SALCEDO, O. S. J. DATE- MAR. 1968
GSPC-003
Magnetic tape transport includes a common drive
for both the tape drive capstans and the rotating
record/record and reproduce head. 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 LIQUID METAL SOLUTION CALORIMETER DETERMINES
HEATS OF FORMATION OF ALLOYS AT HIGH TEMPERATURES
DAVIS, J. E. DATE- APR. 1968
N-FS-14014
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.

B68-10087
TWIN LIQUID METAL SOLUTION CALORIMETER DETERMINES
HEATS OF FORMATION OF ALLOYS AT HIGH TEMPERATURES
DAVIS, J. E. DATE- APR. 1968
N-FS-14014
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.
Gyration-Type Circuits Replace Ungrounded Inductors

Gyration circuits using only transistors, capacitors, and resistors which can replace both grounded and ungrounded inductors have been developed to permit complete microminiaturization of circuitry by integration of the components.

Method of Disjoining Adhesively Bonded Electronic Cordwood Modules

Embedment of resistive heating elements in a cordwood module used for packaging electronic components, facilitates separation 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 of Small Voltages at Cryogenic Temperatures

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, welds, and homogeneity.

Monitor Senses Amount of Contamination Deposited on Surfaces

Monitoring device detects and indicates directly the amount of contamination deposited on a surface. It uses an optical system in conjunction with a reliable collimated light source and associated electronics. Change in its output signal is proportional to change in the optical absorption characteristics of the sample plate surface.

Automatic Contour Welder Incorporates Speed Control System

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.

Accumulator for Shaft Encoder

Digital accumulator relies almost entirely on integration 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 Induction Meter

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.

Portable Pulse Code Modulation /PCM/ Subsystem

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 subsystem directly and then converted and transmitted to a receiving station.

Projection Transparencies from Printed Material

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.
when the scan beam nears it, which causes vertical elongation in the reconstructed images of all sensitized areas on the surface.

B68-10128
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
COMPENSATION CIRCUIT IMPROVES OPERATION OF INDUCTIVE COUPLING TRANSFORMERS
SPINON- INNOVATOR R. C. GIVEN /SPERRY GYROSCOPE CO./ /DATE- APR. 1968

M-PS-13980
Circuitry eliminates undesirable modulation effects in rotary transformers which transfer electrical energy to and from angular rate transducers on a gyroscope. It cancel the error by feeding back compensation signals through a tertiary winding on the stator of the output rotary transformer.

B68-10130
PHASE-LOCK LOOP FREQUENCY CONTROL AND THE DROPOUT PROBLEM
ATHWOOD, S. H. /Motorola/ /DATE- APR. 1968

M-PS-13946 M-PS-13950
Technique automatically sets the frequency of narrow band phase-lock loops within automatic lock-in-range. It presets a phase-lock loop to a desired center frequency with a closed-loop electronic frequency discriminator and holds the phase-lock loop to that center frequency until lock is achieved.

B68-10131
AUTOMATED PATIENT MONITORING SYSTEM
BERARD, R. B. /BUXTON, R. L. DUNSON, W. S. /BOEING CO./ /DATE- MAY 1968 /DATE- SEE ALSO

N-PS-14552
Radio-linked patient monitoring system collects several channels of physiological data from as many as 64 hospital patients and transmits the data in digital form to a central control station. The system consists of a central control station and battery-operated patient units comprising small strap-on electronics packages.

B68-10133
IMPROVED COMPENSATION CIRCUIT FOR DIRECT-COUPLED AMPLIFIERS
BUREBEE, R. R. /GW SPACE TECHNICAL LABS./ /DATE- APR. 1968

M-SC-11325
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.

B68-10138
ELECTRONIC CALORIMETRIC COMPUTER
NECKELIN, J. L. /DATE- APR. 1968

LEWIS-90254
Electronic calorimetric computer calculates nuclear reactor thermal power output to a nominal accuracy of 1 percent. Heat balance is determined by an electronic approach. The thermal power is calculated using the inlet and outlet temperatures and the volume of cooling water and is displayed by a digital readout system.

B68-10140
INSTRUMENTATION FOR BONE DENSITY MEASUREMENT
ENSEN, L. S. /KAMAR INSTR./ /DATE- APR. 1968

MSC-11388
Measurement system evaluates the integrated bone density over a specific cross section of bone. A digital computer converts stored bone scan data to equivalent aluminum calibration wedge thickness, and bone density is then integrated along the scan by using the trapezoidal approximation integration formula.

B68-10141
STEREO PHOTONACROGRAPHY SYSTEM
LINDSEY, R. P. /DATE- APR. 1968

LANGLEY-10176
Stereo photomacography 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.

B68-10142
CARDIAC R-WAVE DETECTOR
GEBBEN, V. D. /DATE- APR. 1968 /DATE- SEE ALSO

B68-10144
HIGH-PRESSURE GAS FACILITATES CALIBRATION OF TURBINE FLOWMETERS FOR LIQUID HYDROGEN
J. E. BURRY, F. M. /ASTRONUC. LAB./ /DATE- MAY 1968

B68-10147
DEFLECTION CIRCUIT MONITORS FORCE ON OBJECT UNDER WATER
NORWOOD, L. /WESTINGHOUSE ASTRONUC./ /DATE- MAY 1968

N-SC-11347
Capsule containing samples for radiation testing is guided under a water's edge to an exact position within a nuclear reactor. A Linear Variable Differential Transducer (LVDT) flexplate deflection circuit monitors the force on the capsule as it is positioned within the reactor.

B68-10148
SILICON SOLAR CELL MONITORS HIGH TEMPERATURE FURNACE OPERATION
ZELLNER, G. J. /WESTINGHOUSE ASTRONUC. LAB./ /DATE- MAY 1968

N-SC-11363
Silicon solar cell, attached to each viewpoints, 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
BURR, P. H. /CONN. WAY/ /DATE- MAY 1968

M-PS-14545
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 inspection of vacuum-jacketed liquid lines that cannot be inspected externally.
**B68-10151**

**IMPLODED /W METER**

WINDTRE, C. B. /MOTOROLA/ DATE- MAY 1968

MSC-11656

Signal-to-noise ratio /W meter containing a variable-frequency notch filter measures noise plus interference in the presence of carrier or modulation signals. A noise source and calibration signal sources are included in the instrument for calibration purposes.

**B68-10152**

**MM-WAVE POWER METER MOUNT**


NPS-10348

Soldered thermistor mount and a technique for adjusting a temperature compensating thermistor to provide an electrically balanced bridge are used for measuring RF power in the MM-wave range. The mount is relatively insensitive to temperature effects that cause measurement errors in single ended circuits.

**B68-10155**

**DATA DISPLAY SYSTEM**

HODGKINS, R. L. CGOOD, D. R. DATE- MAY 1968

MSC-11594

System, named Hydra, generates charts, graphs, and printed matter on slides or printed matter. The instrument for calibration purposes. The mount is relatively insensitive to temperature effects that cause measurement errors in single ended circuits.

**B68-10156**

**PRIVISION BOLOMETER BRIDGE**

WHITE, D. R. /AM. AVIATION/ DATE- MAY 1968

MSC-11473

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.

**B68-10157**

**THERMAL RESISTANCES OF SOLDER-BOSS/POTTING COMPOUND COMBINATIONS**

VEILLEUX, E. D. /RECA/ DATE- MAY 1968

ARC-10060

Formulas, which can be used as a design tool, are derived to calculate the thermal resistance of soldered-boss/potting compound for different depths of a solder boss, in electronic circuit modules. Since the solder boss is the heat source, its shape and position will affect the thermal resistance of the surrounding potting compound.

**B68-10163**

**IMPROVED PROCESS FOR MAKING THIN FILM SODIUM NIOBATE CAPACITORS**

NICKA, E. Z. /INH SPACE TECHNOL. LABS/ DATE- MAY 1968

MSC-11231

Sodium niobate, formed by high vacuum, flash, and reactive evaporation, has a high dielectric constant and is used as a thin film 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 substrates.

**B68-10166**

**SILICON SURFACE BARRIER DETECTORS USED FOR LIQUID HYDROGEN DENSITY MEASUREMENT**


NPS-14115

Multichannel system employing a radiocisotope radiation source, strontium-90, radiation detectors, and a silicon surface barrier detector, measures the local density of liquid hydrogen at various levels in storage tanks. The instrument contains electronic equipment for collecting the density information, and a data handling system for processing this information.

**B68-10171**

**SILICON OXIDE FILMS GROWN IN MM-WAVE DISCHARGE**

KRAUSCHN, J. /WESTINGHOUSE RES. LABS./ DATE- JUN. 1968

MSC-11473

Silicon oxide films thicker than 1000 angstroms are produced in the dense plasma of a microwave discharge. The oxide growth is characterized by a rate limiting diffusion process modified by sputtering effects produced by the discharge. Silicon is rapidly oxidized at temperatures estimated to be 500 degrees C or lower.

**B68-10173**

**TUNNEL DIODE CIRCUIT USED AS CORDWOOD-RENGE TIME MARKER**

LARSEN, K. N. SMITH, B. B. DATE- JUN. 1968

ARC-90164

Simple tunnel diode time marker circuit determines the time at which an event occurs in a scintillation crystal. It is capable of triggering at voltages as low as the noise level of a 10-stage PM tube.

**B68-10175**

**CAPACITANCE-COUPLED WIPPER INCREASES POTENTIOMETER LIFE**

DITMER, J. DATE- JUN. 1968

NASA-TN-X-1235

ABG-10060

Capacitively-coupled wiper reduces the friction between the sliding contact and the potentiometer element in conventional potentiometers. A small preamplifier employed close to the wiper reduces errors caused by output cable capacitance. The device is friction free with resultant low wear and has high speed and high resolution.

**B68-10182**

**STEADY-STATE DIFFERENTIAL CALORIMETERS MEASURES GAMMA HEATING IN REACTOR**

HEIOST, D. TALBOT, J. H. DATE- JUN. 1968

NASA-TN-X-1235

ABG-10120

Steady-state differential calorimeter, which displays good accuracy and reproducibility of results, is used to measure gamma heating in a reactor environment. The calorimeter has a long life expectancy since it is virtually unharmed by the reactor environment.

**B68-10183**

**DETECTION AND LOCATION OF METALLIC OBJECTS IMBEDDED IN NONMETALLIC STRUCTURES**

BROWN, H. L. STEWART, R. W. DATE- JUN. 1968

NASA-TN-X-1235

ABG-10120

Small battery operated eddy current proximity measuring device detects and locates metal objects the size of a dime at distances up to one foot within nonmetallic structures. This device weighs approximately two pounds, occupies approximately 60 cubic inches, and is battery powered.

**B68-10185**

**CONCEPT FOR SLEEVE INDUCTION MOTOR WITH 1-MSEC MECHANICAL TIME CONSTANT**

WIEGAND, D. B. DATE- JUN. 1968

ARC-10022

Conceptive sleeve induction motor having a 1-msec mechanical time constant is used with solid-state devices to control all-electric servo power system. The magnetic rotor inertia is small compared to the maximum force rating of the servo motor, permitting high no-load acceleration.

**B68-10188**

**HIGH- AND LOW-PRESSURE PNEUMOTACHOMETERS MEASURE RESPIRATION RATES ACCURATELY IN ADVERSE ENVIRONMENTS**

PAGE, R. J. MC DONALD, R. T. /NORTHROP NORTHERN/ SMITH, J. A. DATE- JUN. 1968

NASA-TN-D-4217

ABG-10060

High- and low-pressure pneumotachometers measure respiration rates accurately in adverse environments.

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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
COX, W. F. DATE- JUN. 1968 REAR- SEE ALSO
AML-7360
ARG-90193
Six-cup, low-inertia anemometer combines high resolution and fast response with a unique ability to sense only the horizontal component of the winds fluctuating rapidly in three dimensions. Cup assemblies are fabricated of expanded polyethylene plastic.

B68-10203
ELECTRONIC LOAD FOR TESTING POWER GENERATING DEVICES
FRIEDMANN, E. B. STEPPER, G. DATE- JUN. 1968
NPO-10350
Instrument tests various electric power generating devices by connecting the devices to the input of the load and comparing their outputs with reference voltage. The load automatically adjusts until voltage output of the power generating device matches the reference.

B68-10205
MULTILAYER PLATED WIRE SHOWS PROMISE AS MEMORY DEVICE
KENNEDY, 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 mil Be-Cu wire plated with Ni-Fe alloy about 1 micron thick crossed orthogonally by word lines.

B68-10207
FACSIMILE VIDEO ENHANCEMENT DEVICE
VERMILLION, C. R. DATE- JUN. 1968
626C-10185
Video resynchronization unit enhances facsimile transmission using an amplitude-modulated 2400 Hz carrier. The unit demodulates the signal and then resynchronizes 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-10146
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 VEIL, H. R. /WESTINGHOUSE ELECT.
CONF./ DATE- JUN. 1968
MSC-11599
Technique increases the signal current, where direct beam readout is used, in Secondary Electron Conduction /SEC/ camera tube. Increasing the storage capacity and therefore the dynamic range of the SEC target permits satisfactory operation at reduced frame rates.

B68-10218
ZINC-OXYGEN PRIMARY CELL YIELDS HIGH ENERGY DENSITY
GRAFF, C. B. DATE- JUN. 1968
B-PS-19661
Zinc-oxygen primary cell yields high energy density for battery used as an auxiliary power source in space vehicle systems. Maximum reliability and maximum battery weight is achieved by using a stacking configuration of 23 series-connected modules with 6 parallel-connected cells per module.

B68-10220
NEW ELECTRICAL PLETHYSMOGRAPH MONITORS CARDIAC OUTPUT
KUBICEK, W. B. PATTERSON, R. P. WITZSEL, 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.

B68-10223
LIGHTWEIGHT HEATER GENERATES HIGH TEMPERATURES FROM LOW CURRENT
HANSEN, K. E. DATE- JUL. 1968
SAR-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.

B68-10228
SEMICONDUCTOR AC STATIC POWER SWITCH
VAN CLE, J. DATE- JUN. 1968
LMWC-10344
Semiconductor ac static power switch has long life and high reliability, contains no moving parts, and operates satisfactorily in severe environments, including high vibration and shock conditions. Due to their resistance to shock and vibration, static switches are used where accidental switching caused by mechanical vibration or shock cannot be tolerated.

B68-10230
IMPROVED ATOMIC RESONANCE GAS CELL FOR USE IN FREQUENCY STANDARDS
HUGHES, G. R. /TAYLOR ASSOCIATES/ DATE- JUL. 1968
MSC-11666
Atomic resonance gas cell maintains a stable operating frequency in the presence of pressure fluctuations in the ambient atmosphere. The new cell includes an envelope which is transparent to radiation in the optical region and to microwave energy at the atomic resonance frequency of the alkali-metal vapor within the envelope.

B68-10233
ELECTROCARDIOGRAPH TRANSMITTED BY RF AND TELEPHONE LINKS IN EMERGENCY SITUATIONS
FRC-10031
Electrocardiograph of an injured human subject is transmitted by RF 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.

B68-10236
QUASI-STATIC VAPOR PRESSURE MEASUREMENTS ON REACTIVE SYSTEMS IN INERT ATMOSPHERE BOX
FISCHER, A. R. DATE- JUL. 1968
ARG-90142
Apparatus makes vapor pressure measurements on air-sensitive systems in an inert atmosphere glove box. Once the apparatus is loaded with the sample and all connections made, all measuring operations may be performed outside the box. The apparatus is a single-tube adaptation of the double-tube quasi-static technique.

B68-10238
ASTRONAUT SPACE SUIT COMMUNICATION ANTENNA
LINDSEY, J. F., III RASON, G. N. DATE- JUL. 1968
MSC-12101

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 potting compound that is recessed in the center to facilitate bending the blade flat for stowage when not in use.

B68-10241

PARALLEL-TO-serial Biphase-data converter

TRUDLOVE, E. D. /W. A. AVIATION/ DATE- JUL. 1968

MSC-11600

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.

B68-10242

WELDER ANALYZER

MILLER, L. L. /GENERAL MOTORS CORP./ DATE- JUL. 1968

MSC-12066

Welder analyzer circuit measures 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 on a precision shunt load for a pure electrical evaluation of the weld machine.

B68-10244

IMPROVED TRAVELING WAVE MASER AMPLIFIER

CLARK, R. C. DATE- JUL. 1968

NP-10498

Traveling Wave Maser /MW/ 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.

B68-10246

MINIATURE PRESSURE TRANSDUCER FOR STRESSED MEMBER APPLICATION

WALKER, R. E. WICKHAM, C. G. /W. A. AVIATION/ DATE- JUL. 1968

MSC-11866

Miniature pressure transducer responds to static or dynamic pressures acting against a structural surface without introducing errors caused by stresses in the structural surface. This is accomplished by a thin stainless steel pressure sensing diaphragm with an attached foil strain gauge.

B68-10254

HARMONIC DISTORPTION ANALYZER SPEEDS SETUP OF MAGNETIC TAPE RECORDERS

TINARI, D. F. DATE- JUL. 1968

GSPC-10198

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 PSEUDONOISE SIGNALS BY SEQUENTIAL ESTIMATION

HARD, R. B. /LOCHHEAD MISSES AND SPACE CO./ DATE- JUL. 1968

M-PS-13996

Rapid acquisition by Sequential Estimation /SEE/ 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 median input signal-to-noise ratio.

B68-10262

SILICON STRAIN SENSORS ENABLE PRESSURE MEASUREMENT AT CHLORINATED TEMPERATURES

BOWMAN, R. BURNS, J. MC Lellan, W. /ELECTRO-OPTICAL SYSTEMS/ DATE- JUL. 1968

M-PS-14703

Miniature pressure transducers with diffused, heavily doped silicon strain-gage sensor elements, operate 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 PHOTCELL-TYPE HYDROGEN SENSOR

BODEK, F. P. BUTKOWSKI, 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

KARGER, G. OLSON, G. /CHRYSLER CORP./ DATE- JUL. 1968

M-PS-14572

Dead weight testing device uses a common force plane piston barometer to set accurate gage pressure in pounds per square inch. An additional piston barometer adapts the device for absolute pressure calibration.

B68-10267

MOEBIUS RESISTOR IS NONINDUCTIVE AND NONREACTIVE

DAYS, W. L. DATE- JUL. 1968

SAN-10020

Moebius strip made of insulated resistive materials with electrical leads attached directly opposite 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

SPUR- INNOVATOR NOT GIVEN /OKLAHOMA STATE UNIV./ DATE- JUL. 1968

M-PS-14562

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 OHMMETER CAN BE USED TO TEST SENSITIVE CIRCUITS, OTHER DEVICES

PLATT, W. M. DATE- JUL. 1968

SAN-10013

Hazards circuit ohmmeter 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 provides protection for the unit assembly.

B68-10272

NOISE FIGURE MEASUREMENT CONCEPT FOR ACOUSTIC AMPLIFIERS

JOHNSON, V. R. YEAGER, J. R. /MICROWAVE ELECTRON./ DATE- JUL. 1968

GSPC-10166

Optimum length buffer crystals are used with an amplification section for measuring the noise figure for 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 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.

XY relay switching matrix provides complete random access and random release of 400 points. A mercury-wetted bistable relay with independent set and reset coils is the unique feature associated with each point.

Apparatus detects leaks at joints in lines carrying electrically nonconductive liquids. The proposed apparatus could include a panel that would give a visible or audible indication of a leak to permit manual shutdown and/or an electromechanical actuator that would automatically cut off the flow when a leak occurs.
beams illuminating source, an electronic laser beam deflector, and an image detector photomultiplier. An electronic scanning transmitter and receiver follows rapid movements or accelerations of the target.

868-10321
CONCEPT TO CONVERT ELECTRICAL POWER
HATZI, N. /LEACH SINGER/ DATE- AUG. 1968
GSPC-10222
Moving fluid conductor transforms electrical power from one voltage to another. The electrically conductive fluid acts as a coupling medium between or among multiple electromagnetic fields producing the conversion.

868-10323
HYDROGEN SAFETY MANUAL
SPOK- INNOVATOR NOT GIVEN /LEWIS/ DATE- AUG. 1968
NASA-SP-15032
LEWIS-10887
Hydrogen safety manual covers the characteristics and nature of hydrogen, design principles for hydrogen systems, protection of personnel and equipment, and operating and emergency procedures. It sets standards and practices for minimum safety requirements at hydrogen installations.

868-10325
ELECTROCHEMICAL CELL BAS INTERNAL RESISTIVE HEATER ELEMENT
COLESTON, R. P., FORD, P. E., HENNING, T. J.
DATE- AUG. 1968
GSPC-10358
External source supplies power to electrochemical cells containing internal resistive heater element. Each cell plate is individually contained in its own Pallon bag, enabling the heater element to be arranged in a continuous, parallel circuit.

868-10327
POWER CONSUMPTION IN ACOUSTIC AMPLIFIERS
UNDER CONDITIONS OF MAXIMUM STABLE GAIN
JOHNSON, V. R. /MICROWAVE ELECTRON./ DATE- AUG. 1968
GSPC-10067
Comparison is made of the power consumed and the acoustic amplification realized when a dc bias field is placed across a piezoelectric semiconductor and adjusted to amplify a microwave acoustic signal to the point where the forward gain is just equal to the reverse attenuation. This represents the maximum possible gain condition.

868-10328
TRANSISTORIZED MARX BANK PULSE CIRCUIT PROVIDES VOLTAGE MULTIPLICATION WITH NOISELESS RISE-TIME
JUNG, E. A. LEWIS, H. N. DATE- AUG. 1968
BASE-10110
Base-triggered avalanche transistor circuit used in a Marx bank pulser configuration provides voltage multiplication with nanosecond rise-time. The avalanche-mode transistors replace conventional spark gaps in the Marx bank. The delay time from an input signal to the output signal is typically 6 nanoseconds.

B66-10330
SIMULTANEOUS MESSAGE FRAMING AND ERROR DETECTION
FERRY, A. H., JR. /IBM/ DATE- SEP. 1968
MSC-12001
Circuitry simultaneously inserts message framing information and detects noise errors in binary code data transmissions. Separate message groups are framed without requiring both framing bits and predetermined message sequence are separated from other message sequences without being hampered by intervening noise.

B66-10333
AUTOMATIC, NONDESTRUCTIVE TEST MONITORS IN-PROCESS WELD QUALITY
DEA, F. C. /MASTAR CO./ DATE- SEP. 1968
N-PS-14096
Instrument automatically and nondestructively monitors the quality of welds produced in microresistance welding. It measures the
infrared energy generated in the weld as the weld is made and compares this energy with various limits of infrared energy values previously correlated with acceptable weld-strength tolerances.

B68-10336
FULLY AUTOMATIC TELEMETRY DATA PROCESSOR
COE, F. B. /BECKMAN INSTR. CO. / KEIPERT, F. A.
LEE, E. C. DATE- SEP 1968 REAM- SEE ALSO
NASA-TW-33981
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 OR PRESSURE CONTROLLER
GILLET, J. D. /N. AM. ROCKWELL 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 THIN FILM MAKES CONVENIENT LIQUID HELIUM LEVEL SENSOR
BECKES, H. H. DATE- SEP. 1968
LANGLET-10269
Sensor consisting of superconductive film mounted on a dipstick measures the level of liquid helium in a Dewar flask. 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
INDIUM ADHESION PROVIDES QUANTITATIVE MEASURE OF SURFACE CLEANLINESS
KRIEGER, G. L. WILSON, G. J. DATE- SEP. 1968
SAM-10024
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-THERMOCROMIC DISPLAY DEVICE
GRAFSTEIN, R. HILBORN, R. H. DATE- SEP. 1968
SEC-10031
Fluidic decoder and display device has low-power requirements for temperature control of thermochromic materials. An electro-to-fluidic converter translates incoming electrical signals into pneumatic signals of sufficient power to operate the fluidic logic elements.

B68-10357
CLOSED CIRCUIT TV SYSTEM AUTOMATICALLY GUIDING WELDING ARC
STEPHENS, D. L. /BAYS INTERM. CORP./ WALL, W.
A., JR. DATE- SEP. 1968
N-PS-20009
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
RELIABILITY OF ELECTRICAL WIRES IN VACUUM ENVIRONMENTS
SCHAFER, J. L. SVENSON, P. C. /N. AM. ROCKWELL CORP./ DATE- OCT. 1968
MSC-15108
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
SWARTZ, G. A. /ELECTRA-MIDLAND CORP./ DATE- OCT. 1968
8GS-08566
Nondestructive test determines the time required for current limiters to blow/opens 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
DINGEP, J. FOPE, J. H. DATE- OCT. 1968
ARC-10174
Automatic respiration failure detection system detects respiration failure in patients with a surgically implanted tracheostomy tube, and actuates an audible and/or visual alarm. The system incorporates a miniature radio transmitter so that the patient is unencumbered by wires yet can be monitored from a remote location.

B68-10366
DETECTION OF EFFECT OF DEPOSITS ON OPTICAL WINDOWS OF PROTONER MEASUREMENTS
CIPOLONE, F. 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 TRANSUDERS EFFECTIVE AT HIGH TEMPERATURES
AMETHOUT, 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 total 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, E. S. /FAIRCHILD HILLER CORP./ DATE- OCT. 1968
LANGLET-10991
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 PHOTOMULTIPLIER TUBES
LAWRENCE, R. M. DATE- OCT. 1968
LEWIS-10437
Calibration system enables precise determination of rise time of photomultiplying 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
HALLBERG, 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 current.

**B68-10386**
**LOW-COST, FAST-RESPONSE DRIVE CIRCUIT FOR ELECTROMAGNETIC TORQUE MOTORS**
**ZELLES, J. B.** DATE: OCT. 1968

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 SNAPP IN MAGNETIC AMPLIFIERS**
**FISCHER, R. L. E.** WORD, J. L. DATE: OCT. 1968

Method of reducing snap in magnetic amplifiers uses a dephase 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**
**STOYES, C. M.** DATE: OCT. 1968

Contacts wire 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 FIELDS**
**SPOON-, INNOVATORS NOT GIVEN /MCDONWELL DOUGLAS CO./** DATE: OCT. 1968

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**
**LEVERONE, W.** MANDELL, R. DATE: NOV. 1968

System that substitutes solar cells directly in the path of the radiation incident on the test Lamp and uses a dc bridge-will system was developed. The solar cell is affixed to a heat sink mounted on each of three arms for each solar lamp. Control of the radiation from the solar lamps is automatic.

**B68-10400**
**LITHIUM-TELLURIUM BIEMETALLIC CELL HAS INCREASED VOLTAGE**
**CLARKS, R. J. ROGERS, G. L. SHIMOTAKE, H.** DATE: NOV. 1968

B68-10402
**SYSTEMS FOR MEASURING SPATIAL DISTRIBUTION OF EXPLODED DROPLETS, A CONCEPT**
**AYFATZ, R. A. /N. A. ROCKWELL CORP./** DATE: NOV. 1968

B68-10185
**System measures the spatial distribution of high-velocity droplets ejected from a nozzle 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 NONPARING ELECTRICAL CONNECTOR**
**HOLZER, R. E. /DOUGLAS AIRCRAFT CO./** DATE: NOV. 1968

Using 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**
**INERTED 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. In an annealing chamber using the inverted grounding is constructed around a commercially available stainless steel cross.

**B68-10412**
**AUTOMATIC CALIBRATION SYSTEM FOR PRESSURE TRANSDUCERS**
**SPOON- INNOVATORS NOT GIVEN /C. T. SCHJELDEHL CO./** DATE: DEC. 1968

**M-DS-20127**

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**
**CLEN, G. G. KENNEDY, B. W.** DATE: DEC. 1968

**M-DS-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 BIEMETALLIC EMF CELL SHOWS PROMISE IN DIRECT ENERGY CONVERSION**
**HESSELL, J. C. SHIMOTAKE, H.** DATE: NOV. 1968

**ARG-10183**

Concentration cell, based upon a thermally regenerative cell principle, produces electrical energy for any large heat source. This experimental bimetallic EMF cell uses a sodium-tellurium 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/ SPECTROSCOPES REDUCE RATE-DEPENDENT DISTORTIONS AT HIGH COUNTING RATES**

**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
underboots due to multiple time constants, baseline restoration improves resolution and prevents spectral shifts.

B68-10429
CONDITIONING FLAT CONDUCTORS FOR FLAT CONDUCTOR B68-10429
SPON- INNOVATOR NOT GIVEN /NITRO CORP. OF AR./ DATE- DEC. 1968 M-PS-14914
Apparatus can straighten, anneal, clean, and a tension, after straighten a cable one percent to assure uniform cross-sectional area. A conductor passes through temperature controlled distilled water and through a toroidal coil. As the conductor enters the water, steam performs the cleaning action. Quenching and annealing also take place.

B68-10430
SYSTEM CONVERTS OPTICAL PHASE CHANGES TO RF PHASE CHANGES LOGUE, S. S. /GEN. ELE./ CONVAIR DATE- NOV. 1968 M-PS-20091
System converts phase changes at optical frequencies to equal phase changes at RF. This system operates in conjunction with either a Michelson interferometer or conventional interferometers.

B68-10431
CHANGE CONTROL OF NICKEL-CADMIUM BATTERIES BY COULOMETRE AND THIRD ELECTRODE METHOD FOERD, F. PAULKOTCH, J. DATE- SEP. 1968 GSPC-10487
Combined coulometer/third electrode central circuit for a nickel-cadmum 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. /STURDY BAND CORP./ DATE- DEC. 1968 M-PS-20049
Single-ended step-up regulator-chopper power supply /employing conventional chopper circuitry/ combines the advantages of the chopper and switching regulator circuits. Schematic of the power supply incorporating the step-up regulator is shown.

B68-10434
SELECTIVE VIDEO BLANKING TECHNIQUE SADDE, M. A. TREHED, A. C. /WESTINGHOUSE ELEC. CORP. DATE- DEC. 1968 M-PS-20013
Adverse viewing effects caused by faulty photosensitive elements are eliminated. A linear axial /or nonaxial/ sequence generator gives a pseudorandom pulse train to selectively blank the display monitor during specified mosaic interrogation times. The outputs minimize the length of the required shift register generator.

B68-10436
COMPACT ROTATING CUP ANEMOMETER WELLMAN, J. B. DATE- DEC. 1968 NFC-10563
Compact, collapsible rotating cup anemometer is used in remote locations where portability and durability are factors in the choice of equipment. This lightweight instrument has a low wind-velocity threshold, is capable of withstanding large mechanical shocks while in its stowed configuration, and has fast response to wind fluctuations.

B68-10437
TWO-WAY DIGITAL DRIVER/RECEIVER USES ONE SET OF LINES BUNNELL, G. J. PFEiffer, A. P. /N. AM. ROCKWELL CORP./ DATE- OCT. 1968 NFC-10555
Two-way /bilateral/ digital driver/receiver system using MOS circuits was designed for a multiprocess computer having several subsystems at relatively close locations. The system requires only a single set of communication lines between subsystems, thus achieving lower cost with increased reliability.

B68-10438
NOSEPIECE RESPIRATION MONITOR LABERT, A. L. LONG, L. E. RICE, N. E. DATE- SEP. 1968 EEC-10136
Comfortable, inexpensive nosepiece respiration monitor produces rapid response signals to most conventional high impedance medical signal conditioners. The monitor measures respiration in a manner that produces a large signal with minimal delay.

B68-10443
SHORT CIRCUIT PROTECTION FOR A POWER DISTRIBUTION SYSTEM OATES, J. R. II /EDE./ DATE- JAN. 1969 M-PS-14993
Sealing circuit detects when the output from a matrix is present and when it should be present. The circuit provides short circuit protection for a power distribution system where the selection of the driven load is accomplished by digital logic.

B68-10456
AMPLIFIER IMPROVEMENT CIRCUIT STRUHAR, J. DATE- DEC. 1968 LEWIS-10712
Stable input stage was designed for the use with a integrated circuit operational amplifier to provide improved performance as an instrumentation-type amplifier. The circuit provides high input impedance, stable gain, good common mode rejection, very low drift, and low output impedance.

B68-10501
READOUT SYSTEM FOR RADIATION DETECTOR BLOOM, B. E. CASHION, K. D. DATE- NOV. 1968 MSC-90180
Improved electrical circuit determines the amount of light detected by a photomultiplier tube when its output signal is in the dark-current range of the tube. The low-intensity light to which the tube responds arises from a thermo-lumescentized detector.

B68-10502
RAPID-RESPONSE, LIGHT-EXPOSURE CONTROL SYSTEM KUENEL, D. K. ZIILLENBERG, J. DATE- DEC. 1968 RPO-10238
Rapid-response electro-optical, light exposure control system, will maintain the light reaching a camera film or other light-sensitive detector at essentially constant level, despite wide variations in the brightness of the light source. The system permits detailed photographic or photoelectric recording of the phenomenon over a range of brightnesses.

B68-10505
LONG-TERM DATA STORAGE AND RETRIEVAL SYSTEM, A CONCEPT FOL, T. I. /SCHING CO./ DATE- NOV. 1968 M-PS-14789
Combination magnetic tape/microfilm system may give reliable long-term storage and immediate retrieval. The recording, storage, and retrieval of data would be accomplished by computers, without manual intervention. The proposed system retrieves data in less than one hour after being stored for periods of up to 50 years.

B68-10511
ROCKET ENGINE ANALOG SIMULATION PHILLIP, B. K. RANBIZZO, G. J. /BOEING CO./ DATE- NOV. 1968 M-PS-14511
Mathematical equations simulate the operation of a rocket engine, simulating destructive and nondestructive tests to verify engine design feasibility, and investigate nonlinear variations in engine performance.
01 ELECTRICAL (ELECTRONIC)

B68-10513
METHOD FOR MEASURING ALTERNATOR VOLTAGE TRANSIENTS
PFEIL, D. A. DATE- NOV. 1968
LEWIS-10373
Transistor voltage detection circuit measures voltage excursions and recovery times resulting from step-load changes applied to a combination alternator-voltage regulator.

B68-10518
AUTOMATIC CALIBRATION APPARATUS FOR TELEMETRY SYSTEMS
ALLEN, W. W. DATE- NOV. 1968
NPO-10360 NPO-10759
Apparatus automatically calibrates and tests spacecraft telemetry systems. The apparatus can generally be used to calibrate analog-to-digital converters.

B68-10516
HIGH-TEMPERATURE THERMIonic EMISSION MICROSCOPE
CARPENTER, C. E., JR. HAMBERGER, R. W. /ELECTRO-OPT. SYSTEMS/ DATE- NOV. 1968
NPO-10548
Thermionic emission microscope was designed to operate with metal specimens cathode temperatures of 2000 degrees C.

B68-10518
INTEGRATED METAL TRANSISTOR LEADS
G57C-10526
Technique that makes the metal leads integral to the transistor wafer and reduces capacitance in the device, thereby increasing its efficiency is outlined.

B68-10525
DIGITAL LASER-BEAM DEFLECTION SENSOR
FOWLER, V. J. /GEN. TELEPHONE AND ELECTRON.
LABS./ DATE- NOV. 1968
N-PS-10875
Sensor automatically and accurately measures the two-dimensional deflection angles of a laser beam to provide closed-loop servomechanism control of laser beam directivity.

B68-10529
IMPROVED COMMUNICATION SYSTEM FOR LARGE OPERATIONS CENTER
SHAPIER, W. S. /BOEING CO./ DATE- NOV. 1968
G57C-10516
When several microphones are fed into a common system, sound originating at any given source results in poor articulation. Introduction of an automatic microphone priority control suppresses echo and reverberation.

B68-10539
ACTIVE RC FILTER PERMITS EASY TRADE-OFF OF AMPLIFIER GAIN AND SENSITIVITY TO GAIN
KEVIN, W. J. SHAPIER, C. V. DATE- NOV. 1968
NCEC-10942
Passive RC network was designed with zeros of transmission in the right half of the complex frequency plane in the feedback loop of a simple negative-gain amplifier. The proper positioning provides any desired trade-off between amplifier gain and sensitivity to amplifier gain.

B68-10541
FAILURE RATES FOR ACCELERATED ACCEPTANCE TESTING OF SILICON TRANSISTORS
TOVE, C. R. DATE- NOV. 1968
NCEC-10198
Extrapolation 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.

B68-10542
HIGH DIELECTRIC THICK FILMS FOR SCREENED CIRCUIT CAPACITORS
SLECHT, D. R. DATE- DEC. 1968
LANGLEY-10294
Techniques and materials have recently been developed to obtain high dielectric films of thicknesses of 300 to 800/. High dielectric barium titanate particles are mixed in a barium titanate glass.

B68-10543
TEMPERATURE CONTROLLED STRAIN GAGED EXTENSOMETER
BEARDS, G. L. SEPELLOW, S. /AEROSPACE GEN./ DATE- DEC. 1968
NCEC-10353
Temperature controlled strain-gaged extensometer measures longitudinal and girth deflections of pressure vessels in excess of one percent strain during pressurization and depressurization with cryogenic fluids at cryogenic temperatures. The device is of beryllium-copper strips.

B68-10544
COOLING OF 2-KW SUBSCRIP SUBSCRIP 2-FUEL CELL
N-PS-10377 N-PS-10740 N-PS-10749
An extensive research and development program has been carried out to devise an improved method of removing waste heat of reaction from a developmental 2-kw hydrogen-oxygen fuel cell.

B68-10545
A 35 GHE SOLID STATE TRANSMITTER/DRIVER
DE ANGELIS, J. A. DATE- DEC. 1968
N-PS-20152
Solid state transmitter/driver /multiplier/ signal source has been designed and fabricated to produce a stable crystal-controlled CW power output of 100 mw at 35 GHz.

B68-10547
OPERATIONAL INTEGRATOR
LUTZ, B. S. DATE- NOV. 1968
NPO-10230
System operates in the nonreturn-to-zero mode, maintaining the increased bit density capability of this mode but with much higher noise immunity than conventional schemes offer. This integrator performs a mathematical integrating function on inputs from 100 Hz through 100 MHz.

B68-10555
ELECTROLYTIC SILVER ION CELL STERILizers
WATER SUPPLY
MSC-11027
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 PROBE FOR AIRFLOW MEASUREMENTS
DUDELSKII, T. J. GLANE, G. E. KAUSE, L. N. DATE- DEC. 1968
LEWIS-10281
Probe 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 INSSENSITIVE FLUID EXPANSION COMPRESSOR
HUGHES, L. F. /MIT/ DATE- OCT. 1968
NCEC-10152
Device compensates 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 gases or liquids in a moving body.

B68-10562
RELIABLE METHOD FOR TESTING GROSS LEAKS IN SEMICONDUCTOR COMPONENT PACKAGES
ALTSHULEY, T. L. DATE- DEC. 1968

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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.

Miniature transducers involve the use of
appropriate commercial epoxy resins. Design
protects the sensitive semiconductor surface from
ambient and excludes an air space in the device
capsule.

Use of a matrix system wherein circuit pin
connections are assigned arbitrary designators and
table format in terms of the matrix is
illustrated. The matrix is a format that shows
the current paths.

New welding skate concept for automatic
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.

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.

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.

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.

Isolated, multiple-output voltage dc-to-dc
converter

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.
PERFORMANCE OF LOU-PRESSURE ON-LINE COMPUTER SYSTEM FOR USE WITH SPONTANEOUSLY-PRODUCED CONVERTERS IS STRUCTURAL ANALYSIS AND MATRIX BEHAVIOR.

B69-10093
NPO-10839

Microelectronic oscillator uses a bipolar transistor to circumvent the problem 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.

B69-10094
KLEINSBERG, L. L. DATE- MAR. 1969 REARN- SEE ALSO

B69-10095
SIMPLE DEMODULATOR FOR TELEMETRY PHASE-SHIFT KEYED SUBCARRIERS

B69-10096
GRIFFITHS, L. R. MLAVSKY, A. I. /TYCO LABS./ DATE- JUN. 1969

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
NPO-11000

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.

B69-10098
BUC-BEAM/PHILCO CORP./ DATE- JUN. 1969

Improvements in 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 an analog signal from the command receiver into digital information for the command decoder.

B69-10099
POLLOCK, F. G. DATE- JUN. 1969

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.

B69-10100
DURBER, C. L. RICHARDS, W. E. DATE- APR. 1969

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.
CIRCUITRY SELECTIVELY LIMITS DATA STORAGE IN THE MEMORY OF A STORED PROGRAM. THE LIMIT REGISTER PERMITS STORAGE OR WRITING TO CERTAIN SPECIFIED AREAS OF MEMORY. THE LIMIT REGISTER IS LIGHTWEIGHT AND HAS HIGH EFFICIENCY.

THE RESULTS OF EXPERIMENTS ON HYDROGEN-OXYGEN FUEL CELLS SHOW THAT HIGHER CURRENT DENSITIES ARE OBTAINED WITH CELL ANODES HAVING A 100 MICROINCH ACTIVE LAYER OF POROUS NICKEL CONTAINING SILVER ELECTROCATALYST. INCREASE IN CURRENT DENSITY IS ATTRIBUTED TO A CONVECTIVE MASS TRANSPORT MECHANISM.

FULL WAVE DC-TO-DC CONVERTER USING ENERGY STORAGE TRANSFORMERS. 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.

INTEGRATED CIRCUIT WITH MULTIPLE COLLECTOR CURRENT SOURCE. INTEGRATED CIRCUIT WITH MULTIPLE COLLECTOR CURRENT SOURCE, WHICH 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.

MULTIFUNCTIONAL OSCILLOSCOPE PROBE INCORPORATES REQUIRED ELECTRONIC COMPONENTS SO THAT ANY ONE OF THREE DESIRED FUNCTIONS (DIRECT, DEMODULATION, OR LOW CAPACITANCE) CAN BE SWITCHED INTO THE OSCILLOSCOPE. THE PROBE OBITURATES THE NEED FOR THE THREE SEPARATE OSCILLOSCOPE PROBES PREVIOUSLY USED IN CHECKING ELECTRONIC EQUIPMENT.

HIGH-ENERGY, HIGH-POWER, LONG-LIFE BATTERY. HIGH-ENERGY-DENSITY PRIMARY BATTERY ACHIEVES ENERGY DENSITIES OF UP TO 130 WATT HOURS/LB. THE ELECTROCHEMICAL COUPLES CONSISTS OF A LITHIUM ANODE, A COPPER-FLUORIDE CATHODE, AND MUSHI FLOODSORPTION/LITHIUM HEXAFLUOROSULFATE FOR THE ELECTROLYTE. ONCE CHARGED, BATTERY LIFE IS APPROXIMATELY 30 HOURS.

ONE HUNDRED MHZ VOLTAGE-CONTROLLED OSCILLATOR ELECTRICAL POTENTIAL. VOLTAGE CONTROLLED OSCILLATOR (VCO)/GENERATES A CENTER FREQUENCY OF 100 MHZ WITH LOW PHASE NOISE. VCOs AT THIS AND LOWER FREQUENCIES ARE APPLIED TO PHASE-LOCK LOOP DETECTION SYSTEMS USED IN TRACKING RECEIVERS AND TELEMETRY SYSTEMS.
Schmitt trigger multivibrator circuit, capable of
stable, metastable or bistable operation, incorporates an input circuit in conjunction with
a Schmitt trigger circuit. The circuits for
two output signal levels, are 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
CUBERT, H. V. /SUNGRAIL, Z./ DATE- MAY 1969
ARG-10318
Method for calibrating germanium-resistance
thermometers in cryostats between 0.4 degrees K
and 4 degrees K involves extrapolating the
specific heat of a simple 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 FLAME
DETECTION INSTRUMENT
LOX, N. H. /BETHO PHYS./ DATE- MAY 1969
M-P-20157
Portable fiber optics sensing device which detects
surface irregularities in a specific tube flare,
permits discrete dimensional measurements to be
taken, scanned and read out with only one setup.
Capabilities of the instrument can be expanded to
include surface inspection of various kinds of
tube flares.

B69-10153
PCR BIT DETECTION WITH CORRECTION FOR
INTERSYMBOL INTERFERENCE
THUNIS, A. I. /NEW YORK UNIV./ DATE- MAY 1969
GSFC-10155
For pulse code modulation bits, received signals
are filtered by integrate and dump filter from
which samples are directed to end of PCR bit.
Threshold decision circuit determines level of
sample voltage. Effects of interference of known
pant bit can be corrected by raising or lowering
threshold voltage value.

B69-10155
TECHNICAL REPORT ON GALVANIC CELLS WITH
FUSED-SALT ELECTROLYTES
FOSTER, H. S. /HESSON, J. C. /JOHNSON, C. E.
SHINGRADE, R. TAYLOR, A. D. DATE- JUN. 1969
BRI-SEE ALSO ANL-7346
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
bimetallic cell for storage of electricity.

B69-10156
VACUUM GAGE SYSTEM FOR RADIATION ENVIRONMENT
SUMMERS, R. L./ DATE- MAY 1969
LEWIS-10792
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.

B69-10161
EXPERIMENTAL PREDICTION OF PERFORMANCE
BY SUPERCONDUCTING CABLES
BROOKS, J. N. /PUDCELL, J. R./ 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 given for the superconductor
and copper currents at various magnetic field
strengths.

B69-10162
MAGNETOHYDRODYNAMIC GENERATORS USING
TOTAL-PHASE LIQUID-METAL FLOWS
PETRIDGE, 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.

B69-10171
GAGE PROVIDES AUDIBLE SIGNAL TO FACILITATE
CHECKOUT OF CONNECTOR PINS
LORER, B. 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 minimize, preset pressure.

B69-10185
SPECTRAL ION SOURCE
HALL, L. G. /SDS DATA SYSTEMS/ DATE- JUN. 1969
ERF-00898
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
EICHER, J. J. DATE- JUL. 1969 BRIAN-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, K. B. DATE- JUL. 1969
LANL-10496
Single-component scratch-gage transducer
incorporates a unique motion magnification scheme
to increase the magnitude of the load measuring
scratch approximately 10 times over that of
conventional models. It is small, load carrying
and high in natural frequency.

B69-10213
MAGNETICALLY COUPLED EMISSION REGULATOR
FOR- INNOVATION HOT SITE /CONSULTANTS AND
DESIGNERS/ DATE- JUL. 1969
GSFC-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 TESTING ANTENNA SYSTEMS
PRODUCING NEGLECTIBLE SIGNAL RADIATION
NEES, K. /BOEING CO./ DATE- AUG. 1969
KSC-10060
Sweep and marker generators tune and match antenna
system in its operational environment. Sweep
generator simulates transmissions over entire

74
frequency range of the antenna receiving system. Macker generator identifies frequency points along the wave form displayed on oscilloscope.

B69-10216 COMPENSATION OF PULSE-REBALANCED INERTIAL INSTRUMENTS
LORY, C. B. DATE- JUL. 1969
MSC-13098
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
STEHMAN, J. C. DATE- JUL. 1969
LEWIS-10760
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 supply.

B69-10218 PROTECTIVE CLOTHING FOR WORKERS WITH 5-KW AND 20-KW SHORT-ARC LAMPS
ARGOOD, R. J. DATE- JUL. 1969
BQ-11155
Two suits of protective clothing reduce hazards to personnel working near short-arc lamps. One suit is worn during assembly or servicing of inoperable 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
LORESON, D. C. DATE- JUL. 1969
GSF-10546
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. /LOCKEED ELECTRON CO./ DATE- JUL. 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 MASTAGUS
GUDERLY, F. L., JR. /NAVAL AEROSPACE MED. INST./ TOMPSD, G. /NAVAL AEROSPACE MED. CENTER/ DATE- JUL. 1969
RQ-10273
Electromechanical Slope Computer /ESC/ and Electronic Swatation Device /BSS/ facilitates rapid analysis of mastic records. The ESC reads out the slope and time of each mastic wave form. The BSS provides much faster analysis than the ESC. It provides an immediate analog display and digital display of analyzed mastic.

B69-10225 EP NOISE SUPPRESION USING THE PHOTODETECTOR EFFECT IN SEMICONDUCTORS
ARMBY, G. D. DATE- JUL. 1969
MSC-12259
Techniques using photodiode effect of semiconductor in high-Q superconductive cavity gives initial improvement of 2-3 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
LERNER, S. E. /GUPT IND./ SEIZER, H. N. DATE- JUL. 1969
LEWIS-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. /GUPT 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 stability of signal, low quantizing error, high resistance to mechanical shock and vibration loads, and temporary data storage capabilities.

B69-10233 SEGMENTED SIGE-PETE COUPLES
EGGERS, P. E. /NAVTELEH REM. INST./ MUELLER, J. J. DATE- JUL. 1969
GSF-10746
New design of segmented couples incorporates an intermediate junction located by pressure, and eliminates transition nodes that bend materials differing in thermal expansion. Development of a reproducible and reliable intermediate junction between PbTe and SiGe 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 ELEC. CORP./ SCOTT, J. M. DATE- JUL. 1969
MSC-13199 MSC-13200
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
WILK, E. M. DATE- JUL. 1969
BQ-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 sleeve.

B69-10247 SIMPLIFIED SYSTEM DISPLAYS COMPLEX CURVES
CORRESPONDING TO INPUT DATA
RQ-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 system.

B69-10251 LOW-LOSS **** BAND PARASITIC PROBE

75
CRIBB, H. 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 (MISTEF) 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-CONI FEED HORN SYSTEM FOR CASSEGRAINIAN ANTENNA
STIEFEL, 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 GIMBALING MECHANISM
FERRARA, J. D. JOHNSON, K. G. 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 GALLIUM ARSENE DiODES
BOY, H. M. YEH, T. H. DATE- AUG. 1969
NRO-04235
Improved method fabricates electroluminescent planar P-N gallium arsenide diodes. GaAs is masked with silicon monoxide to allow P-type impurities to be diffused into unmasked portions of GaAs to form P-N junctions.

B69-10272
NONDESTRUCTIVE EVALUATION OF PRINTED WIRING BOARDS BY MICROM RESISTANCE MEASUREMENTS
STIEFEL, B. DATE- AUG. 1969
SAR-10034
Application of the microhm measuring circuit to measurement of plated-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 continuous inspection performed, with plating defects causing abnormal readings.

B69-10274
RESONANT MICROWAVE DIELECTRIC SURFACE
ESTEP, H. /LOCKHEED ELECTRONICS CO./ SAKELLARODOS, F. G. DATE- DEC. 1969
GSFC-10658
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
STUETZEN, G. M. DATE- AUG. 1969
SAM-10037
Electrically coded piezoelectric lock mechanisms are strong, have few moving parts, are resettable, and are relatively unaffected by high magnetic fields. Codes are extremely difficult to circumvent.

B69-10289
SWEEP FREQUENCY DETECTOR
CLAUSS, 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.

B69-10290
HIGH-POWER MICROWAVE POWER DIVIDER CONCEPT
KOLBY, E. 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
BEHAU, J. M. /BOEING CO./ DATE- AUG. 1969
M-PS-15075
Paper presents mathematical comparison of several techniques with the limiting slope technique for data reduction and reconstruction. Limiting slope method results in minimum 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
LEWIS-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
LEWIS-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
EQ-10290
Survey, consisting of limited noise measurements, was made to augment and verify existing data at WR and WRI and to obtain basic data at URI. Exact frequencies were determined by the absence of intentionally generated signals around three selected frequencies.

B69-10312
NEW PASSIVE TELEMETRY SYSTEM
VISSCHER, J. /FAIRCHILD HILLER CORP./ DATE- AUG. 1969
NPO-11034
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 power frequencies separate.

**B69-10313**
CIRCUIT COUNTS PULSES AND INDICATES TIME OF OCCURRENCE OF SLOW PULSES

**B69-10314**
SELF-SHIELDING PRINTED CIRCUIT BOARDS FOR HIGH FREQUENCY AMPLIFIERS AND TRANSMITTERS

**B69-10315**
SEPARATION SIMULATOR

**B69-10316**
SEQUENCE DISPLAY DEVICE

**B69-10317**
IMPROVED ANODE DESIGN FOR METAL-CITIZEN CELLS

**B69-10318**
FIELD EFFECT TRANSISTOR /FET/ CIRCUIT FOR VARIABLE GAIN AMPLIFIERS

**B69-10319**
SIMPLE, ACCURATE AUTOMATIC FREQUENCY CONTROL CIRCUIT

**B69-10320**
COMBINATION RANGING SYSTEM AND MAPPING

**B69-10321**
AN INTEGRATED CIRCUIT SWITCH

**B69-10322**
AN IMPROVED METHOD FOR ELECTRICAL CABLE TERMINATIONS

**B69-10323**
THE EFFECT OF MISMATCHED COMPONENTS ON MICROWAVE NOISE-TEMPERATURE CALIBRATIONS

**B69-10324**
A METHOD FOR REDUCING SAMPLING JITTER IN DIGITAL CONTROL SYSTEMS

**B69-10325**
AEQUIPMENT AND PIPES
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
DAVIS, L. E. /GE/ DATE- SEP. 1969
LWIS-90271
Thyatron, capable of being operated as a rectifier and a voltage-reference tube, was constructed and tested for 1000 hours at 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
GRAF, F. R. /AMHERST UNIV./ HEFF, M. DATE- SEP. 1969
M-LS-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
Reflecting antenna of the parabolic type offers complete control of its aperture illumination function. The reflector beam width can be changed easily by excitation of various amounts of the line-source feed. The conical reflector collimates a beam when the feed complies with certain geometric constraints.

B69-10381
PHASE MULTIPLYING ELECTRONIC SCANNING ARRAY
SEATON, A. F. /HUGHES AIRCRAFT CO./ DATE- SEP. 1969
NFO-10382
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 signal, an edge slot for the difference port, and a sum arm for the unaided signal.

B69-10382
IMPROVED CIRCULARLY POLARIZED PLANAR-ARRAY ANTENNA
SEATON, A. F. /HUGHES AIRCRAFT CO./ DATE- SEP. 1969
NFO-10383
Wide-band doubler and sine wave quadrature generator
CHEW, R. B. DATE- SEP. 1969
NFO-11133
Phase-locked loop with photore sistive control, which provides both sine and cosine outputs for subcarrier demodulation. It serves as a telemetry demodulator signal conditioner with a second harmonic signal for synchronization with the locally generated code.

B69-10384
AUTOMATIC CALORIMETRY SYSTEM MONITORS RF POWER
HARRIS, B. W. /HARRIS, R. C. DATE- SEP. 1969
NFO-11033
Calorimeter system monitors the average power dissipated in a high power RF transmitter.
Sensors measure the change in temperature and the flow rate of the coolant, while a multiplier monitors the power dissipated in the RF load.

B69-10385
IMPROVED PERCEPTUAL-MOTOR PERFORMANCE MEASUREMENT SYSTEM
PARKER, T. F. JR. /BIOTECHNOLOGY, INC./ REILLY, K. N. DATE- SEP. 1969
H-Q-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
MSC-12148
RTOS has a cost savings advantage for real-time applications, such as those with random 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 ANTEenna SYSTEM
Graf, R. B. /AUBURN UNIV/ DATE- SEP. 1969
M-P-20435
Thirty-six element square array, with mutual coupling between crossed slots for array elements, is used as an electronically scanned tracking antenna. 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. J. /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 cosinuate silicon controlled rectifiers by removing the drive voltage, display circuits are then used to monitor multiple discrete lines.

B69-10401
IMPROVED FERROUS SHIELDING FOR FLAT CABLES
DRECHSEL, R. J. /DOUGLAS AIRCRAFT CORP/ DATE- SEP. 1969
M-P-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
KAGNER, B. J. /AM. ROCKWELL CORP/ ROSEKONY, G. J. DATE- SEP. 1969
M-P-10184
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 braze bonds in thin-walled, small diameter joints and wall thickness of thin-walled metal tubing.

B69-10407
A POSITIVE TAPER TRAVELING-WAVE TUBE
LANGLEY-10263
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
F-2000 MULTIPURPOSE TIMER FOR LABORATORIES
EISLER, Y. J. E. 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 makes it economical.

B69-10416
SOUTH-MAGNET DELAY ELIMINATED BY MODIFICATION OF CIRCUIT
CORE, C. E. DATE- SEP. 1969
ARG-10333
Reduction of retardation by diode-resistor networks of the current-decay time of a punch magnet by connection of a Tener diode in series with the damping network increases the reliability of data on paper tape.

B69-10418
RADIOGRAPHIC RESOLUTION DETECTION LEVELS OF ALUMINUM WELD DEFECTS
TETON, B. W. /GEN. DYNAMICS/ DATE- SEP. 1969
M-P-20487
Test program is used in the design and fabrication of special graduated aluminum penetrators. 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
THERMAL CALIBRATION TARGET
MUELLER, J. C. /SANTA BARBARA RES. CENTER/ DATE- SEP. 1969
IES-11148
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 VAN ATTENUATOR
HPO-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
BOHIS, J. P. /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 PENETRATES THE MOLDED WALL OF A PACKAGE
NABILY, J. /ITT FEDERAL LABS/ DATE- SEP. 1969
LANGLEY-10228
Multiplicity 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 electropolishing.

B69-10438

LEAKAGE MEASURING METHOD
CLAUSEN, H. J. /DOUGLAS AIRCRAFT CO./ DATE- SEP. 1969
N-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-EXponential SLOPE GENERATOR
ANDERSON, T. O. BUD; W. J. DATE- SEP. 1969
NPO-11130

Circuitry for digitally generating an exponentially decaying wave function permits discrete values to be sampled from the exponential waveform for comparison with a binary number of specified accuracy. This exponential-decay generator employs a simple binary counter to count the sequence of exponential decay.

B69-10440

TEMPERATURE-CONTROLLED RESISTOR
PARKE, T. G. DATE- SEP. 1969
NPO-10713

Electrical resistance of a carbon-pile resistor is controlled by the compression or relaxation of a pile of carbon clamps 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
LILAVI, L. SCAGGENO; 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 bedding 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 QUANTUM, AN IMPROVED QUANTUM DETECTOR
ERC-10148

Quantum 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 lumogen.

B69-10445

CURRENT-SWITCHING TECHNIQUE FOR ANALOG PULSE CIRCUITS
LABOVSKY, K. W. DATE- SEP. 1969
AG-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. /HEWLEETT-PACKED/ VESSOT, 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 COMBING INTEGRATED CIRCUITS AND DISCRETE COMPONENTS
LACCHI, J. F. /ELECTRO-OPTICAL SYSTEMS, INC./ DATE- SEP. 1969
GSFC-10365

Technique for packaging electronic modules interconnects integrated circuits and discrete components by means of beryllium-copper strips in a molded dialyphathalate 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
CROSLEY, A. P. /BCA/ 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 CHANGE-CONSTRAINED ELECTROQUASISTATIC GENERATOR
MELCHEER, J. H. /MIT/ 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 on the charges on the belt creates an ac output voltage.

B69-10865

TECHNIQUE FOR PINPOINTING SUBMICRON PARTICLES IN THE ELECTRON MICROPROBE
WILLER, E. L. /MC DONNELL DOUGLAS/ PHILLIPS, A. DATE- SEP. 1965
B69-10043

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 microprobe. This approach could be modified to apply to fractographic studies, particularly of oxidation products stripped from fractures.

B69-10870

PREPARATION OF SUPERCONDUCTING THIN FILMS OF TRANSITION-METAL INTERSTITIAL COMPOUNDS
CAVALOR, J. R. /WESTINGHOUSE ELECTRIC CORP./ DATE- OCT. 1969
HQ-10845

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
TREBST, E. R. F. DATE- DEC. 1965
NPO-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
KATZ, L. DATE- SEP. 1969
NPO-11140

One-shot, breakaway multwire cable connector is fabricated by welding a number of insulated wires, each of which, differing incrementally 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
MAYBERG, R. N. / ZINGBER, P. J. / DATE- SEP. 1969
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.

B69-10490
FUSE PROTECTS CIRCUIT FROM VOLTAGE AND CURRENT OVERLOADS
CASEY, L. O. / DATE- OCT. 1969
NESC-12135

B69-10494
EPITAXIAL CRYSTALLINE GROWTH UPON COLD SUBSTRATES
LEBESKIN, E. L. / PHYSICS TECHNOL. LAB., INC. / DATE- OCT. 1969
NESC-11196

B69-10480
AN UNCONVENTIONAL MAGNETICALLY-COUPLED MULTIVIBRATOR
MORSE, R. T. / DUEK UNIV. / YU, Y. / DATE- SEP. 1969

B69-10222
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.

B69-10481
IMPROVED PULSE SHAPE DISCRIMINATOR FOR FAST NUCLEAR-GAMMA RAY DETECTION SYSTEM

B69-10151
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.

B69-10484
ADJUSTABLE THERMAL *THING*
APPAL, H. H. / / INC. ROCKWELL CORP. / HAWKINS, B. / DATE- SEP. 1969
NESC-15556

B69-10497
PHASE-LOCKED-LOOP PHASE MODULATOR WITH HIGH MODULATION INDEX, LOW DISTORTION
BAGGOTT, L. G. / NHUR / DATE- OCT. 1969
NESC-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 de modulated signal of less than 5 percent. These characteristics are obtained without the use of multipliers.
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
PETERSON, R. H. /N. E. ROCKWELL CORP. / DATE- OCT. 1969
M-12-10629
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
HQ-10318
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
ROBBE DICK, 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 y-axis. Short range rendezvous system provides increased position accuracy.

B69-10526
COVER PROTECTS CRITICAL ELECTRICAL CONNECTIONS AGAINST DAMAGE DURING HANDLING
CANTOR, A. L. /N. E. 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 clips over the two plastic halves to hold them in place.

B69-10533
GAS METAL ARC /GMA/ WELD TOUCH PROXIMITY CONTROL
HURST, R. B. /N. E. ROCKWELL CORP./ DATE- OCT. 1969
MSC-16327
Adjustable transducer probe, which is attached to a welding torch and maintains a preset touch-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. A. PHILIPS CO./ VAJDA, I. R. DATE- NOV. 1969
HQ-10828
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, J. C. GALLO, J. 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-adjustable approach rather than the time-consuming cycle slipping or stepping techniques of conventional phase-locked loops.

B69-10539
CIRCUIT BOARD ROLE COORDINATE LOCATOR CONCEPT
SAMUEL, L. W. /BOEING CO./ DATE- NOV. 1969
H-16737
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 photocells are used to detect the passage of light through the individual holes.

B69-10546
SYNCHRONIZING REDUNDANT POWER OSCILLATORS
JENSEN, C. J. /HONEYWELL, INC./ DATE- NOV. 1969
XGS-09377
Outputs of oscillators are synchronized by summing the power transmitters 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
PIPEN, D. L. DATE- OCT. 1969
MSC-12178
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
MULTICHANNEL SPECTROSCOPY GUIDE
BUTTER, B. K. //CORNELL AERONAUTICAL LAB., INC./ DATE- NOV. 1969
HQ-10481
System makes use of diverging duct walls for conducting the light from entrance slips 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
SPOR- INNOVATOR NOT GIVEN /MAUNED SPACECRAFT CENTER/ DATE- OCT. 1969
MSC-13389
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
COVENTRY, L. A. JR. GILCHRIST, C. E. DATE- OCT. 1969
XEP-05254
Statistical method estimates signal-to-noise ratios 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. VOLKOFF, J. J. DATE- OCT. 1969
NRO-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 any 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, R. E. DATE- OCT. 1969
NPO-11134

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

AUTOMATIC PLOTTING OF EQUIPOTENTIALS
BUNKER, E. B., JR. DATE- NOV. 1969
NPO-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.

B69-10574

LOAD CURRENT SENSOR FOR A PULSE WIDTH MODULATOR POWER REGULATOR
HROW, R. L. /HONEYWELL, INC./ DATE- DEC. 1969
GSFC-10565

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.

B69-10578

KILOMETER-WAVE ATMOSPHERIC LOSS PREDICTION METHOD
STLEJERDE, C. T. DATE- NOV. 1969
NPO-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 program computes atmospheric loss due to water content, given the measured loss and ground temperature and humidity.

B69-10585

BALLOON BATTERIES, CHARGED AND HEATED BY SOLAR ENERGY
SPOC- INNOVATOR NOT GIVEN /HEMPLAR, INC./ DATE- NOV. 1969
GSFC-10769

Shielded heat-of-fusion material envelope collects and stores solar heat to maintain temperature during the light cycle at 30,000 feet. Spiral-wound fluoroclastic film structure has low density to avoid damage to aircraft in case of impact.

B69-10597

AUTOMATIC STAR-HORIZON ANGLE MEASUREMENT SYSTEM
KOSZBER, K. KOSO, D. A. NABDELLA, 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 earth's horizon as seen on a spacecraft.

B69-10601

CRYOTHERMIC PRESSURE TRANSDUCER
HENDRICK, J. E. DATE- NOV. 1969
N-PS-1499

Cryogenic pressure transducer utilizes a diaphragm which is electron beam welded to a fitting. This assembly is then heliarc welded to the main body of the transducer. The transducer requires no sampling oil and thus is capable of operating at both cryogenic and high temperatures.

B69-10603

FLEXIBLE HIGH-VOLTAGE SUPPLY FOR EXPERIMENTAL ELECTRON MICROSCOPE
CHAPMAN, J. L. JUNG, E. A. LEWIS, B. W. VAN LOON, L. S. WHITR, L. N. DATE- OCT. 1969
ABG-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
ULLER, A. N. /DOUGLAS AIRCRAFT CO./ DATE- NOV. 1969
N-PS-13570

Metallic coating directly sprayed on electronic modules provides simple and reliable lightweight protection against radio frequency interference. A plasma arc may be used. Aluminium and copper are the most effective metals.

B69-10612

LIVE-TIMER METHOD OF AUTOMATIC DEAD-TIME CORRECTION FOR PRECISION COUNTING
FORGE, K. E. BUDICK, S. J. DATE- OCT. 1969
ABG-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 IMMORALIZED FUSED-SALT ELECTROLYTES
MELFORD, L. J. HOWARD, R. H. BUDICK, S. J. DATE- OCT. 1969
ABG-10452

Secondary cells with liquid lithium anodes, liquid bismuth 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 FORNUCLEAR COUNTING
ENGLES, J. J. HOWARD, R. H. BUDICK, S. J. DATE- OCT. 1969
ABG-10463

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 I-I DISK-STOREAGE SUBROUTINES
KELLECI, E. F. DATE- OCT. 1969
ABG-10376

Set of subroutines provides the FORTRAN user with a protected, permanent, disk storage of data on an IBM 1620 monitor I-I-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

MANGANSE-56 COINCIDENCE-COUNTING FACILITY
BARBER, K. J. PETERS, K. G., RUDNICK, S. J. DATE- OCT. 1969
ABG-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
SHEIN, W. N. DATE- NOV. 1969
NAG-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 BISMETALIC CELLS CONTAINING ALKALI METAL
FOSTER, R. S. HESSON, J. C. SHIROYAMA, H. DATE- NOV. 1969
NAG-10347
Theoretical analysis of thermally regenerative bismetallic 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 dissolation and ionization of alkali metal atoms in the fused-salt electrolyte.

B69-10639
DATA PROCESSING METHOD FOR A WEAK, MOVING TARGET SIGNAL
NAG-10103
Method of processing data from a spacecraft, where the carrier has a low signal-to-noise ratio and wide unpredictable frequency shifts, consists of analogue 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
GOLDSMITH, W. W. /LANCINE RADIATION LAB./ DATE- NOV. 1969
NAG-10503
Feedback-controlled pulse-amplitude integrator and amplifier is used as an analog-to-digital converter that converts event-limited 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
SONIC INNOVATOR NOT GIVEN /BATTIE ENS. INST./ DATE- NOV. 1969
N-FS-202008
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 transpirational cooled porous beryllium plug and pressure transmitting column.

B69-10653
WIND TOWER INFLUENCE STUDY
HAYDN, J. W. /BOEING CO./ DATE- DEC. 1969
N-FS-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
FEBUS, N. W. DATE- NOV. 1969
NAG-10339
Small scale versatile multichannel telemonitoring can be installed economically with considerable expansion capability. This system contains a data transmitter, control transmitter, control receiver, display of readout units, a sync generator, and some remote control features.

B69-10665
DESIGN OF PRINTED CIRCUIT COILS
HIGGINS, W. T. /FIT/ DATE- DEC. 1969
N-80427
Spiral-like coil is printed with several extra turns which increase the realizable coil inductance. Included are shorting connections which not only shorten 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
MONOPOLE MASS SPECTROMETER WITH IMPROVED SENSITIVITY AND REDUCED BACKGROUND
HERBOS, R. F. /GCA CORP./ DATE- DEC. 1969
N-80476
Monopole 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 REFLOWING ELECTRODEPOSITED SOLDER ON TERMINALS
JOHNSON, W. C. /V. A. ROCKWELL CORP./ DATE- DEC. 1969
N-FS-13821
Terminals are reflored in a hot strata and solidified in a cooler strata, without physical contact with each other, any fixtureing, 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 ON SPACECRAFT
CRAWFORD, F. S. /FIT/ DATE- DEC. 1969
N-80447
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 impulses. Minimum-fuel and fuel-time solutions are found.

B69-10673
DISCRIMINATION OF FISH OIL AND MINERAL OIL SLICKS ON SEA WATER
NAG DONALD, J. /BARRINGER RES., LTD./ DATE- DEC. 1969
N-80412
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 duel beam reflectance apparatus.

B69-10676
TECHNIQUE FOR IMPROVING SOLID STATE MOSAIC IMAGES
SAUER, J. H. /WESTINGHOUSE ELECTRIC CORP./ DATE- DEC. 1969
N-80451
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
LIPIN, E. /SPERRY RAND CORP./ DATE- DEC. 1969
N-80479
Measurement of great circle patterns requires rotation in azimuth 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.

84
Modification to Improve Self-Isolating Transistor Arrays

Farnsworth, D. L. /Westinghouse Electric Corp./
DATE- DEC. 1969
N-P-20499

Fabrication process improves the size ratio and shape factor of the base region of self-isolating transistor arrays. Basic processing steps in the modified method include sub-diffusion, epitaxial layer growth, isolation-diffusions, enhancement diffusions, aluminum interconnect deposition, and testing and packaging.

Microelectronic Device Data Handbook

Soren- Innovator Not Given /Arinc Res. Corp./
DATE- DEC. 1969
R-10322

Handbook provides general guidance to the technology of integrated circuits for readers with little or no experience. It does not supply solutions to specific design problems, but is heavily footnoted to the original sources.

Reducing Contact Resistance at Semiconductor to Metal or Reducing

Keller, R. K. /RCA/ DATE- DEC. 1969
ER-10254

Etchant containing chloroplatinic acid 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.

Miniature Backward-Diode Pressure Sensor

Garten, A. Rinehart, W. DATE- DEC. 1969
ER-10292

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.

Conditioning of Pulses from Aerosol-Particle Detectors

Bowen, C. E., Marvin, C. T. DATE- DEC. 1969
ER-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.

PCB Synchronization by Word Stuffing

Button, S. DATE- DEC. 1969
WPO-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.

A Stereizable High-Impact Antenna

Woo, K. H. DATE- DEC. 1969
N-P-2031

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.

Pulsed High-Voltage DC RF Sputtering

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.

Vacuum Gage Calibration System for 10 to 100 Torr

Holanda, R. DATE- DEC. 1969
LEW-10732

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 maintaining accuracy and convenience.

Deposition Monitor and Control

Salisbury, S. S. DATE- DEC. 1969
WPO-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.

Pocket-Sized Tone-Modulated FM Transmitter

Couvillon, L. A. DATE- DEC. 1969
GSPC-10568

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.

Application of Cryptanalytic Techniques to the Analysis of Micro Space Batteries

GSC-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.

Covered Substrate Cooling Improves Reproducibility of Vapor Deposited Semiconductor Composites

Cough, R. /Rca/ Tietjen, J. DATE- DEC. 1969
R-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.

A Simple Electrometer for Measuring Small Photocurrents

Spon- Innovator Not Given /Am. 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 terminal and the photoelectron collector to the barrel of the dosimeter and by charging the device to 150 V, a small-current measuring device can be achieved.

Photonic Microscopy

Young, P. L. /M. Am. Rockwell Corp./ DATE- DEC. 1969
N-P-10556

Photonic microscopy combines microphotography 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 micrometers.

Lateral PNP Bipolar Transistor with
02 PHYSICAL SCIENCES (ENERGY SOURCES)

AIDING FIELD DIFFUSIONS
CICCARDI, A. /WESGON ELECTRIC CORP./ NC
CANN, D. E. DATE- DEC. 1969
M-1072
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.

B69-10742
A NEW ELECTRICAL CONNECTOR PIN PROTECTOR
MC QUILLER, N. R. /W. R. ROCKWELL CORP./
MCC-15660
Spring loaded insert protects electrical connector
pins from being bent due to improper mating, or
probing the pins with a screwdriver. This device
modifies existing electrical connectors using only
springs and retaining pins.

B69-10746
OPTICAL FREQUENCY WAVEGUIDE AND DYN
TRANSMISSION SYSTEM
CHENG, K. E. /AT&T/ TOWES, C. H. DATE- DEC.
MCC-10541
Electromagnetically generated, high-dielectric
tube 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 diffraction loss.

B69-10747
BATTERY CHARGE-DISCHARGE CONTROLLER
CICCARDI, A. D. /BOEING CO./ DATE- DEC. 1969
MCC-11836
Charge-discharge controller contains punched-tape
programmer capable of programming 305 discrete
steps in the battery load. The indicating
instrumentation includes meters for ampere-hours,
 watt-hours, voltage, current, and internal
 temperature and pressure. It also generates
 analog signals for recording the displayed data.

B69-10748
SYSTEM CONVERTS SLOW-SCAN TO STANDARD
FAST-SCAN TV SIGNALS
LIDOMA, P. C. /LOCKHEED ELECTRONICS CORP./
MCC-10067
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 7V pictures produced in
accordance with the standards of one country into
the standards of another country.

B69-10750
PELIR-CODE MODULATION BASELINE CORRECTION
FOR LOW SIGNAL-TO-NOISE RATIOS
STEVENS, G. J. /TEN SYSTEMS GROUP/ DATE- DEC.
MCC-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, filters it, and
then algebraically adds enough voltage to a servo
loop to reduce the error to zero.

B69-10756
SEISMOGRAPhic RECOrdING OF LARGE ROCKET
ENGINE OPERATION
DAHIN, J. R. /NASA/ DATE- DEC. 1969
M-10756
Recording equipment for rocket engine vibration is
adapted 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.

B69-10764
DYNAMIC CALIBRATION OF TURBINE FLOWMEASERS
STEVENS, G. J. DATE- DEC. 1969
LEBS-11014
Turbine flowmeters are calibrated dynamically by
means of frequency response tests, provided small
perturbations are used. The indicated flow is
related to the actual flow by a first order lag
function. This lag function is completely
defined by the breakpoint frequency which is
directly proportional to mean flow rate.

B69-10776
SOLAR ACTIVITY HISTORY MODEL
MC KOWEN, F. /MARTIN MARIETTA CORP./ DATE- DEC.
MPS-20529
Solar activity model provides information on
plages, sunspots, filaments, and flares. The model
enables scheduling, which will indicate the
time periods when solar experiments can be
conducted. Data were collected at various
locations throughout the world and recorded on
tape for the computer.

B69-10782
INVESTIGATION OF THE DEVELOPMENT OF CRACKS
IN SOLDER JOINTS
MOORE, R. L. /SPERRY RAND CORP./ VINSON, R. J.
DATE- DEC. 1969
MPS-20448
Study consisted of an analytical approach, in
which a mathematical model of existing printed
 circuit board component mounting techniques was
analyzed, and an empirical investigation was
performed to determine the extent of damage caused
by temperature cycling of the printed circuit
boards.

02 PHYSICAL SCIENCES (ENERGY SOURCES)

B63-10260
SOLAR-ANGLE SENSOR HAS NO MOVING PARTS
EXNER, D. W., JR. MEISENHOLDER, G. W. SCHMIDT,
L. V. DATE- MAY 1964
JPL-118
To measure the direction of the sun over a
spherical field of view, a cube-shaped solar
sensor with a photocell on each side is used. The
outputs from the six cells are fed into a computer
for determining the position of the sun relative
to an orthogonal coordinate system.

B63-10344
COOLING METHOD PROLONGS LIFE OF HOT-WIRE
TRANSUCER
BALSING, L. V. SANDERS, V. A. DATE- JUN 1964
LEBS-31
To cool a hot-wire transducer, the two ends of the
wire are supported on thermally and electrically
conductive rods, surrounded by a fluid cooling
medium. By keeping the supporting rods at a
substantially constant temperature, the probe is
prevented from overheating.

B63-10346
NEW METHOD USED TO FABRICATE LIGHT-WEIGHT HEAT
EXCHANGER FOR ROCKET MOTOR
BAENS, R. F. DATE- MAR. 1964
LEBS-43
A grooved capstrip, to straddle the metal edges of
regenerative cooling channels, increases the
strength and heat transfer characteristics of
lightweight motor cases. This capstrip is so
designed as to form a firm joint between the
channels that form the rocket casing wall.

B63-10421
MIRROR DEVICE ALIGNS MACHINE SURFACE PERPENDICULAR TO SIGHT LINES
KISSLER, R. E. / 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.

B65-10116
IONIZATION VACUUM GAGE STARTS QUICKLY, IS UNAFFECTED BY SPURIOUS CURRENTS
CARWOOD, R. C. / DATE- FEB. 1965

Ionization vacuum gage with a switch-operated starting device and a microameter begins functioning quickly in a high vacuum. The microameter 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

By mounting the Fresnel lens in eight steps above the light weight solar energy collector is devised.

B65-10071
SIMPLE OPTICAL SYSTEM USED TO ALIGN SPECTROGRAPH
EIXON, R. J. / DATE- FEB. 1965

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.

B65-10082
MULTIPLE ELEMENT SOFT X-RAY SOURCE PRODUCES WIDE RANGE OF IONIZATION
CAHUSO, A. J. / HOFFER, W. M. / 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.

B65-10084
MODIFIED CONTORP PROJECTOR MAKES EXCELLENT CONTOUR DENSITOMETER
EIXON, R. J. / DATE- MAR. 1965

LANGLEY-93

Thin glass beam splitter, densitometer head, and densitometer electronics are incorporated in a standard contour 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.

B65-10100
ROTATING FILTERS PERMIT WIDE RANGE OF OPTICAL PYROMETRY
EIXON, R. J. / SIVITE, J. H. / STRASE, R. K. / 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 pyrometry. This technique is applicable in metallurgy, glass, plastics and refractory research, and crystallography.

B65-10122
MICROWAVE TECHNIQUE MEASURES PLASMA CHARACTERISTICS
LEONARD, W. F. / 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.

B65-10129
APPARATUS PERMITS FLUORESCENCE TESTING OF SPECIMENS AT CRYOGENIC TEMPERATURES
BEANBURG, C. N. / REECHE, G. Y. / DATE- JUN. 1965

DATE- FEB. 1965

N-32-257

Cryostat with support structure for test specimen allows fluorescence fatigue testing of honeycomb composite sandwich structures at cryogenic temperatures. The cryostat consists of a cryogen container enclosing two pairs of yokes which support two rotating end clamps.

B65-10132
SIMPLE CIRCUIT POSITIONS FILM FRAMES IN PROJECTOR
SILVER, R. H. / DATE- MAY 1965

H-5-508

Individual frames on a photographic film strip in a projector are automatically positioned by a simple circuit. The circuit uses a photodiode that senses frame registry position and a relay that stops the film-advance motor to suspend the film at point of registry.

B65-10133
FROST MEASURES CHARACTERISTICS OF HOT GAS STREAM
SPON- INNOVATOR NOT GIVEN /PLASMADYNE COBF. /
DATE- MAY 1965

N-30-240

Shielded, tubular flow calorimeter operated by a valve position measures characteristics of a hot gas stream of unknown composition. Measurements of mass flow density and total heat content per unit mass, total heat content per unit mass only, and pitot pressure are made.

B65-10157
INTERNAL COOLING INCREASES RANGE OF INVERSION-TYPE TEMPERATURE PROBE
SHAW, C. H. / DATE- JUN. 1965

DATE- JUN. 1965

LEWIS-171

Temperature probe used in a high temperature, high velocity gas stream consists of coated outer shell and a cooled platinum sensing tube with iron constantan thermocouples.

B65-10171
FRENSOR ZONE PLATE FORMS IMAGES AT WAVELENGTHS BELOW 1000 ANGSTROMS
SPON- INNOVATOR NOT GIVEN /SMITHSONIAN INST. /
DATE- JUN. 1965

DATE- JUN. 1965

GSFC-231

Fresnel zone plate with openings replacing the usual transparent rings produces images in a vacuum ultraviolet. The plate is made by etching and electrodeposition.

B65-10166
ELECTRONIC MODULES EASILY SEPARATED FROM BEAT SINK
SPON- INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP. /
DATE- JUN. 1965

N-30-142

See also B63-10033

Metal heat sink and electronic modules bonded to a thermal bridge can be easily cleaved for removal of the modules for replacement or repair. A thin film of grease between a fluorocarbon polymer film on the metal heat sink and an adhesive film on the modules acts as the cleavage plane.
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.

Ion pump provides increased vacuum pumping speed by decomposing oil backstreaming from high-vacuum pumps. The pump has eight cathode-anode magnetron cells arranged in a cylinder which increase the surface area of the cathode.

Thermal insulating material increases the rate of heat transfer from the interior of a chamber to a fluid line, and chemical reaction vessels. The pump has eight cathode-anode magnetron cells arranged in a cylinder which increase the surface area of the cathode.

Disturbance objects detected visually with optical filters by fluorescent coating aids visual daylight detection 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.

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.

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.

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.

Ultra-sensitive heat exchanger is constructed for effective operation even if the total instrument is subjected to mechanical stress.

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.

Michelson-type interferometer with a cat-eye reflector operates effectively even in the presence of random mechanical stresses. A cubical beamsplitter with dichroic surfaces permits operation in infrared or visible light.

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.

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.
WEDGE IMMERSED THERMISTOR BOLOMETER MEASURES INFRARED RADIATION

DETROIT, M. C. /NEARSH WING CO./ DATE- NOV. 1965

GSPC-443

Wedge immersed-thermistor bolometer measures infrared radiation in the atmosphere. The thermistor flakes are immersed by optical contact on a wedge-shaped germanium lens whose narrow dimension is clamped between two complementary wedge-shaped germanium blocks bonded with a suitable adhesive.

CLOSED FLUID SYSTEM WITHOUT MOVING PARTS CONTROLS TEMPERATURE

STENGEL, P. J. 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 thermodynamically cycling of the heat transfer fluid and a hydraulic fluid is entirely supplied by the heat generated in the thermally insulated region.

SEGMENTED ELECTRODE INCREASES OPERATING PRESSURE OF HHF ACCELERATOR

SPON- INNOVATOR NOT GIVEN /WESTINGHOUSE ELECTRIC CORP./ DATE- NOV. 1965

LANGLEY-99

Circumferentially segmented-ring electrode replaces the solid-ring electrode in a basic magnetohydrodynamic H/M accelerator. This produces diffuse discharges at pressures as high as 100 atmospheres.

VACUUM CHAMBER PROVIDES IMPROVED INSULATION AND SUPPORT FOR CRYOSTAT

SPON- INNOVATOR NOT GIVEN /GE/ DATE- DEC. 1965

M-PS-415

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 SPEEDS CAMERA COPY LAYOUT FOR OFFSET PRINTING

SMITH, L. F. DATE- DEC. 1965

GSPC-928

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, E. C. /A. AVIATION/ DATE- DEC. 1965

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, F. E., JR. SCHRAMM, P. A. /A. AVIATION/ DATE- JAN. 1966

M-30-262

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


WOO-395

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 expander turbine that is magnetically coupled to the separator.

PROJECTED OBJECTS SIMULATE HUMAN EYES TO ESTABLISH OPERATOR'S FIELD OF VIEW

BEER, E. A. /A. AVIATION/ DATE- JAN. 1966

WOO-250

Device projects visual patterns limits of the field of view of an operator as his eyes are directed at a given point on a control panel. The device, which consists of two projectors, provides a constant evaluation of visual ability at a point on a panel.

SINGLE PROJECTOR ACCOMMODATES SLIDES OF DIFFERENT SIZE AND FORMAT

GATES, G. E. DATE- JAN. 1966

GSPC-339

Projector with two adjustable external units accommodates slides of different size and format. One external unit is the holder for different size slides and includes mounting means for appropriate condensing lens and heat filters. The other unit is a turret lens assembly. The machine is easily adaptable to rear-screen and front-screen projection over various distances.

PEF-ALUMINUM FILMS SERVE AS NEUTRAL DENSITY FILTERS

BURES, H. D. DATE- JAN. 1966

LANGLEY-189

Polytetrafluoroethylene /PEF/ films coated with aluminium films act as neutral density filters in the wavelength range 0.3 to 2.1 microns. These filters are effective in the calibration of photometric systems.

COMPLEMENTARY SYSTEM VAPOORIZES SUBCOOLED LIQUID, IMPROVES TRANSFORMER EFFICIENCY

KESSLER, E. C. /N. AM. AVIATION/ DATE- FEB. 1966

M-PS-550

Complementary system converts subcooled liquid hydrogen or nitrogen to gas. The inherent induction heat losses of an electrical transformer are used in the vaporizing process. Transformer efficiency is improved in the process.

CALORIMETER ACCURATELY MEASURES THERMAL RADIATION ENERGY


LANGLEY-173

Calorimeter accurately measures steady-state and transient, low-level thermal radiation energy. The calorimeter uses a compensating shield between the sensor and the calorimeter mount to intercept sensor heat losses and to provide a reference for determining a correction factor.

THIN CARBON FILM SERVES AS UV BANDPASS FILTER

SPON- INNOVATOR NOT GIVEN /GEOFLYS. CORP. OF AM./ DATE- FEB. 1966

ERC-8

Thin carbon film deposited on a 70 percent transparent screen provides a filter for narrow-band detectors in the extreme ultraviolet. The filter also suppresses scattered light and light of unwanted orders in vacuum spectrographs.

DEAR SPLITTER USED IN DUAL FILMING TECHNIQUE

ZELDMAN, S. /A. AVIATION/ DATE- MAR. 1966

M-PS-501

Tabular tape is intersected at its junction by a reflecting/transmitting mirror angled to provide two images of an object for simultaneous photographing from two positions. This method is employed when space and focal conditions are limited.

SPECIMEN HOLDER DESIGN IMPROVES ACCURACY OF X-RAY POWDER ANALYSIS

BARK, R. /A. AVIATION PHILLIPS CORP./ DATE- FEB. 1966

JPL-SC-165
Specimen holder for X-ray diffraction analysis prevents the specimen to the incident X-rays in a curvature. 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
WEAKLAND, J. T. /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-cold-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.

B66-10096
SCREEN OF CYLINDRICAL LENSES PRODUCES STEREOSCOPIC TELEVISION PICTURES
WORK, C. L. /SPLACO, INC./ DATE- MAR. 1966 N-FS-499
Stereoscopic 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, R. F. /N. AM. AVIATION/ DATE- MAY. 1966 M-FS-498
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/ RP-1 as propellant.

B66-10096
INEXPENSIVE INFRARED SOURCE IMPROVED FROM FLASHLIGHT
SPXX. - 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
GRUBER, A. KAPESKIN, B. R. /MOBSANTO 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
SPXX. - INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ DATE- MAR. 1966 EEC-10
Commercially 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
SPXX. - INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ DATE- MAR. 1966 EEC-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
EALLIN, W. M. /WESTINGHOUSE ASTRONIAC LAB./ DATE- MAY. 1966 HQ-005
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
POLYMER TEIN FILMS ARE SUPERCONDUCTIVE IN STRONG MAGNETIC FIELDS AT LOW TEMPERATURES
CLOUGH, F. J. /NATL. RES. CORP./ 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
SPXX. - INNOVATOR NOT GIVEN /GEOELECTRONICS, 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 PURGE GAS COOLED BY CHILL BOX
SFINGI, 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
SPXX. - 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
BEGLAND, 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
JAMES, A. E. /DOCUMENTATION, INC./ DATE- APR. 1966 HQ-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 fall on the photographic paper in the magazine above and below the baseline.

B66-10178
FATIGUE CRACKS DETECTED AND MEASURED WITHOUT TEST INTERRUPTION
FRECH, J. C. ELTMAN, S. J. LESCO, D. J. DATE- MAY 1966
USAG-1019
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
ALUMINUM BOXING IMPROVES SILICON SOLAR CELLS
SPON- INNOVATOR NOT GIVEN /LESD AND NORTHERN CO./ DATE- MAY 1966
RASI- SIEE ALSO NASA-36-3-2711
Aluminum 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.

B66-10183
INSULATION FOR CRYOGENIC TANKS HAS REDUCED THICKNESS AND WEIGHT
K-75-326
Dual seal insulation, consisting of an inner layer of sealed-cell, teflon honeycomb core and an outer helix purge channel of fiber glass reinforced phenolic honeycomb core, is used as a thin, lightweight insulation for external surfaces of cryogenic-propellant tanks.

B66-10186
RADIATION USED TO TEMPERATURE COMPENSATE SEMICONDUCTOR STRAIN GAGES
GROSSE, 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 BELLOW IMPROVES VIBRATION DAMPING IN VACUUM LINES
ENGEL, D. E. SMITH, B. J. DATE- MAY 1966
LEWIS-273
Compact-vibration damping systems, consisting of rubber-coated bellows with a sliding 0-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.

B66-10199
MOUNT ENABLES PRECISION ADJUSTMENT OF OPTICAL-INSTRUMENTATION MIRROR
SPON- INNOVATOR NOT GIVEN /ADD/ DATE- MAY 1966
MSC-184
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 arms, allows independent precise adjustment of the mirror mount with respect to each axis.

B66-10231
SOLAR CELL SUBMODULE DESIGN FACILITATES ASSEMBLY OF LARGE ARRAYS
TAYLOR, 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 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
FREON PROVIDES HEAT TRANSFER FOR SOLID CO2 CALIBRATION STANDARD
SPON- INNOVATOR NOT GIVEN /LESD AND NORTHERN CO./ DATE- JUN. 1966
R-PS-644
Acetone and Freon as liquid heat transfer mediums 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 FP 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
ABDULLAH, J. H. /ERI SPACE TECHNOL. LABS./ DATE- JUN. 1966
W-1002-253
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-limited resolution.

B66-10268
HIGH-SPEED MACHINE USES INFRARED RADIATION FOR CONTROLLING BRAZING
SCHLIEFF, P. J. /AEGEJ-GEN. CORP./ DATE- JUN. 1966
H-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 ellipsoidal 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
MORRIS, P. A. /BOEING CO./ DATE- JUN. 1966
K-PS-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
PARTH, P. A. DATE- JUN. 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- JUN. 1966
K-PS-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 ELECTROLUMINOSENT INSTRUMENT PANELS INVESTIGATED
MSC-494
MSC-496 MSC-501 MSC-505
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.

B66-10325
BIMETALLIC DEVICES HELP MAINTAIN CONSTANT
HEATING FORCES DOWN TO CRYOGENIC TEMPERATURES
DE ROY, W. R. /U.S. NAVAL RES. LABS/ DATE- JUL. 1966
R-FOO-930
Tantalum washers compensate for different thermal coefficients of expansion between stainless steel and an aluminum O-ring. The washers have sufficient thickness to maintain a vacuum seal from room to cryogenic temperatures.

B66-10330
ADAPTOR ASSEMBLY PREVENTS DAMAGE TO TUBING
DURING HIGH PRESSURE TESTS
STEINERT, L. L. /N. AR. AVIATION/ DATE- JUL. 1966
MSC-563
Portable adapter assembly prevents damage to tubing and injury to personnel when pressurizing a system or during high pressure tests. The assembly in 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.

B66-10331
CIRCUIT PROVIDES ACCURATE FOUR-QUADRANT
MULTIPLICATION
MC GOWAN, G. F. /MARTIN-MARIETTA CORP./ DATE- JUL. 1966
WCC-272
Solid state circuit provides four-quadrant multiplication at frequencies ranging from dc to 100 cps using pulse-width and -height multiplication techniques. The circuit consumes little power and has an accuracy of approximately one percent.

B66-10340
INSULATION IS EFFECTIVE FOR
CRYOGENIC TRANSFER LINES
LINDGREN, A. R. /N. AR. AVIATION/ DATE- AUG. 1966
MSC-618
Hinging cover thermally insulates cryogenic-liquid transfer pipelines. The hinging consists of layers of commercially available fiber glass tape in which the fibers are randomly oriented in parallel planes.

B66-10372
SPECIAL TREATMENT REDUCES HELIUM PERMEATION OF
GLASS IN VACUUM SYSTEMS
BHARG, P. J. GOSSELIN, C. M. /MIDWEST RES. INC./ DATE- AUG. 1966
WQ-25
Internal surfaces of the glass component of a vacuum system are exposed to cesium in gaseous form to reduce helium permeation. The cesium gas is derived from decomposition of cesium nitrate through heating. Several minutes of exposure of the internal surfaces of the glass vessel are sufficient to complete the treatment.

B66-10388
AUXILIARY TITANIUM SUBLIMATION PUMP PRODUCES
ULTRAHIGH /100 TO THE MINUS 11 TORR/ VACUUM
OUELLEN, R. A. DATE- SEP. 1966
LANGLEY-212
Sublimated titanium as a gettering agent in conjunction with a turbine-type pump provides a two-step procedure for obtaining an ultrahigh vacuum of 10 to the minus 11 torr. The pump alone evacuates the chamber to a pressure of 10 to the minus 9 torr. The residual gas is removed by the gettering agent at a pumping speed of 15 liters per second per square inch.

B66-10435
CHEMICAL REGENERATION OF EMITTER SURFACE
INCREASES THERMIOMIC DIODE LIFE
BREITINGER, W. DATE- OCT. 1966 REAS- SEP ALSO
NAGA-TNO-0-1877
LEWIS-17
Chemical regeneration of sublimated emitter electrode increases the operating efficiency and life of thermionic diodes. A gas which forms chemical compounds with the sublimated emitter material is introduced into the space between the emitter and the collector. The compounds migrate to the emitter where they decompose and redeposit the emitter material.

B66-10474
GAS PRESSURE FEEDS FILM INTO CAMERA AT HIGH
SPEED
KEISER, P. J. DATE- NOV. 1966
ARG-97
Blow of gas blows a loop of unsupported film as a wave across a vacuum plate at 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.

B66-10483
UNIFORM REFLECTIVE FILMS DEPOSITED ON LARGE
SURFACES
SPON- INNOVATOR NOT GIVEN /LEWIS/ DATE- NOV. 1966
ARG-109
Specially designed baffle which intercepts varying amounts of the vapor stream from an evaporant source, vacuum deposits films of uniform thickness on large substrates, using a single small area evaporation source. A mirror coated by this method will have a reflectance as high as 82 percent at 1216 angstroms with a variation of only plus-minus 2 percent over the surface.

B66-10499
CRYOGENIC COOLING REDUCES HIGH VOLTAGE ARCING
BETWEEN ELECTRODES OPERATING IN A VACUUM
DE GERTER, D. J. DATE- NOV. 1966
ARG-109
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.

B66-10507
PANELS ILLUMINATED BY EDGE-LITTEED LENS
TECHNIQUE
HAAS, G. E. HERRFALL, R. R. /N. AR. AVIATION/ DATE- NOV. 1966
MSC-871
Electroluminescent lamps used to edge-light a specially ground lens provide nonglare, reduced eye strain panel illumination. There is no noticeable falloff 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.

B66-10508
EXPERIMENTAL INVESTIGATION OF MEGAWATT DC
ARC HEATING OF NITROGEN
HOLDMAN, D. E. CAMPBELL, J. F. DATE- DEC. 1966
LEWIS-313
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
MAPLES, H. G. STRASS, R. K. DATE- NOV. 1966
MSC-946
Mechanisms scalds and controls the intensity of luminous radiation in light beams associated with high-intensity heat flux. This scalds incoroporates 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.

B66-10547
HIGH INTENSITY RADIATION HEAT SOURCE IS
CAPABLE OF SUSTAINED OPERATION

GRISDMAN, W. A. MULLER, K. /TEXTRON ELECTRONICS/
DATE- NOV. 1966
ABC-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
VAFFNER, R. B. DATE- DEC. 1966
M-FS-10563

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 COORDINATES ON PHOTOGRAPH
DOEBE, J. H. LINDENMEYER, C. W. VONDERBORG, R. H.
DATE- DEC. 1966
ABC-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
TALBOY, P. /W. A. AVIATION/ DATE- DEC. 1966
M-FS-1784

Room temperature gaseous hydrogen mixed with liquified hydrogen in a venturi produces a two-phased liquid hydrogen stream at a stable temperature. This technique is useful in laboratory testing where presently, temperature control is maintained by a calibrated heat lamp that results in considerable expenditure of cryogenic refrigerants.

B66-10583

NEON ISOTOPES CANCEL ERRORS IN GAS LASER
MACHE, W. H. GLYTHIS, B. W. SCHNEIDER, J. R.
/SPECTRUM CYTOSCOPE CO./ DATE- DEC. 1966
M-FS-1976

Neon isotopic cancel frequency pushing errors arising from unequal gain in the two contracirculating beams of a helium-neon filled discharge tube used in a ring laser.

B66-10596

OPTICAL AUTOMATIC GAIN CHANNEL
KRUS, G. ZUKOWSKY, W. /PERKIN-ELMER CORP./
DATE- DEC. 1966
M-FS-1550

Automatic Gain Control /AGC/ channel automatically compensates for gain changes in the anamorph 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 /EV/ SYSTEM EXPANDED TO INCLUDE FILTERS AND TRANSMITTANCE
LINDSEY, W. F. DATE- DEC. 1966
LANGLEY-190

Application of the exposure valve system requires that the system be extended 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 t-stop interval, could introduce noticeable error.

B66-10615

FEED-THRU FLANGE IS USEFUL IN VACUUM APPLICATIONS TO CRYOGENIC TEMPERATURES
YAGER, S. F. DATE- DEC. 1966
JDL-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 EMITTANCE BY USING CYCLIC INCIDENT RADIATION
JACOBS, J. E. DATE- DEC. 1966 REAR- SEE ALSO NASA-TM-X-52193

LEWIS-291

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.

B66-10652

ROCKET ENGINE VIBRATION ACCURATELY MEASURED BY PHOTOGRAPHY
CRAIG, K. A. /W. A. AVIATION/ DATE- DEC. 1966
M-FS-1976

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 normal 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. /W. A. AVIATION/ DATE- DEC. 1966
M-FS-1927

Remotely controlled sampling device obtains a 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
HASSER, C. M. GIBB, R. /RCA/ DATE- DEC. 1966
M-FS-1816

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
SPOR- INNOVATOE NOT GIVEN /BENDIX CORP./ DATE-
1966
LANGLEY-288

Tapes and quick-mount 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**

PETMAR CELLS UTILIZE HALOGEN-ORGANIC CHARGE TRANSFER COMPLEXES

GUTMAN, F.; BERRAH, A. M.; REMBAUM, A. DATE- DEC. 1966

JPL-526

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

FROEBER, R. BROWN ENG. CORP./ HUFFAKER, R. E. DATE- JUN. 1966

MFS-1767

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 CONE IN SUPersonic FLOW IS SOLVED BY SMALL PERTURBATION TECHNIQUES

PAO, T.-B. /HIT/ DATE- DEC. 1966

MFS-869

Small perturbation technique solves the problem of an oscillating cone 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 HARDERCODE RANGE

JOHNSTON, A. R. DATE- FEB. 1967

JPL-290

Conventional polarimeter with a Senarmont compensator improves transient response and eliminates manual manipulation. A sampled photodiode 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

ND-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**

METHODS OF 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 BRAZE BONDS

DI ROTI, R. A. DATE- MAR. 1967

See also ARG-267

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 NONDISPERSE POLYSTYRENE LATTICES

KURTZSCHEK, H. E. DATE- MAR. 1967

ARG-207

Photomicrographic method determines mean particle diameters of non-dispersed polystyrene latexes. Many diameters are measured simultaneously by measuring row lengths of particles in a triangular array at a glass- over 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

AUTLER, S. E.; COFFET, H. T.; KELLER, R. L.

FATTERSON, A. DATE- MAR. 1967

MFS-1994

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, R. S.; SMITH, F. W., JR./DOLT, BERRAH, R. /BOLTMAN, D. /BROWN CORP./ DATE- APR. 1967

BQ-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

BQ-55

Electronic filtering system discriminates between true corneal and false reflections, solving the problem of spurious reflections of the CRT light in newly designed oculometer.

**B67-10072**

AN IMPROVED SOFT X-RAY PHOTONIZATION DETECTOR

STOEERS, A. K.; YOUNG, R. M. DATE- APR. 1967

DSP-540

Photonization 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

SIMPSON, N. /INNOVATOR NOT GIVEN/ ARTHUR E. LITTLE, INC./ 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.

**B67-10282**

**FATIGUE ZONES IN METALS IDENTIFIED BY**

**POLARIZED LIGHT PHOTOGRAPHY**

**WALSE, F. D. /GEOEIS CO./ DATE- APR. 1967**

**WOO-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 specimen.

**B67-10288**

**EXPERIMENTAL SCALING STUDY OF FLUID AMPLIFIER ELEMENTS**

**ABLEN, J. GREEN; TAPTS, C. /CASE INST. OF TECH./ DATE- APR. 1967**

**M-1S-1802**

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 impede the establishment of these scaling laws.

**B67-10109**

**SPECIAL PURPOSE REFLECTOMETER USES MODIFIED ULBRICHT SPHERE**

**GOODSTEIN, N. W. /MIT/ DATE- MAY 1967**

**M-407**

Modified Ulbricht 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 SIMULATOR USED TO TEST SPACE GUIDANCE SYSTEM**

**SNIDER, W. C. /MIT/ DATE- MAY 1967**

**M-607**

Star/horizon simulator is used for alignment and optical plus photorelectric tests of the sextant for the Apollo guidance and navigation system. The optical unit assembly contains a twenty-four inch focal length lens system and a twenty-four inch focal length.

**B67-10120**

**VISUAL ATTITUDE ORIENTATION AND ALIGNMENT SYSTEM**

**BEAL, H. A. MORRIS, D. R. /N. AM. AVIATION/ DATE- MAY 1967**

**M-667**

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 FORMING SYSTEM**

**SPORK- INNOVACE RCT NOT GIVEN /ADVAN. KINET/ DATE- MAY 1967**

**M-54-2162**

In the magnetohydraulic metal forming system, a sonic shock wave is generated in a liquid medium by a coil energized by an electrical discharge. These waves 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 CRYOTEGIC REFRIGERATION SYSTEM**

**SIEG, 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**

**ATOLLS, B. 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 gonioiometric turntable and electronic controls, and auxiliary equipment including a goniometer, diffraction electromagnet, two cryogenic dewars, and two diffraction furnaces.

**B67-10134**

**CRYOTEGIC SEAL REMAINS LEAKTIGHT DURING THERMAL DISPLACEMENT**

**FIELDS, T. H. MARTEN, K. H. PEWITZ, 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 rema-filled aluminum g-ring bonded to the inner surface.

**B67-10164**

**SOLAR X-RAY SPECTRUM REPRODUCED IN VACUUM**

**HERMAN, C. A. KIRCHNER, L. F. /MIT RES. INST./ DATE- JUN. 1967**

**M-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 X-RAYS ITS OWN WELDS**

**BODEN, W. A. /GEN. DIV. GENERAL可愛 DIV./ DATE- JUN. 1967**

**LEWIS-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 INTERCHANGABLE 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 LAMPS**

**RISE, H. N. DATE- NOV. 1967**

**NPO-10190**

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 CRYOTEGIC INSULATION REPLACES VACUUM JACKETED LINE**

**PICKENS, C. E. /WESTINGHOUSE ASTRONOMY Lab./ DATE- JUL. 1967**

**NOC-10061**

Commercially available aluminized Mylar, cork, and fiber glass form a multilayered sealed system and provide rugged and economical field installed insulation for cryogenic /liquid nitrogen or
oxygen/pipe lines in an exposed environment.

B67-10288
LASEB SYSTEM GENERATES SINGLE-FREQUENCY LIGHT
TANG, B. /SYLVANIA 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-WAVE OBSERVATION TECHNIQUE
BERGER, E. DATE- AUG. 1967 REAR- SEE ALSO ARN-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 RADIOPHOTIC PATTERN
ARG-120
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
ROOVER, R. E. DATE- AUG. 1967
M-PS-12731
Fresnel plate demonstrates diffraction phenomena simply and inexpensively. A large number of identical diffraction 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 diffraction aperture is readily seen.

B67-10316
RADIATION MEASURING TECHNIQUE ALLOWS DENSITY MEASUREMENTS IN HIGH-PRESSURE/ HIGH-TEMPERATURE ENVIRONMENT
DILLON, G. G. NELSON, P. A. SWANSON, E. S. DATE- SEP. 1967
ARG-124
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
GROVE, E. L. /N. J. INSTR./ 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
SIEBOLD, J. R. /ARGONNE-GEN. CORP./ WARNER, E. A. DATE- OCT. 1967
MSC-10856
Thermoluminescence doseimeter technique measures thermal-neutron fluence by encapsulating lithium fluoride phosphor powder and exposing it to a neutron environment. The capsule is heated in a doseimeter reader, which results in light emission proportional to the neutron fluence.

B67-10371
MEASURING COPLANARITY OF SURFACES
WEBER, E. M. /KOLLER INSTR. CORP./ DATE- OCT. 1967
MSC-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
ELEOTRON BEAM PARALLEL X-RAY GENERATOR
PAYNE, P. /AM. SCI. AND ENG./ DATE- OCT. 1967
MSC-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
SCHRAMM, 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
STERKUS, A. A. /N. AM. AVIATION/ DATE- OCT. 1967
M-PS-13803
This-walled neoprene containers prevent secondary radiation, scatter, and undercut during radiographic inspection. The containers are filled with a mixture of bariun sulfate, red lead, and petroleum jelly that achieves the required absorption rate.

B67-1094
EXPERIMENTS TO INVESTIGATE PARTICULATE MATERIALS IN REDUCED GRAVITY FIELDS
M-PS-13308
Study investigates agglomeration and macroscopic behavior in reduced gravity fields of particles of known properties by measuring and correlating thermal and acoustical properties of particulate materials. Expert system evaluations provide a basis for a particle behavior theory and measure bulk properties of particulate materials in reduced gravity.

B67-10398
AERIAL-IMAGE ENABLES DIAGRAMS AND ANIMATION TO BE INSERTED IN MOTION PICTURES
ANDREWS, S. J., JR., TRESSEL, G. W. DATE- OCT. 1967

Aerial-image unit makes it possible to insert diagrams and animation into live motion pictures, and also lift an element from a confusing background by suppressing general details. The unit includes a combination of two separate lens systems, the camera-projector system and the field lens system.

B67-10413
STUDY OF HYDROGEN SLUSH-HYDROGEN GEL UTILIZATION
KELLE, C. W. LOCKHEED Missiles and Space Co./ DATE- OCT. 1967

MFS-13068
Study of hydrogen slush-hydrogen gel utilization is presented in two volume publication. The first volume contains the physical and thermal property data for hydrogen used in the study. In the second volume, details of the technical effort are presented including parametric analysis of effects on vehicle system.

B67-10420
CONCEPT FOR CYCLOGENIC LIQUID RECLAMATION SYSTEM
DADERIAN, S. K. DATE- NOV. 1967

NFS-13222
Cryogenic liquid reclamation system is used as an add-on unit to the nitrogen system of environmental control to salvage liquid nitrogen presently being treated as waste. The system may be installed indoors or outdoors provided the gas boiled off from the cryogenic liquid is vented to the outside.

B67-10428
ULTRASONICS USED TO MEASURE RESIDUAL STRESS
SPON- INNOVATION NOT GIVEN/E. W. BENSON AND ASSOCIATES/ DATE- NOV. 1967

NFS-12449
Ultrasonic method is used to measure residual stress in metal structures. By using this method, various forms of wave propagation in metals are possible, and more thorough analysis of complex geometric structures may be had.

B67-10430
STUDY MADE OF ACoustical MONITORING FOR MECHANICAL CHECKOUT
SAVELLE, C. DATE- NOV. 1967

MFS-13376
Study demonstrates that sonic signal analysis technique provides a powerful tool for mechanical component checkout. The technique also provides the unique capability of predicting component failures by detecting incipient malfunctions.

B67-10431
CAMERA LENS ADAPTER MAGNIFIES IMAGE
MOFFITT, P. L. DATE- NOV. 1967

MFS-11955
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 magnifying glass and then photographed with this device, thus providing immediate pictorial data for use in remedial procedures.

B67-10443
CODED PHOTOGRAPHIC PROOF PAPER COULD SERVE AS CONVENTIENT DENSITOMETER
WINSLOW, D. J. DATE- NOV. 1967

MFS-13376
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.

B67-10452
PROPOSED METHOD OF ROTARY DYNAMIC BALANCING BY LASER
PEKINS, W. E. /MISS. AVIATION/ DATE- NOV. 1967

MFS-12422
Laser method, where high energies of monochromatic light can be precisely collimated to perform welding and machining processes, is proposed for rotary dynamic balancing. The unbalance, as detected with the velocity pickup, would trigger the laser system which would emit high energy pulses directed at the heavy side of the component.

B67-10465
FLUID BEHAVIORAL PATTERNS FOUND IN SUBSCALE GEYSERING STUDY
BURKHARTER, J. E. GLASGOW, W. L. BOEING CC./ DATE- NOV. 1967

MFS-12352
Study provides a fundamental understanding of geysering mechanisms necessary for formulating theoretical analyses. An algebraic relationship between average heating rate, reservoir temperature, and geysering period was established and areas for future studies were identified.

B67-10466
STUDY MADE OF TRANSFER OF HEAT ENERGY THROUGH METAL JOINTS IN VACUUM ENVIRONMENT
ELLiot, D. H. DOUGLAS AIRCRAFT CO./ DATE- NOV. 1967

MFS-12536
Heat energy transfer is concentrated closely around a welded joint and the temperature drop across it decreases rapidly as the bolt and nut are tightened to a minimum torque level. Flat metal surfaces pressed together display a cyclical improvement in heat energy transfer as the interface pressure is increased.

B67-10474
METHOD FOR X-RAY STUDY UNDER EXTREME TEMPERATURE AND PRESSURE CONDITIONS
PARR, L. L. BENZNET CORP./ DATE- DEC. 1967

MSC-11232
Vacuum chamber environmental simulator and X-ray camera are used to study the stability of various minerals in extreme environmental conditions. A ion pump creates the desired vacuum. Exact sample positioning is obtained with a bellows sealed linear motion feed-through. Temperature control is by means of fluid conductive heat transfer.

B67-10477
TRAINING COURSE FOR RADIATION SAFETY TECHNICIANS
LADEN, S. H. /ARGON/ DATE- DEC. 1967

NEC-69751
DUAL PHOTOCHROMIC REPLENISHER SYSTEM REDUCES CHEMICAL LOSSES
KOLBER, J. M. DATE- DEC. 1967

KSC-67-111
DUAL replenisher system reduces chemical losses and maintains optimum solution concentration during long nonprocessing cycles of photo processing machines. Using a single 3-position switch and solenoid control valves, the system provides instantaneous flow control to each processing tank.
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.

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 aids inspection of thin walled specimens. 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 specimens.

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 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.

Recursive method for the optimal smoothing of data. Fraser, B. E. /CIT/ DATE- MAY 1968

Improved optical diffractometer. Bilderback, R. E. DATE- MAR. 1968


Standard dosimeter reader, modified by adding an electronic gating circuit to trigger the intensity level photomultiplier, increases readout sensitivity of photoluminescent dosimeter system. The gating circuit is controlled by a second photomultiplier which senses a short ultraviolet pulse from a laser used to excite the dosimeter.
D68-10081
INFRARED SPECTRORadiometer FOR ROCKET EXHAUST ANALYSIS
HERGET, W. F. / AM. ROCKWELL CORP./ DATE- MAY 1968 N-PS-14357
Infrared spectroradiometer measures high-resolution spectral absorption, emission, temperature, and concentration of chemical species in radically 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.

D68-10090
ANTIGLARE IMPROVEMENT FOR OPTICAL IMAGING SYSTEMS
DAVIS, F. S. DATE- MAR. 1968 NFO-10337
Baffle configuration provides a more efficient shade against interfering sources of illumination outside the desired field of view of optical imaging systems. It consists of a semi-ellipsoid of revolution about the minor axis with black specular reflecting surface and an aperture defined by the locus of the foci of the generating ellipse.

D68-10098
RECTANGULAR CONFIGURATION IMPROVES SUPERCONDUCTING CABLE
FORSYTH, B. LATERICK, C. LOBELL, G. DATE- APR. 1968 ABO-90098
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.

D68-10105
STUDv OF CYROGENIC CONTAINER THERMODYNAMICS DURING PROPELLANT TRANSFER
BHOGA, J. J. VERBO, N. E./LOCKEED MISSILES AND SPACE CO./ DATE- MAY 1968 N-PS-14310
Study of thermodynamic phenomena occurring during transfer of cryogenic liquids from dewar to receiver tank reveals that the basic cause of tank implosion is evaporative rate of droplets entering the tank in the early transfer phase. Analyses of the thermodynamics involved and implosion prevention techniques are included.

D68-10113
ROCKET ENGINE NOZZLE PHOTOGRAPHIC SYSTEM
BAILEY, R. L. TIBBETS, W. C. DATE- APR. 1968 NFO-10174
Protective enclosure for a camera, located on the exhaust stream of a rocket engine, permits continuous recording of erosion 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-sealed viewing duct.

D68-10119
MULTICIP PACKAGING WITH THERMAL INSULATION
Thermal insulation technique permits low and high power electronic chips to operate in a single 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.

D68-10126
OPTICAL INTEGRATING SPHERE OPERATES AT VISIBILO AND INFRARED SPECTRAL WAVELENGTHS
ATZINBERG, S. /SPACE SCI./ DATE- APR. 1968 N-PS-14248
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.

D68-10129
PHOTOGRAPHIC AND DRAFTING TECHNIQUES SIMPLIFY METHOD OF PRODUCING ENGINEERING DRAWINGS
FROSTON, E. /AM. AVIATION/ DATE- APR. 1968 MSC-716
Combination of photographic and drafting techniques has been developed to simplify the preparation of three dimensional and diometric engineering drawings. Conventional photographs can be converted to line drawings by making copy negatives on high contrast film.

D68-10135
ANTICHAMBER FACILITATES LOADING AND UNLOADING OF VACUUM FURNACE
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.

D68-10136
THE X SQUARE STATISTIC AND GOODNESS OF FIT TEST
The 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.

D68-10143
DEEP GABBAI PENETRATION IN THICK SHELDS
ARMSTRONG, T. W. STEVENS, R. E. /TENN. UNIV./ DATE- APR. 1968 N-PS-14388
A suitable importance function and sampling scheme facilitates the application of the Monte Carlo method to problems involving the deep penetration of radiation.

D68-10154
TOOL RECONSTRUCTS DATA INPUT POINTS CORRESPONDING TO FIRST ORDER OUTPUT GRAPH
BEGUS, R. E. /AM. ROCKWELL CORP./ DATE- MAY 1968 N-PS-18003
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.

D68-10160
ABSOLUTE LOW-PRESSURE CALIBRATION SYSTEM
BOBISH, J. B. /BATL. RES. CORP./ DATE- MAY 1968 N-PS-13095
Vacuum gage is used as the primary reference standard in a system used for absolute calibration of vacuum gages in the very low pressure range. The system involves steady-state flow of a gas through a cascade of differentially pumped chambers or stages connected by precisely defined orifices.

D68-10170
LONG-AMPLITUDE INVISID FLUID MOTION IN AN ACCELERATING CONTAINER
PERKO, L. E./LOCKEED MISSILES AND SPACE CO./ DATE- JUN. 1968
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.

Low scatter lightweight fission spectrometer constructed for biological research

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.

Heat 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.

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.

Study involves the effects of the interactions of a electrolyte, 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.

Investigation of the tensile strength dependence 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.

Procedure developed for reporting fast-neutron exposure

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.

Refined 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.

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 designing for control computers.

Bibliography lists the sources containing emissivity and absorptivity data on materials at extremely high temperatures. The experimental techniques, equipment and effects of the experimenters to characterize the materials used and methods to evaluate the errors are given in the sources in this bibliography.

Small portable, high intensity isotopic neutron source combines twelve curium-berkelium beryllium sources. This high intensity of neutrons, with a flux which slowly decreases at a known rate, provides for increased experimental accuracy.

Improved relay optical element for spectroradiometer using chemically cooled detector

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.

New method for critical failure prediction of complex systems

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.

Electro-optic modulator for infrared laser using gallium arsenide crystal

Walshe, T. E. /RCA/ 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 designing for control computers.

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MSC-11554
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.

The primary mechanism for generation of acoustic waves in a centrifugal pump, due to the rotor/stator interaction, is an unstable source at the entrance of the blade row as represented by the unsteady velocity field. The amplitudes of wave generated by pressure loading on the blades and by velocity boundary conditions are compared.

Electro-optical modulator realizes voltage transfer function in synthesizing birefringent networks. Choice of the voltage transfer function is important, the most satisfactory optimizes the modulator property.

Study of detection 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.

Minimizing mode coupling improves sensing resolution of a gas ring laser in a gimballed gyroscope system or inertial rotation sensor. The piezoelectric-driven corner mirrors of the ring laser are oscillated in a direction parallel to their surfaces and the plane of rotation.

Modified sine bar device measures small angles with high accuracy.

Study considers problems encountered in using 4 pi-recoil proportional counter used as neutron spectrometer. Emphasis is placed on calibration, shape discrimination, variation of W, the average energy loss per ion pair, and the effects of differentialion on the intrinsic counter resolution.

Miniaturized, 16 mm high speed pulse camera takes spectral photometric photographs upon instantaneous camera. The design includes a low-friction, low-inertia film transport, a very thin beryllium shutter driven by a low-inertia stepper motor for minimum actuation time after a triggering the camera.
pulse 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-FS-14845
Dynamics 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 thermodynamic-phase equilibrium governs the dynamics of the bubble at its interface.

**B68-10345**
INDEPENDENT דוLYE TRUNCATED GAMMA VARIABLES
LAVROFF, D. R. /GEORGIA UNIV./ DATE- SEP. 1968
M-FS-20443
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
HERGETZ, C. J. /CALIF. UNIV./ DATE- SEP. 1968
M-FS-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
HUNG, J. C. /TENNESSEE UNIV./ DATE- SEP. 1968
M-FS-14975
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
BEO- SEE ALSO 866-10693
M-FS-20039
Three-D instrument using a laser light source measures both turbulence and mean velocity of subsonic and supersonic gas flows. This 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 RADIOMICROGRAPHIC IMAGE AMPLIFIER PANEL
BROWN, R. L. SE. DATE- OCT. 1968
M-FS-16522
Layered image amplifier for radiographic x ray and gamma ray applications, combines very high radiation sensitivity with fast image buildup and erasure 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 Thorne panel.

**B68-10396**
EVALUATION OF SUPERCONDUCTING MAGNETS, A STUDY
M-FS-14806
Study analytically develops and experimentally verifies the steady state behavior characteristics of composite superconductors. Zero-dimensional, one-dimensional, and three-dimensional analyses were performed.

**B68-10406**
FIBER GLASS PREVENTS CRACKING OF POLYURETHANE FOAM INSULATION ON CYROGENIC VESSELS
FORGE, D. A. /MCDONELL DOUGLAS CORP./ DATE- NOV. 1968
M-FS-20058
Fiber glass material, placed between polyurethane foam insulation 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 PERMITS ABSORPTION SPECTROSCOPY OF SMALL SAMPnLES
HERFORD, B. TOWLING, F. S. DATE- NOV. 1968
ARG-10177
Miniature King-type furnace, consisting of an indirectly 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**
CREEK AND PERCUSSION DOSEMETERS SHOW PRECISION FOR 50-5000 RAD RANGE
FRIGERIO, N. A. HENRY, V. D. DATE- NOV. 1968
ARG-10173
Ammonium thiocyanate, added to the usual ferrous sulfate dosimeter solution, yields a very stable, precise and temperature-independent system eight times as sensitive as the classical Frickes system in the 50 to 5000 rad range. The cemic dosimeters, promising for use in sized radiation fields, respond nearly independently of LET.

**B68-10504**
SOLVING NONLINEAR HEAT TRANSFER CONSTANT AREA FIN PROBLEMS
SPON- INNOVATOR NOT GIVEN /HARSHALL/ DATE- NOV. 1968
M-FS-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-COOLING SYSTEM
FREED, R. B. DATE- NOV. 1968
NGO-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-FS-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.

**B68-10510**
HEAT-LOAD SIMULATOR FOR HEAT SINK DESIGN
DUNLEAVY, A. M. VADOG, T. J. /M. A. ROCKWELL CORP./ DATE- NOV. 1968
MSC-1570
Heat-load simulator is fabricated from 1/4-inch
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-FS-18045

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

RMAN, N. 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

CABON, R. D. DATE- NOV. 1968

KSC-10966

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 METER FOR MEASUREMENT IN A SUPERSONIC STREAM

GLEVE, C. E. KEADES, L. M. DATE- DEC. 1968

LEWIS-10565

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.

B68-10546 IMAGING SLITLESS SPECTROMETER FOR X-RAY ASTRONOMY

GORMET, E. Z. SHEFFERSONG, T. /AR. SCI. AND ENG./ DATE- NOV. 1968

M-FS-14309

Imaging slitless spectrometer, a combination of an X ray transmission/reflection grating and image-forming X ray telescope, is capable of obtaining simultaneous spatial and spectral information about celestial X ray sources.

B68-10588 ONE-DIMENSIONAL COULOMB-DAMPED WAVE MOTION IN PRISMATIC BARS

TOLIN, D. B. JR. DATE- DEC. 1968

M-FS-14215

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 RECRYSTALLIZATION OF AMORPHOUS SEMICONDUCTOR MATERIALS

SPARKS, 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 REPEATITIVELY PULSED, WAVELENGTH-SELECTIVE CARBON DIOXIDE LASERS

HANST, P. L. DATE- NOV. 1968

KSC-10778

Carbon dioxide laser as a simple portable unit generates coherent light pulses at selected infrared wavelengths. The improved power was designed for the detection of air pollutants but can be applied to optical communications.

B68-10569 ACCURATE DIGITAL TECHNIQUE SIMULATES FLIGHT CONTROL SYSTEM

HATS, J. R. /BOEING CO./ DATE- NOV. 1968

M-FS-14787

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

STAUFFER, N. R. /BOEING CO./ DATE- NOV. 1968

KSC-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 time digital simulations, resulting in savings of digital computer time.

B68-10571 CORRECTION FOR LOSSES IN OPTICAL BIREFRINGENT NETWORKS, A CONCEPT

AMAN, Y. C. /SYLVANIA ELECTR./ DATE- NOV. 1968

B68-10260 AND B68-10275

M-FS-2068

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

SPEK- INNOVATOR NOT GIVEN /HARSH/ DATE- DEC. 1968

M-FS-20292

Training Manual EQA/K5 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 TIME TECHNIQUE FOR COLOR INDUSTRIAL RADIOGRAPHY

LAFRAK, W. 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. Adition of the film during processing assures uniformity of results.

B69-10002 ISOTHERMAL DROE CALORIMETER PROVIDES MEASUREMENTS FOR ALPHA ACTIVE, PYROPHORIC MATERIALS

SAVAGE, 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 RA-226, AC-227 AND B-232 BASIL, L. J. RACIAL, R. H. MILLSTAD, J. STEWART, D. C. DATE- JAN. 1969 REAR- 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 FOR X-RAY EMISSION ANALYSIS.
NAMSOS, A. I. SHINTER, R. K. DATE- JAN. 1969 ARG-10190. Crystal-diffraction spectrometer, combined with a lithium-drifted ge-diode detector, performs high-resolution gamma ray 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
WORLDWIDE X-RAY EMISSION ANALYSIS FOR GEOCHEMICAL EXPLORATION.
ADLER, I. KANDER, R. SCHADEBECK, R. TROMBA, J. L. /LAB. FOR THEORET. STUDIES/ SCHADEBECK, R./ELPAN, INC. DATE- JAN. 1969 GSF-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 isotope sources. The technique is applicable for quantitative and qualitative analyses on complex chemical systems, and satisfies the goals for a lunar geological exploration device.

B69-10017
VARIABLE-BEAM METHOD OF SOLVING DIFFERENTIAL EQUATIONS.
VAN WYK, R. /AN. 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.
BAILLIE, J. E. CAPPELLA, D. P. /OPTICS TECHNOL. DATE- FEB. 1969 XMP-09745. Improved method for producing fased-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 THERMOLUMINESCENT DOSEMETERS.
LUCAS, E. RACOWITZ, S. W. H. WHEELE, R. W. DATE- FEB. 1969 REAR- SEE ALSO ANL-7196 ARG-10229. Beam profilometer, using thermoluminescent 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. /LOCKEED MISSILES AND SPACE CO./ DATE- FEB. 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.

B69-10043
PROPAAGATION OF DENSITY DISTURBANCES IN AIR-WATER FLOW.

B69-10047
ANALYSIS OF TRANSIENT THERMAL STRESS IN HEAT-GENERATING PLATES AND HOLLOW CYLINDERS CAUSED BY SUDEN ENVIRONMENTAL TEMPERATURE CHANGES.

B69-10057
DROAPE POINT TEMPERATURE INVERSIONS ANALYZED.

B69-10065
STRESS TRANSFER TO AN ALUMINUM PLATE AND HOLLOW CYLINDERS DURING HEAT GENERATION. RUBIN, M. N. M. DATE- FEB. 1969 M-FS-14854. A magnetic material to effect the switching process. It was found that rare earth garnets are limited by an absorption edge, only terbium
and dysprosium offer a possibility of pumping at energies below the conduction band edge.

B69-10075
SELECTIVE VIGNETTING OF TYPE 1 X-RAY TELESCOPES
RANGUS, J. DATE- MAR. 1969
GSFC-10662
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 SOUNDER MEASUREMENTS OF OZONE IN THE UPPER ATMOSPHERE
ESLENBETH, R. DATE- MAR. 1969
GSFC-10580
Rocket sounder 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.

B69-10076
STUDY OF LATTICE DEFECT VIBRATION
ELLIOTT, R. J. DATE- MAR. 1969 REAN- SEE ALSO
AML-7237
ARG-10221
Report on the vibrations of defects in crystals relates how 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 MONOENERGETIC GAMMA RAYS IN FINITE MEDIA ARE INVESTIGATED
SMOK, W. J. DATE- MAR. 1969 REAN- SEE ALSO
AML-7310
ARG-10295
In a study of the transport of radiation in matter, the response parameters of monoenergetic 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, H. G. DATE- MAR. 1969 REAN- SEE ALSO
AML-7190
ARG-10107
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
GEAB, C. W. /ILLINOIS UNIV./ DATE- APR. 1969
REAN- SEE ALSO AMN-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
REHBIR, R. L. DATE- APR. 1969 REAN- SEE ALSO
AML-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 exchanger and that use of the customary design equations to predict heat-exchanger performance leads to significant errors.

B69-10099
ACTIVE FREQUENCY CONTROL SYSTEM FOR ARGON FM LASER
SPON- INNOVATOR NOT GIVEN /SILVANIA REC.
PRODUCTS/ DATE- JUN. 1969
M-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 WOLFT, 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
OCULUTING-FILTER METHOD FOR OBTAINING FLASHER-LIGHT VISIBILITY DATA
HARDT, A. C. ZAPP, K. /MIT/ DATE- APR. 1969
NSS-13097
Occluding-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 TRACTION COEFFICIENTS FOR GASES
TAYLOR, R. F. DATE- MAY 1969 REAN- SEE ALSO
NACA-TE-9-267
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
PHOTOFLOURESCENT PHOTOGRAPHY OF SPRAY DROPLETS USING A LASER LIGHT SOURCE
GROENHWEK, J. /WISCONSIN UNIV./ BEROYANG, H.
SOULS, B. DATE- MAY 1969
LEWIS-10777
Monochromatic laser emission transformed by a fluorescent 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 harmonic generator combination produced sharp, well-exposed droplet images.

B69-10142
IMPROVED COMBUSTION CHAMBER OPTICAL PROBE
WALKER, J. /EVT 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 MICROPHONE FACILITY USED IN THE ELEMENTAL ANALYSIS OF SMALL FEATURE OF A SAMPLE
BALDWIN, J. K. /IDAHO NUC. CORP./ DATE- JUN. 1969
REAN- SEE ALSO C-1121
ARG-10359
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.

B69-10166
ION-RETARDING LENS IMPROVES THE ABUNDANCE SENSITIVITY OF TANDEM MASS SPECTROMETERS
KASPER, K. A. STEVENS, C. M. DATE- JUN. 1969
SEEM- SEE ALSO ANL-7393
ARG-10365
Ion-retarding lens which increases the abundance sensitivity of tandem 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, R. M. HART, E. J. DATE- JUN. 1969
ARC-10122
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
HC-10377
Total Energy Distribution/TED/ measurements of field excited 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.

B69-10185
PLASMA-HEATING BY INDUCTION
HABINGTON, K. HUMPHREYS CORP. / THORPE, R. L.
DATE- JUL. 1969
LEWIS-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.

B69-10189
A PROTOTYPE HIGH POWER PORTABLE LAMP
SANTIS, J. C. /MICROTEC, INC./ DATE- JUN. 1969
8-Ps-25229
Portable lighting system serves the combined work and photographic needs of manned spacecraft effort. This system enables the lamps 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
MOLO, R. A. /PENNSYLVANIA STATE UNIV./ DATE- JUN. 1969
80-10234
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 pulping of upper laser state. Narrow tube dimensions cause increased rate of 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
SEEM- SEE ALSO ANL-5954
ARG-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-FLUX HEAT EXCHANGER
TREBUS, D. N. /N. A. ROCKWELL CORP./ DATE- JUN. 1969
M-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-holding 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- JUL. 1969
SEEP- SEE ALSO ANL-7428
ARG-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 SENSORS FOR CRYOGENICS
HYMAN, L. G. SHEPPARD, J. F. SPIKE, N. DATE- JUL. 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 EXCHANGER
SHERMAN, L. D. DATE- JUN. 1969
SEEP- SEE ALSO ANL-10442
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 continuus, and eliminates spectral shift.

B69-10226
CAMERA MOUNT FOR CLOSE-UP STEREO PHOTOGRAPHS
CLAUDE, P. H. DATE- JUL. 1969
LANGST-10482
Camera mount, adaptable to any camera, facilitates obtaining close-up stereo pairs of photographs. The basic mount can be used with a 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.

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LIQUID LASER CAVITIES

DJORELUND, S. /LOCKED ELECTRON./ FILIPESCU, N. /GEO. WASHINGTON UNIV./ KELLERSTEER, G. L. SC AVOT, N. DATE- JUL. 1969 GSFC-10592

Liquid laser cavities have plecan 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


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.

TUNGSTEM THERMAL NEUTRON DOGMETER

BALL, L. L. RICHARDSON, P. J. SHEELEY, 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, M. D. /MIT/ PIERSON, E. S. DATE- JUL. 1969 NEAR- SEE ALSO ANL-7148

Discussion of magnetohydrodynamic induction generator examines the machine in detail and materials problems influencing its design. The higher upper-temperature limit of the MHD system promises to be more efficient than present turbine systems for generating electricity.

CONCENTRATIONS OF THE NATURALLY OCCURRING

HOLTZAN, R. B. DATE- JUL. 1969 ABO-10345

Study reveals naturally occurring radioisotopes are ubiquitous and contribute 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


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 transmittance. It is useful in optical coating, vacuum deposition, radiometry, interferometry, and spectroscopy.

A CONCEPT FOR MAGAZINE EXRAT PROCESSOR

PARK, C. M. /BOEING CO./ DATE- AUG. 1969 KSC-06796

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.

PHYSICAL SCIENCES (ENERGY SOURCES)

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.

A CONCEPT PON A BIMAGAZINE BIMAT PROCESSOR


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 transmittance. It is useful in optical coating, vacuum deposition, radiometry, interferometry, and spectroscopy.

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Allowing a liquid to seep through a long crack in glass prevents 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
PREFERRED-ORIENTATION ANALYSIS OF POLYCRYSTALLINE MATERIALS
DE WTS, E. C. DATE- SEP. 1969
B69-10004
Automatic device built around a goniometer examines characteristics of polycrystalline materials and determines preferred orientations of crystallites. It is automatically rotatable in each of two planes and has circuit regulated sequential rotation. A fixed X ray source in conjunction with a detector examines the material.

B69-10341
AN IMPROVED ATOMIC HYDROGEN FREQUENCY AND TIME STANDARD
AC GONIAL, T. E. H. PETKUS, H. E. DATE- SEP. 1969
GSPC-10706
Use of a large bulb, long-solute 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.

B69-10344
NEW SHIELD FOR GAMMA-RAY SPECTROMETRY
BRAH, L. E. GUSTAFSON, R. V. WILSON, D. M. DATE- AUG. 1969
ARG-10388
Gamma ray shield that can be evacuated, refilled with a clean gas, and pressurized for exclusion of airborne radioactive contaminants effectively lowers background noise. Under working conditions, repeated evacuation and filling procedures have not adversely affected the sensitivity and resolution of the crystal detector.

B69-10365
IMPROVED VACUUM DEPOSITION APPARATUS
ESBERBACH, H. DATE- SEP. 1969
B69-11009
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
LUDING, C. B. /GENERAL DYNAMICS CORP./ DATE- SEP. 1969
N-PS-20414
Data from absorption coefficients and fine-structure parameters measured for water vapor have been incorporated 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
CARR, H. E. /ABBOTT INC./ PETERS, H. D. DATE- SEP. 1969
FROHOLD, A. T., JR. HABUSCH, T. A. DATE- SEP. 1969
N-PS-20471
Investigation report presents details of dielectric properties of various metals 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
HOTT, W. B. /SPERRY RAND CORP./ DATE- SEP. 1969
GSPC-10743
Optical system designed by third order aberration theory is significantly improved by placing it into a ray deviation design program composed 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
BERSON, R. J. B. STEINHAGER, O. J. DATE- SEP. 1969
ARG-10419
Parameters of gas pressure, type of gas, tube voltage, 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
BAREISS, E. H. DATE- SEP. 1969
ARG-10445
Numerical technique increases the efficiencies 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
BRODE, D. S. /ELECTRO-OPTICAL SYSTEMS, INC./ DATE- SEP. 1969
N-PS-20172
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
BOAT-CURING AND GENERAL ROOT-POWERING METHODS FOR FINDING THE ZEROS OF POLYNOMIALS
BAREISS, E. H. DATE- SEP. 1969
ARG-10448
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
FLINN, J. E. MURA, T. /NORTHERN UNIVERSITY/ DATE- SEP. 1969
ARG-10425
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. E. DATE- SEP. 1969
ARG-10428
General mathematical expression found for energy storage shows that for linear, passive networks there is a minimum possible energy storage corresponding to prescribed impedance. The electromagnetic energy storage is determined at different excitation frequencies through analysis of the networks terminal and reactance characteristics.

B69-10446
OCULOMETER FOR REMOTE TRACKING OF EYE MOVEMENT
BEER, K. A. /KOMETT, INC./ MERCHANT, J. DATE- OCT. 1969
BEC-10114
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. EDDGER, 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**
NEBES, W. E. /AERO-ASTRODYNAMICS LAB./ DATE- SEP. 1969
H-P-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 INSTABILITIES OF A MAGNETIZEDPlasma**
CALLAHAN, J. D. /MIT/ MC CUNE, J. E. DATE- DEC. 1969
H-Q-1047
Study comprises a determination of the plasma density at which absolute density becomes predominant by using the dielectric properties at this incipient unstable state. Relationships between wavelength, frequency, and density microinstabilities are used to derive the spatial dielectric function.

B69-10466
**PROPOSED ACOUSTO-OPTIC FILTER**
DORIS, S. E. /STANFORD UNIV./ DATE- SEP. 1969
H-Q-10460
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. H. DATE- SEP. 1969
H-P-20002
Report ascertains the effects of thermoelastic damping on the propagation of longitudinal waves in cylindrical code. Review 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**
LINDDE, S. /STYSYS INTERNATIONAL INC./ DATE- OCT. 1969
MSC-13194
Actuator exerts linear force that is controllable and reproducible to microinch 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**
HARDING, J. D. DATE- OCT. 1969
N-P-11200
Report summarizes the principal problems encountered in sphere fabrication, magnetic field lenses in superconductors, configurations for the supporting field, damping oscillations, refrigeration, techniques for accelerating the electrons, read-out, and testing the stability of the gyro.

B69-10508
**METHOD OF DIRECTING A LASER BEAM WITH VERY HIGH ACCURACY**
ALLEN, R. SHURATZ, M. S. WESTPHAL, J. A. DATE- OCT. 1969
N-P1-11087
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 simulate and satellite tracking.

B69-10510
**ION MASS SPECTROMETER FOR SPECIAL USES**
ABRAMSON, E. H. /TRW, INC./ FREEDERICKS, R. W. DATE- OCT. 1969
H-Q-1048
Prototype of curved-electrode, Paul-type, quadrupole, electrodynamic mass filter has the same-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**
STARK, J. E. DATE- OCT. 1969
N-P-20240
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.

B69-10522
**DESIGN AND SPARING TECHNIQUES TO REMOVAL* SPECIFIED PERFORMANCE LIFE**
MOLITOR, A. J. Jr. /GE/ DATE- OCT. 1969
H-Q-10557
Specified performance life technique starts with the general description of what is wanted, defines in block diagram 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.

B69-10524
**A NEW METHOD FOR PRODUCING OPTICAL REFLECTIONS**
DORIS, S. E. /PERKIN-ELMER CORP./ HARRIS, J. DATE- OCT. 1969
H-Q-10527
Pure silicon 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**
FLEETING, R. B. /GE/ STAUB, F. W. DATE- OCT. 1969
H-P-20438
Analytical and experimental investigation determines the nature of oscillations and instabilities that occur in the flow of two-phase cryogenic fluids at both supercritical and subcritical pressures in heat exchangers. Test results with varying system parameters support certain design approaches with regard to heat exchanger geometry.

B69-10554
**MINIATURIZED HIGH-RESOLUTION MASS/CHARGE SPECTROGRAPH /DESIGN STUDY/**
TAYLOR, L. H. /ELECTRO-OPTICAL SYSTEMS/ DATE- OCT. 1969
MSC-13279
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 alleviates the problem of designing an ion source of small energy spread.

B69-10556
**MODIFIED CRYOGENIC STORAGE TANK SUBSYSTEM**
BALLS, W. J. /BOEING CO./ ROBERTS, B. H. DATE- OCT. 1969
B69-10560
A THEORETICAL STUDY OF RADAR BACKSCATTER
FROM DISTRIBUTED TARGETS WITH EMPHASIS ON
POLARIZATION DEPENDENCE
HUTHE, J. P./LOCKHEED MISSILE AND SPACE CO./
DATE- NOV. 1969
K-FS-17775

Mathematical framework for the electromagnetic
scattering from random 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
SPSON-INNOVATOR NOT GIVEN/MARSHALL SPACE FLIGHT
CENTERS/DATA- OCT. 1969
K-FS-14816

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
LILLY, B. /H. AR. ROCKWELL CORP./SCHAEDLE, G.
C. DATE- OCT. 1969
M5C-15193

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
HAIS, G. R./BOEING CO./DATE- DEC. 1969
K-FS-15033

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 GRAPIC METHOD FOR DETERMINING THE
ATTITUDE OF ROCKET VEHICLES
MILLER, C. F., JR./DATE- OCT. 1969
GEFC-10860

Graphical method for 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.

B69-10594
AIRBORNE FRANCOHOFER LINE DISCRIMINATOR
GABRIEL, F. C./PERKIN-ELMER CORP./MARELE, D.
A_DATE- NOV. 1969
MSC-13146

Airborne Fraunhofer 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 Fraunhofer lines in the
solar spectrum occurring at the characteristic
wavelengths of some fluorescent materials.
B69-10663
FIRE-LINE SENSITIVITY FOR HOLOGRAPHIC INTERFEROMETERS
HEFLINGER, L. O. /TRW SYSTEMS GROUP/ DATE- NOV. 1969
BG-10348
Improvement in sensitivity of holography, the technique of lensless interferometry, is obtained by enhancing the higher-order structure in the interferogram. 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. /ATV RESEARCH CENTER/ BAINWATER, W. J.
DATE- DEC. 1969
K-FS-14886
Data on the scattering of 1-Mev electrons in aluminum for the case of 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.

B69-10700
LONG RANGE HOLOGRAPHIC CONTOUR MAPPING CONCEPT
BROOKS, R. E. /TRW SYSTEMS GROUP/ DATE- DEC. 1969
BG-10350
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.

B69-10705
HANDBOOK REPLENISHING THE FUNDAMENTALS OF NUCLEAR AND ATOMIC PHYSICS
SHAW, D. F. /WESTINGHOUSE ASTRONUC. LAB./ DESK, W. J. /AEROPOSTAL-GENERAL CORP./ DATE- DEC. 1969
BUC-10554
Induction 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. F. /INST. FOR BASIC STANDARDS, BBS/ DATE- DEC. 1969
BUC-10554
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.

B69-10712
NATURAL GAS FLOW THROUGH CRITICAL NOZZLES
JOHNSON, R. C. DATE- NOV. 1969
LEWIS-11031
Empirical method for calculating both the mass flow rate and upstream volume flow rate through a two dimensional flow at one of the plane is tested over a wide range of Reynolds numbers and Mach numbers. The work is limited to tests of a single probe design for three dimensional flow.

B69-10716
CHROMATOGRAPHIC DETECTION AND ANALYSIS OF TRACES OF HYDROCARBONS
KSC-10380
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.

B69-10733
GAMMA RADIATION CHARACTERISTICS OF PLUTONIUM DIOXIDE FUEL
GINGO, P. J. DATE- DEC. 1969
NPO-11220
Investigation of plutonium dioxide as an isotopic fuel for Radiodiuotope Thermolectric 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 DEFUSE DUE TO ELECTRON INTERACTION IN DEAD LAYERS OF GE/LI
GAMMA-RAY DETECTORS
LAMEN, R. M. STRAUSS, H. G. DATE- DEC. 1969
ARG-10362
Study shows the pulse-height degradation of gamma ray spectra in germanium/lithium detectors to be due to electron interaction in the dead layers that exist in all semiconductor detectors. A pulse shape discrimination technique identifies and eliminates these defective pulses.

B69-10771
LIQUID-METAL-PISTON AND GENERATOR
PALMER, J. P. /ASSOCIATED UNIVERSITIES, INC./ DATE- DEC. 1969
BUC-10500
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-RENEWAL MODELS FOR HEAT-TRANSFER BETWEEN WALLS AND FLUIDIZED BEDS
PAVER, R. S. DATE- DEC. 1969
ARG-10372
Two surface-renewal 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
WEBER, J. R. /VANDERBILT UNIV./ DATE- DEC. 1969
BUC-20537
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 correction was changed at each step.

B69-10781
AERODYNAMIC FORCES OF FLUTTERING CYLINDRICAL AND/OR PLANAR STRUCTURES
BUC-20497
Determination 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.
**03 MATERIALS (CHEMISTRY)**

**B69-10783**
**IMAGE POSITION SENSOR**
ROSETT, B. /ROLLSMA Instrument Corp./ SIEFFERT, L. I. /DATE- DEC. 1969
**CLASS- 10101**

Preliminary design calculations for a proposed fine guidance system telescope containing a four-sided pyramidal reflector indicate that 0.01 arc sec pointing, at 0.03 arc sec seeing resolution, could be achieved by viewing a +10.0 magnitude star where the total collected light energy would be applied for fine error detection.

**B69-10793**
**ESTIMATING RELIABILITY BY APPLICATION OF MATRIX REPRESENTATION**
AUSTIN, W. L. /GEN. ELECTRIC CO./ DATE- DEC. 1969
**CLASS- 10426**

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.

**B69-10810**
**TRAJECTORY OPTIMIZATION USING REGULARIZED VARIABLES**
LEWALLEN, J. S. /TRIAS CENTER FOR ENG./ TAYLOR, B. D. /DATE- DEC. 1969
**CLASS- 12370**

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.

**B69-10823**
**DETERMINATION OF PERMISSIBLE APPLIED LOAD STRESS IN STRUCTURAL ELEMENTS**
LOY, S. E. /B. A. ROCKWELL CORP./ FOSSEY, F. C. /DATE- DEC. 1969
**CLASS- 16556**

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.

**B69-10004**
**REFERENCE BLACK BODY IS COMPACT, CONVENIENT TO USE**
DIZENEF, J. NEEL, C. B. /DATE- APR. 1964
**CLASS- 9**

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.

**B69-10207**
**THERMALLY CONDUCTIVE METAL WOOL-SILICONE RUBBER MATERIAL CAN BE USED AS SHOCK AND VIBRATION DAMPER**
ROGERS, W. W. /DATE- APR. 1964
**CLASS- 374**

Bronze wool pads, impregnated with silicon rubber, meet the requiremen for a thermally conductive, shock and vibration absorbing material. They serve as spacers in equipment mounting and are resistant to high temperatures.

**B69-10224**
**FILTER FOR HIGH-PRESSURE GASES HAS EASY TAKE-DOWN ASSEMBLY**
MAC GLASBAN, W. F. /DATE- FEB. 1960
**CLASS- 373**

A small metal filter body, for use in tubing supplying sterilization gases, has an inlet and outlet 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.

**B69-10235**
**CRYOGENIC FILTER METHOD PRODUCES SUPER-PURE HELIUM AND HELIUM ISOTOPES**
HEDBORN, A. F. /DATE- MAR. 1964
**CLASS- 374**

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.

**B69-10263**
**FRESNEL CUP REFLCTOR DIRECTS MAXIMUM ENERGY FROM LIGHT SOURCE**
LAEV, E. G. YOUNGBERG, C. L. /DATE- MAY 1964
**CLASS- 920**

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 conosheet spherical surfaces.

**B69-10311**
**COUNTRY MODELS AID WIND TUNNEL MEASUREMENTS**
RAZOFF, S. LOVING, D. E. /DATE- APR. 1964
**CLASS- 375**

For visualizing flow characteristics in wind tunnel tests, model surfaces are smeared with any common petroleum-base oils. These fluoresce under ultraviolet light and the flow patterns are readily visualized.

**B69-10318**
**QUICK-HARDENING PROBLEMS ARE ELIMINATED WITH SPRAY GUN MODIFICATION WHICH MIXES RESIN AND ACCELERATOR LIQUIDS DURING APPLICATION**
JOHNSON, O. W. /DATE- MAR. 1964
**CLASS- 920**

S. PATENT NO. 3,072,574

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.

**B69-10337**
**GALLIUM USEFUL BEARING LUBRICANT IN HIGH-VACUUM ENVIRONMENT**
BUCKET, D. B. /DATE- MAY 1964
**CLASS- 920**

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 vacuums and under low temperature.

**B69-10345**
**APPARATUS FACILITATES HIGH-TEMPERATURE TENSILE TESTING IN VACUUM**
SIEKORA, P. F. /DATE- JUN. 1964
**CLASS- 82**

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.

**B69-10351**
**NEW COBALT ALLOYS HAVE HIGH-TEMPERATURE STRENGTH AND LONG LIFE IN VACUUM ENVIRONMENTS**
ASHBROOK, R. L. FRECHE, J. C. KILMA, S. J. /DATE- MAY 1964
**CLASS- 82**

Cobalt refractory metal alloys combine sheet
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
ESCO, W. T. /BENDIX CORP./ DATE- JUN. 1964
M-F5-3
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-F5-17
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
SHOW, W. R. SHOW, W. R. /SPACE TECHNOL. LAB./ DATE- MAY 1964
JPL-WO-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 1/6TH-INCH IN DIAMETER
COON, G. W. DATE- BAR. 1964 HEAN- SEE ALSO U. S. PATENT NO. 3,027,763
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
POLYBENZIUM DISULFIDE MIXTURES MAKE EFFECTIVE HIGH-VACUUM LUBRICANTS
SPON- INNOVATOR NOT GIVEN /MIDWEST RES. INST. /
DATE- NOV. 1964 HEAN- SEE ALSO 863-10337, 863-10562, AND 864-10116
M-F5-58
Five different mixtures of polybenzium disulfide are found to be effective bearing lubricants when tested at very low pressures and high temperatures.

B63-10476
CECUM IODIDE CRYSTALS FUSED TO VACUUM TUBE FACEPLETS
PLACE, H. G. /ELECTRO-MECHANICAL RES./ DATE- MAY 1964
GSFC-67
A cesium iodide crystal is fused to the lithium fluoride faceplate of a photon scintillator image tube. The conventional silver chloride solder is then used to attach the faceplate to the metal support.

B63-10479
IMPROVES POLYBENZIUM DISULFIDE-SILVER MOTORS
BRUSHES HAVE EXTENDED LIFE
WAGNER, J. C. KING, H. N. DATE- MAY 1964
M-F5-64
Motor brushes of proper quantities of polybenzium 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.
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.

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.

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.

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.

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.

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.

A bellows-type bag with its own heating element is developed for safe handling and injection of hot corrosive liquids into modules.

Pressure molding 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.

Strong fine-mesh screens are fabricated by a method involving uniform distribution of fine ferromagnetic particles on a nonmagnetic plate. Such screens are commonly used for grids in electron tubes and ion devices.

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.

Non-toxic paste consisting of a dispersion of graphite or silver granules in a mixture of polyvinylpyrrolidone and diluted 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.
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
WIRE WINDING INCREASES LIFETIME OF OXIDE-COATED CATHODES
LWBS-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- INVENTOR NOT GIVEN / RCA/ DATE-  FEB. 1965
JRL-SC-071
The retention force of a female connector pin is measured by observing the action of a calibrated spring in a gage consisting of housing, a plunger terminating in a male subminiature connector pin, and the tension spring.

B65-10043
NOBELIECE ADAPTER FOR PIPESTES PROTECTS MOUTH FROM HARMFUL LIQUIDS
MC SMITH, D. G. DATE-  FEB. 1965
LANSBURY-47
To prevent the laboratory technicians mouth from contacting harmful liquids, a device with a heptagonally sealed elastic bellows is attached to a standard pipette.

B65-10048
FLEXIBLE CURTAIN SHIELDS EQUIPMENT FROM INVERSE HEAT FLUXES
SPOR- INVENTOR NOT GIVEN / ARROWHEAD PROD./  DATE-  FEB. 1965
M-FS-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 CURIE CRYSTAL STUDY
BACIALUPE, R. J. SPAGRSELL, A. E. DATE-  MAR. 1965
LWBS-108
Transparent sphere of polymethylmethacrylate with major zones and poles of cubic crystals is used to make crystallographic visualizations and to interpret basic ray diffraction of single cubic crystals.

B65-10083
BIDENTATE COMPOUND IMPROVES NICKEL-CADMIUM CELL
SPOR- INVENTOR NOT GIVEN /GE/ DATE-  MAR. 1965
GSBC-295
Nickel electrodes impregnated with an additional solution of diamyd hydrate and nitric acid mixed with nickel nitrate increases amperi-hour capacity of cells and does not affect the voltage characteristics.

B65-10089
FIBER GLASS PARTS CURED DURING FILAMENT WINDING ELIMINATES OVEN, SAVES TIME
CABOOD, C. J. DATE-  APR. 1965
M-FS-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 CHROMIUM TEMPERATURES
SPOR- INVENTOR NOT GIVEN / M-PAD-M LAB./ DATE-  APR. 1965
M-FS-267
M-45, a lightweight, high purity aluminum casting alloy has superior tensile properties for use at cryogenic temperatures.

B65-10095
CARBON-ARC ROD HOLDER HAS LONG LIFE, REDUCES ARC SPLITTER
SPOR- INVENTOR NOT GIVEN / RCA/ DATE-  APR. 1965
M-CE-146
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- INVENTOR NOT GIVEN / LITTON IND./ DATE-  APR. 1965
M-FS-202
Evenly distributing a monolayer of filaments 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 OXYGEN
SPOR- INVENTOR NOT GIVEN / BOEING CO./ DATE-  APR. 1965
M-FS-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 CONTAMINATION OF DRY BOX ATMOSPHERE
HERBERL, T. F. QUANTRIFTZ, N. REIMHEARTZ, G. DATE- APR. 1965
LWBS-211
Pair of encased 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, submicron powders, and liquid metals.

B65-10136
VAPOR PRESSURE MEASURED WITH INFLATABLE PLASTIC BAG
SPOR- INVENTOR NOT GIVEN /GEOPHYS. CORP. OF AM./ DATE-  MAY 1965
GSBC-281
Deflated plastic bag in a vacuum chamber measures initial low 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
GALACTIC CORROSION REDUCED IN ALUMINUM FABRICATIONS
SPOR- INVENTOR NOT GIVEN / HAMILTON/ DATE- MAY 1965
M-FS-272
Titanium alloy fasteners dipped at zinc chromate primer are installed while wet in protective coated alumina panels to reduce galvanic corrosion. Moisture tight seals at fastener points are also provided.

B65-10156
INORGANIC PAINT IS DURABLE, FIREPROOF, EASY TO APPLY
SCOTT, J. B. DATE- JUN. 1965
GSBC-346
Inorganic 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- INVENTOR NOT GIVEN / SCHILDEAU G.T./ CO./ DATE- JUN. 1965

116
Electroless nickel resist is unaffected by caustic soda applied as a milling or etching agent on aluminum.

B65-10164

INRADIATION IMPROVES PROPERTIES OF AN AROMATIC POLYESTER
BELL, V. L., JR. DATE- JUN. 1965
LANGLEY-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
SPOR- INNOVATOR NOT GIVEN /LANGLEY/ DATE- JUN. 1965
LANGLEY-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
SPOR- INNOVATOR NOT GIVEN /ALCOA RES. LABS./ DATE- JUN. 1965
-PS-235
Topcoat of epoxy-polyamide paint is effective protection for aluminum alloys against stress corrosion cracking. The paint can be used on unprimed surfaces.

B65-10173

PEEL RESISTANCE OF ADHESIVE BONDS ACCURATELY MEASURED
SPOR- INNOVATOR NOT GIVEN /BARKER/ 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
SPOR- INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/ DATE- JUN. 1965
JPL-WO0-021
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

RESUSCIBLE NEOPRENE JACKET PROTECTS PARTS FOR CHEMICAL KILLING
SPOR- INNOVATOR NOT GIVEN /BRYAN AEROSPACE CO./ DATE- JUN. 1965
WQ-071
Resuscible neoprene jacket is used to prepare metal part or panel for chemical killing. Jacket covers back and upper rim of part and is sealed before the masking solution is applied to surface to be killed. This reduces amount of masking material required for sealing identical parts and increases production.

B65-10180

TESTING DEVICE SUBJECTS ELASTIC MATERIALS TO BIAXIAL DEFORMATIONS
BECKER, G. W. 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
-RS-279
Bismuth trioxide-tellurium dioxide glasses have improved infrared transmission characteristics.

B65-10214

EMERGENCY SOLAR STILL DESALTS SEAWATER
SPOR- INNOVATOR NOT GIVEN /HILFAX/ DATE- JUL. 1965
MSC-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
SPOR- INNOVATOR NOT GIVEN /HOFFMAN ELECTROL./ 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

THORIUM AND NICKEL BONDED BY SOLID-STATE DIFFUSION METHOD
BALES, T. T. BANNING, R. C., JR. DATE- AUG. 1965
LANGLEY-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
SEARAY, F. D. /WESTINGHOUSE ELECTRIC CO./ DATE- AUG. 1965
-MO-030
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.

B65-10261

BORON CARBIDE WHISKERS PRODUCED BY VAPOR DEPOSITION
SPOR- INNOVATOR NOT GIVEN /GE/ DATE- SEP. 1965
-MQ-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
SPOR- INNOVATOR NOT GIVEN /ITT RES. INST./ DATE- SEP. 1965
-LS-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
LOOK, G. F. DATE- SEP. 1965 HAEB- SEE ALSO
B65-10090
LANGLEY-377
Adding trichlorofluoroethane to polyester resin accelerates the reaction between the resin and toluene diisocyanate. This accelerated reaction instantaneously produces a plastic foam of low density and uniform porosity needed to provide buoyancy for flotation recovery of instrument
THREADED FASTENERS
CARBON
MAGNESIUM-LITHIUM ALLOY
ADHERENT PROTECTIVE COATINGS

B65-10294
ADHESIVE PROTECTIVE COATINGS PLATED ON MAGNESIUM-LITHIUM ALLOY
SPON- INNOVATOR NOT GIVEN /LBA/ DATE- OCT. - 1965
M-PS-365
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
BURRING TECHNIQUE IMPROVES LUBRICATION OF THREADED FASTENERS
GUERRA, J. L. /LOCKHEED MISSILES AND SPACE CO./ DATE- OCT. 1965
LEWIS-217
Burnishing a sodydimufide 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
ABC-47
Removable plastic well with a flange that seats on the rim of an Erlenmeyer screw top flask aids qualitative 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 absorbers.

B65-10321
PLATED NICKEL WIRE MESH MAKES SUPERIOR CATALYST BED
STILL, M. /BELL AEROSYSTEMS CO./ DATE- OCT. 1965
MSC-216
Placed nickel wire mesh screen catalyst bed produces gas evolution in hydrogen peroxide thrust chambers used for attitude control of space vehicles. The nickel wire mesh disks in the catalyst bed are plated in Cyanon form with a silver-gold coating.

B65-10325
MAGNETIC FLUID READILY CONTROLLED IN ZERO GRAVITY ENVIRONMENT
PAPPEL, S. S. DATE- NOV. 1965
LEWIS-126
Colloidal composed of finely ground ircon 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
M-PS-365
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-444
Special coatings in the form of paints that exhibit controlled ratios of sunlight absorptivity to grey-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
TMD, E. S. /U. S. NAVY AVIATION/ 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 central and spreads it over a rigid configuration.

B65-10344
SOLUBLE UNDERCOAT FACILITATES REMOVAL OF FORCED-IN-PLACE INSULATION
DURCAN, A. C. BELL, C. L., JR. DATE- NOV. 1965
LEWIS-193
Forced-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
HARAHA, Y. /IIT RES. INST./ RECHTER, R. L. 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
SETZINGER, V. F. 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 /PARAMETRICS/ DATE- DEC. 1965
GSFC-388
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
WINNAKRI, 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 FORGED INTO GRIDS WITH MINUTE INTERSTICES
TODD, R. S. /ELECTRO-OPTICAL SYSTEMS/ DATE- DEC. 118
Deferring the ends of a bundle of closely packed parallel wires to restrict the interstices to substantially uniform and minute 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.

Flexible, inextensible material combined with stainless-steel fibers and soldered 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.

Four different test strips, using crystal violet 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.

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.

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Flexible protective coatings formed from either of two polymers exude from through holes in the strip. The 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.

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Protective coating containing a plasma arc sprayed mixture of hafnium oxide and zirconium diborate 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


NOS-97

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

Zvarev, N. T., Jr. /Grumman Aircraft Corp./ Date: Feb. 1966

NOS-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**

Polytetrafluoroethylene Lubricates Ball Bearings in Vacuum Environment

Spon-Innovator Not Given /Goodyear/ Date: Mar. 1966

NOS-272

Polytetrafluoroethylene /PTFE/ balls are interspersed among steel ball bearings to provide a dry lubricant in a high vacuum environment.

**B66-10083**

Cryostat Modified to Aid Rotating Beam Fatigue Test

Desham, T. P. /N. Am. Aviation/ Date: Mar. 1966

NOS-435

Modified stainless steel Dewar aids 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 system explosion-proof.

**B66-10097**

Solid-Film Lubricant is Effective at High Temperatures in Vacuum

Slisby, H. E. Date: Mar. 1966 Rear-See Also B63-10453 and B63-228

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.

**B66-10100**

Radiotoxic Tracer System Detects Oil Contaminants in Fluid Lines

NOS-10453 and B63-228

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

NOS-10453 and B63-228

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.

**B66-1110**

Etching Process Hills Pb 14-8 No Alloy Steel to Precise Tolerances

Chapman, B. L. /N. Am. Aviation/ Noland, F. W. Date: May 1966

NOS-70

Chemical milling process, which composes an aqua regia etchant with a sulfonate wetting agent, produces finishes on Pb 14-8 monelloy alloy steel to precise tolerances. This process permits precision removal of excess metal from the steel in annealed and/or aged conditions.

**B66-1111**

Storage-Stable Foamy Polyurethanes Is Activated by Heat

Spon-Innovator Not Given /Goodyear/ Date: May 1966

Largey-187

Polyurethane foamy mixture remains inert in storage unit activated to produce a rapid foaming reaction. The storage-stable foamy 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.

**B66-1212**

Oxygen-Hydrogen Torch Is a Small-Scale Steam Generator

Nassell, C. E. /Aerojet-Gen. Corp./ Date: Mar. 1966

NOS-8043

Compact, high-intensity spark-flash unit is used as a light source for continuous rapid photography. The spark-breakdown flash source is enclosed in polyethylene and incorporates a parabolic reflector.

**B66-1310**

Surfactant for Dry-Penetrant Inspection Is Insensitive to Liquid Oxygen

Spon-Innovator Not Given /N. Am. Aviation/ Date: Mar. 1966

NOS-475

LOX insensitive solvent is blended into a mixture of commercially available surfactants to clean metal surfaces which are to be investigated by the dry-penetrant method. The surfactant mixture is applied before and after application of the dye.

**B66-1318**

Bismuth Alloy Potting Seals Aluminum Connector in Cryogenic Application

Flower, J. P. /Douglas Aircraft Co./ Date: Mar. 1966

WOC-260

Bismuth alloy potting seals feedthrough electrical connector for instrumentation within a pressurized vessel filled with cryogenic liquid. The seal combines the transformation of high-bismuth content alloys with the thermal contraction of an external aluminum tube.

**B66-1319**

Hot-Wire Detector for Chemically Active Materials Used in Gas Chromatography

Spon-Innovator Not Given /N. Am. Aviation/ Date: Apr. 1966

NOS-269

Hot-filament detector analyzes chemically active materials used in gas chromatography. The detector reacts chemically with the effluent vapors in the gas chromatograph apparatus to
Gallium alloy films investigated for use as boundary lubricants.

B66-10160

Corrosion of 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.

B66-10165

Gallium alloy films investigated for use as boundary lubricants.

B66-10166

Dispersion leak tests and sterilizes rubber gloves.

B66-10185

Improved adhesive for cryogenic applications cures at room temperature.

B66-10194

Silazane polymers show promise for high-temperature application.

B66-10196

Fibers of newly developed refractory ceramics produced by improved process.

B66-10207

White primer permits a corrosion-resistant coating of titanium.

B66-10211

Submicron metal powders produced by ball milling with grinding aids.

B66-10222

Nickel-base superalloys developed for high-temperature applications.

B66-10230

Electric arc heater is self starting.

B66-10256

Dry film lubricant is effective at extreme loads.

B66-10257

Substituted silane-diol polymers have improved thermal stability.

B66-10160

Corrosion of metal samples rapidly measured.

B66-10166

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.

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B66-10257

Substituted silane-diol polymers have improved thermal stability.
prase-diphenol, was found to have the most desirable properties.

B66-10273
BORON-DIOXIDIZED COPPER STANDS UP TO HEAT TRANSFER TEMPERATURES
SCHMIDT, E. N. /N. AM. AVIATION/ DATE- JULY 1966
NPS-762
Boron-deoxidized high-conductivity copper is used for fabrication of heat transfer components that are heated 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. /MONSANTO RES. CORP./ DATE- JUNE 1966
LEWIS-167
Vapor diffusion type fuel cell electrode presents a nonwetting barrier to the liquid feedstock 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
MPS-735
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
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
SPENCER, INNOVATOR NOT GIVEN /HCA/ DATE- JULY 1966 GSFC-480
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 DONOHUE, D. J. /N. AM. AVIATION/ DATE- JULY 1966 MSC-525
Rapid, nondestructive test for identifying metals measures the characteristic potential difference produced by galvanic reaction 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 LCHREISH, H. C. /N. AM. AVIATION/ DATE- JULY 1966

1966
MSC-549
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 DO LALT, P. /N. AM. 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 SEAL POSES SEALED WITH THERMOSETTING MONOMER GLUCKER, A. B. /N. AM. AVIATION/ DATE- JULY 1966 MFS-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-RAYS TO BE TAKEN OF INNER WILD AREAS HENDRICKSON, D. R. SPENCE, T. R. /N. AM. AVIATION/ DATE- JULY 1966 MFS-856
Inflatable rubber gland positions and holds X ray films in positive contact with inner weld areas of mainfold torch assemblies for verifying the weld quality. The gland is constructed to conform to the inside diameter of the manifold torch.

B66-10335
SHOCK-OPERATED VALVE WOULD AUTOMATICALLY PROTECT FLUID SYSTEMS BRANDS, L. W. WELS, G. H. /N. AM. AVIATION/ DATE- JULY 1966 MFS-801
Glandless valve shuts down high-pressure fluid systems 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 BOLKAN, E. V. /N. AM. AVIATION/ DATE- JULY 1966 MFS-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 BIALXIAL LEADS MCDONNELL, T. C. /N. AM. AVIATION/ DATE- AUGUST 1966 EEA-N SEE ALSO B65-10243 MSC-516
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. /GE/ DATE- JULY 1966 GSFC-495
Hydrogen-oxygen 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 TUBE END  
               EISENHAN, W. G. /W. AM. AVIATION/ DATE- AUG. 1966  
               M-PS-74  
               Electrochemical milling removes 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.

B66-10373  BEARING ALLOYS WITH HEXAGONAL CRYSTAL  
               STRUCTURES PROVIDE IMPROVED FRICTION AND WEAR  
               CHARACTERISTICS  
               BUCKLEY, D. R. JOHNSON, B. L. DATE- AUG. 1966  
               LW-59-097  
               Bearings of titanium, cobalt, and other hexagonal crystal alloys are used in vacuum and high temperature environments. These temperature-stabilized alloys have reduced friction and wear characteristics and therefore have potential use in aircraft seals, hydraulic equipment, and artificial human joints.

B66-10380  SUBMICRON HOLES IN THIN FILMS INCREASE  
               SAMPLING RANGE OF MASS SPECTROMETERS  
               WILLIAMS, H. /CONSOLIDATED SYSTEMS/ DATE- AUG. 1966  
               JPL-SC-097  
               Gold films are 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  
               NEFF, J. E. TENNEK, E. W. DATE- SEP. 1966  
               ABC-58  
               Self-supported aluminum thin film is produced by vacuum depositing the film on a polystyrene film and then removing the resin by a photoresist. 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  
               GODDARD, H. B. /WHITTAKER CORP./ DATE- SEP. 1966  
               M-PS-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 in controlled so that the fibers are not incarcerated with the polymer.

B66-10398  THIN-FILM FERRITES VAPO DEPOSITED BY ONE-STEP PROCESS IN VACUUM  
               BACHRACHLO, E. /BELFAIR/ DATE- SEP. 1966  
               M-SC-259  
               Thin-films of 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  
               MINIMIZE BRIDGING AND UNDERCUTTING  
               SPOH- INNOVATOR NOT GIVEN /BENDIX CORP./ DATE-  
               SEP. 1966  
               M-PS-1366  
               Four-step photoresist 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  
               SPOH- INNOVATOR NOT GIVEN /B. AM. AVIATION/ DATE-  
               SEP. 1966  
               M-PS-761  
               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  
               WESTERLUND, B. W. /ALCOA RESEARCH LABS/ DATE- OCT. 1966  
               M-PS-1213  
               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  
               SPOH- INNOVATOR NOT GIVEN /BOEING CO./ DATE- OCT. 1966  
               M-PS-1351  
               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 formed in the aged T61 condition, and aging subscale parts formed in the aged T31 condition.

B66-10451  BRUADABLE CHELATING RESINS CONCENTRATE METAL IONS FROM HIGHLY DIILUTE SOLUTIONS  
               BAUMAN, A. J. WESTAL, R. H. WELTY, N. DATE- OCT. 1966  
               JPL-758  
               Column chromatographic method uses new metal chelating resins for recovering heavy-atom ions from highly dilute solutions. The absorbed heavy-atom 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 CORKLIKE MATERIAL PRODUCED AT LOW COST  
               HENDEL, F. J. DATE- OCT. 1966  
               JPL-793  
               Thermoplastic corklike 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 PEE CMT SI-FE SHEET IS CHEMICALLY REDUCED  
               GOLDMAR, A. PAVLOVIC, D. M. /WESTINGHOUSE ELECTRIC CORP./ DATE- OCT. 1966  
               M-SC-557  
               Chemical milling process aids the production of 0.0065 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 CASTINGS AND TOOL STRUCTURES
Heat treatment processes, applied after welding but before machining, impart above normal stability to welded aluminum jigs and tool structures. Weight saving will not be realized in these tools if rigidity equal to that of a comparable steel tool is required.

Experiments show that xenon and fluoride 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.

Procedures for applying an adherent electroless nickel plating on 303 S.S., 304, and 17-7 PH stainless steels, and 7075 aluminum alloy were developed. When heat treated, the electroless nickel plating provides a hard surface coating on a high strength, corrosion resistant substrate.

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.

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.

Copper-based quaternary alloys of the solid solution type are used for vacuum furnace brazing of large stainless steel components at a maximum temperature of 790 deg F. The alloy has high bonding strength and good ductility over a temperature range extending from the cryogenic region to approximately 800 deg F.

Crucible cast from a mixture of a beryllium oxide aggregate and hydraulic refractory cement, and coated with an impervious refractory oxide will not deteriorate in the presence of fused salt-molten metal mixtures such as uranium-magnesium-zinc-halide salt systems. Vessels cast by this process are used in the flux reduction of oxides of thorium and uranium.

Tungsten-rhenium alloy 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.

Cobalt-iron alloys containing from 7.0 to 9.3 percent iron prepared from ultrapure 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.

Tungsten-insulated suscepter cup for high temperature induction furnace eliminates contamination.

Slip ring lead wires composed of ternary alloys of silver, have high electrical conductivity, a tensile strength of at least 30,000 psi, high ductility, and are solderable and weldable. An unexpected advantage of these alloys is in their resistance to discoloration on heating in air.

New tungsten alloy has high strength at elevated temperatures.

Tungsten-bismuth-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.

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.

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.

Sprayable fire retardent coating enables
HEAT-TREATMENT OF METAL PARTS FACILITATED

**B66-10596**

Use of steel and tantalum apparatus for molten cd-bs-en alloys

**R. A. BERNSTEIN, L. JR. KYLIE, H. L. NELSON, H. JR.**

**DATE- DEC. 1966**

**ASC-1161**

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

**R. WILLING, H. JR. A. AVIATION/ DATE- DEC. 1966**

**KSC-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 IMBEDMENT**

**R. C. COATES, C. C. KELLEY, JR. /BOEING CO./ DATE- DEC. 1966**

**M-PS-1043**

Embedding metal parts of complex shape in sand contained in a steel box prevents strains 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.

**B66-10639**

**PROCESS FOR PREPARING DISPERSSIONS OF ALKALI METALS**

**H. P. LANE, A. DATE- DEC. 1966**

**JPL-734**

Finely divided particles of alkali metals are produced by combining alkali metals with certain aromatic compounds in selected solvents to form low-temperature solvolyzable 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**

**CONVERSION CHAMBER STRUTS CAN BE EFFECTIVELY TRANSPARATION COOLED**

**P. R. PALMER, R. H. /N. A. AVIATION/ DATE- DEC. 1966**

**M-PS-1430**

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.
Determined by Emission Spectrography

Declair, M. H. /Air Force, Aviation/ Date: Dec. 1966

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.

866-10705

Glass formulation has high coefficient of thermal expansion

Davis, E. R. Seidel, J. /Westinghouse Astronucl. Lab./ Date: Dec. 1966 Rear: See Also 866-10706

WU-223

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.

866-10710

Radioactive method enables determination of surface areas rapidly and accurately


WU-223

Radioactive krypton adsorption technique is used to determine the surface area of more than one sample of material simultaneously.

867-10003

New electrolyte may increase life of polarographic oxygen sensors

Ahlbrandt, C. T. /Garrett Corp./ Date: Jan. 1967

MSC-223

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.

867-10007

Composites of porous metal and solid lubricants increase bearing life

Slavik, B. E. Date: Jan. 1967

Lewis-238

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.

867-10012

Crystal microbalance measures condensable molecular fluore

Stephens, J. H. Date: Jan. 1967

JPL-238

Quartz crystal quantitatively measures molecular fluore 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.

867-10014

Abased cadmium-plated cable connectors

Simons, J. R. /Boeing Co./ Date: Jan. 1967

N-238-126

Conversion coating procedure repairs scratched and abased cadmium-plated aluminum cable connectors while they are in assembly.

867-10016

Dispersion of borax in plastic is excellent fire-retardant heat insulator

Evans, R. Hughes, J., Schmich, F. Date: Jan. 1967

ABC-5

A mix of borax powder and a chlorinated anhydrous polyester resin yields a plastic composition that is fire-retardant, yields clumps 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.

867-10026

Beryllium fluoride film protects beryllium against corrosion

Odonnell, P. E., Odonnell, P. M. Date: Feb. 1967

Lewis-238

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.

867-10032

Fluid-bed fluoride volatility process recovers uranium from spent uranium alloy fuels


SNL-305

Fluid-bed fluoride volatility process recovers uranium from uranium fuels containing either zirconium or aluminum. The uranium is recovered as uranium hexafluoride. The process requires few operations in simple, compact equipment, and eliminates aqueous radioactive wastes.

867-10033

Hydrated bicarbonate cations are new class of molten salt mixtures

Angell, C. A. Date: Mar. 1967

ARC-211

Electrical conductance and activation energy measurements on mixtures of calcium and potassium nitrate show the hydrated form to be a new class of molten salt. The theoretical glass transition temperature of the hydrate varied in a manner opposite to that of the anhydrous system.

867-10034

Two techniques enable sampling of filtered and unfiltered molten metals

Burris, L., Jr., Pierce, R. D., Tobias, K. E., Wieland, R. C. Date: Mar. 1967 Rear: See Also ANL-7088

ARC-150

Filtered samples of molten metals are obtained by filtering through a plug of porous material fitted in the end of a sample tube, and unfiltered samples are obtained by using a capillary-tube extension rod with a perforated basket. With these methods there are no sampling errors or loss of liquid.

867-10044

Irradiated gases transferred without contamination or dilution

Bow, J. L., Kern, W. Date: Mar. 1967

Lewis-279

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 valve piping manifold, and a special drill and sealed drilling access.

867-10049

Cryogenic fatigue data developed for Inconel 718

Schmidt, R. B. /Air Force, Aviation/ Date: Mar. 1967

N-70-702

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.

867-10050

Zirconium alloys with small amounts of iron and copper offer nickel show improved corrosion resistance in superheated steam

Greenberg, S., Youngblood, C. A. Date: Mar. 1967

ARC-226

Heat treating various compositions of zirconium alloys
alloys improve near 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
ARC-230
Experiments performed under conditions found in nuclear reactor superheaters determine the corrosion rate of stainless steel and nickel alloys used in them. Electroplating was the primary surface treatment before the corrosion test. Corrosion is determined by weight loss of specimens after descaling.

B67-10058
ADDITION OF SOLID OXIDIZER INCREASES LIQUID FUEL SPECIFIC IMPULSE
RARDEL, F. J. DATE- APR. 1967
JPL-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
M-PS-566
Corrosion-resistant steel that adds restrictions on chemical composition to ensure sufficient ferrite content decreases the tendency of CHS to develop cracks during welding. The equations restricting composition are based on the Schaeffler constitution diagram.

B67-10070
RADIAL FURNACE SHOWS PROMISE FOR GROWING STRAIGHT BOSON CARBIDE WHISKERS
FEINGOLD, E. /GE/ DATE- APR. 1967
UG-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
WALTER, R. J. /N. AM. AVIATION/ DATE- APR. 1967
M-PS-1913
Three-stage purification train produces ultrapure hydrogen gas at 1000 psi from K-bottles of high-purity hydrogen. The continuous process incorporates demineralization and dehydrogenation units and a molecular sieve.

B67-10079
ARYLENSILOXANE COPOLYMERS
BREED, L. W. ELLIOTT, R. L. /MIDWEST BIS. INST./ DATE- APR. 1967
M-PS-1812
Arylenesiloxane copolymers with regularly ordered structures were discovered during efforts to develop organosilicon polymers. Arylenesiloxane and siloxane monomers were both synthesized in these experiments.

B67-10083
EFFECTS OF HELIUM AND NITROGEN AS PRESSURANTS IN NITROGEN TETROXIDE TRANSFER
BIEZAK, F. SIRKIN, D. J. /N. AM. AVIATION/ DATE- APR. 1967
MSC-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 improve LOX 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
SPON- INNOVATOR NOT GIVEN /SYRACUSE UNIV. RES. INST./ DATE- APR. 1967
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
MSC-1137
Improved chlorate candle is used as a solid, portable source of oxygen in emergency situations. It contains sodium chlorate, iron, barium perchlorate, 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 MONOEMES AND POLYMERS
HOLLANDER, J. TSCHERLER, F. D. /HITTNER CORP./ DATE- APR. 1967
MSC-1050
Halogenated polyurethane and polycarbonates are synthesized and found to be LOX compatible but dependent upon the type nitrogen bonding.

B67-10102
SIMPLIFIED METHOD INTRODUCES DRIFT FIELDS INTO CELLS
GODETTE, E. RAPPAPORT, F. WISKOSCH, J. J. /ECA/ DATE- APR. 1967
GSFC-572
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
MSC-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
NOWOVEN GLASS FIBER MAT REINFORCES POLYURETHANE ADHESIVE
ROSELAND, L. H./DOUGLAS AIRCRAFT CO./ DATE- MAY 1967
M-PS-2309
Nowoven 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
OLSON, G. A. /BOEING CO./ DATE- MAY 1967
M-FS-2032
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
WINDUP WIRE
DOWKELLY, 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. Wire characteristics of
tensile strength, flexibility, conductivity, and
general workability are tested. Knowledge of the
advantages and limitations of these materials
should prevent overspecification.

B67-10128
SILVER PLATING ENSURES RELIABLE DIFFUSION
BONDING OF DISSIMILAR METALS
SPRO- INNOVATOR NOT GIVEN /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
KERR, R. M.; LANDAU, R. F.; REMBAUM, A. DATE-
MAY 1967
N-80-10062
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
FLUORIDATING AGENTS
HINH, E. H.; QUARTERMAN, L. A.; SHERR, I. DATE-
MAY 1967
ARC-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 fluoride alone at high
temperatures.

B67-10138
STATUS OF ULTRACHEMICAL ANALYSIS FOR
SEMICONDUCTORS
DITZ, E. V.; HALL, L. C. /VANDERBILT UNIV./
DATE- MAY 1967
M-FS-2254
Status of ultracheemical 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 ultracheemical
analysis.

B67-10141
STUDY TO ATTENUATE HYDROGEN EMBRITTLEMENT
OF ULTRAHIGH-STRENGTH STEELS
ELSEA, S. T.; FLETCHER, R. E.; GRONEVELD, T. P.
/BATTLESN R&M. 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.

B67-10147
DECREASED OF TITANIUM TO MINIMIZE STRESS
CORROSION
CARPENTER, S. W. /GEN. DYN./CONVAIR DIV./ 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
ECKER, B. W. /GEN. DYN./CONVAIR DIV./ DATE-
MAY 1967
LEWIS-381
Cracking that causes pressure leakage in glass
connector headers can be alleviated by
manipulating the pin bridgewire connectors. This
initiates the surface and meniscus cracks. Dry
blasting the header surface with a fine abrasive
then removes the cracks.

B67-10149
COATING PROTECTS MAGNESIUM-LITHIUM ALLOYS
AGAINST CORROSION
SPRO- INNOVATOR NOT GIVEN /MACH. AND
FOUNDRY CO./ DATE- MAY 1967
REAN- SEE ALSO
NASA SP-50-66
M-FS-2466
Coating protects newly developed magnesium-lithium
alloys against corrosion. The procedure includes
heating the insets 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
HYDROGEN TREATMENT STUDY OF ALUMINUM CASTING ALLOY
M-45
LOVET, C. V. DATE- JUN. 1967 REAN- SEE ALSO
M-FS-2397
Study determines the heat treatment cycle of
aluminum casting alloy M-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
DAVIS, R. A.; OLSEN, M. G.; WOODEN, S. W. DATE-
JUN. 1967 REAN- SEE ALSO NASA TM-X-53537
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 CONVERTS
POLYETHANOLIC INTO STRUCTURAL MATERIAL
INGHAM, J. D.; LAwSON, D. D.; OSTEUM, G. N. DATE-
JUN. 1967
JPL-492
Isostatic compression process compacts certain
powdered organic 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.
Stress calculator permits speedy conversion of strain data directly into maximum and minimum stresses and also determines stress direction. The calculator has a sensitive slide with logarithmic and linear scales, and an information and grid board. Its size is flexible for easy manipulation.

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.

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.

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.

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.

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.

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.
metal on the base metal. The resulting bond is a true metal-to-metal bond.

B67-10236
URANIUM ISOPESES QUANTITATIVELY DETERMINED
BY MODIFIED METHOD OF ATOMIC ABSORPTION
SPECTROPHOTOMETRY
LEE, T. H. /DATE- JUL. 1967
ARC-210

Hollow-cathode discharge tubes determine the quantities of uranium isotopes in a sample by using atomic absorption spectrophotometry. Disassociation 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
TRACE CONTAMINANTS IN WATER
POSTER, J. A. /DATE- JUL. 1967
MSC-10034

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 HYDROCARBON CARBIDE
COMPOSITE PRODUCES LIGHTWEIGHT NEUTRON
SHIELD MATERIAL
HOTZHEDER, A. M. /WESTINGHOUSE ASTROEUCL. LAB./
DATE- AUG. 1967
NOC-10069

Inexpensive lightweight neutron shield material has high strength and ductility and withstands high internal heat generation 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
TEMPEST YIELD STRENGTH USING LEAST NUMBER
OF SPECIMENS
DIXON, E. /AEROJET-GEN. CORP./ DATE- AUG. 1967
NERC-10075

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.

B67-10282
MATERIALS DATA HANDBOOK, INCONEL ALLOY 718
SESSLER, J. /SYRACUSE UNIV. RES. INST./ DATE- AUG. 1967
N-PF-2349

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.

B67-10286
LIQUID CRYSTALS DETECT VOIDS IN FIBER GLASS
LAMINATES
MOLLER, W. T. /GEN. ENG./ DATE- AUG. 1967
LEWIS-10104

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 differences in color.

B67-10290
TRACE HYDRAZINES IN AQUEOUS SOLUTIONS
ACCURATELY DETERMINED BY GAS CHROMATOGRAPHY
WELZ, E. A., JR. /AM. AVIATION/ DATE- AUG. 1967
AER/SEE ALSO NASA B66-10586
HBE-11222

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 DUCTING CLEANED BY FALLING
FILM METHOD
PAUL, R. I. /BOEING CO./ DATE- AUG. 1967
N-PF-11846

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. /SYRACUSE UNIV. RES. INST./ DATE- AUG. 1967
N-PF-2349

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
LANGLEY-10027

Modified 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
BROOKSHER, W. K. /GILROY, J. DATE- AUG. 1967
ARG-158

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 relative few electrons, and the changing of specimen position and magnification without adjustments.

B67-10315
TRITIATED ALUMINA SERVES AS REAGENT FOR
SELF-LABELING ANALYSIS
EEDEBACH, E. H. /KLEIN, P. D. DATE- SEP. 1967
ARG-209

Tritiated alumina, prepared by exchange of the surface hydroxy groups with tritiated water, is a suitable reagent for exchange-labeling of specific compounds in low concentration prior to chromatographic analysis. In a chromatographic column, it detects and measures submicrogram quantities of material.

B67-10320
EVAPORANT PEND DEVICE FACILITATES FLASH
VAPORE DEPOSITION PROCESS IN VACUUM
BERNARD, W. A. /STEIN, R. J. DATE- SEP. 1967
N-PF-2349

Mechanism using a helix sequentially feeds prescribed amounts of metal charges into an evaporation 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
COMBUSTION CRACKS IN TITANIUM ALLOY
BRASKI, R. M. DATE- SEP. 1967
LANGER-1007
Solution of hydrogen fluoride, hydrogen peroxide, and water reveals hot salt 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-DIFFUSION TECHNIQUE
NILES, K. H. DATE- SEP. 1967 REAM- SEE ALSO
AM-6657

ARG-277
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
KLOPP W. D. /RAFFO, P. L. /HUBBENSTEIN, I. S.
WITZES, W. R. DATE- AUG. 1967
LEV-10257
Alloy combines superior strength at elevated temperatures with improved ductility at lower temperatures relative to unalloyed tungsten. Composed of tungsten, rhodium, 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 CREATED FOR IMPORTANT
TEMPERATURE RANGE
LC CARY, R. D. /MATS. BUR. OF STD./ ECDES, H. N. 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 K with pressures to 100 psi and mixtures of the liquid and vapor phases to 0.003 quality. The diagrams are plotted in color, are 19 by 30 inches in size, and are suitable for wall mounting.

B67-10349
EXCELLENT SPRING PROPERTIES DEVELED IN TWO
NICKEL ALLOYS FOR USE AT CRYOGENIC
TEMPERATURES
DESSAU, P. F. /AEROJET-GEN. CORP./ EBBR, I. M. DATE- GEN. 1967
NOC-10086
Cold working and aging improves 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,
HIGH PRESSURE ENVIRONMENT
LAMBERTSTEIN, D. J. /AEROJET-GEN. CORP./ DATE- SEPO 1967
NOC-10083
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 antiall and seal properties.

B67-10351
METAL FLAME SPRAY COATING PROTECTS ELECTRICAL
CABLES IN EXTREME ENVIRONMENT
BRADY, R. D. /FOZ, R. A./ AEROJET-GEN. CORP. /
BRADY, R. D. /METCO, INC./ DATE- OCT. 1967
NOC-10077
Metal flame spray coating prevents metal measurement error in sheathed instrumentation 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 WAVES
BAKER, R. N. /DOUGLAS AIRCRAFT/ DATE- OCT. 1967
M-PS-12506
Cut-through tester 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/weight/acting on the penetrator can be applied through a near infinite range.

B67-10365
MAGNESIUM-LITHIUM ALLOYS DEVELOPED FOR LOW
TEMPERATURE USE
DUNKELEY, F. J. /LEAVENWORTH, H. W., JR.
DUNKELEY, F. J. /AM. MACHINE AND FOUNDRY CO./ DATE- OCT. 1967 REAM- SEE ALSO NADA-SP-5068
M-PS-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 CRYOGENIC
CAPACITORS
MATHES, C. N. /GE/ MINEERCH, S. H. DATE- OCT. 1967
M-PS-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, anodic coatings on metal foils, and polar low temperature liquids.

B67-10374
HANDBOOKS DESCRIBE Eddy CURRENT TECHNIQUES
USED IN NONDESTRUCTIVE TESTING OF METAL
PARTS AND COMPONENTS
SPOOR- INNOVATOR NOT GIVEN /GEN. DRY./ CONVAIR/ DATE- OCT. 1967
M-PS-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 CO./ LIU, L. S. YANG, P. D. DATE- OCT. 1967
M-PS-12269
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 MATERIALS
STARKOP, D. M. /ANG. AVIATION/ DATE- OCT. 1967
M-PS-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. DRY./ CONVAIR/ DATE- OCT. 1967
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. Thin-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 size.

Isotopic tracer experiments and scale-impingement study of the relation between microstructure and technique measures interlayer adhesion in manganese sodium perxenate oxidizes manganese to... Polyimide-film flat surfaces are subjected to the human eye the... Plastic components exposed to the human eye the locked-in stresses that will result in fractures and delaminations when the soldering procedure takes place. Thin-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 size.

Technique improves the service life of fuel cell electrodes. The welding is done before the metallic sinter is activated by depositing finely divided metal within the sinter structure from a solution with corrosion inhibiting ions. The activator solution flows through the porous sinter while attached to the backup plate.

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Technique shows contrast to nickel oxide scales, where nickel is... Mechanical properties of aluminum-silicon alloys... Variations in strength are a consequence of variations in ductility and that ductility is inversely proportional to dendrite size.

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only a slight corrosive effect on the alloy.

B67-10451
STUDY MADE OF PROCEDURES FOR EXTERNALLY LOADING AND CORROSION TESTING STRESS CORROSION SPECIMENS
E-FS-12664
Study was initiated to determine methods or test specimens for evaluating stress 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
E-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
BCH TEMPEL, P. J. /BOEING/ DATE- DEC. 1967
E-FS-13757
Zirconia oxide coating enables 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 IMMERSION
BOOG, C. G. /LOCKHEED MISSILES AND SPACE CO./
DATE- NOV. 1967
E-FS-12500
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.

B67-10464
METALLURGIC SAMPLES MOUNTED WITH BROOM-TEMPERATURE CURABLE POLYESTER CASTING RESINS
HUGGINS, F. H., JR. /GEORGIA INST. OF TECH./ DATE- DEC. 1967
ABS-10013
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
BROUGHER, S. E. /STC/ DATE- DEC. 1967
E-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. H. DATE- DEC. 1967
GSPO-10004
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 SURECK, VACUUM BAG, PROVIDE PORTABLE BONDING OVEN
NICHOLS, A. H. /BOEING/ 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 NITRIC IODINE IN ETHYLIC ACID-WATER SOLUTIONS
GARRARD, G. G. /BOEING/ DATE- DEC. 1967
MSC-11496
Computer study was made on the production of multiecuric amounts of highly alpha-active curium 242 from americium 241 irradiation. The information available includes curium 242 yields, curium composition, irradiation data, and production techniques and safeguards.
Spectrophotometric method, using a ratio-recording ultraviolet-absorption spectrophotometer, permits analysis of NaFSC in ethylene glycol-water solutions with high accuracy. It reduces analysis time, requires smaller samples, and is able to detect extremely small concentrations of uracil-2-thioethanol.
electronic components when subjected to mechanical vibrations.

B67-10600
DYNAMIC CAPTIVE PLASTIC SEAL
DEVER, E. O. / /AM. AVIATION/ DATE- DEC. 1967
R-PS-12988

Fluoroplastic material held captive between valve sealing surfaces of 16 to 125 ram microcaries, provides zero leakage to 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.

B67-10608
A CERAMIC COMPOSITE THERMAL INSULATION
SPON- INNOVATOR NOT GIVEN /MARI/ DATE- DEC. 1967
BNM- SEE ALSO NASA-TM-X-53646
N-PS-13991

Ceramic composite thermal insulation comprised of alumina-silica fibers, pigmented potassium titinate, and asbestos fibers, bonded with a colloidal silica sol has improved insulting capabilities to both radiant and convective heat. Gelation of the colloidal silica sol prevents binder migration.

B67-10627
THERMIATEN TUNGSTEN TUBE PRODUCED IMPROVED
HIGH TEMPERATURE THERMOCOUPLE SHEAT
BELNBR, G. D. /WESTINGHOUSE ASTRON. LAB./ DATE- DEC. 1967
NUC-10165

Thermocouple tubing of thoriated tungsten with a very fine grain structure produces a small-diameter sheath capable of operating up to 5000 degrees C in a hydrogen and graphite environment. This tubing remains ductile and resists both grain growth and carbiding even after prolonged exposure to temperature.

B67-10634
PHOTOVOLTAIC EFFECT IN ORGANIC POLYMER-IODINE COMPLEX
WERNER, A. R. /ERDAH/ DATE- DEC. 1967
BNM- 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.

B67-10641
CORRELATION OF DETECTION SENSITIVITY IN THERMAL-NEUTRON ACTIVATION
WAHLBLO, M. A. /WING, J. DATE- DEC. 1967 BBNM-
SEE ALSO ANL-6953
ARB-10066

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.

B67-10645
EDDY CURRENT PROBE MEASURES SIZE OF CRACKS IN NONMETALLIC MATERIALS
MUSHER, C. W. /BOEING CO./ DATE- JAN. 1968
R-PS-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 measures the mass of metal in the crack after it has been filled with the powdered iron.

B67-10647
SYNTHESIS OF PURE AROMATIC GLYCIDYL ESTERS
FOR USE AS ADHESIVES
SPON- INNOVATOR NOT GIVEN /BORDEN CHEM. CO./ DATE- JAN. 1966
R-PS-12705

SPON- INNOVATOR NOT GIVEN
Laboratory study was conducted to synthesize pure glycidyl esters of aromatic acids and to convert the resultant epoxy esters to polyureas 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
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
RESE, R. 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.
refractory metals and the special problems they present in manufacture, evaluation, and application. The unique facilities required for their processing and evaluation, a summary of accomplishments in achieving commercial products, and the present status of the most advanced refractory materials are presented.

B68-10034
CONTINUOUS DETONATION REACTION ENGINE
LANGE, D. E. STEIN, R. J. TUBBS, H. E. DATE-
FEB. 1968
-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
LABAI, R. HIGH, W. G. /W. N. AVIATION/ DATE-
FEB. 1968
-MPS-13131 -PS-13132
Rapid visual and simple qualitative 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
BROWN, W. F., JR. JONES, R. A. SHARKEY, J. E.
DATE- MAR. 1968 READ-SEE ALSO NASA- TM-D-2599
ASTM-NASA-STP-8410
LEWIS-10379
Comprehensive survey presents current methods of fracture toughness testing that are based on linear elastic fracture mechanics. 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
STABILITY TEST FOR PHYSICAL STABILITY OF CRYOGENIC TANK INSULATION
ROSSIELLO, D. /DOUGLAS AIRCRAFT Co./ DATE- MAR.
1968
-MPS-12567
Qualitative test determines the ability of insulation liners used on liquid hydrogen tanks to withstand stressses produced by the thermal shocks imparted to the insulation during tank filling and draining. 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
BARNES, J. N., III /BEECHMEN INST./ DATE- MAR.
1968
-MPS-1822
Three-electrode hydrogen sensor containing a platinum electrode maintained in a highly catalytic state, operated 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 axial catalytic activity.

B68-10062
PHOTOCHEMIC DEVICE PROVIDES ONE-SHOT HEAT SOURCE
HALLER, H. C. LALL, V. R. /TRW EQUIPMENT LABS./ DATE-
MARCH 1968
LEWIS-10131
Pyrotechnic buster provides a one-shot heat source capable of creating a predetermined temperature around sealed objects. It is composed of a blend of an active chemical cleavase and a conducting compound which reacts exothermically when ignited and produces fixed quantities of heat.

B68-10066
STATIC STRUCTURAL ANALYSIS OF SHELL-TYPE STRUCTURES
B78-10167
EVALUATION OF IGNITION MECHANISMS IN SELECTED NONMETALLIC MATERIALS
GERSTEIN, M. /MC LAIN, M. /ROSS, W. /DYNE. SCI.
CERP. /DATE- MAY 1968
BSC-11648 BSC-11647
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
ALDRED, A. T. /BARDO, D. I. /BECK, P. A.
/ILLINOIS UNIV. /DATE- MAY 1968
B65-90259
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 FILE IS FIRE-RETARDANT IN OXYGEN ATMOSPHERE
GOODWYN, J. T. /HERRELL, W. E. /SOUTHWEST RES.
IST/ DATE- JUN. 1968
BSC-11604
Saran was tested for flammability as a wrapping on 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 M-45
LOVET, C. W. /DATE- JUN. 1968 REAN- SEE ALSO
B65-10092 AND B67-10159
B65-10181
Evaluation of the stress-corrosion characteristics of aluminum alloy M-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.

B68-10189
REACTION STUDIED OF STEAM WITH NIOBIUM AND TANTALUM
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
KANNO, A. /DATE- JUN. 1968 REAN- SEE ALSO
AKI-6024
ARG-90175
Evaluation of nondestructive methods of testing brazed joints reveals that ultrasonic testing is effective in the detection of nonconductive defects and the neutron radiographic tests reveals a particular advantage for brazing materials containing cadmium.

B68-10192
WELDING OF COMMERCIAL BASE PLATES IS INVESTIGATED
Investigation of aluminum alloy welds reveals that the combinations of metallic elements with hydrogen are not capable of producing weld porosity themselves, rather they tend to increase the amount of porosity only in the presence of arc contamination by water vapor.

B68-10194
SUSCEPTIBILITY OF IRRADIATED STEELS TO HYDROGEN EMbrittlement

Investigation determined whether irradiated pressure-vessel steels 4340 and 212-N are susceptible to hydrogen embrittlement and to catastrophic failure. Hydrogen-charging conditions which completely embrittled 4340 steel had negligible effect on 212-N steel in tensile and delayed-failure tests.

B68-10195
ELEMENTARY REVIEW OF ELECTRON MICROPROBE TECHNIQUES AND CORRECTION REQUIREMENTS

Report presents requirements for correction of instrumented data on the chemical 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.

B68-10196
FUNDAMENTAL ELECTRODE KINETICS

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.

B68-10197
STUDY OF MECHANICAL PROPERTIES OF URANIUM COMPOUNDS

Deals, R. J. Drager, G. M. Hardenk, J. H. Tottle, C. R. Date- Jun. 1968

Study determines the mechanical properties, including brittleness and ductility of several uranium compounds. These include uranium dioxide, uranium sulfide, and uranium phosphide.

B68-10198
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 Ni group. The data, obtained by conventional methods, are presented in an easily usable tabular form.

B68-10199
STUDIES IN ZIRCONIUM OXIDATION

Deals, J. E. Deegne, C. J. Levitan, J. Date- Jun. 1968

Study provides insight into the oxidation mechanism of zirconium by combining electrical measurements with oxidation data. The measurement of electrical potential across growing scale on zirconium and the determination of conventional weight-change oxidation data were carried out at 550, 700, and 800 degrees C.

B68-10200
RESISTIVITY MEASUREMENTS OF NEUTRON-IRRADIATED PURE METALS AND AL-ZN ALLOYS

J. A. 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 nonaqueous processing of nuclear fuels is also reviewed.

B68-10204
MANGANESE-ALUMINUM-CERAMIC GLASS ELIMINATES RIGID CONTROLS NECESSARY IN BONDING METALS TO CERAMICS

B. L. Date- Jun. 1968

Matrix of manganese-alumino-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.

B68-10212
ION PLATING TECHNIQUE IMPROVES THIN FILM DEPOSITION

D. E. Mattos, D. M. Date- Jun. 1968

Ion plating technique keeps the substrate surface clean until the film is deposited, allows extensive diffusion and chemical reaction, and joins insulative or incompatible materials. The technique involves the deposition of ions on the substrate surface while it is being bombarded with inert gas ions.

B68-10214
REDUCING BUBBLES IN GLASS COATINGS IMPROVES ELECTRICAL BREAKDOWN STRENGTH

B. A. Banes, B. Date- Jun. 1968

Helium reduces bubbles in glass coatings of accelerator grids for ion thrusters. Fusing the coating in a helium atmosphere creates helium bubbles in the glass. In an argon atmosphere, entrapped helium diffuses out of the glass and the bubbles collapse. The resultant coating has a substantially enhanced electrical breakdown strength.

B68-10215
GLASS COATED SINGLE GRID FOR CHARGED PARTICLE ACCELERATION

B. A. Nakashih, S. Date- Jun. 1968

Glass coating is used on a single grid accelerator system for ion thrusters. The uniformly thin, smooth, dense, impervious glass coating has a high dielectric strength and is firmly bonded to the accelerator grid.

B68-10221
LIQUID CRYSTAL CALIBRATOR

D. E. /Lockheed-Georgia Co./ Date- Jun. 1968

Helium reduces bubbles in glass coatings of accelerator grids for ion thrusters. Fusing the coating in a helium atmosphere creates helium bubbles in the glass. In an argon atmosphere, entrapped helium diffuses out of the glass and the bubbles collapse. The resultant coating has a substantially enhanced electrical breakdown strength.
M-PS-14151
Calibration apparatus determines the operating temperature range/sensitivity of liquid crystals. The calibrator maintains a precisely controlled test surface temperature. It permits a measurement accuracy of plus or minus 0.5 degrees F and a sensitivity of plus or minus 0.15 degrees F.

B68-10251
WLD MICROFISSURING IN INCONEL 718 MINIMIZED BY BEON ELEMENTS
CARITHERS, F. R. /M-18-18185 SEE B68-10253
LEWIS-10377
B68-10253
HIGH TEMPERATURE ALLOY
PIANK, E. G. /B68-10278
LEWIS-10377
B68-10256
GRAPHITE CLOTH FACILITATES VACUUM EVAPORATION OF SILICON MONoxide
CABITHER, R. M. /GEORGIA INST. OF TECH./ DATE- JUL. 1968 M-PS-14764
B68-10271
PREPARATION OF SILVER-ACTIVATED ZINC SULFIDE THIN FILMS
FIND, C. SWINDELLS, P. E. /MELPAR/ DATE- AUG. 1968 GSCF-10687
B68-10274
VISCOSITY AND DENSITY OF METHANOL/WATER MIXTURES AT LOW TEMPERATURES
AUSTIN, J. C. KOPA, F. SWIFT, G. W. /KANSAS UNIV./ DATE- AUG. 1968 M-PS-14991
B68-10278
CHARACTERISTICS OF FLUIDIZED-PACKED BEDS
GARNO, J. D. NECBA, W. J. DATE- AUG. 1968 REAR-SEE ALSO ARL-68585
B68-10251
COMPONENTS OF FINE NIOBIUM WIRER IN COPPER IS USED TO STUDY THE SIZE AND PROXIMITY EFFECTS OF A SUPERCONDUCTOR IN A NORMAL MATRIX. THE NIOBIUM ROD WAS DRAWN TO A 100 ANGSTROM DIAMETER WIRED ON A COPPER TUBING.

B68-10254
STUDY OF BEHAVIOR OF STEREOLS AT INTERFACES
ELDER, P. D. KNIIGHT, J. C. SCZCENFAR, P. A. DATE- AUG. 1968
B68-1005
BEHAVIOR OF STEREOLS AND STERE ACETATES ON VARIOUS TYPES OF INTERFACES INDICATES THAT THE FUNCTION OF A STEROL DEPENDS UPON A SURFACE ORIENTATION AND SURFACE ENERGY OF THE INTERFACE.

B68-10268
PRE-WELD HEAT TREATMENT IMPROVES WELDING IN STEEL 41
PFEGER, M. /N. AM. ROCKEY CORP./ DATE- AUG. 1968 M-PS-18174
COOLING OF STEEL 41 PRIOR TO WELDING REDUCES THE INCIDENCE OF CRACKING DURING POST-WELD HEAT TREATMENT.

B68-10302
EFFECTS OF SURFACE PREPARATION ON QUALITY OF ALUMINUM ALLOY WELDMENTS
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 SPECTROMETRY, GAS CHROMATOGRAPHY AND SPARK EMISSION SPECTROSCOPY.

B68-10334
MICROPROBE INVESTIGATION OF BRITTECh SEDIMENTS IN ALUMINUM EGG AND TIG WELDS
LASKER, P. A. MILLER, R. L. /MCDONNELL DOUGLAS CORP./ DATE- SEP. 1968 M-PS-14720
QUANTITATIVE MICROPROBE ANALYSIS OF SEGREGATED PARTICLES IN ALUMINUM EGG/METAL INERT 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 EG AND TIG WELDS RELATED TO THE INDIVIDUAL COOLING RATES OF THESE WELDS.

B68-10340
APPLICATION OF THE SOLID LUBRICANT
BOLYDENUM DISULFIDE BY SP尤TING
PESTYRZEVSKI, J. SPALVINS, T. DATE- SEP. 1968 LEWIS-10544
BOLYDENUM DISULFIDE LUBRICANT FILM IS DEPOSITED ON TWO SUBSTRATES, NIOBIUM AND NICKEL-ChROMIUM ALLOYS, BY MEANS OF PHYSICAL DIRECT-CURRENT SP尤TING. THE SPУTING SYSTEM USES A THREE-ELECTRODE /TRODE/ GEOMETRY - A THERMIONIC CATHODE, AN ANODE, AND THE TARGET, ALL ENCLOSED IN A VACUUM CHAMBER.

B68-10344
NICKEL BASE ALLOY WITH IMPROVED STRESS RUTFOR PROPERTIES
COLLINS, H. E. WANG, R. J. /TRW/ DATE- SEP. 1968 LEWIS-10283
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.

B66-10351
THERMAL CONDUCTIVITY AND DIELECTRIC CONSTANT OF SILICATE MATERIALS
N-PS-14856
Report on the thermal conductivity and dielectric constant of nonmetallic materials evaluates the mechanisms of heat transfer in evacuated silicate powders and establishes the complex dielectric constant of these materials. Experimental measurements and results are related to postulated lunar surface materials.

B66-10355
EXPERIMENTS WITH CERAMIC COATINGS
LYNN, J. E. /ROLLERS, C. F. /AM. ROCKWELL CORP./DATE- SEP. 1968
N-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.

B66-10358
FIBER-REINFORCED FOAMS DEVELOPED TO SUPPRESS FUEL FIRES
ARC-10096
Heat insulating polyurethane foam retards and suppresses fuel fires. Uniformly dispersed in the foam is a halogenated polymer capable of spilling off hydroxide halide upon heating and charring of the polyurethane.

B66-10360
FIBER GLASS REINFORCED STRUCTURAL MATERIALS FOR AEROSPACE APPLICATION
BARTLETT, D. N. /BOEING CO./DATE- SEP. 1968
N-PS-14606
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.

B66-10368
CONSOLIDATION AND FABRICATION TECHNIQUES FOR VANADIUM-20 /O TITANIUM /4/20 /
BARTLETT, D. N. /BOEING CO./DATE- SEP. 1968
N-PS-12806
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.

B66-10369
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 relationship between fabrication technique, matrix compositions and fiber sizes, minimized fiber-matrix reaction. Potential application includes high temperature turbine components.

B66-10373
PRODUCT IDENTIFICATION TECHNIQUES USED AS TRAINING AIDS FOR ANALYTICAL CHEMISTS
GRIEG, J. E. /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.

B66-10378
NONDESTRUCTIVE METHOD FOR MEASURING RESIDUAL STRESSES IN METALS: A CONCEPT
SCHWEDEL, C. D. /BOEING CO./DATE- OCT. 1968
KSC-10237
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.

B66-10380
NICKEL-BASE SUPERALLOYS: EXCELLENT PROPERTIES PROMOTE ITS SERVICE TO 2200 DEGREES F
BRECKE, J. C. WATERS, W. J. /DATE- OCT. 1968
LEWIS-10355
Nickel base alloy with high strength, ductility, good impact and oxidation resistance, microstructural stability, workability potential, and the ability to show improved strength and ductility when directly solidified has recently been developed for high temperature applications.

B66-10381
HIGH-EMITTANCE COATINGS ON METAL SUBSTRATES
EVAANELESHN, R. C. LODHA, W. L. WALKER, W. J. /PRATT AND WHITNEY AIRCRAFT CORP./DATE- OCT. 1968
LEWIS-10325
High-emittance coatings of iron, calcium, and zirconium tinitates 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 emittance stability at elevated temperature and high vacuum were evaluated.

B66-10385
ELECTROMOTIVE SERIES ESTABLISHED FOR METALS USED IN AEROSPACE TECHNOLOGY
KUSTER, C. A. /AM. ROCKWELL CORP./DATE- OCT. 1968
N-PS-16129
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.

B66-10390
IMPROVED PROCESS FOR EPITAXIAL DEPOSITION OF SILICON ON PREPARED SUBSTRATES
CLARKE, M. G. HALSEY, J. L. WHITE, W. R. /WESTINGHOUSE ELEC. CORP./DATE- OCT. 1968
N-PS-14910
Process for fabricating integrated circuits uniformly deposits silicon epitaxially on pre diffused 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.

B66-10391
TRAINING MANUALS FOR NONDESTRUCTIVE TESTING USING MAGNETIC PARTICLES
SPQR- INNOVATOR NOT GIVEN /G EN. DTR. /CONVAL/DATE- OCT. 1968
N-PS-20107
Training manuals containing the fundamentals of nondestructive testing using magnetic particle 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
particle and interpretation of the patterns formed.

B68-10392
NONDESTRUCTIVE TESTING OF BRAZED ROCKET ENGINE COMPONENTS
ADAMS, C. J. WAGNER, D. J. MAYER, J. A. /N.
AM. ROCKWELL CORP./ DATE- DEC. 1968
M-FS-18191
Report details study made of nondestructive radiographic, ultrasonic, thermographic, and leak 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
ACKERMANN, R. J. SANDBORNE, R. W. /N. DATE- DEC. 1968
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 PROPERTIES OF CHLOROPHYLL DERIVATIVES
KATS, J. J. PENNINGTON, F. C. STRAHL, 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 autotropic algae to determine the molecular structure of the chlorophylls.

B68-10414
TITANIUM-NITROGEN REACTION INVESTIGATED FOR APPLICATION TO GESSING SYSTEMS
ARMZEE, J. D. COLEMAN, L. F. KYLE, R. L.
PIFERS, R. L. DATE- NOV. 1968
ARG-10208
Titanium is one of several gessing 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
AVAILABIE
ELSBROOK, R. G. DATE- NOV. 1968
ARG-10006
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
BLOCHER, C. A. A. PARIS, J. P. STEWART, D. C.
DATE- NOV. 1968
ARG-10065
Colloid 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 M 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
BLUM, J. W. SMITH, K. E. SODS, Y. J. DATE- DEC. 1968
LEWIS-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
DAVAL, Y. 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
GIBBON, C. F. DATE- DEC. 1968
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. /N. 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
FAYLEY, R. W. /N. AM. ROCKWELL CORP./ DATE- NOV. 1968
M-FS-18151
Electrical discharge machining /EDM/ damaged layer can be effectively removed from Rene 41, Inconel 625, Inconel 718, and Monel K-500 by abrasive-grit blasting or electropolishing /at room temperature/ or 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 CYLINDRIC VALVE SEALS
CZERNIAK, R. E. LIEB, J. N. MOWERS, R. E. /N.
AM. ROCKWELL CORP./ DATE- NOV. 1968
M-FS-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 BUTADINE
LEWIS-10444
03 MATERIALS (CHEMISTRY)
LEWIS-10535
BABRETT,
868-10526
NOV.
TODD,
LEWIS-10393
B68-10527
1968
B68-10526
PERMEABILITY
BABRETT,
GRAIN GROWTH INBIBOD
MATERIALS
ALLOYS
A RAPID STRESS-CORROSION TEST
B6B-10526
M-1497
LEE,
SHELL
068-
M-FS-1497
1968
MASS LOADING EFFECTS ON VIBRATED RING AND
SHELL STRUCTURES
LEE, S. Y. /& AM. ROCKWELL CORP./
DATE- NOV. 1968
M-FS-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.
B68-10528
METHOD FOR CONTROLLING DENSITY AND
POTTERABOUTLY OF SINTERED POWDERED METALS
TODD, B. L. /& ELECTRO-OPT. SYSTEMS/
DATE- NOV. 1968
B68-10532
LWIS-10535
Borost, 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
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Improved, relatively low-cost method has been
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density, utilizing powder-metal processes. The
method uses angular not spherical tungsten powder.
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LEE, S. Y. /& AM. ROCKWELL CORP./
DATE- NOV. 1968
M-FS-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.
Two systems, one for helium and one for argon, are used for purifying inert atmospheres. The helium system uses an activated charcoal bed at liquid nitrogen temperature to remove oxygen and nitrogen. The argon system uses heated titanium sponge to remove nitrogen and copper wool beds to remove oxygen. Both use molecular sieves to remove water vapor.


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.


Practographic principles used for analyzing failure in metals are applied to the analysis of the microstructure and fracture of polytetrafluoroethylene. Weibel, B. H. (1969).


The text shows 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.
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 REFRACTORY-METAL COMPOUND IMPREGNATION OF POLYTETRAFLUORETHYLENE LEIBEL, F. DATE- MAR. 1969 LEWIS-10733
Process impregnates polytetrafluoroethylene with thorium or molybdenum compounds. The refractory metals impregnated PTFE combines chemical inertness with electrical conductivity. They are useful for electro-chemical cells, chemical processing equipment, catalysts, electrostatic charge removal, RF gasketing, and cable shielding.

B69-10074 ADHESIVE FOR CRYOGENIC TEMPERATURE APPLICATIONS DOYLE, R. M. /MCDONNELL DOUGLAS CORP./ DATE- MAR. 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.

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-ZINC HETEROCYCLIC ALLOY BY SPARK-IGNITED, LOW-VOLTAGE AC-ARC EXCITATION HUFF, R. A. J. EPDA, A. J. DATE- APR. 1969 REAN- SEE ALSO ANL-7331 ARG-10288 Spectrographic method determines individual stainless steel components in molten bismuth-42 wt% tin eutectic to determine the solubility of Type 304 stainless steel. 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 WASH, J. R. WEDLER, L. W. /W. H. 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 AGR-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.

B69-10099 CORROSION PROTECTION OF ALUMINUM ALLOYS IN CONTACT WITH OTHER METALS LEISLER, C. A. /W. H. ROCKWELL CORP./ DATE- APR. 1969 8-PS-10526
Study establishes the quality of chemical and galvanized protection afforded by anodized and alodined 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.

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.

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 aliphatic rings positioned on the ends of polyamide prepolymer having relatively low molecular weights.

B69-10123 PRODUCTION OF METALS AND COMPOUNDS BY RADIATION CHEMISTRY WESSELS, S. J. PHILLIPP, W. H. DATE- MAY 1969 LEWIS-10231 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 FLOCCINATING COPPER HYDROXYFLUORIDE KING, F. B. LUBOULSKY, J. B. 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 cathode material for high energy density batteries.

B69-10138 LIQUID GALLIUM ROTARY ELECTRIC CONDUCT ZYDSIEJEWICZ, J. S. DATE- MAY 1969 LEWIS-10828 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 vacua. It features low electrical loss, little or no wear, and long maintenance-free life.

B69-10147 TORSION SYSTEM FOR CREep TESTING WITH MULTIPLE STRESS REVERSALS LILIENTHAL, P. A. /ILLINOIS IIT./ DATE- MAY
1969
HG-10039
Torsion system proves exploratory data on accelerated creep due to multiple stress reversals. Torsional testing of tubular specimens is best suited for reversed stress creep tests since large strains are obtainable while maintaining specimen geometry.

B69-10154
FUEL ELEMENT CONCEPT FOR LONG LIFE HIGH POWERNUCLEAR REACTORS
MCDONALD, G. E. MON. F. E. DATE- MAY 1969
LEWIS-10309
Nuclear reactor fuel elements have burnups that are an order of magnitude higher than can currently be achieved by conventional design practice. Elements have greater time integrated power producing capacity per unit volume. Element design concept capitalizes on known design principles and observed behavior of nuclear fuel.

B69-10168
SEPARATION OF TRACES OF METAL IONS FROM SODIUM MATRICES
KORDEISH, J. ORLANDINI, K. A. DATE- JUN. 1969
ABB-10341
Method for isolating metal ion traces from sodium matrices consists of two extractions and an ion exchange step. Extraction is accomplished by using 2-thienyl trifluoracetone and dithizone followed by cation exchange.

B69-10170
REDUCTION BY MONOVALENT ZINC, CADMIUM, AND NICKEL CATIONS
NEYERSTEIN, D. MULAC, W. A. DATE- JUN. 1969
ABB-10328
Understanding of chemical properties of monovalent transition metal cations in aqueous solutions was obtained by a study of kinetics of reduction of different inorganic substrates by zinc, cadmium, and nickel.

B69-10176
COATINGS DECREASE METAL FATIGUE FAILURE
SUNION, H. T. DATE- JUN. 1969
ABB-10015
Metal test specimens were coated with suitable materials to limit the rate of attack of fresh metal surfaces by the atmosphere. The fatigue properties of coated metals were superior to those which were recoated and approached the properties observable in vacuum.

B69-10179
MANUAL OF TYPICAL LOW TEMPERATURE MECHANICAL PROPERTIES OF SEVERAL MATERIALS
HALM, C. G. /ROCKETEER/ DATE- JUN. 1969
HFS-18331
Manual contains information resulting from tests regarding low temperature properties of a number of materials commonly used in aerospace. The mechanical properties data are presented for 54 commonly used materials. The data is taken from many sources and is averaged and adjusted to represent the properties of typical material.

B69-10192
DETECTING BIVALENT-CONTAINING CONTAMINANTS ON METAL SURFACES
GROVE, R. E. LOELE, W. A. /XIV RES. INST./ DATE- JUN. 1969
HFS-29456
Spark emission spectroscopy analyses surface contamination of metals. This technique controls the quality of surface preparations and is useful in fundamental investigations of surface properties of metals.

B69-10195
EFFECT OF INTERPARTICLE FORCES ON THE FLUIDIZATION OF FINE PARTICLES
BARKER, E. G. BARNES, D. DATE- JUN. 1969
ABB-10264
Report studies elucidation and description of 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 ELASTIC BUCKLING
BERNS, B. L. ROSNER, B. L. WINSBERG, N. W. DATE- JUL. 1969
ABB-10275
Sensitive method, identifying effective damping mechanism, 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
HOBROCKS, D. L. WIRE, H. O. DATE- JUL. 1969
ABB-10344
ABB-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 BEARING
MURRAY, S. F. /ARMS TECHNOL./ DATE- JUL. 1969
LEWIS-10793
Aluminum oxide and nickel-chrome bonded chrome carbide coatings enhance the performance of gas bearings at temperatures up to 1400 degrees F. A plasma-sprayed aluminum-oxide coating is applied to the bearing surface and a plasma-sprayed 25 percent nickel-chrome bonded chrome carbide coating is applied to the journal surface.

B69-10206
MEASUREMENTS OF THERMOELECTRIC POWER IN ANNEALED AND QUENCHED GOLD-PLATINUM ALLOYS
IABALO, I. A. DATE- JUL. 1969
ABB-10323
Report gives measurements of absolute thermoelectric powers of dilute gold-platinum alloys and influence of quenched-in lattice vacancies on their thermoelectric power. 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
MCGREGOR, J. B. PALMER, J. S. /MIT/ DATE- AUG. 1969
MSC-13242
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
LALNAO, F. P. DATE- JUL. 1969
HFS-29487
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.

B69-10280
THERMOPLASTIC PROPERTIES OF SODIUM GOLDEN, G. S. TOKA, J. V. DATE- AUG. 1969
ABB-10363
Volume 03, MATERIALS (CHEMISTRY)
Ammonium is given of physical and thermodynamic properties of sodium. POSTMAN 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 ZONE PURIFICATION OF POTASSIUM CHLORIDE SUSHAN, S. DATE- AUG. 1969 ARG-10377 Procedure for removal of sodium and barrier from ECI involves zone refining in dinitrogen atmosphere. Distribution of Na and Br at concentrations of parts per million is followed by neutron-activation analyses.

B69-10250 A NEW SOLID LUBRICANT FUSARO, A. DATE- AUG. 1969 LEWIS-10872 Friction and wear life studies on burned-in films of the compoud 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. /GE/ DATE- AUG. 1969 LEWIS-10829 Experimental investigation identifies materials suitable for use in potassium lubricated turbo-generai journal bearing and shaft applications at high temperatures. Attention is given to nonferrous 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 DUKIN, W. F. /NEL/ LEAD CO. OF OHIO / KIRSCH, R. C. DATE- JUL. 1969 LEWIS-10825 ARG-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, takes use of readily available equipment and is flexible and reliable in operation.

B69-10256 INDUCTION PROBE DETERMINES LEVELS OF LIQUID METALS JOHNSON, R. R. /ROBERTS, R. D. DATE- JUL. 1969 LEWIS-10814 ARG-10346 Metal-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 ARG-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 SHIELDING 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 hot 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, N. J. SPAGNUOLO, A. C. STONEBAKER, J. C. DATE- AUG. 1969 LEWIS-10860 Two-piece fastener bushing provides mounting surface for components on a three-inch thick honeycomb structure. Specialized 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 KLOPP, W. D. STEPHENS, J. R. DATE- AUG. 1969 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 produces a porous alloy layer on the surface. Exposing the layer to hot silicon converts it to a silicide.


B69-10287 TECHNIQUE FOR ASSESSING POTENTIAL FIRE HAZARDS LAMPERT, H. M. /GE/ DATE- AUG. 1969 HQ-10279 Combustion hazard modeling technique limits the fire evaluation to a description of only thermal energy exchange 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 O'WALT, F. W. DATE- AUG. 1969 SAN-10032 Solvent Purity Meter /SPM/ automatically measures the soluble residue in volatile solvents used in cleaning or extraction of liquids, greases, and other nonvolatile materials. The SPM gives instantaneous and continuous readout of soluble contaminant residues in concentrations as low as one part per million of solvents.

B69-10293 HIGH STRENGTH, SUPERPLASTIC SUPERALLOY ASHBOURNE, R. L. FECHTLE, 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 a 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 INSOLUBLE WITH CROSSLINKING AGENT HERERA, A. DATE- AUG. 1969 NB-10034 New plastic compositions, involving the synthesis of a polyacryl system containing heparin insolubilized with crosslinking agents, show
appreciable promise in human body implant technology.

B69-10352
IMPROVED HIGH-TEMPERATURE-STRENGTH NICKEL-BASE SUPERALLOY
MITCHELL, S. H./AM. ROCKWELL CORP./ WALLACH, J. R. DATE- SEP. 1969
M-15678
Nickel-base superalloy has a strength of 2,000 psi at 2,200 degrees F, approximately double the strength of the strongest available cast nickel-base alloys. It is not subject to the effects of hydrides and hydrogen absorption through various metals processing techniques.

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B69-10357
SPIRAL-FLOW APPARATUS FOR MEASURING PERMEATION OF SOLIDS BY GASES
MITCHELL, S. H./AM. ROCKWELL CORP./ WALLACH, J. R. DATE- SEP. 1969
M-15678
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 CYTO-FLOTATION /DAMPING/ FLUIDS
JACOBS, S. S./H AND T CHEMICALS, INC./ DATE- SEP. 1969
M-15678
Synthesis of a metal-stabilized halophosphazene compound with a density of 3 g/cc at 137 Degrees F serves as an improved stabilizer fluid for floated gyros. 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
HANSEN, C. G./AM. ROCKWELL CORP./ NOOE, J. F. DATE- SEP. 1969
M-15678
Progress develops instrumentation for nondestructive testing of adhesive-bond strength in honeycomb materials and air coupled inspection methods suitable for large tankage.
B69-10417  DEVELOPMENT OF STRUCTURAL TEST ARTICLES  FROM MAGNESIUM-LITHIUM AND BERYLLIUM.
ALARIO, R. /FAIRCHILD HELIX/  DATE- NOV. 1969
MPS-10459
Study on the fabrication and testing of a magnesium-lithium box beam shows 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. N.  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.

B69-10482  COMPARATIVE CHROMATOGRAPHY OF CHLOROPLAST  PIGMENTS
GRANDOLFO, R. /SHERMAN, J. STRAIN, H. E.  DATE-SEP. 1969
ARG-10415
Methods for isolation of low concentration pigments of the cocklebur species are described. The methods entail two steps 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 systems.

B69-10451  IMPROVED INORGANIC ION EXCHANGE MEMBRANES
ABARACE, J. C. /MC D Ornell D douglas corp./
BENDER, C. KELNER, L. A.  DATE- SEP. 1969
LEWIS-10737
New method makes solid ion exchange membrane electrolytes for use in hydrocarbon-oxygen and hydrogen-oxygen fuel cells. The membrane is a sintered composite of silica, phosphoric acid, and water.

B69-10457  ABRASION AND FRACTURE TESTING IN A HIGH-PRESSURE HYDROGEN ENVIRONMENT
SHERBY, G. V. /F. JENKINS, W. J.  DATE-SEP. 1969
MPS-10480 - MPS-10488
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 CORROSION STRENGTH OF ADHESIVE-BONDED COMPOSITES
THOMPSON, D. G. /M. R. RICKELL CORP./  DATE- OCT. 1969
MPS-20397
Systematic plan determines vibration responses and modes of bonded composite, 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.

B69-10468  IMPROVED RETORT FOR CLEANING METAL POWDERS WITH HYDROGEN
APPINS, L. M. /F. B. ISBSUR/  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, such as tantalum, in reducing atmospheres, and for cleaning powders in reduction atmospheres other than hydrogen.

B69-10468  BASAL-PLANE METALLOGRAPHY OF DEFORMED PYROLYTIC CARBON
APPINS, L. M. /F. B. ISBSUR/  DATE- SEP. 1969
NFO-11959
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 cellulose tape, the true structure is clearly revealed.

B69-10511  THERMALLY CONDUCTING ELECTRON TRANSFER POLYMERS
GSC-10703
New polymeric material exhibits excellent thermal 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. /MC DOrnell D douglas corp./  DATE- SEP. 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
NICHOLLS, L. N. /M. R. RICKELL CORP./  DATE- OCT. 1969
MSC-15592
Polyside, phenolic, and other resins which develop volatiles during laminating or molding are studied using optimum 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 in added to smulate an autoclave.

B69-10531  TESTING OF FLAMMABILITY OF MATERIALS EXPOSED TO ARC'
MSC-15225
Apparatus tests flammability and ignition characteristics of materials in close proximity to incandescent metal fragments or spalls ejected
from intermetallic short circuit area 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 solvent.

B69-10536

**IMPROVED METHOD OF PRODUCING OXIDE-DISPERSION-STRENGTHENED ALLOYS**

GRANT, R. J. /N/ SCHILLING, W. F. DATE- OCT. 1969

PC-10461

Dispersion strengthened alloys having the required properties are produced by a process in which the refractory particles are less than 100 to 500 Å 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 dispersed oxide metal.

B69-10540

**IMPROVED PRIMER FOR BONDING POLYURETHANE ADHESIVES TO METALS**

CONSTANZA, I. J. /N/ AM. ROCKWELL CORP./ DATE- OCT. 1969

R-FS-80591

Primer ensures effective bonding integrity of polyurethane adhesives on metal surfaces at temperatures ranging from ambient to plus 120 degrees F. It provides greater metal surface protection and bond strengths over this temperature range than could be attained with other adhesive systems.

B69-10543

**BURST DIAPHRAGM LEAK DETECTOR**

PASCALLI, J. A. /ROCKETEER/ DATE- OCT. 1969

R-FS-14505

A new method replaces flowmeter approach with readily available burst diaphragm leak detector assembly mounted to all line ports. This allows simultaneous leak detection of all flange seals while operating conditions.

B69-10552

**TECHNIQUE FOR ULTRASONIC CLEANING WITH VOLATILE SOLVENTS ELIMINATES NEED FOR HOODS OR CONTAINERS**

FISHER, E. /N/ 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. /MORGANTO RES. CORP./ DATE- OCT. 1969

R-FS-20219 R-FS-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 FLEXILE VACUUM FUGE JACKETS**

SHEFFER, C. A. /GOODYEAR AEROSPACE CORP./ DATE- NOV. 1969

R-FS-12646

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 MOTOR**

DORSEY, E. A. STRAND, L. D. DATE- NOV. 1969

B69-10198

The size of aluminum oxide particles produced by small rocket motors in determined by track collection and spectrophotometry. The size of the particulate determines ions in thrust 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. 1969

M-FS-20250

Two polymeric silphenylene ethers, when cured by reactions with ethyl silicates and metal salts at room temperature, form elastomers having excellent thermal and tensile properties. The highest tensile strength obtained in a reinforced elastomer was 2800 psi.

B69-10581

**A METHOD FOR PRECISION AMODIZE STRIPPING**

PETERS, R. L. /N/ AM. ROCKWELL CORP./ DATE- DEC. 1969

B69-11097

Technical report on the effects of sterilization on the energy-dissipating properties of balsa wood.

B69-10592

**EFFECTS OF STERILIZATION ON THE ENERGY-DISSIPATING PROPERTIES OF BALSA WOOD**

SORKIN, A. B. DATE- DEC. 1969

B69-11097

Technical report on the effects of sterilization on the energy-dissipating properties of balsa wood.

B69-10595

**A METHOD FOR USING SURFACE TENSION TO DETERMINE THE SIZE OF HOLES IN HARDWARE**

SORES, W. J. /N/ AM. ROCKWELL CORP./ DATE- NOV. 1969

RSC-15194

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 METALLOGRAPHIC POLISHING**

ADEKINS, J. M. BERNETT, E. C. DATE- NOV. 1969

B69-11015

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.

B69-10597

**LIQUID OXYGEN-COMPATIBLE INSULATION SYSTEM**

JONES, J. S. /N/ AM. ROCKWELL CORP./ DATE- NOV. 1969

R-FS-16113

To provide insulation for tees, elbows, stems, 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 that such insulation be liquid oxygen compatible and be easily removable and reinstallable.

B69-10602

**PROGRAMMED SCHEDULE HOLDS FOR IMPROVING LAUNCH VEHICLE HOLDS**

HALLOW, V. E. /ROIING CO./ HAYES, J. D.

B69-10602

To provide insulation for tees, elbows, stems, 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 that such insulation be liquid oxygen compatible and be easily removable and reinstallable.
Baseline definition and system optimization are used for the analysis of programmed 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.

**B69-10605**

**STRAIN-AGE CRACKING IN BKMR 41 ALLOY**

**FRAGER, E. /ROCKETDYNE / THOMPSON, E. G. DATE- NOV. 1969 REAN-SEE ALSO ROCKEDYNE SEPT. NO. 66-20**

**E-FS-18550**

Weldability test determines the effects of material and process variables on the occurrence of strain-age cracking, and demonstrates effective and practical means for its reduction. Studies consist of tensile, impact, and stress-rupture tests.

**B69-10606**

**LITERATURE REVIEW ON PICKLING INHIBITORS AND CRYSTAL ELECTROPLATING PROCESSES**


**E-FS-14421**

Because introduction of hydrogen during bright-cadmium electroplating of high strength steels causes hydrogen-stress cracking, a program was undertaken to evaluate various processes and materials. Report describes effectiveness of inhibitors for reducing hydrogen absorption by steels.

**B69-10611**

**DIRECT DETERMINATION OF LEAD-210 BY LIQUID-SCINTILLATION COUNTING**

**PARKER, W. D. /SHELBY, J. DATE- DEC. 1969**

**A-FS-15462**

Soft betas, the internal conversion electrons, and unconverted gamma rays from lead-210 are efficiently detected in a liquid scintillation counter system with efficiency of 97 percent. The counter is interfaced with a multichannel pulse height analyzer. The spectra obtained is stored on paper tape and plotted on an x-y plotter.

**B69-10616**

**RETENTION OF DUCTILITY IN HIGH-STRENGTH STEELS**

**PARKER, E. E. /LAURENCE RADIATION LAB./ ZAKAY, V. F. DATE- NOV. 1969**

**A-FS-15467**

To produce high strength alloy steel with retention of ductility, include tempering, cooling and subsequent tempering. Five parameters for optimum results are pretempering temperature, amount of strain, strain rate, temperature during strain, and retempering temperature.

**B69-10627**

**ANALYSIS OF CELL PERFORMANCE AND THERMAL REGENERATION OF A LITHIUM-TIN CELL HAVING AN IMMOBILIZED FUSED-SALT ELECTROLYTE**

**CABOER, E. J. SEINITYAK, H. DATE- OCT. 1969**

**A-FS-10463**

Cell performance and thermal regeneration of a thermally regenerative cell using lithium and tin and a fused-salt electrolyte. The emf of the Li-Th cell, as a function of cathode-alloy composition, is shown to resemble that of the Na-Bi cell.

**B69-10629**

**GLASS FABRIC FIRE BARRIER FOR SILICONE RUBBER PARTS**

**BLACKBEE, R. L. /N. AM. BOCHELL CORP./ DATE- OCT. 1969**

**M-PS-15555**

Preformed knitted glass-fabric covers are placed around silicone rubber items in such a way as to completely isolate them from the effects of adjacent fire. These covers permit retention of the desirable resilient properties of the silicone rubber while forming a very effective fire barrier.

**B69-10635**

**DEVICE SEPARATES HYDROGEN FROM SOLUTION IN WATER AT AMBIENT TEMPERATURES**

**ALBRIGHT, C. F. /GARRETT CORP./ DATE- NOV. 1969**

**M-PS-13235**

Separator decreases the partial pressure of hydrogen gas dissolved in the water produced by fuel cells containing an alkaline electrolyte. The unit eliminates the hazards associated with the release of hydrogen from water solution when the hydrostatic pressure is rapidly decreased.

**B69-10636**

**SYNTHESIS OF POLYMERS OF HEXAFLUOROBENZENE AND HEXAFLUOROPENTESTERIDOL**

**HARRISON, E. S. /BETTLENA CORP./ HOLLANDER, J. LEVINE, E. R. TISCHLER, F. B. DATE- DEC. 1969**

**E-FS-14366**

Two new polyethers, polyhexafluoropentamethylenetetrafluoro-p-phenylene ether and a completely hydroxyl-terminated polymer, is prepared by reactions of hexafluorobenzene with hexafluoropentamethylenetetrafluoride. The polymers can be prepared as low molecular weight oils, as intermediate molecular weight waxes, or as high molecular weight elastomers.

**B69-10641**

**NIOBIUM-URANIUM ALLOYS WITH VOWDS OF PREDETERMINED SIZE AND TOTAL VOLUME**

**MC CLUREY, J. K. /IOWA STATE UNIV./ WILKES, R. A. DATE- NOV. 1969**

**A-FS-10460**

Mixture of uranium oxide, niobium oxide, and graphite of various carbon-to-oxygen ratios is heated to a temperature below the melting point of the niobium-uranium alloy. The alloy is produced by this method with voids predetermined as to size and total volume.

**B69-10642**

**ELECTROLYTIC SEPARATION OF CRYSTALS OF TRANSITION-METAL OXIDES**

**AKNOTT, R. J. /BROOKHAVEN N. L./ FERRATTI, A. TUMANAE, W. DATE- NOV. 1969**

**A-FS-10506**

Versatile flux system grows large, well-formed, stoichiometric single crystals of mixed oxides of the transition-metal elements. These crystals have important uses in the microwave field, and applications as lasers and masers in communications.

**B69-10647**

**SYNTHESIS OF PERBROMATES**

**APPelman, E. H. /STUDER, E. DATE- NOV. 1969**

**A-FS-10559**

Salts of heptavalent bromine were synthesized by a hot atom process, the beta decay of radioactive selenium-81 incorporated into a selenate. Formation of an inorganic perbromate ion led to preparation of macro amounts of perborate. A rubidium salt was isolated.

**B69-10660**

**FINITE ELEMENT FORMULATION FOR LINEAR THERMOVISCOELASTIC MATERIALS**

**CHEI, J. C. HEGE, E. DATE- NOV. 1969**

**B-0-11229**

Report presents the finite difference equations in time and finite element matrix equations in space for general linear thermoviscoelastic problems. The equations are derived for a general three-dimensional body but are applicable to one and two-dimensional configurations with minor changes.

**B69-10662**

**SEALED CONTAINER SAMPLING DEVICE**

**HENVIGAN, T. J. DATE- DEC. 1969**

**G-P-10630**

Sampling device, by means of a tapered needle, pierces a sealed container while maintaining the seal and either evacuates or pressurizes the container. This device has many applications in the chemical, preservative and battery-manufacturing industries.
669-10592
ELIMINATION OF DISSOLVED GASES IN HYDROGOLIC ENGINE PROPELLANTS
ROBES, E. W. /NASA ROCKWELL CORP./ DATE- DEC. 1969
M-FS-16179
Exposure to ultrasonic vibration eliminates dissolved gases in hypergolic propellants. A manometer connected to the ullage of the propellant container measures the volume of gases freed.

669-10711
PROPERTIES OF AIR AND COMBUSTION PRODUCTS OF FUELS WITH AIR
LEWANDOWSKI, K. /NOEEL CORP./ SVRVA, B. DATE- DEC. 1969
LEWS-11030
Thermodynamic and transport properties include ratio of specific heats, molecular weight, 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.

669-10730
EFFECTS OF HIGH-PRESSURE HYDROGEN ON STORAGE VESSEL MATERIALS
CHANDLER, W. T. /NASA ROCKWELL CORP./ WALTER, R. J. DATE- NOV. 1969
M-FS-18605
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 samples. Surface cracking, evident in unnotched specimens, is conducive to breakdown in tensile strength and ductility.

669-10737
MIXED ETHER BATH FOR ELECTRODEPOSITION OF ALUMINUM
LOU, K. /ELECTRO-OPTICAL SYSTEMS, INC./ DATE- DEC. 1969
LANGLEY-10200
Anisole added to the bath mixture improves Bremer aluminum plating bath technique. Mixture has lower bath vapor-pressure and the electro-deposits obtained have greater physical strength than deposits from the Bremer bath.

669-10740
BURN-RATE TESTING APPARATUS
DANF, F. S. /MILIL/ DATE- DEC. 1969
M-FS-10947
Combustibility tester fits into a sealed chamber so that tests may be performed under controlled atmospheric pressure and composition. Support frame allows rotation of the test sample so that ignition combustion may be tested in various orientations from horizontal to vertical.

669-10744
PRODUCTION OF CRYSTALLINE POLYMERS VIA LIQUID CRYSTAL MONOMERS
SMITH, M. /DEERCO INST. OF TECHNOLOGY/ PALOS, C.
DATE- DEC. 1969
RQ-10235
Method produces crystalline polymers through a liquid crystalline phase of monomers. The monomer is polymerized while held in the liquid crystalline phase either thermally, photolytically, catalytically, or by X ray or gamma ray irradiation, and can be performed in an electric magnetic field that influences the molecular orientation.

669-10749
IMPROVED CURE METHOD FOR SINGLE COMPONENT SILICONES MONOHER
LIPPIITT, F. W. DATE- DEC. 1969
M-FS-12230
Water is incorporated in a carrier and then thoroughly mixed with the single component silicone rubber containing acetic anhydride as a curing agent. Because curing occurs with the water supplied internally, controlled curing is possible within a reasonable period of time, regardless of the thickness of the material.

669-10780
THERMAL CONDUCTIVITY PROBE
KATZIGAS, J. /AC DOUGEL DOUGLAS CORP./ DATE- DEC. 1969
M-FS-20566
Low-fuse probe accurately measures the thermal conductivity of polyurethane foam and other thermal insulating materials while exposed to either hydrogen or helium permutation in temperature ranges from ambient to cryogenic. The thermal conductivity of a specimen is determined from an experimentally determined increase in temperature.

669-10788
GAS CHROMATOGRAPH INJECTION PORT PROTECTIVE DEVICE
M-FS-18585
To prevent samples containing foreign matter from poisoning the gas chromatographic columns, a pre-filter insertion is placed in the injection port. The packing becomes a variable reactant, for example, acids are removed by using an alkaline liquid.

04 LIFE SCIENCES

663-10003
NEW LOW-LEVEL A-C AMPLIFIER PROVIDES ADJUSTABLE NOISE CANCELLATION AND AUTOMATIC TEMPERATURE COMPENSATION
SMITH, J. R., JR. DATE- MAR. 1964
AMC-2
Circuit utilizing a transistorized differential amplifier is developed for biomedical use. This low voltage operating circuit provides adjustable cancellation at the input for unbalanced noise signals, and automatic temperature compensation is accomplished by a single active element across the input-output ends.

664-10025
IMPROVED ELECTRODE GIVES HIGH-QUALITY BIOLOGICAL RECORDINGS
DAY, J. L. LIPPIITT, R. W. DATE- MAY 1964
ESC-17
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.

664-10108
DEVICE INDUCES LUNGS TO MAINTAIN KNOWN CONSTANT PRESSURE
LIPPIITT, F. W. REED, J. S. DATE- JULY 1964
ESC-50
This device requires the use of thoracic muscles to maintain prescribed air pressure in the lungs for brief periods. It consists of a clear plastic hollow cylinder fitted with a mouthpiece, a spring-loaded piston, and a small vent for escaping air when exhalation into the mouthpiece displaces the piston.

664-10146
TECHNIQUE SIMULATES EFFECT OF REDUCED GRAVITY
HINES, D. E. HINSON, A. A. JR. DATE- AUG. 1964
LANGLEY-64
To simulate the effects of lunar gravity, an arrangement of near-vertical cables has been devised. These suspend the test subject perpendicular to an inclined walkway to give the effect of reduced gravitational pull.

665-10332
TEST MONKEYS ABESTHETIZED BY ROUTINE PROCEDURE
SPADY, A. J. JR. DATE- NOV. 1965
H-18
Test monkeys are safely anesthetized for five minutes by confining then for less than six
minutes in enclosures containing a controlled volume of ether. 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**

**DATE, J. L.** DATE- FEB. 1966 REAN- SEE ALSO B66-10025 AND B65-10015

High-conductivity electrode paste is used in obtaining accurate skin resistance or skin potential measurements. The paste is isotonic to perspiration, is nonirritating and nonsensitizing, and has an extended shelf life.

**B66-10117**

**MICROORGANISMS DETECTED BY ENZYME-CATALYZED REACTION**

**VANCO, P. S. WENTALL, N. H. WELKIE, N.** DATE- JUL. 1966

Enzymes detect the presence of microorganisms in soils. The enzyme lysozyme is used to release the enzyme catalyst from the microorganisms in a soil sample. The catalase reacts with the decomposition of added hydrogen peroxide to produce oxygen which is detected semiquantitatively. The partial pressure of the oxygen serves as an index of the mesophilus bacteria content.

**B66-10118**

**INTEGRAL SKIN ELECTRODE FOR ELECTROCARDIOGRAPHY IS EXPENDABLE**

**SPONSOR- 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 depressing of the skin area.

**B66-10154**

**PHONOCARDIOGRAPH SYSTEM MONITORS HEART SOUNDS**

**SPONSOR- INNOVATOR NOT GIVEN / BECKMAN INSTR. 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 aurally, or transmitted telemetrically to a remote station.

**B66-10184**

**SELF-INFLATING LIFEVEST STORES IN SMALL PACKAGE**

**SPONSOR- INNOVATOR NOT GIVEN / N. AM. AVIATION/ 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, P. F. FRIEDERICKS, J. E. 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 DURABLE 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 ABSBS TORSIONAL DEVIATIONS IN DUCT SYSTEM**

**DANIELS, C. N. / N. AM. AVIATION/ DATE- JUL. 1966**

M-FS-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 angular and axial deflections.

**B66-10406**

**PLANT RESPIROMETER ENABLES HIGH RESOLUTION OF OXYGEN CONSUMPTION RATES**

**FOSTER, D. L / SPACE DEFENSE CORP./ DATE- SEP. 1966**

MSC-5A

Plant respirometer permits high resolution of relatively small changes in the rate of oxygen consumption by photosynthetic 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.
ADJUSTABLE BINGE PERMITS MOVEMENT OF ROEBUCK, NATHAN. B67-10056

ION EXCHANGE DETERMINES IODINE-131 IN PLASTER CAST MALLEY, W. E. DATE- MAR. 1967 B67-10188


ION EXCHANGE DETERMINES IODINE-131 CONCENTRATION IN AQUEOUS SAMPLES FAIRBAIRN, W. D. SEDLEER, J. DATE- MAY 1967 A66-208

INTEGRITIETED MOBILITY MEASUREMENT AND NOTATION SYSTEM ROEBUCK, J. A., JR. /M. AM. AVIATION/ DATE- MAY 1967 MSC-726


CONTINUOUS MICROBIAL CULTURES MAINTAINED BY ELECTRONICALLY-CONTROLLED DEVICES

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.

ULTRAVIOLET MICROSCOPY AIDS IN CYTOLOGICAL AND BIOMEDICAL RESEARCH

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.

STUDY MADE OF RELATIONSHIP BETWEEN GROWTH AND METABOLISM

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.

BIOLOGICAL AND TOXICOLOGICAL EFFECTS OF WATER-SOLUBLE XENON COMPOUNDS ARE STUDIED

Biological properties of water-soluble xenon compounds are 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.

RADIATION EFFECTS ON BACTERIAL CELLS

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.

INFRARED VIEWING PERMITS HUMAN IRIS RESPONSE STUDY

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 unexposed iris response. The device permits observation in the near infrared region, with little stimulation to the eye except by normal ambient lighting.

VACUUM PROBE SAMPLER REMOVES MICRO-SIZED PARTICLES FROM SURFACES

Vacuum probe sampler removes micro-sized particles from sensitive surfaces, without damage to the surface. The probe has a critical orifice to ensure an optimum airflow that disturbances the boundary layer of air and raises bacteria from the surface into the probe with the moving air stream.

EXPERIMENTAL STUDY AND EVALUATION OF RADIOPROTECTIVE DRUGS

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.
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 wide, where all fabrication seams are sealed on the inside of the garment.

**B69-10222**

**INVESTIGATION OF TEMPERATURE DEPENDENCE OF DEVELOPMENT AND AGING**

**SACHER, G. A. DATE- FEB. 1969**

Temperature dependence of maturation and metabolic rates in insects, and the failure of vital processes during development were investigated. The paper presented advances 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. /M. AM. ROCKWELL CORP./ DATE- APR. 1969**

65-PS-11207 65-PS-11208 65-PS-11209 65-PS-11210 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**


Scanning machine C Bloe, developed for photographic use, is combined with a digital computer to obtain quantitative and statistically significant data on chromosome shapes, distribution, density, and pairing. CBLOE permits data acquisition about a chromosome complement to be obtained two times faster than by manual pairing.

**B69-10124**

**IMPROVED MOUSE CAGE PROVIDES VERSATILITY AND EASE IN HANDLING LABORATORY MICE**

**JONES, N. D. DATE- MAY 1969**

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**

**BROHMAN, R. B. ILCEVIC, F. H. DATE- JUN. 1969**

Differential absorption spectrophotometric technique, using auriside, gives a highly precise analysis of calcium in volumes of blood serum as small as 0.01 ml. The method of additions and proper timing allows compensation to be made for fading, variation in type of serum or plasma, and aging of the specimen.
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.

Modified Gelsan 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.

Study reveals that suggested threshold limit values are from two to fifty times lower than current recommended threshold limit values. Proposed safe limits of exposure to the ultrafine dusts are based on known toxic potential of various materials as determined in particle size ranges.

Collecting and recovery small assay samples of viable microbial contaminants in a gas stream involves use of a commercially available water-soluble paper. This paper is nontoxic to a number of microbiological organisms and can be dry-heat-sterilized.

Spacecraft sterilization training manual provides a basic understanding of microbiological techniques and presents scientific information in language intelligible to shop personnel.
B69-10593  
MICROBIOLOGICAL ASPECTS OF STERILIZATION  
DEVELOPMENT LABORATORIES  
FAIR, W. W. STEEN, J. A.  DATE- NOV. 1969  
NRC-11197  
Report deals with an investigation of vertical laminar flow clean rooms for use in spacecraft assembly. A reduction of particulate and microbial contamination occurs in the application.

B69-10598  
QUICK DON-DOFF ELECTRODE PASTES  
ROSENFELD, B. /INSTR. FOR RESEARCH, INC./  DATE- NOV. 1969  
NRC-13249  
Evaluation of electrode pastes for use in electrocardiographs and electroencephalographs found that the one having the desired don-doff properties had to be water soluble or a water dispersible base. Poly/methyl vinyl ether/salicylic anhydride/ or starch gels of the gum drop variety are two such bases.

B69-10715  
QUANTITATIVE DETERMINATION OF FLAVIN NUCLEOTIDE USING THE BACTERIAL BIOFLUORESCENT REACTION  
CHAPPELL, E. W. PICCIOLO, G. L.  DATE- DEC. 1969  
NRC-10545  
Photometric method based on the use of bacterial luminous reaction quantitatively detects the presence of flavin compounds in all forms of life. Aqueous cellular dispersion of a biological sample with an aqueous perchloric acid ruptures the cells and frees the flavin coenzymes from their proteins.

05 MECHANICAL

B63-10007  
HIGH PURITY ELECTROFORMING YIELDS SUPERIOR METAL MODELS  
HAFFEL, E. M. HOUSTON, J. P.  DATE- JAN. 1964  
NRC-6  
Ultrastrong electroforming has proved 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  
CLARK, A. H. JR.  DATE- MAR. 1964  
NRC-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  
DAVIDSON, J. S.  DATE- APR. 1964  
NRC-8  
By cementing a strip of an elastomer to the smooth metal rim of the pulley and necropsy centered idles 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 FOR FACILITATE INSERTION AND REMOVAL OF SCREW PASTHERVES  
HANLEY, H. G.  DATE- JAN. 1964  
NRC-10  
A V-shaped slot facilitated driving the screw into different locations and sideways axial forces thus avoiding damage to the screw.

B63-10123  
ELASTIC ORIFICE AUTOMATICALLY REGULATES GAS FLOWINGS  
BATSCH, F. LAUB, 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  
PERKINS, R. LEVY, R.  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 GLASHAN, 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, E.  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 10 times faster than the first.

B63-10170  
HIGH-PRESSURE REGULATING SYSTEM PREVENTS PRESSURE SURGES  
KELLEY, C. F. MAC GLASHAN, W. F.  DATE- JUN. 1964  
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 convorstional normally closed command valve, a control valve are the main components.

B63-10198  
DEVICE TRANSITS ROTARY MOTION THROUGH HERMETICALLY SEALED WALL  
PUNCE, E. E.  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 BOUCH  
MILLER, J. V.  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 box of considerable length.

B63-10226  
SELF SEALING Disconnect FOR TUBING FORMS METAL SEAL AFTER BREAKAWAY  
GRANWDEN, 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...
the fill tube seal against leakage.

B63-10228
PACKLESS VALVE WITH ALL-METAL SEAL HANDLES WIDE TEMPERATURE, PRESSURE RANGE
MAC GLASSAH, 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
BANFORD, R. E. DATE- JAN. 1964
JPL-375
A lightweight universal joint uses a thin steel flxure 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
SUPERCOOL TECHNIQUE DUPLICATES MAGNETIC FIELD IN SECOND SUPERCONDUCTOR
HILDEBRANDT, R. P. 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-384
To test equipment, welded tubing joints may have to be disconnected and rewelded. To eliminate rewelding, 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.

B63-10241
VEITCH DIAGRAM SIMPLIFIES BOOLEAN FUNCTIONS
ROUX, 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 BELLOWS SPRING PERMITS RATE CHANGE, EASY DISASSEMBLY
MAC GLASSAH, W. F. DATE- MAR. 1964
JPL-392
A spring package, with grooves to hold the spring washers at the inner and outer edges, reduces hysteresis 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
SCHROEDER, J. R. DATE- JUN. 1964
JPL-398
To prevent a 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
TURNER, W. E. 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, F. A. DATE- MAR. 1964
JPL-IT-1003
To speed and safety in handling disconnect fittings on a hose carrying liquid under pressure, special pliers have been constructed. A gear and rack mechanism is combined with two or more wide-opening U-shaped jaws which are placed over the quick-disconnect fittings.

B63-10292
HEAVY-DUTY STAPLE REMOVER OPERATED BY HAND
MOBELSON, T. DATE- MAR. 1964
JPL-IT-1004
To remove staples from thick reports, a rooster, 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, HAGE REMOVED
HATHAWAY, R. M. DATE- MAY 1964
JPL-IT-1006
LANGELEY-14
A frangible metal tube has the capability to dissipate the energy generated when a vehicle lands with excessive velocity. The tube is so placed that, at impact, it is forced against a die and, as it fragments, energy is absorbed.

B63-10340
CRYOPUMPING OF HYDROGEN IN VACUUM CHAMBERS IS AIDED BY CATALYTIC OXIDATION OF HYDROGEN
CHILD, J. H. DATE- APR. 1964
JPL-IT-1008
LANGELEY-15
Vacuum test facilities are required for high speed cryopumping of gaseous hydrogen at low pressures. One method involves the catalytic oxidation of hydrogen and condensation of the resulting water on a liquid nitrogen-cooled surface.

B63-10341
DESIGN OF VALVE PERMITS SEALING EVEN IF THE STEM IS MISALIGNED
SCHREIBER, E. W. DATE- JUN. 1964
LANGELEY-16
A conical-valled valve plug is designed to seal against a recessed spherical valve seat. This insures proper sealing during numerous seating cycles even though the valve stem is misaligned or forced out of its proper axis.

B63-10354
RAPID BILLET LOADER AIDS EXTRUSION OF REFRACTORY METALS
EICKHORN, L. F. DATE- APR. 1964
LANGELEY-17
A combination gravity and manually powered rapid billet loader reduces the time required for transferring hot metal billets from a heating furnace to an extrusion press. Positioned between the furnace and extrusion press, this loader is a simple slide-delivery device.

B63-10367
CONNECTOR FOR VACUUM-JACKETED LINES CUTS TUBE SYSTEM COST
CALVERT, H. F. DATE- MAY 1964
LANGELEY-19
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 BELLOWS IN CHROMIUM SYSTEMS
POWERS, H. F. DATE- JUN. 1964
LANGELEY-22
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- JAN. 1964
M-PS-1
Welding clamps, placed inside and outside a rocket case, held it in proper alignment during tungsten 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 redesign, the bar can be made sufficiently flexible to fit any large cylindrical surface.

B63-10385

FLEXIBLE HONEYCOMB STRUCTURE CAN BEND 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 curved, finished surface and provide support for workmen, 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

SIMPLECT STAKING COMBINES POSITIVE LOCKING AND QUICK-RELEASE FEATURES
CLAYTON, L. B. /HUGUES AIRCRAFT CO./ DATE- FEB. 1964
M-PS-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
GIUVARSETTI, A. BIERELIGHT, R. METZ, K. KUTTA, H. DATE- APR. 1964
ARC-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.

B63-10435

PORTABLE DISPLAY PANELING HAS WIDE USE, EASY TAKE DOWN AND ASSEMBLY
DR VOOG, H. J. DATE- MAR. 1964
ARC-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 FRICCTIONAL FORCE BETWEEN HATING CYLINDERS
CONRAD, R. W. DATE- MAY 1964
LEWIS-75
A kinetic energy absorbing device uses a series of coials, rating 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 on landing surfaces.

B63-10469

FINE-PARTICLE FILTER PREVENTS DAMAGE TO VACUUM PUMPS
HILLBERG, 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 BARS
MAY DURABILITY OF LARGEST ROCKET CASES.

B63-10498

GIOVANNETTI, A. KIMMELRIG, T. SEGMENT VALVE PROVIDES QUICK OPENING FORCE ARC-17
HANNS, P., JR. DATE- APR. 1964
LEWIS-111

B63-10499

THE PARTIAL PLEATS FORMED IN INDIVIDUAL CELL WALLS PROVIDE SUPPORT FOR WORKMEN, PORTABLE FLOORING HAS WIDE USE, BASEMENT

B63-10517

MINIATURE OXYGEN-HYDROGEN CUTTING TORCH CONSTRUCTED FROM HYPODERMIC 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.

B63-10519

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
SPAN INNOVATOR NOT GIVEN /LANGLY/ DATE- FEB. 1964
LEWIS-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
LANGLY-28
A simple anemometer having a fast response to high frequency wind fluctuations by direct measurement of two drag-force components in orthogonal planes.
is described. It may be used to determine wind profiles to extensive heights and would be helpful in takeoff and landing of light planes.

B63-10547
ELLIPSOIDAL OPTICAL REFLECTORS REPRODUCED BY ELECTROFORMING
LAMBERG, W. J. LAMBERG, S. W. LEWINSCH, M.
DATE- OCT. 1964
GSFC-92
An accurately dimensioned convex ellipsoidal surface, which will become a master after polishing, is fabricated from 316L stainless steel. When polishing of the master is completed, it is suspended in a modified vat bath for electroforming of nickel reflectors.

B63-10556
LATHE CONVERGENT FOR GRINDING ASPHERIC SURFACES
LABBE, J. H. LEVINSCH, S. RC CRAF, B.
PENGAYO, B. H. ZABO, F. J. DATE- JUN. 1964
GSFC-115
A standard overras tracing lathe converted by the addition of an independently driven diamond grinding wheel is used for grinding aspheric surfaces. The motion of the wheel is controlled by the lathe air tracer following the template which produces the desired aspheric profile.

B63-10558
NEW METHOD FORMS BOND LINE FREE OF VOIDS
KING, C. B. DATE- OCT. 1964
LONELY-20
A new bonding method using vacuum, pressure and heat, which produces a bond line free of voids, is described. This method is very successful in bonding ablation shields to a magnesium structural component in simulated reentry tests involving great heat and air turbulence.

B63-10560
CAMERA SHUTTER IS ACTUATED BY ELECTRIC SIGNAL
NEFF, J. E. DATE- NOV. 1964
ARC-20
Rotary solenoid energized by an electric signal opens a camera shutter, and when the solenoid is de-energized a spring closes it. By the use of a microswitch, the shutter may be opened and closed in one continuous, rapid operation when the solenoid is actuated.

B63-10564
A TECHNIQUE FOR MAKING ANIMAL RESTRAINTS
CLARK, R. E. B. BIRRFAR, S. DATE- SEP. 1964
ARC-25
A contoured shell for restraining animals is made by thermosetting plastic over the anesthetized, frozen specimens. It may be vented, or pieces may be cut out to facilitate working in localized areas.

B63-10566
PLASTIC MOLDS REDUCE COST OF ENEAPCULATING ELECTRIC CABLE CONNECTORS
KNOTT, D. DATE- NOV. 1964
NPS-59
Resin casting of the aluminum master pattern forms a plastic mold for encapsulating a cable connector. An electrolysis is injected into the mold and cured. The mold is disassembled leaving an elastomer encapsulation around the connector.

B63-10571
SELF-BALANCING BEAM PERMITS SAFE, EAST LOAD HANDLING UNDER OVERLOADING CONDITIONS
REWOARDS, O. H. DATE- MAR. 1964
NPS-84
The use of a self-balancing I-beam with a counterweight and motor simplifies moving heavy loads that are inaccessible for cranes. The beam cannot be overloaded, as the counterweight will not balance the load, and thus acts as an automatic safety device.

B63-10590
STAINLESS-STEEL ELBOWS FORGED BY SPIN FORGING
SPRING- FORGING NOT GIVEN /BROOKS-FOODS CORP./ DATE- DEC. 1964
NPS-122
Large seamless austenitic stainless steel elbows are fabricated by spin forging/ rotary shearing. A specially designed spin forging tool for mounting on a hydropin machine has been built for this purpose.

B64-10001
NEW INFLATABLE LIFERAFT IS NON-TIPPABLE
BROOKS, E. L. SEARLES, L. A. DATE- MAR. 1964
BEAM- SEE ALSO NASA-TN-D-1083
BSC-44
A one-seated lightweight life raft has three underwater ballast buckets as stabilizers. Non-tippable, it can be compactly packaged and inflated with carbon dioxide.

B64-10066
SPADING-SENSE FOR CRANE AID TO AID CRANE OPERATORS
SPRING- INNOVATOR NOT GIVEN /CANADIAN AIRLINES/ DATE- OCT. 1964
W-5
So that crane operators can judge payload movements accurately, a friction-driven multilobed can device energizes a buzzer and indicator lamp in the crane cab. The signal frequency of this speed sensor has a sensitivity to hoist movement of 1/6 inch.

B64-10011
GUIDE FOR EXTRUSION DIES ELIMINATES STRAIGHTENING OPERATION
GORMAN, C. A. HOOVER, R. J. DATE- NOV. 1964
LIECE-152
To prevent distortion of extruded metal, a guide 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. DATE- NOV. 1964
BSC-15
For two-way radio communication where safety gear is required, a lightweight helmet with fur 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
BULKHEAD TRANSDUCER 3/8-INCH IN SIZE CAN BE INFLATED INTO SURFACE
SCHARF, R. J. DATE- MAY 1965
WON-065
To measure fluid pressure with minimum disturbance to fluid flow, a miniature pressure transducer can be embedded and faired into the test surface. Incorporated in the design are piezoresistive elements mounted on a diaphragm, which transform pressure strain into an electrical signal.

B64-10028
QUICK-ACTING CLUTCH DISENGAGES IDLE DRIVE MOTOR
STARK, K. W. DATE- AUG. 1964
BSC-143
Positive-drive, no drag, over-running clutch is 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.

B64-10031
MULTIPLE PORT PRESSURE SCANNER VALVE FEATURES
GREATER ACCURACY, QUICKER DATA
VINCENZI, E. B. DATE- SEP. 1964
JPL-555
A fast, accurate, multipressure measuring system, which employs a multiple port pressure scanning valve that connects a pressure transducer to many pressures, is described.

JPL-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.

JPL-10058
INSULATED WELD TOOLING PERMITS UNIFORM, HIGH-QUALITY WELD
SPOR, L. R. INNOVATION NOT GIVEN /N. AM. AVIATION/ DATE- AUG. 1964
MSC-42
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.

JPL-10066
ENCAPSULATION PROCESS STERILIZES AND PRESERVES SURGICAL INSTRUMENTS
MONTGOMERY, L. C. MORELLI, F. A. DATE- JULY 1964
JPL-584
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.

JPL-10069
METAL-BENDING BRAKE FACILITATES LIGHTWEIGHT, CLOSE-TOLERANCE FABRICATION
ERCOLINI, A. L. WILSON, K. B. DATE- OCT. 1964
ASC-29
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.

JPL-10084
MOLDED ELASTOMER PROVIDES COMPACT FERRITE-CORE HOLDER, SIMPLIFIES ASSEMBLY
HAYDEN, R. B. 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 leads to be multiply threaded and soldered to terminals, without requiring intermediate terminals.

JPL-10119
BUCKLE JOINS WEB STRAPS QUICKLY, ADJUSTS EASILY
WILKINSON, J. E. /CHANCE VOUGHT CORP./ DATE- JUNE 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.

JPL-10121
ELECTRONIC ASSEMBLY RACK PANELS SNAP ON AND OFF
BAILEY, J. W. DATE- JUNE 1964
GSPC-59
Snap fasteners on each side of an electronic assembly rack blank panel give quick access to the interior. Guides pass extending from the inside surface easily slip into standard screw holes on the frame and provide additional support.

JPL-10124
ATTACHMENT CONVERTS MICROSCOPE TO POINT SOURCE AUTOCLOLLIMATOR
SELIGMAN, 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.

JPL-10130
BEARING TRANSITS ROTARY AND AXIAL MOTION
DUN, F. P. FEZ II, F. W. DATE- SEP. 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.

JPL-10141
PNEUMATIC POWER IS TRANSMITTED THROUGH AIR BEARING
JOHNSON, H. I. WOBIG, G. 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.

JPL-10145
FLEXIBLE FASTENER ALLOWS THERMAL EXPANSION
CHURCH, W. B. DATE- JUNE 1964
LANGLEY-40
A flexible fastener permits thermal expansion of metal 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.

JPL-10164
UPSETTING BUTT EDGE INCREASES WELD-JOINT STRENGTH
VESCO, D. 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.

JPL-10170
BRAKING DESIGN IN DESIGN OF RUGGED FLOWMETER
HINick, H. L. DATE- JAN. 1965
LEWIS-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.

JPL-10178
MACHINE TESTS CHEASE DURABILITY OF SHEET MATERIALS
JONES, L. K. STANFORD, B. B. DATE- NOV. 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.

JPL-10145
THREADING 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, OPENS TO ALLOW FLOW IN B64-10110 JPL-585

Two thin blades are incorporated into a valve which, when closed, form 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 MICROW DIMENSIONS

Micron dimensioned rectangular optical aperture is formed under a high powered toolmaker’s 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

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

A device, incorporating a collar with a hexagonal opening which fits snugly over a hexagonal nut, is 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 SUPPRESSES STRUCTURAL VIBRATIONS

The viscous pendulum damper consists of a cylinder containing round trays on which round lead plugs 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

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

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.

B64-10284 APPARATUS MEASURES VERY SMALL THRUSTS

A polychart contour plotter is used to reduce the data from all 19 antenna pattern charts to a one-chart form.

B64-10306 COMPRESSED GAS SYSTEM OPERATES SEMI-TRAILER BRAKES DURING KINching OPERATION

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

The braid at each end of a standard electric cable pulley is modified to reinforce high pressure, flexible, fluid transfer hoses. The safety device acts as a restraint if the line ruptures.

B64-10349 THERMOCOMPRESSION BONDING PRODUCES EFFICIENT SURFACE-BARRIER DIODE

Thermocompression 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.

B64-10003 ILLUMINATED DISPLAY PANEL IS EASILY CHANGED

A polychart contour plotter is modified to reinforce high pressure, flexible, fluid transfer hoses. The safety device acts as a restraint if the line ruptures.

B65-10007 Shock absorber protects motive components against overloads

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.
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-FS-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
BAUMGARTNER, J. F., 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 RADIENT HEAT ENERGY IN CORROSIVE ATMOSPHERES
SPON- INNOVATOR NOT GIVEN /BOEING CO./ DATE- JAN. 1965
M-FS-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
SEE ALSO B66-10297
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, D. DATE- JAN. 1965
BEAN- SEE ALSO B66-10331
LWIS-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
NOB LINKAGE PERMITS ONE-HAND CONTROL OF VARIOUS OPERATIONS
CODDING, G. C. LAVENDER, C. E. DATE- JAN. 1965
MSC-30
Electro-mechanical 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
SHAB, B. L. DATE- MAR. 1965
LWIS-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-FS-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. E. MAH. AVIATION/ DATE-FEB. 1965
W-00-106
An efficient wire puller consists of a steel probe which is strung 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
OCHEMBERKER TRANSPOZER PLATFORM HAS GOOD STABILITY
SPON- INNOVATOR NOT GIVEN /IBM/ DATE- FEB. 1965
M-FS-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 HOLDERS 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
FASTER PROVIDES COOLING AND COMPENSATES FOR THERMAL EXPANSION
SPON- INNOVATOR NOT GIVEN /HEOIJET-GEN. CORP./ DATE- FEB. 1965
W-60-003
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-FS-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
MAC GLASHAN, W. P., DATE- FEB. 1965
JPL-462
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 ball irregularity.

B65-10064
FLEXURE SUPPORT SYSTEM PROTECTS THERMALLY AND DYNAMICALLY LOADED MODELS
CRUMPLER, 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 cups quickly and nearly chipped
Sponsor: Innovator not given /Westinghouse Elec.
Corp. / Date- Feb. 1965
Note-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
nearly crimping.

B65-10053
Seal allows blind assembly and thermal
expansion of components
Sponsor: Innovator not given / Westinghouse Elec.
Corp. / Date- Feb. 1965
Note-0010
The design of a seal consisting of two concentric
cylinders with outer and inner threaded elements
attached to each side of the system interface
withstands large temperature changes and allows
for blind assembly.

B65-10060
New Alloy Brazes Titanium to Stainless Steel
Sponsor: Innovator not given / N. A. Aviation/ Date-
Mar. 1965
Note-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-coated boat is chemically inert,
provides good heat transfer
Spitzes, 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
Sponsor: Innovator not given /GE/ Date- Mar. 1965
Note-112
Measurement of the curved surface finish on gear
teeth is made by a device used in conjunction wth
a conventional profilometer.

B65-10070
Simple scale interpolator facilitates
reading of graphs
Pfitzenman, D. H., Jr. Date- Mar. 1965
Langley-94
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
Sponsor: Innovator not given /AM. Opt. Co. / Date-
Mar. 1965
Langley-94
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 compensates for shaft
misalignment
Spoff- Innovator not given /Westinghouse Elec.
Corp. / Date- Mar. 1965
Note-0013
Coupling of splined shafts with slight
misalignment is accomplished by means of a crown
 spline and sleeve arrangement.

B65-10090
Compact assembly generates plastic foam,
implements flotation bag
Date- Apr. 1965
Langley-36
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. E. 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., Domerest, K. E., Barton, J. C.
Date- Apr. 1965
N-15-260
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
Batsch, F. P., pipe, J. H. Date- Apr. 1965
BEANS Also B64-10123 and B64-10050
JPL-264
Gas-lubricated journal bearing with narrow radial
slits forming circular gas-feed passages regulates
gas flow in precision instruments. Asymmetrical
flow pattern and unbalanced torques are prevented.

B65-10201
Jig and fixture aid fabrication of tumbeter
rivers
Chattin, J. H. Date- Apr. 1965
Lewis-105
Jig and fixture that holds several lengths of
tungsten rods produces rivets simply and
inexpensively. The apparatus allows sufficient
tungsten to be exposed for heating and forging
into a rivet head.

B65-10204
Leaf-spring suspension provides accurate
parallel displacements
McCrady, R. A. Date- Apr. 1965
JPL-480
Leaf-spring suspension device with the springs
symmetrically mounted on suspension frame
provides accurate parallel displacements of loads
over short linear distances.

B65-10209
Rock bit requires no flushing medium to
maintain drilling speed

164
SPON- INNOVATOR NOT GIVEN /HUGHES AEROSPACE CORP./ DATE- APR. 1965
Wagner, R. P. DATE- APR. 1965
Coil springs wound with maximum initial tension in a three-turn, closed loop structure form a collapsible truss structure. The truss automatically expands and provides excellent rigidity and close dimensional tolerance when expanded.

B65-1010
MAGNETS POSITION X-RAY FILM FOR WELD INSPECTION
SPON- INNOVATOR NOT GIVEN /HUGHES AEROSPACE CORP./ DATE- APR. 1965
Fils-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.

B65-1011
PROBE TESTS MICROWELD STRENGTH
SPON- INNOVATOR NOT GIVEN /DOUGLAS AEROSPACE CO./ DATE- APR. 1965
Probe is developed to test strength of soldered, 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
SPON- INNOVATOR NOT GIVEN /DOUGLAS AEROSPACE CO./ DATE- APR. 1965
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
SPON- INNOVATOR NOT GIVEN /DOUGLAS AEROSPACE CO./ DATE- APR. 1965
Average the high and low pressure admitted to a probe and then average the probe with the free-stream static pressure on an aerodynamic surface. This method 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 DANGEROUS SYSTEMS
SPON- INNOVATOR NOT GIVEN /DOUGLAS AEROSPACE CO./ DATE- APR. 1965
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 transport.

B65-10116
LOW-COST TOOL MINIMIZES DAMAGE TO O-RINGS DURING INSTALLATION
SPON- INNOVATOR NOT GIVEN /H. M. A. A. DATE- APR. 1965
Long fasteners are formed in metal panels by cold-press extrusion method without material loss. Integral ribs in aluminum-alloy panels are formed by this process.

B65-10126
COLLAPSIBLE TRUSS STRUCTURE IS AUTOMATICALLY EXPANDABLE
SPON- INNOVATOR NOT GIVEN /H. M. A. DATE- APR. 1965
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.

B65-10130
COLLAR POSITIONS STEEL STOCK USED TO FORM COIL ON MANDREL
SPON- INNOVATOR NOT GIVEN /DOUGLAS AEROSPACE CO./ DATE- APR. 1965
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
SPON- INNOVATOR NOT GIVEN /DOUGLAS AEROSPACE CO./ DATE- APR. 1965
High permeability semiconductors concentrate magnetic field energy in small areas to allow soldering of small components. This device can be used in microminiature parts in thin-film fabrication.

B65-10135
COILED SPRING MAKES SELF-LOCKING DEVICE FOR THREADED FASTENERS
SPON- INNOVATOR NOT GIVEN /H. M. A. A. DATE- APR. 1965
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.

B65-1014
LIGHTWEIGHT LOAD SUPPORT SHOES AS VIBRATION DAMPER
SPON- INNOVATOR NOT GIVEN /H. M. A. A. DATE- APR. 1965
Omnidirectional antennas and solar panels can be supported by a thin-walled tubular strut. 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
SPON- INNOVATOR NOT GIVEN /THIEGOL CHEM. CORP./ DATE- APR. 1965
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 diaphragm and the valve seat, and a fluid feedback arrangement. The stress and wear of components at the valve seat
BACKLASH

Two deflected cantilever springs 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

Mechanical assembly mounted in a lathe chuck is used with a forming wheel to roll-form bellows from standard steel metal tubing. Spacers and mandrels of various sizes custom-fabricate bellows of any desired dimensions.

B65-10153

TITANIUM TREATMENT IMPROVES BRAZED JOINTS

DATE- MAY 1965

MSC-127

Pre-treating 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

DATE- MAY 1965

EXCLUDES EXTRUSION FORCES

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

DATE- JUN. 1965

NO-0016

Seal 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

DATE- JUN. 1965

JPI-226

Actuator assembly disconnects electric cable and fluid-line coupling from a rocket. The device 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

SPlice PLATE DESIGN ASSURES STRUCTURAL SEPARATION BY MILD EXPLOSIVE

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

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.
Dispensing system eliminates torsion in deployed hoses.

Dispensing system uses a rotating drum, transfer arm, and stationary drum to 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.

Extendible column can be stowed on drum.

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 soil samples and supporting electrical and optical sensors.

Spiral heater coils hand-formed with fixture.

Bench model jig and fixture used for hand fabricating spiral coils of various lengths from flat strip stock. This tool is used to make springs and coils to custom lengths.

Self-aligning fixture used in lathe chuck jaw replacing.

Self-aligning tool positions and rigidly holds lathe chuck jaws for refining and timing of the clamping surface. The jaws clamp the fixture in the manner of clamping a workpiece. The fixture can be modified to accommodate four-jawed chucks.

Electrical cable connector-clamp has smooth exterior surface.

Electrical cable connector-clamp fitted with a collet has a smooth exterior surface that can be easily gripped. The collet clamps a portion of the cable and provides for connecting it to a standard electrical connector.

Ball and socket joints provide accurate biaxial gimbal.

Ball-and-socket joints are used to connect two rotating inputs to orthogonally pivoted outputs. This provides an accurate biaxial gimbal which will operate in continuous motion without backlash.

Fluid check valve has fail-safe feature.

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 speed forming of large metal sheets.

Fiberglass tooling dies accelerate forming of large metal sheets. The dies, fabricated to fit over and fasten to the side bases, are lightweight, quickly replaced and have nongalling surfaces.

Wire mesh isolator protects sensitive electronic components.

Sensitive electronic components are enclosed in wire mesh for protection. The wire mesh isolates the component from shock and vibration. It acts as a heat sink and as a screen against RF interference.

Flexible magnetic planning boards are easily transported.

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.

Inexpensive check valve is installed in standard AN fittings.

Check valve with a cylindrical flanged tube body is used in standard AN fittings. The valve also has an easily removable spring-loaded piston.

Diaphragm eliminates leakage in cryogenic fluid duct coupling.

Check valve eliminates leakage in cryogenic fluid duct coupling. The valve also has an easily removable spring-loaded piston.

Scoop attachment makes helicopter recoveries easier and safer.

Compact hydraulic drive device translates microinch deviations measurements into precise corrective displacements. The unit is driven by a servomotor activated by the output of an attitude sensing device.

Hydraulic device provides accurate displacements to microchips.

Hydraulic 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.

Hand tool facilitates extraction of circuit modules.

Compact hand tool extracts electronic modules from circuit board socket. It is used on modules that have four small notches in the base of the plastic housing.

Angular glass tubing drawn from round tubing.

Round glass tubing softened in a furnace is drawn over a shaped plug and molded 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
HOLZ, G. M. HOWARD, E. A. DATE- AUG. 1965
3PL-687
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. M. JONES, J. C. DATE- AUG. 1965
3NC-168
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
SACCOCIO, R. M. WESTINGHOUSE ELEC. CORP./ DATE- AUG. 1965
NU-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
TELECOUPLER-TO-INSTRUMENTATION CONNECTOR FEATURES QUICK ASSEMBLY
HUMSHA, N. westinghouse eel. corp. DATE- AUG. 1965
NU-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 TRANSMITS MECHANICAL VIBRATION INTO HAZARDOUS ENVIRONMENT
BRZEZINSKI, D. A. westinghouse ELEC. corp./ GAIL, A. E. DATE- AUG. 1965
NU-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. D. 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
MOBILE OPERATED CLAMPING TOOL HAS POSITIVE GRIP
ADCC1, S. A. WESTINGHOUSE ELEC. CORP./ SEWALD, A. W. DATE- AUG. 1965
NU-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 THERMOCOUPLE IN STORAGE AND HANDLING
OSMOND, L. R.WESTINGHOUSE ELEC. CORP. DATE- AUG. 1965
NU-0023
Thermocouples are shipped and stored in hollow plastic hoops. The hoop is an inexpensive but efficient method of protection.

B65-10262
ROTATING HOLDER PERMITS ACCURATE GRINDING OF METALLURGICAL MICROSAMPLES
CHAMBER, 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
KELLY, S. /HUGER S AIRCRAFT CORP. DATE- SEP. 1965
WOO-195
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 GAGE HAS FAST RESPONSE
WIBBEL, E. S. /AERMC CORP. DATE- SEP. 1965
M-PS-358
Differential pressure gage 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
AXIS BRAKE-DYNAOMETER ACCURATELY MEASURES TORQUE
SPOR- INNOVATOR NOT GIVEN /LEWIS/ DATE- 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 measure power outputs of rotating machinery over a wide range of shaft speeds. It can also be used as an air turbine.

B65-10319
BRAZED METAL WELD BEARINGS WIT TUNGSTEN INERT GAS EQUIPMENT
WISNER, J. P. DATE- OCT. 1965
LEWIS-219
Brazed bearing and bearing sleeves are brazed with tungsten inert gas equipment. The highest quality bond is obtained when TIG welding is performed in an inert atmosphere.

B65-10323
VOLUMETRIC SYSTEM CALIBRATES METERS FOR LARGE FLOW RATES
SPOR- INNOVATOR NOT GIVEN /MI. AR. AVIATION/ DATE- NOV. 1965
WOO-130
Volumetric system calibrates meters used for large liquid 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
M-PS-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 at other meteorological data.

B65-10327
PRESSURE RESPONSIVE SEAL HANDLES STATIC AND DYNAMIC LOADS
RABEE, E. W. /MI. AR. AVIATION/ DATE- NOV. 1965
GSFC-441
Ported ball valves are sealed under both static and dynamic load conditions by a line-pressure
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
SC DEREONG, 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
WISNER, J. F. DATE- NOV. 1965
LEWIS-220
Custom-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
SHULTSBERG, R. R. 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
ELEKTRONOMAGNETIC HAMMER REMOVES WELD DISTORTIONS FROM ALUMINUM TANKS
SCHWINGMANS, E. J. DATE- NOV. 1965
N-75-267
Distortions around weld areas on sheet-aluminum tanks and other structures are removed with a portable electroacoustic 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 DAMPENPROOF SEAL
WALLACE, E. D. DATE- NOV. 1965
N-75-263
Soft-seat poppet valve provides positive closure against fluid without damaging 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 FRICTION-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 jaw.

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 acrual gear train backlash that is intolerable when driving certain heavy loads.

B65-10356
FASTENER DISTRIBUTES STRESS EVENLY FROM SANDWICH-PANEL-BUNG ITEMS

SHAPING, J. /N. AM. AVIATION/ DATE- NOV. 1965
MSC-236
Items are attached externally to a 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. FABRICATION N. AM. AVIATION/ 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
SPRN- 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
SPRN- 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 BELLOWS JOINT RESTRAINT PERMITS ANGULAR AND OFFSET MOVEMENT
KHN, 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. /MCDONNELL AIRCRAFT CORP./ DATE- DEC. 1965
MSC-236
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
SPRN- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- DEC. 1965
WOO-228
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.

B65-10383
THREADED SPLIT RING CONNECTOR SEPARATES STRUCTURAL SECTIONS
MATO, J. W. DATE- JUL. 1965
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.

B65-10385
RACK MOUNT DEVICE QUICKLY INSERTS OR EXTRACTS CHASSIS UNITS
HAZENBERG, L. H. /COLLINS RADIO CO./ DATE- DEC. 1965
MSC-248
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.

B65-10386
DRILL BIT DESIGN ASSURES CLEAN HOLES IN LAMINATED MATERIALS
TILLOTSON, R. H. /DOUGLAS AIRCRAFT CO./ DATE- DEC. 1965
WOO-098
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.

B65-10388
STRAINER FITS INSIDE FLARED-TUBE FITTINGS
PARKER, O. J. DATE- DEC. 1965
LANGLEY-180
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.

B65-10391
TUNGSTEN WIRE AND TUBING JOINED BY NICKEL BRAZING
SPRW- INNOVATOR NOT GIVEN /AUTO-CONTROLS LABS./ DATE- DEC. 1965
K-FS-398
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.

B65-10393
DIE AND TELESCOPING PUNCH FORM CONVOLUTIONS IN TUB DIAPHRAGM
SPRW- INNOVATOR NOT GIVEN /HONEYWELL/ DATE- DEC. 1965
JPL-2C-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.

B65-10398
CENTRIFUGAL DEVICE SEPARATES LIQUID FROM GAS
HANDLEY, R. H. /UNITED AIRCRAFT CORP./ SPW-242
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. B. /N. AM. AVIATION/ DATE- DEC. 1965
MSC-243
Photo sensors 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 thus permitting alignment for more than straight line or true circle joints.

B65-10402
LIGHTWEIGHT DOOR SEALS CRYOGENIC CONTAINERS AGAINST DIAPHRAGM TYPE LOADING
ENGLEHART, R. C. /N. AM. AVIATION/ DATE- DEC. 1965
H-FS-476
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
SPRW- INNOVATOR NOT GIVEN /GEN. DYN./ /ASTRONAUTICS/ DATE- JAN. 1966
WOO-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
PUNCH-PROOFED TOOL EASILY REMOVES BRAZED TUBE CONNECTORS
SCHLEPPHAN, R. A. /MCDOUGALL 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 connection. An inert gas is forced-tubed about the heated area to prevent oxidation of the tube.

B66-10007
FLOATING DEVICE ALIGNS BLIND CONNECTIONS
BESS, J. E. /N. AM. AVIATION/ DATE- JAN. 1966
MSC-256
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
FACERBERG, E. R. /LOCKEAD MISSILES AND SPACE CORP./ 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 FORMS LARGE SHEET METAL PARTS
SPRW- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- JAN. 1966
EOAN- SEE ALSO NASA-SP-5017
K-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.

B66-10016
COMPACT RETRACTOR PROTECTS CABLING LOOPS
SPRW- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- JAN. 1966
K-FS-561
Core and swivel retractor mechanism combined with cable stiffeners provides compact, long-wearing protection for cable loops on cabinet-mounted electronic equipment drawers.
O-RING CHANGES
JAN. 1966
SPON- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-

B66-10019
BORROWED STRIKES LITTER ASSEMBLY USED FOR SEA
RESCUE OPERATIONS
POLLARD, R. A. SHEIVER, G. A. DATE- JAN. 1966
MSC-131
Standard stoken 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 TYPE FITTINGS FORM LEAKPROOF SEAL IN
HYDRAULIC SYSTEMS
SPOW- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-
JAN. 1966
M-PS-481
Leakproof fittings for hydraulic systems are
designed to be welded to the ends of the tubing to
be joined and mated to form a seal with one o-ring
at the joint. Since the fittings are coupled at
only one joint, they tend to be more reliable than
standard fittings coupled at two joints.

B66-10022
RING VALVE RESPONDS TO DIFFERENTIAL PRESSURE
CHANGES
SPOW- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-
JAN. 1966
WOC-247
Pressure valve has a moving annular ring seal that
automatically reacts to differential pressure
changes across the seal. This valve has good
potential for the petroleum and chemical
industries.

B66-10023
SIMPLE KEY LOCKS TURBINE ROTOR BLADES
SPOW- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-
JAN. 1966
WOC-103
Symmetrical, cruciform key has end tabs which bend
up to lock turbine rotor blades against axial
displacement. The key locks without introducing
aerodynamic resistance or upsetting rotor balance.

B66-10030
FRICTION DEVICE DAMPS LINEAR MOTION OF
ROTATING SHAFT
SPOW- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-
JAN. 1966
WOC-214
Damping device checks the axial motion of a
rotating shaft by exerting a controllable, radial
frictional load to the outer race of the ball
bearing in which the shaft is mounted. The device
can be used as a soft bearing mount to damp
resonant frequencies at critical shaft speed.

B66-10032
SHEET METAL STRIP UNROLLS TO FORM CIRCULAR
BOOM
SPOW- INNOVATOR NOT GIVEN /HELPAR, INC./ DATE-
JAN. 1966
GSPC-423
Prefabricated metal strip, coiled flat on a storage
frame, unrolls to form a cylindrical boom. Tabs
and slots on opposite sides of the strip interlock
to form a continuous circular cross section.
This retractable boom can be used as a spacecraft
antenna, gravity gradient, or positioning device.

B66-10035
RELIABLE CLAMP HOLDS FUEL CELL STACK THROUGH
THERMAL CYCLE
GREEN, R. H. UNITED AIRCRAFT CORP./ DATE- FEB.
1966
MSC-313
Reliable clamping device holds a stack of fuel
cells during thermal expansion and contraction
periods. The clamp has tension bar action which
maintains seal integrity over a wide stress range.

B66-10040
ASSEMBLY JIG ASSURES RELIABLE SOLAR CELL
MODULES
OFARRELL, K. O. TRW SPACE TECHNOL. LABS./ DATE-
FEB. 1966
GSPC-455
Assembly jig holds the components for a solar cell
module in place as the assembly is soldered and
bonded by the even heat of an oven. The jig is
designed to the configuration of the planned
module. It eliminates uneven thermal conditions
cau sed by hand soldering methods.

B66-10047
HEATED DIS FACILITATES TUNGSTEN FORMING
CHATTON, J. H. BAYSHORE, J. B. LAUGHLIN, J. C.
LEIDT, R. A. DATE- FEB. 1966
LEWIS-267
Tungsten forming in a press brake employs a bot tom
die assembly with a heating manifold between two
water-cooled die sections. The manifold has a
hydrogen-oxygen burner spaced along its length
for even heat during forming.

B66-10052
COMBUSTION CHAMBER INLET MANIFOLD SEPARATES
VAPOR FROM LIQUID
BARKER, B. L. /N. AM. AVIATION/ DATE- FEB. 1966
HEAN- SEE ALSO B66-10251
M-PS-531
Circular manifold with tangential orifices at the
inner circumference provides for the vapor
constituent of a vaporized cryogenic propellant to
enter a rocket combustion chamber before the
liquid constituent. The vapor is separated from
the liquid by centrifugal action and proceeds into
the chamber through carefully positioned
orifices.

B66-10054
MODIFIED POWER TOOL RAPIDLY DRIVES SERIES
TORQUE BOLTS
SPOW- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-
FEB. 1966
MSC-221
Feeder attachment, which fits on a standard power
driver, drives a series of longitudinally attached
torque bolts into place with great speed. It
allows loading of a series of bolts and then
positions individual bolts in the driving head for
assembly. The attachment contains a rocket gun
which may be modified to accommodate different
types and sizes of bolts.

B66-10055
HYDROGEN-ATMOSPHERE INDUCTION FURNACE HAS
INCREASED TEMPERATURE RANGE
CAVES, A. M. GREESLIN, C. H. DATE- FEB. 1966
LEWIS-153
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
BENCH VISE ADAPTER GRIPS TUBING SECURELY AND
SAFELY
HOWLAND, B. T. JONES, A. S., JR. /N. AM.
AVIATION/ DATE- FEB. 1966
MSC-279
Plastic self-compressing adapter with grooves,
attached to the jaws of a bench vise, secures
thick 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.

B66-10059
CALIBRATED CLAMP FACILITATES PRESSURE
APPLICATION
SPOW- INNOVATOR NOT GIVEN /N. AM. AVIATION/ DATE-
FEB. 1966
MSC-298
Spring-loaded clamp applies specific pressure to
hold materials together during bonding, welding,
and machining. The clamp has two adjustable legs
terminating in suction cups for easy attachment
to a surface.

B66-10061
INSTRUMENT QUICKLY TRANSPOSES GROUND REFERENCE
TARGET TO HIS LEVEL
GREEN, R. E. VAN DERESTER, 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.

**B66-10063**

**TENSILE-STRENGTH APPARATUS APPLIES HIGH STRAIN-RATE LOADING WITH MINIMUM SHOCK**

COTTEE, H. E., JR., MAC GLASHAN, W. F.

DATE- FEB. 1966

JPL-28 JPL-29

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.

**B66-10065**

**T-HANDLE WRENCH HAS TORQUE-LIMITING ACTION**

KEMP, S. B. /N. AM. AVIATION/ DATE- FEB. 1966

MSC-280

T-handle wrench can be preset to release when a certain torque value is exceeded by means of a spring-loaded roller and ground 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.

**B66-10069**

**BON-IN WITH CHEMICAL ADDITIVE PROTECTS GEAR SURFACE**

HARTMAN, M. A. /N. AM. AVIATION/ DATE- FEB. 1966

M-PS-540

Bon-in treatment provides a protective coating on turbopump gear surfaces so that they are capable of operation under marginal conditions in mineral oil and diester lubricants. This treatment protects highly loaded gears during relatively short-term operation.

**B66-10071**

**MECHANISM ISOLATES LOAD WEIGHING CELL DURING LIFTING OF LOAD**

HAGLER, J. S. /N. AM. AVIATION/ DATE- FEB. 1966

MSC-297

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.

**B66-10073**

**CALCULATIONS ENABLE OPTIMUM DESIGN OF MAGNETIC BRAKE**

KESHLER, R. G. DATE- FEB. 1966

LEWIS-231

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 unconventional wound coils determine the required parameters for the desired deceleration with minimum electrical energy supplied to the stationary coil.

**B66-10074**

**THREADED PILOT ISSUES CUTTING TOOL ALIGNMENT**

GOLDMAI, R. /N. AM. AVIATION/ SCHNEIDER, W. E.

DATE- FEB. 1966

M-PS-527

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.

**B66-10076**

**SHOULDER ADAPTER STEADIES SPOT WELDING GUN**

LOVE, T. H. DATE- MAR. 1966

M-PS-321

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.

**B66-10077**

**PLUGGED HOLLOW SHAFT MAKES FATIGUE-RESISTANT SHEAR PIN**

HANKINSON, T. W. B. DATE- MAR. 1966

LANGST-195

Shear pin coupling with plugged hollow shaft provides required load capacity for shaft protection and has no groove to induce fatigue failure.

**B66-10078**

**THERMAL MOTOR POSITIONS MAGNETOMETER SENSORS**

KENNIV, W. J. SCOTT, S. G. DATE- MAR. 1966

ABC-51

Reversing, thermal, motor-driven device positions magnetometer sensors for checking zero offset. The device alternately positions two sensors at fixed positions 90 degrees apart. The thermal motor is fabricated completely of nonmagnetic materials.

**B66-10080**

**NYLON SHOCK ABSORBER PREVENTS INJURY TO PARACHUTE JUMPERS**

HANDEL, J. A. /GOODYEAR AEROSPACE CORP./ DATE- MAR. 1966

MSC-226

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.

**B66-10092**

**FINGERPRINT CURRENT CONTROL FACILITATES USE OF ARC WELDING GUN**

ROTH, R. /N. AM. AVIATION/ DATE- MAR. 1966

MSC-285

Fingertip-operated trigger accurately controls the current supplied to an arc welding gun. The trigger is mounted directly on the handle of the gun.

**B66-10093**

**TOOL PROVIDES CONSTANT PURGE DURING TUBE WELDING**

LANG, R. B. /N. AM. AVIATION/ DATE- MAR. 1966

M-PS-541

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.

**B66-10100**

**QUEUING REGISTER USES FLUID LOGIC ELEMENTS**

SPROK.- INNOVATOR NOT GIVEN /UNIVAC DIV. OF SPERRY RAND/ DATE- MAR. 1966

M-PS-317

Queuing register uses multistage bit-shifting device/ uses a series of pure fluid elements to perform the required logic operations. The register has several stages of three-state pure fluid elements combined with two-input NOR gates.

**B66-10102**

**PIPE CUTTING TOOL IS USEFUL IN LIMITED SPACE**

HEADLEY, C. A. /MCDONNELL AIRCRAFT CORP./ DATE- MAR. 1966

MSC-36

Portable pipe cutting tool is used in areas of limited space. The pipe is clamped in the tool and then cut by a rotating cutter assembly that is internally connected to a drive shaft engaged in the chuck of a portable electric drill. The tool is held in a fixed position during the cutting operation.

**B66-10107**

**MECHANISM CONTINUOUSLY MEASURES STATIC AND DYNAMIC CABLE LOADS**

SPROK. INNOVATOR NOT GIVEN /HOUSTON/ DATE- MAR. 1966
B66-217
Pulley 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-off 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.

B66-10115
SOLDIERING TOOL HEATS WORKPIECES AND APPLIES SOLDER IN ONE OPERATION
GUDKES, G. V. /N. AM. AVIATION/ DATE- MAY 1966
LEWIS-207
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.

B66-10116
TELESCOPING OF INSTRUMENTATION TUBING ELIMINATES SWAGING
MC CLELLAS, R. L. /N. AM. AVIATION/ DATE- MAY 1966
M-PS-586
Short sections of stainless steel tubing of slide-fit sizes fitted together and silver-soldered at the junctions form 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
MSC-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, R. P. DATE- MAR. 1966
MSC-223
Granular aluminum oxide is used as filler in serpentine tubing while welding the tubing to a flat surface. The filler eliminates obstructing particles from the tubes formed by melting 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
MSC-304
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
WELLS, E. A. /N. AM. AVIATION/ DATE- APR. 1966
MSC-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.

B66-10136
CRYOGENIC TRAP VALVE HAS NO MOVING PARTS
BRANNON, 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.

B66-10137
ROTATING MANDREL SPEEDS ASSEMBLY OF PLASTIC INFLATABLES
LANGLEY-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.

B66-10145
PORTABLE POWER TOOL MACHINES WELD JOINTS IN FIELD
SPIER, R. A. DATE- APR. 1966
M-PS-258
Portable routing 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.

B66-10146
EXPANDABLE MAST USED IN ONE SHOT SOIL PENETROMETER
HOTT, G. M. HOWARD, G. A. DATE- APR. 1966
JPL-285
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.

B66-10149
DEEP INDICATOR AND STOP AID MACHINING TO PRECISE TOLERANCES
LAVERTY, J. L. /N. AM. AVIATION/ DATE- APR. 1966
M-PS-555
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 jigsaw boxes.

B66-10150
MOUNTING FACILITATES REMOVAL AND INSTALLATION OF FLAME-DETECTOR RODS
CASTRIL, F. /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.

B66-10151
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.

B66-10152
NYLON HIT REMOVES CORR INSULATION WITHOUT DAMAGE TO SUBSTRATE
OP TUBES  
CRANDALL, J. C. /N. 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  
CARETHERS, K. V. /N. AM. AVIATION/ KELLEY, W. B. DATE- APR. 1966  
M-PS-550  
Metal Y-tube simultaneously directs argon streams over weld areas on both sides of tube 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 REFERENCE  
JACKSON, E. /GARRET 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, R. J. B. /N. AM. AVIATION/ DATE- APR. 1966  
M-PS-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. /N. AM. AVIATION/ DATE- APR. 1966  
M-PS-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. /N. AM. AVIATION/ DATE- APR. 1966  
M-PS-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 MATING CYLINDERS  
COPPERNOIc, R. W. /GEN. DYN./ASTRONAUTICS/ DATE- APR. 1966  
W-209-270  
Mating 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 mating 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. /N. AM. AVIATION/ DATE- APR. 1966  
M-PS-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 SPOT-LAPS SPHERES TO VERY CLOSE TOLERANCES  
AVERY, H. W. /GE/ DATE- MAY 1966  
JPL-SC-119  
Device laps 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 SHAPES  
REINHARDT, E. C. DATE- MAY 1966  
M-PS-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  
LIEBERG, J. G. /N. 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 TIMED-DELAY VALVE OPERATES AT CONTROLLED RATES  
HORNING, J. L. TOMLINSON, L. E. /N. AM. AVIATION/ DATE- MAY 1966  
M-PS-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 delay time and spill travel time.

B66-10190  
BELLOWS DESIGN FEATURES LOW SPRING RATE AND LONG LIFE  
LUSCIC, R. F. /N. AM. AVIATION/ DATE- MAY 1966  
M-PS-531  
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 LATERAL CUTTING-TOOL ALIGNMENT  
PRATT, L. /N. AM. AVIATION/ DATE- MAY 1966  
M-PS-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  
W-209-288  
Segmented ball valve and flowmeter in the same spherical housing provide a valve that will handle large fluid volume without bulkiness and weight of

174
B66-10197
INTERMEDIATE ROTATING RING IMPROVES
RELIABILITY OF DYNAMIC SHAFT SEAL
MILLS, R. E. /AM. AVIATION/ DATE- MAY 1966
M-PS-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
SPER- INNOVATOR NOT GIVEN /IBM/ DATE- MAY 1965
M-PS-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-FI TTED HARNESS PROVIDES SAFE AND EASY
COMPONENT HANDLING
MILLIS, R. E. /CHRYSLER CORP. /DATE- MAY 1966
M-PS-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
TOQUE WRENCH ALLOWS READINGS FROM
INACCESSIBLE LOCATIONS
DE BARNARDO, M. /AM. AVIATION/ DATE- MAY 1966
M-PS-588
Torque wrench with an adjustable wrench handle permits indicator to remain in view when used on sections of equipment with limited access. The wrench is capable of protruding from either side of the wrench head by means of spring loaded bolts.

B66-10206
LOW POWER HEATING ELEMENT PROVIDES THERMAL
CONTROL DURING SLAGING OPERATIONS
CROWELL, J. W. /CHRYSLER CORP. /DATE- MAY 1966
M-PS-587
Low power, cylindrical heating element in a swaging phase assembly heats the material being worked on. The increased ductility of heated material results in crack-free deformation.

B66-10208
TOOL ENABLES PROPER MOUNTING OF ACCELEROMETER
AND CABLE CONNECTOR
STEELE, C. H. /AM. AVIATION/ DATE- MAY 1966
M-PS-511
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-PS-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 teflonfluoroethylene 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
THIELE, A. E. DATE- MAY 1966
M-PS-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
SPOR- INNOVATOR NOT GIVEN /AM. AVIATION/ DATE- MAY 1966
M-PS-466
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
HUFF, E. F. /AM. AVIATION/ DATE- MAY 1966
M-PS-568
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-PS-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
MC CANN, R. J. /LOCKHEED MISSILES AND SPACE CO./ DATE- JUN. 1966
W00-266
Missile nose fairings immersed in colloidal suspension prepared with various specific gravities simulate pressure profiles very similar to those encountered during reentry. Stresses and deflection conditions similar to those expected during atmospheric reentry are thus attained in the laboratory.

B66-10215
ELE TRON BEAM WELDING OF COPPER-MONEL
FACILITATED BY CIRCULAR MAGNETIC SHIELDS
LAM, J. M. /AM. AVIATION/ DATE- MAY 1966
M-PS-569
High permeability, soft magnetic rings are placed on both sides of electron beam weld seams in copper-monel circular joint. This eliminates deflection of the electron beam caused by magnetic fields present in the weld area.

B66-10216
SOFT-SEAL VALVE HOLDS HAZARDOUS FLUIDS
SAFELY
DATE- MAY 1966 READ- SEE ALSO NASA-TN-D-1727
LEWS-275
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.
B66-10217
FIBERGLASS CONTAINER SHELLS FORM CONTAMINATION-FREE STORAGE UNITS
KLAUS, H. E. /N. AM. AVIATION/ DATE- JUN. 1966
WPN-275
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
ROTT, B. /N. AM. AVIATION/ DATE- JUN. 1966
N-FS-580
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
DECKLET, J. E. /COMPREHENSIVE DESIGNERS/ DATE- MAY 1966
GSN-867
Moded 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
SPON- INNOVATOR HOT GIVES /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/stain-producer/ 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
STONEMTZ, R. T. DATE- MAY 1966
M-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-0045
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
MAJESKI, S. J. DATE- JUN. 1966
ARC-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
EST-LOCKED GUARD PREVENTS ACCIDENTAL SWITCH ACTUATION
HANSHINE, R. 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
RILEY, 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
BAUSCHEL, 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
RILEY, A. ODOR, N. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-504
Portable tool sizes tubing ends without disassembling the tubing installation. The shrink sizing tool is clamped 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 PROJECTS 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 51-51 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 process and produces bonds of greater strength and reliability.
PORTABLE SANDBLASTER CLEANSE SMALL AREAS
SEVERIN, H. J. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-523
Portable sandblasting unit rapidly and effectively cleans localized areas on a metal surface. The unit incorporates a bellows enclosure, making plate, sand container, and used sand accumulator connected to a vacuum system. The bellows is equipped with an inspection window and light for observation of the sanding operation.

CHRISTMAN, G. L. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-506
Lathe chuck key incorporates safety feature

LATER CHUCK KEY INCORPORATES SAFETY FEATURE

B66-10243
CHRISTMAN, G. L. /N. AM. AVIATION/ DATE- JUN. 1966
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.

B66-10244
HOLLOW NURSELL USED TO CUT METAL HONEYCOMB STRUCTURES

GREGG, E. A. /N. AM. AVIATION/ DATE- JUN. 1966
MSC-496
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 SYNTHECTHIC MATERIALS

M-PS-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 lades.

B66-10247
PRESSURE-WELDED FLANGE ASSEMBLY PROVIDES LEAKPROOF SEAL AT REDUCED BOLT LOADS

BARTON, A. J. /OE/ DATE- JUN. 1966
M-PS-680
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.

B66-10248
ELECTRICAL UPSETING OF METAL SHEET FORMS WELD EDGE

SCHERR, J. S. /N. AM. AVIATION/ DATE- JUN. 1966
M-PS-726
Electric gathering of sheet stock edges form 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 sheet structure.

B66-10249
FLUID DAMPING REDUCES BELLows SEAL FATIGUE FAILURES

SPOK- INOVATOR NOT GIVEN /N. AM. AVIATION/ DATE- JUN. 1966
M-PS-565
Service life of a bellows-type seal in the presence of mechanical vibration is increased by a system of interconnected bellows with intervening cavities filled with a fluid which damps the amplitude of periodic deflection of the sealing bellows. Different damping fluids are used according to environmental conditions.

B66-10250
DIFFUSION BONDING MAKES STRONG SEAL AT FLANGED CONNECTOR

M-PS-637
Copper strip seals high pressure fluid systems 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.

B66-10253
TOOL SEPARATES SLEEVE-TYPE UNIONS WITHOUT HEAT

B66-10253
BILLET, A. U. /N. AM. AVIATION/ DATE- JUN. 1966
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.

B66-10254
Nail PROFIhER MACHINES SOFT MATERIALS ACCURATELY

BASS, J. A. /N. AM. AVIATION/ DATE- JUN. 1966
M-PS-692
All profiler machines beads, 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 curved or straight line work.

B66-10255
FLOW K1NG VALVE IS SIMPLE, QUICK-ACTING LINDORS, J. A. /N. AM. AVIATION/ DATE- JUN. 1966
M-PS-752
Two porting rings, one within the other, control gas or liquid flow by using seal buttons as the sliding valve closers. Multiporting within the ring allows close control of the flow by the slight rotation of the outer porting ring.

B66-10258
CRITICAL PARTS ARE STORED AND SHIPPED IN ENVIRONMENTALLY CONTROLLED REUSABLE CONTAINER

HUMMEL, K. R. /N. AM. AVIATION/ DATE- JUN. 1966
M-PS-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.

B66-10262
ALUMINUM/STEEL WIRE COMPOSITE PLATES EXHIBIT HIGH TENSILE STRENGTH

SPOK- INOVATOR NOT GIVEN /HARVEY ALUMINUM CO./ DATE- JUN. 1966
M-PS-101
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.

B66-10265
CONTACT 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.

B66-10266
SEAL SURFACES PROTECTED DURING ASSEMBLY

RICHARDSON, H. L. /EHERSTEIN-GEN. 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

DIFERENTIAL EXPANSION PROVIDES PRESSURE FOR LARGE DIAUBER RINGS

SPEON INNOVATOR NOT GIVEN /BOEING CO./ DATE- JUN. 1966

H-FS-603

Differential expansion provides for bolt pressures. Fits with a rolled flange.

B66-10268

DIAPHRAGM SPRING GIVES QUICK RELEASE TO TUBE COUPLING

RODDENBROG, J. W. /GE/ DATE- AUG. 1966

H-FS-726

Diaphragm spring clutch mechanism engaged with 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 base section and covering the indentations with a rolled flange.

B66-10277

EXTENSOMETER AUTOMATICALLY MEASURES EROSION IN ELASTOMERS

ROOP, 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.

B66-10284

HIGI PRESBBUE TUBE COUPLING REQUIRES NO THREADS OR FLARES

STEIN, J. A. /N. AM. AVIATION/ DATE- JUN. 1966

H-FS-603

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

PNEUMATIIC SEPARATOR GIVES QUICK RELEASE TO HEAVY LOADS

Buchan, D. C. DAVIS, E. J. PEILLIPS, J. D. DATE- JUL. 1966

H-FS-641-10

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

TOGGLE EFFECT

B66-10301

TOGGLE EFFECT

FRANKEN, K. A. TOWER, R. C. /N. AM. AVIATION/ DATE- JUN. 1966

H-FS-726

In securing a bulky object in a storage compartment, a clinching or tightening tool is used to draw two opposing cover 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
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-inch 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.

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In-place calibration of a pressure switch is provided by a system of radially oriented flexing arms which, when rotated at a known velocity, convert the centrifugal force of the arms to a linear force along the shaft. The linear force, when applied to a pressure switch diaphragm, can then be calculated.

Energy absorbing device forces tors elements to rotate annularly between two concentric tubes when a load is applied to one tube. Interference forces can be varied by using tors elements of different thicknesses. The device operates repeatedly in compression or tension, and under problems of large onset rate tolerance or structural overload.

Stainless steel fiber web filter resists fiber migration which causes contamination of filtered fluids. This filter is capable of holding five times more particulate matter before arbitrary cutoff pressure drop and shows excellent retention in fuel flow at high rates.
B66-10335
FRICTION LOADING DEVICE ENABLES ACCURATE TESTING OF Brittle MATERIALS
HUSCHREB, R. G. /WESTINGHOUSE ASTRONUC. LAB./ DATE- JUL. 1966
NU-0051
Fiction 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-PF-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
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
Liquid coolant chill tool provides uniform cooling to materials adjacent to weld areas on long or contoured butt welds. This tool incorporates a manifold that clamps to the weld joint by vacuum and circulates the liquid in direct contact with adjacent material.

B66-10357
SUPPRESSOR PLATE ELIMINATES UNDESIRED ARCING DURING ELECTRON BEAM WELDING
Suppressor 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
SPODE- INNOVATOR NOT GIVEN /BARONCA ENG. CORP./ DATE- AUG. 1966 N-PF-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 characteristics of heat treated aluminum alloys.

B66-10366
VERSATILE MACHINE HILLS, SAWS LIGHT MATERIALS
Versatile milling/cutting 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
EBBENA, J. T. VARY, A. DATE- AUG. 1966
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
Equatorial bands are fabricated to provide a locating fit for the hemisphere of hollow spherical rotors which are then jointed 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 FLW AREAS FOR STUDY OF ADHESIVE BONDS
FRANK, L. SCHRITZ, G. /GEN. AM. TRANSPORTATION CORP./ DATE- AUG. 1966 M-PF-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
DABBOR, C. E. DATE- AUG. 1966
GLAISTER-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
Inflatable, lightweight cell provides a separate, secondary environment for a space-suited man in case of space-suite 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 MAINTENANCES AIR CONTAMINATION AND ENHANCE UNIFORM GAS FLOW
SUPPE, E. P. /U. N. AVIATION/ DATE- AUG. 1966 M-PF-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 folded 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 GLOVED 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

BBERGS, D. L. /HEATCROOK, R. /DATE- SEP. 1966

A-66-10403

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/strain 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

LANDT, B. G. /NA. AVIATION/ DATE- SEP. 1966

A-66-893

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 safer, 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 IRRREGULAR HORIZONTAL SURFACES

BOYLE, J. V. /DATE- SEP. 1966

Langley-219

Alignment 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

DELLERBACH, W. /N. AVIATION/ DATE- SEP. 1966

M-66-1085

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 abut the components to proper position.

B66-10415

ELECTROPLATING ELIMINATES GAS LEAKAGE IN BRAZED AREAS

LEGE, J. D. /N. AVIATION/ DATE- SEP. 1966

M-66-925

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 DIAMETER METAL RING SEAL PREVENTS GAS LEAKAGE AT 5000 PSI
MIDDLEKIND, J. H. /N. AM. AVIATION/ DATE- SEP. 1966
M-PS-1064
Large metal ring seal prevents gas leakage in hydrogen, helium, or nitrogen storage bottles at pressures up to 5,000 psi. The grooved ring seal which contains elastomer O-rings is installed between the mating faces of the access cover and the storage bottle.

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INTERIOR SERVICING PLATFORM SIMPLIFIES MAINTENANCE OF STORAGE TANKS
RANGRE, C. S. /N. AM. AVIATION/ DATE- OCT. 1966
M-PS-1300
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
HARVEY, D. R. /N. AM. AVIATION/ DATE- OCT. 1966
MSC-528
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 PULSES USED TO PUMP MERCURY
HARRAB, R. T. /N. AM. AVIATION/ DATE- OCT. 1966
LEWIS-276
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 WELDING OF 2014-26 ALUMINUM
BLACK, P. J. /N. AM. AVIATION/ DATE- OCT. 1966
MSC-606
Backup chill bar with new grooved dimensions improve welding of 2014-26 aluminum. This groove geometry affords optimum chillling 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
DEMONS, R. R. /ECA/ DATE- OCT. 1966
GSPC-513
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.

MATERIAL TUBE CAN BE FOLDED FOR COMPACT STOWAGE, IS SELF-RETRACTING
DATE- OCT. 1966 REAR-SEE ALSO NASA-TH-X-1187
LEWIS-288
Metal tube configuration reduces the section modulus to that of a thin plate, thus permitting the section to be bent into a coil for stowage in limited space without destructive yielding of the material. It is readily released to serve as a rigid fluid transportation conduit or structural member.

MYLAR FILM ELIMINATES SILK SCREENING OF EQUIPMENT PANELS
CORNER, D. R. /N. AM. AVIATION/ DATE- OCT. 1966
MSC-798
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 AIDSA IN EVALUATION OF PROJECT READINESS
DATE- OCT. 1966 REAR-SEE ALSO NASA-TH-X-1187
MSC-753
Measurement Operational Readiness Requirements /NOGB/ assignments 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 ENHANCED ASBESTOS
GAIRES, P. J. /N. AM. AVIATION/ DATE- OCT. 1966
MSC-949
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.
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
M-PS-1117

Microminiature 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
DANIELS, C. B. HAWES, V. D. /N. AM. AVIATION/ DATE- OCT. 1966
M-PS-1117

Large diameter seals are fabricated from narrow strip seamless tubing 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. W. MORGAN, W. H. /VICKERS, INC./ DATE- DEC. 1966
LEWIS-291

Varied reference pressure used together with a balanced pressure pickup to 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 COLD DRAWING OF REFRACTORY METALS
BANEK, C. KARASEK, F. DATE- NOV. 1966
ABG-58

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 drawn using this lubricant.

B66-10472
RUBBER AND ALUMINA GASKETS RETAIN VACUUM SEAL IN HIGH TEMPERATURE EMF CELL
Bussom, J. C. DATE- NOV. 1966
ABG-17

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 regenerative 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
GROHART, A. DATE- NOV. 1966
ABG-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 STATION TO CONTROL FLUID MIXTURE RATIO
MC GRANT, J. B. /N. AM. AVIATION/ DATE- DEC. 1966
M-PS-1785

Mechanical device senses and controls 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
BRAKE MECHANISM IS SELF ACTUATING AND UNIDIRECTIONAL
PIZZO, J. /N. AM. AVIATION/ DATE- OCT. 1966
M-PS-1299

Mechanism automatically applies a braking 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- OCT. 1966
M-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
GONDRAY, R. J. HARRIS, C. L. /AEROJET-GEN./ DATE- OCT. 1966
B6-0049

Expandable metal plug is inserted to provide a seal to support the solid core with small blocks, referred to as chaplets, during the casting of a complex volute. Weld-warpage and multiple X ray inspection are eliminated by use of this technique.

B66-10495
SPOOL VALVE CYCLES AT CONTROLLED FREQUENCY
MUC-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
WIEGAND, D. E. DATE- NOV. 1966
ABG-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
BUDS, 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.

OS MECHANICAL

583.7x761.0
In-tank shutoff valve is provided with maximum blast protection.
GEORGE, T. / /AM. AVIATION/ DATE- NOV. 1966
M-FS-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 JOX and liquid hydrogen tanks at a rocket engine test site.

Self-Actuating Grapple Automatically Engages and Releases Loads from Overhead Cranes.
FRIEBELICH, J. A. / /AM. AVIATION/ DATE- NOV. 1966
ARG-81

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.

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 with less handling operations.

KEPPER, C. E. / /UNITED AIRCRAFT CORP./ DATE- NOV. 1966
NLO-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.

Gage Tests Tube Flares Quickly and Accurately.
GRIPPEN, F. D. DATE- NOV. 1966
KSC-66-19

Flared tube gage with a test cone that is precisely made with a tapering surface to complex 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.

Hoist is Automatically Stopped at Low Deceleration Rate.
GEORGE, T. H. / /AM. AVIATION/ DATE- DEC. 1966
M-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.

Internal Machining Accomplished at Constant Radii.
COLLIGUIE, T. E. / /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.

Stationary Device Produces Homogeneous Mixture of Fluids.
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.

Orthopedic Stretcher with Average-Sized Person Can Pass Through 10-Inch Opening.
FRIEDHORST, F. X. / /MASON-MUDT CO./ DATE- DEC. 1966
N-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 test to test the stretcher.

Emergency Escape System Uses Self-Braking Mechanism on Fixed Cable.
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
OBS, JR. DATE- DEC. 1966
M-PS-1264
Composite bulkhead is produced by a fabrication concept utilizing vacuum and/or autoclave pressure to hold preformed welded sandwich elements in place during bonding and aging.

B66-10585
ROTATIONAL FLUID COUPLING ELIMINATES ROSE ENTANGLEMENTS
AUBOL, P. B. /TSAW/ 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-WIRE WELDS
BRYANT, R. D. /N. AM. AVIATION/ DATE- DEC. 1966
MSC-627
Visual inspection criteria assure the metallurgical integrity of spot welds joining nickel loaded and nickel ribbons in a 90 degree cross-wire configuration.

B66-10588
PLASTIC TUBE PROTECTS FLEXIBLE COPPER ROSE
HELDER, E. B. /N. AM. AVIATION/ DATE- DEC. 1966
M-PS-772
Flexible copper purge and coolant hoses are covered with a high-temperature shrinkable plastic for protection against severe vibration during rocket engine tests. This type of tubing is being used on all flexible water tubes used in F-1 engine tests.

B66-10589
POSITIVE DISPLACEMENT CYLINDER MEASURES CORROSIVE LIQUID VOLUMES
BARTOK, H. A. /VEND, C. J. /N. AM. AVIATION/ DATE- DEC. 1966
MSC-120
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 NUTATOR ACTUATOR MOTOR
SPOE- INNOVATOR NOT GIVEN /ERDIX CORP./ DATE- DEC. 1966
LEWIS-294
Fluid logic control circuit operates a pneumatic nutator 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, A. J. /N. AM. AVIATION/ DATE- DEC. 1966
M-PS-1840
Overaging 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 BLASTING NOZZLE FABRICATED FROM MILD TOOL STEEL PROVES SATISFACTORY
MC FADDEN, J. F. /TOOL/ 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 TUBES, FLAT, CIRCULAR PLATES
HEAP, J. C. DATE- DEC. 1966
MSC-543
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
ROLE OF DRILL ATTACHMENT HAS ZERO FORCE REACTION
HOLMES, A. E. RILEY, B. R., 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 feeding the cutting blade into and through it by forces entirely absorbed within the tool.

B66-10608
FRICION BRAKE CUSHIONS ACCELERATION AND VIBRATION LOADS
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
CARLSON, L. W. DATE- DEC. 1966
MSC-559
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
BLOW, J. L. /BARRIC/ DATE- DEC. 1966
WCO-318
Multilayer rocket nozzles formed by plasma spraying have good thermal shock resistance and can be reheated in an oxidizing environment without loss of coating adherence. Suggested application of this process are for the production of refractory components, which can be formed as surfaces of revolution.

B66-10613
NEW WELDABLE HIGH STRENGTH ALUMINUM ALLOY DEVELOPED FOR CRYOGENIC SERVICE
SPOE- INNOVATOR NOT GIVEN /ALUMINUM CO. OF AM./ DATE- DEC. 1966
M-PS-737
Wrought aluminum alloy has improved low temperature notch toughness and weldability. This alloy can be mill-fabricated to plate and sheet
without difficulty. Post-weld aging improves weld ductility and strength properties. A typical treatment is 6 hours at 225 deg F plus 16 hours at 300 deg F.


Design technique evaluates optimum weight of space radiator consisting of finned, right circular cylinder.


Blade-to-hub mounting concept assures excellent alignment integrity and results in elimination of some welding problems associated with designs. With this design, if rework is required, blade removal and replacement may be readily accomplished without damage to blade positioning media on the wheel hub.

B66-10626 HYDRAULICALLY CONTROLLED FLEXIBLE ARM CAN BEND IN ANY DIRECTION GRIFFIN, P. D. DATE- DEC. 1966 KSC-66-20

Arm assembly consisting of four flexible tubes controlled by a four-way hydraulic or pneumatic valve can bend in any direction. The flexible arm could be used for probing areas that cannot be reached by ordinary tools, handling hazardous materials, and for graph recording.


Fluid coupling assembly that is self-aligning, self-sealing and contains a bellows and socket coupling for quick attach and release is highly reliable and can handle cryogenic fluids where icing is encountered. The fluid coupling assembly is used in many fluid systems but is particularly applicable to cryogenic systems.

B66-10628 CONTROLLED RELEASE DEVICE PREVENTS DAMAGE FROM DYNAMIC STRESSES BURCHAM, T. W. DATE- DEC. 1966 KSC-66-14

Controlled release device that retards motion by extruding or drawing a tapered ductile pin through a die will control launch vehicle action at lift-off. The device prevents the damaging dynamic stresses that are imposed on the vehicle when it is instantaneously released at full thrust.

B66-10633 PREDICTING SURFACE HEATING RATES AND PRESSESURES RESULTING FROM HOT EXHAUST GASES PIERS, R. T. SIMKIN, D. J. / M. AR. AVIATION/ DATE- DEC. 1966 MSC-971

Structural tests determine experimentally the amount of thermal protection required on the Apollo service module because of plume impingement heating. Exhaust flow field analysis correlates with flat plate heating rate and surface pressure in a vacuum.


Elevator-type emergency escape system evacuates personnel from tall structures, especially when the possibility of explosion or fire exists. The system consists of a spike shaped rescue cabin 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. / M. AR. AVIATION/ DATE- DEC. 1966 MFS-1631

Lightweight flexible, metal braced reinforced hose assembly is used in high and low pressure oxygen, helium, and hydrogen systems. These hose assemblies have been successfully used on the Saturn-1 stage to provide joints of sufficient flexibility to absorb movement resulting from temperature variations.

B66-10641 POWER ARC WELDER TOUCH-STARTED WITH CONSUMABLE ELECTRODE JEANETTE, J. C. / AIR REDUCTION CO./ DATE- DEC. 1966 MFS-1485

Power arc welder formed as a hand-held welding gun touch-starts, retracts a consumable electrode to create the desired arc, and then commences feeding of the consumable electrode at the rate required to form the intended bead or spot. This device achieves uniform spot welds repeatedly.


Global mounted test device measures thrust vector deviation of reaction engines in terms of angular displacement and thus precludes force interaction.

B66-10648 FUEL AND OXIDIZER VALVE ASSEMBLY EMPLOYS SINGLE SOLENOID ACTUATOR SPOR- INNOVATOR NOT GIVEN / PARKER AIRCRAFT CO./ DATE- DEC. 1966 KSC-1066

Valve assembly simultaneously starts or stops the flow of oxidizer and fuel from separate inlet channels to reaction control motors. The assembly combines an oxidizer shutoff valve and a fuel shutoff valve which are mechanically linked and operated by a single high-speed solenoid actuator.

B66-10655 CHECK VALVE INSTALLATION IN PILOT OPERATED RELIEF VALVE PREVENTS REVERSE PRESSURIZATION OSWALT, L. / M. AR. AVIATION/ DATE- DEC. 1966 MFS-1525

Two check valves prevent reverse flow through pilot-operated relief valves of differential area piston design. Title valves control pressure flow to ensure that the piston dome pressure is always at least as great as the main relief valve discharge pressure.

B66-10656 MECHANICAL GAGE ACCURATELY CHECKS TUBING FLARE, ROUNDNESS, AND CONCENTRICITY CLARE, L. E. / FRA/ DATE- DEC. 1966 MFS-1622

Mechanical gage checks flare roundness and concentricity of metal tubing. The gage, which is available from off-the-shelf standard toolmaking supplies, provides the needed accuracy and is easily operated.

B66-10662 METHOD FOR PREDICTING FRICTIONAL LOSS IN METAL BELLOWS AND FLEXIBLE HOSE CLEVELAND, J. B. DANIELS, C. M. / M. AR. AVIATION/ DATE- DEC. 1966 MFS-883

Test data obtained concerning the frictional pressure loss to fluid flowing in unlined 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**

**N-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 HATING FLANGE**

**PFLEGER, R. G. /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 springs 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 DEC C**

**SPACK, INNOVATOR NOT GIVEN /SOUTHERN RES. INST./ DATE- DEC. 1966**

**M-PS-1144**

Smooth, unfoamed elastomer is unaffected by common acids, alkalies, 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 AERON./ DATE- DEC. 1966**

**JPL-2C-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.

**B66-10676**

**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**

**COUSMAN, J. /GEN. DYN.-CONVAL/ DATE- DEC. 1966**

**LEWIS-370**

Study determines optimum fastener insert size and shape, type of embedding cement, diameter, 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**

**GLENN, 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 polyisobutylene.

**B66-10683**

**VALVE EFFECTIVELY CONTROLS AMOUNT OF CONTAMINANT IN FLOW STREAM**

**SCOTTIES, T. 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**

**SPACK, INNOVATOR NOT GIVEN /WHITTAKER CORP./ DATE- DEC. 1966**

**M-PS-1556**

Pre 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**

**PREFORMED 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 the production of gons and quarter-panel sections of hydrogen and oxygen tanks for space vehicle boosters.

**B66-10694**

**MECHANICAL DEVICE ACCURATELY MEASURES RF PHASE DIFFERENCES IN VHF OR UHF RANGES**

**HOPP, L. J. /N. AM. AVIATION/ DATE- DEC. 1966**

**M-PS-1736**

Dual range linear measurement device accurately measures RF phase differences in either VHF or UHF ranges. The device has a capability consisting of a course 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**

**ROCKCROFT, J. B. 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 DOUBLED DOOR HIGH-VACUUM VALVE PROVIDES ACCESS TO VACUUM CHAMBER**

**TAYLOR, S. P. DATE- DEC. 1966**

**JPL-649**

Double door provides an extreme high vacuum seal as well as access to a vacuum chamber. The vacuum chamber is accessible by means of test devices into the vacuum environment. This arrangement is applicable to any various chamber and could be of value in cryopumping or mechanically pumped chambers.
B66-10698
MECHANICAL FACILITATES COATING OF INNER SURFACES OF METAL CYLINDERS
BILLINGSLEY, J. B. TAFT, A. R. DATE- DEC. 1966
GSFC-315
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 glasses or metal.

B66-10702
THERMAL SHIELD PERMITS VALVE AND VALVE OPERATOR TO MOVE AS A SINGLE UNIT IN A CYLINDRIC PIPE LINE
KINDER, G. R. /WESTINGHOUSE ASTRONAUTICAL LAB./ DATE- DEC. 1966
N0-0077
Free floating support system in cryogenic pipe lines maintains the valve and valve operator in alignment. A Teflon sheet that is placed between the slide support plate and the base 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 THICK WALL TUBING JOINTS
BLENDERBAUM, W. H. /M. AN. AVIATION/ DATE- DEC. 1966
N0-0090
Leaks in thick 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 SPACES IN METAL SHEARED INSULATION CABLES
CHAMBERS, G. /WESTINGHOUSE ASTRONAUTICAL LAB./ DATE- DEC. 1966 REAM- SEE ALSO B66-10705
N0-0083
Metal boot splices hard sheathed instrument cable used 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 REMOVES OR DISCHARGES NUTS OR BOLTS AS DESIRED
BOULLIK, J. B. /WESTINGHOUSE ASTRONAUTICAL LAB./ DATE- DEC. 1966
N0-0085
Pneumatic wrench grip, screws or unscrews, 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 ASTRONAUTICAL LAB./ DATE- DEC. 1966
N0-0086
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
SALASIO, G. R. /PARSONS-JURDEN CORP./ DATE- DEC. 1966
N0-0092
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
N0-0093
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
N0-0094
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.

B67-10004
MICRONSINTERPULATION TOOL IS EASILY ADAPTED TO MANY USES
SLICHTA, P. J. DATE- JAN. 1967
JPL-129
A special micronsinterpulation 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 PLACED BY THIN-FILM DEPOSITION IN ONE OPERATION
BUCKLEY, D. N. PASSOYSSNOS, J. S. SHALVIS, 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 placing the surface from all sides simultaneously.

B67-10010
PROCESS SEQUENCE PRODUCES STRONG, LIGHTWEIGHT REFLECTORS OF EXCELLENT QUALITY
BEER, A. F. BUTTS, W. L. FEERN, E. A. DATE- FEB. 1967
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
GLASHER, W. P. TOTS, L. B. 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 PIPE
GARDNER, J. W. /M. AN. AVIATION/ DATE- FEB. 1967
USO-333
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.

Tests with 2218-T87 aluminum alloy plate indicate there is, however, a drop in yield strength. The consistency of test data is considerably improved by weld bead removal.

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Tests show that aluminum welds are improved by bead removal. A test with 2218-T87 aluminum alloy plate indicates improvements in strength, ductility, fatigue properties, and burst pressure result when one or both of the top and bottom weld beads are removed. The test results, however, a drop in yield strength. The consistency of test data is considerably improved by weld bead removal.

A high-speed blowdown system provides rapid pressure loss. A 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.

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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**

DANIEL, 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**

DOUGLAS, C. A. /N. AM. AVIATION/ DATE- APR. 1967

M-PS-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**

SPRING, T. E. /N. AM. AVIATION/ DATE- APR. 1967

M-PS-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 HARMON CLAMPS**

PETIT, G. A. /N. AM. AVIATION/ DATE- MAY 1967

M-PS-2039

Adjustable tool facilitates the installation of Harmon 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 WEAKENESS**

SRERAMED, S. /N. AM. AVIATION/ DATE- MAY 1967

M-PS-1923

Composite filler wire welds together an assembly made from components of Rene 41 nickel base alloy. Using equal parts of Rene 41 and Hastelloy weld wire in the filler reduces the cracking and weaknesses of the individual parent metals.

**B67-10117**

**INVESTIGATION OF PRESURIZED TOROIDAL SHELLS**

SPROAT, H. G. /MARTIN CO./ DATE- MAY 1967


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 54-inch-diameter toroidal shell subjected to both pressurization and axial loading.

**B67-10123**

**LOCK-DISCONNECT MECHANISM GIVES POSITIVE RELEASE TO HINGED BODIES**

BEAVER, C. E. /BOEING CO./ DATE- MAY 1967

M-PS-2167

Unobtrusive system mechanism locks and unlocks through an internal cotter 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**

BIDDELE, M. E. /N. AM. AVIATION/ DATE- MAY 1967

NU-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**

THOMPSON, C. /WESTINGHOUSE ASTRONUC. LAB./ DATE- MAY 1967

NUC-10013

Pneumatic impact wrench removes the nuts from freely 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 shank.

**B67-10167**

**HYDROSTATIC FORCE USED TO HANDLE OUTSIZE, HEAVY OBJECTS**

CHAPF, G. W. /RELIABILITY INC./ DATE- JUN. 1967

EQ-90

Specially fitted barge is used to load and transport large, heavy objects to a dockside 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**


JPL-946

Mechanical antenna beam switching device detects weak signals over atmospheric and equipment noise sources in microwave antennas. It periodically mutates the paraboloidal dish in a Cassegrainian reflector system.

**B67-10177**

**EFFECT OF WELDING POSITION ON POROSITY IN ALUMINUM ALLOY WELDS**

MCCHON, J. WECH, E. S. /DOUGLAS AIRCRAFT/ DATE- JUN. 1967

M-PS-2100

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 RELIEF LEAK TESTING OF PIPE WELDS**

HODY, J. A. /BOEING CORP./ DATE- JUN. 1967

M-PS-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**

RUDENSON, T. /N. AM. AVIATION/ DATE- JUN. 1967

M-PS-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**

Welding program produces precise quality, multipass welds in heavy tube sections of Hastelloy-X. It develops semi-automated tungsten-inert gas procedures, weld wire procurement specifications, material weld properties, welder-operator training, and nondestructive testing inspection techniques and procedures.

Rigidly controlled shot peening retards the incompatibility between titanium alloys and nitrogen tetroxide in rocket-propellant storage tanks. This sets up a residual compressive stress in the surface of a material which reduces tensile stresses in the material fibers, alleviating stress corrosion.

Workmanship standards manual defines practices, that adhere to rigid codes and specifications, for fusion welding of component piping, assemblies, and systems written by Hypergraphic and technical presentations, it is part of the operating procedure for fusion welding.

Modified gloved enclosure is used to fill a capsule with a mixture of actinium and beryllium radioactive powders to seal weld the plug, and to test it for leaks. It contains a horizontal partition, vortex mixer, mounting press, welder, test vessel, and radiation shielding to prevent surface contamination.

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.

High-strength braze joints between copper and steel are produced by placing the taping surface of the copper with a layer of gold. This reduces porosity in the braze area and strengthens the resultant joint.

Design concept to decrease relative speed of ball bearings.

Precision 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 the turntable, which can be rotated to expose any desired surface.

Solenoid valve structure has only one moving part, a bell and spring assembly. This eliminates wear caused by sliding motion contact between stationary and moving parts or between moving parts.

Post-stressing concrete 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.

Traveling wire electrode increases productivity of electrical discharge machining 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.
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
WOLFEW, K. A. /N. AM. AVIATION/ DATE- JUL. 1967
M-PS-2159
Line adapter acts as quick and simple disconnect system. It quickly separates upon the application of a side load of 15 pounds with standing line pressure at 100 psig.

B67-10271
PIPE JOINTS REINFORCED IN PLACE WITH FITTED ALUMINUM SLEEVES
CORTIZ, L., JR. SIEGFRIED, J. WOSTIG, G. DATE- AUG. 1967
MSC-1109
Installation of an aluminum sleeve, using specially designed tools, reinforces molded-sealed ferrule joints in installed small-diameter aluminum tubing. Tubing joints reinforced by this method withstand considerable torsional tensional, and vibrational stresses at moderately elevated temperatures.

B67-10272
PORTABLE MACHINE WELDING HEAD AUTOMATICALLY COUNTERVOLS ARC
OLLENSWIG, C. E. BORR, M. A. /N. AM. AVIATION/ DATE- AUG. 1967
M-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 GROARTY, J. D. /N. AM. AVIATION/ DATE- AUG. 1967
M-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 REDUCE DRAUGHTING TOLERANCES
RENNE, J. A. /SCHERTZ 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
HARDI, F. III /N. AM. AVIATION/ DATE- AUG. 1967
M-PS-1054
Static seal permits compensation for flange separation and flange-groove tolerances without large seal-leg deflections.

B67-10291
REMOVELY OPERATED HIGH PRESSURE VALVE PROTECTS TEST PERSONNEL
NOWLAND, R. T. /N. AM. AVIATION/ DATE- AUG. 1967
M-SC-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. WHITEM, R. S. /DOUGLAS AIRCRAFT CO./ DATE- AUG. 1967
M-PS-2314
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 0.010 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. GRAE, J. SCHRAIB, 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 CRYOGENIC PIPING IS STRESS RELIEVED
TRAINOR, W. M. /N. AM. AVIATION/ DATE- AUG. 1967
M-PS-2358
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, R. W. /N. WILE LABS./ DATE- SEP. 1967
M-PS-2590
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
SEGREGATED, ARCE-BOUND CARBON SEAL IS PRESSURE LOADING
BUNCH, R. N. /N. AM. AVIATION/ DATE- SEP. 1967
M-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 TORSION SHEETS
SPON- INNOVATION NOT GIVEN /FAIRCHILD HILLER CORP./ DATE- OCT. 1967
M-PS-12141
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 LEAKIGHT CONNECTIONS
BLAISE, R. T. MAROPS, N. /TECHNIPRE/ DATE-
OCT. 1967
E-FS-12561
Ultrasonic wrench system produces leak tight seals in flared tubing connections. It induces a flexural vibration mode in the coupling nut. The system consists of a frequency converter, a junction box, and wrench assembly.

B67-10355
EXTENSION OF SMALL-DIAMETER, THIN-WALL TUNGSTEN TUBING BLANKENSHIP, C. P. GYORCS, C. A. DATE- AUG. 1967
REAR- SEE ALSO NASA-TN-D-3772
LEWIS-90635
Small-diameter, thin-wall seamless tubing of 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.

B67-10358
STEEL TEST PANEL HELPS CONTROL ADDITIVES IN PYROPHOSPHATE COPPER PLATING ROLLAR, W. T./GEN. DYN./CONVAIR/ DATE- OCT. 1967
LEWIS-10101
Test panel helps control maximum tolerance level for plating solution contaminants. It provides low, medium, and high current density areas such as an exist in production plating, and plating is examined for uniformity of texture and ductility.

B67-10360
PRESSURE LEVELS AND PULSATION FREQUENCIES CAN BE VARIED ON HIGH PRESSURE/FREQUENCY TESTING DEVICE EGOTSON, J. W./GEN. DYN./ CONVAIR/ DATE- OCT. 1967
LEWIS-10205
Hydraulic system components test device obtains a pulsating pressure from a hydraulic actuator that is being driven by a vibration exciter of sufficient force and displacement. Input to the exciter controls the frequency of pressure variation.

B67-10364
RESILIENT BEARING SUPPORTS AEROSPACE GAS CONTROLLED SIL, L. D./GARRETT CORP./ DATE- OCT. 1967
REAR- SEE ALSO NASA-CN-706
LEWIS-10109
Self-acting, partial-arc, pivoted-pad bearings in which the bearing-to-journal applied load is pneumatically controlled are used in the operation of a radial flow gas generator where shaft speeds are on the order of 38,500 rpm.

B67-10373
ECCENTRIC DRIVE MECHANISM IS ADJUSTABLE DURING OPERATION DENISON, O. J., JR. KUEHN, B. J. DENISCH, O. J./AERO/ DATE- OCT. 1967
M-FS-2576
Eccentric drive mechanism can be adjusted throughout its off-center range while in the operating mode to change the width of a weld weaving pattern. No associated tooling need be removed.

B67-10377
STABILIZING STAINLESS STEEL COMPONENTS FOR CHROMIC ACID SERVICE HOLDEN, C. F./AM. AVIATION/ DATE- OCT. 1967
M-FS-13127
Wearage and creep in stainless steel valve components are decreased by a procedure in which components are machined to a semifiinish and then cold soaked in a bath of cryogenic liquid. After the treatment they are returned to ambient temperature and machine finished to the final drawing dimensions.

B67-10379
EACH SET TESTS SLOW-SPEED SLIDING FRICTION IN HIGH VACUUM SKREBS, J./DOUGLAS AIRCRAFT/ WILKINSON, C./DATE- OCT. 1967
M-FS-12341
Testing machine that operates without any lubrication of the machine elements within the vacuum chamber measures static friction and sliding friction at very low speeds. Moving parts are held to a minimum to simplify operation in the vacuum chamber.

B67-10380
SINGLE-SOURCE MECHANICAL LOADING SYSTEM PRODUCES BIAxIAL STRESSES IN CYLINDERS FLOWER, J. F./DOUGLAS AIRCRAFT CO./ STAFFORD, R. L./DATE- OCT. 1967
M-FS-12530
Single-source mechanical loading system produces axial-to-hoop tension loads applied to cylindrical specimens. The system consists of hydraulic, pneumatic, and lever arrangements which produce biaxial loading ratios.

B67-10385
WELDING TORCH AND WIRE FEED MANIPULATOR WILLIAMS, R. T./AM. AVIATION/ DATE- OCT. 1967
M-FS-13102
Welding torch and wire feed manipulator increase capability for performing automatic welding operations. The manipulator rotates on its horizontal axis to avoid obstacles as they approach the torch. The initial individual attentions of the torch and wire guide are set with respect to the general configuration of the part.

B67-10393
STUDY MADE TO ESTABLISH PARAMETERS AND LIMITATIONS OF EXPLOSIVE WELDING POLHEIM, F. C./PRATT AND WHITNEY AIRCRAFT/ DATE- OCT. 1967
M-FS-13006
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 of patches of 3 or 4 inches in diameter were established, and found applicable to explosive welding of patches of various sizes.

B67-10400
STANDARD SURFACE GRINDER FOR PRECISION MACHINING OF THIN-WALL TUBING JONES, A. K./VIRGINIA POLYTECH./ DATE- OCT. 1967
M-FS-13012
Standard surface grinder performs precision machining of thin-wall stainless steel tubing by electrical discharge grinding. A related adaptation, a traveling wire electrode fixture, is used for machining slots in thin-walled tubing.

B67-10404
METAL TUBE REDUCER IS INEXPENSIVE AND SIMPLE TO OPERATE HAYFIELD, R. E./AM. AVIATION/ DATE- OCT. 1967
M-FS-71727
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.

B67-10403
WEAR STUDIES MADE OF SLIP RINGS AND GAS BEARING COMPONENTS FURB, A. K./VIRGINIA POLYTECH. INST./ DATE- NOV. 1967
M-FS-12102
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.
B67-10418
HYDRAULIC SYSTEM PROVIDES SMOOTH CONTROL OF LARGE TRACKING AND ANTENNA DRIVE SYSTEMS AT VERY LOW TRACKING RATES
PARKER, G. L. DATE- NOV. 1967
NPS-10316

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 losses. Linearization of response, eliminating cogging or cyclic operation is thus obtained.

B67-10419
COAXIAL CABLE STRIPPING DEVICE FACILITATES RF CABLE MANUFACTURING
HUGHES, R. S. TOBIAS, R. A. DATE- NOV. 1967
NPS-10315

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.

B67-10423
PRECISION METAL MOLDING
TOWNSEND, A. DATE- NOV. 1967
M-PS-13305

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 almost in all the orthogonal angular direction.

B67-10427
HEAVY-GAGE BONDED HONEYCOMB SANDWICH AS PRIMARY LOAD-BEARING STRUCTURE
SPEN, INNOVATION NOT GIVEN / GEN. DYN./ DATE- OCT. 1967
M-PS-12060

Heavy-gage bonded honeycomb sandwich is used as a primary load-bearing structural material in large-diameter 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.

B67-10485
SAFETY YOKE WOULD PROTECT CONSTRUCTION WORKERS FROM FALLING
GOLDSMITH, G. H. /TRANS WORLD AIRLINES/ DATE- NOV. 1967
KSC-10075

Simple dismountable yoke protects construction workers on narrow steel I beams at high levels. The yoke engages the upper flat of the I beam and slides freely along it to permit freedom of movement to the worker while limiting his ability to fall by a harness attached to the yoke.

B67-10453
PUMP SIMULATOR PROVIDES VARIABLE PRESSURE-FLow CHARACTERISTICS
PACKS, D. R. /PRATT AND WHITNEY AIRCRAFT/ DATE- NOV. 1967
LEWIS-10122

Pump simulator with variable pressure flow characteristics permits ready experimental determination of optimum pump-load matching. It has been successfully used to investigate the effect of feed pump characteristics on the stability of a Rankine system boiler.

B67-10464
TUBE-TO-HEADER JOINT FOR BIMETALLIC CONSTRUCTION
LESSOHN, C. G. STONE, D. R. /WESTINGHOUSE CORP./ DATE- NOV. 1967
LEWIS-10202

Design advantages of bimetallic construction enables an all-welded bimetallic joint to be made from the accessible header side of the tube-to-header joint. In the two-piece header design, the weld joint is completely sealed the tube-header plate crevice and prevent crevice and stringer corrosion.

B67-10466
HAND-OPERATED FLOOR INSERTION VALVE
JOHNS, J. C. NOYES, J. A. /HAYES INTERN. CORP./ DATE- NOV. 1967
M-PS-12109

Hand-operated plug insertion valve seals an evacuated insulation system for upper stage liquid hydrogen tanks on the launch pad. It is light in weight, demountable, and permits evacuation of the system plus sealing after evacuation.

B67-10472
ALUMINUM AND STAINLESS STEEL TUBES JOINED BY SIMPLE RING AND WELDING PROCESS
TOWNSEND, A. /N. AM. AVIATION/ DATE- NOV. 1967
M-PS-13120

Duranel ring is used to join aluminum and stainless steel tubing. Duranel is a bimetal made up of rolled-bonded aluminum and stainless steel. This method of joining the tubing requires only two welding operations.

B67-10483
CONCEPT FOR DESIGN OF VARIABLE STIFFNESS
DARBY, J. DATE- DEC. 1967
ARC-11225

Damping mechanism, containing polymeric-like materials is adaptable to a wide range of shock and vibration. The polymeric-like material changes from a relatively soft, rubbery material in the region of their glass transition temperatures. The energy absorption characteristics and stiffness are controllable with temperature.

B67-10488
COMBINED ACTUATOR AND LATCH FOR CARTRIDGE POWERED ACTUATOR
RUPERT, D. W. /N. AM. AVIATION/ DATE- DEC. 1967
NPS-11242

Combined attenuator and latch stops and latches in place a given mass which is to be moved a discrete distance to effect a desired condition. This device is used in a retraction actuator driven by a pyrotechnic thruster, and can be tailored to meet specific design requirements.

B67-10498
ROCK ANCHORS RESTORE BROKEN SWAMP ANCHORS ECONOMICALLY
MC ALLISTER, J. W. DATE- DEC. 1967
WIL-10004

Swamp anchors, used to convey power lines across marshes, are restored economically by installing a rock anchor in the upper portion of the pipe that remains attached to the original swamp anchor.

B67-10512
FLOW LINER EXTENDS OPERATING LIFE OF HIGH-ANGLULATION BELLOWS
RUMPH, D. G. /BOEING CO./ DATE- DEC. 1967
M-PS-12023

Liner extends the service life of high-angulation /26-degree/ bellows used as ducts for high-velocity fluid flow in a liquid oxygen fill and drain system. It consists of a conical frustum or nozzle on the upstream side and a cylindrical section or catcher on the downstream side.

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the block and serves as a support for a cutting tool and can be adjusted in three dimensions.

B67-10547
POWER TORQUE WRENCH CONCEPT FOR PRECISION TORQUE APPLICATION
PETIES, S. A. /B. AM. AVIATION/ WARMING, K.
DATE- DEC. 1967
M-FS-13546
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.

B67-10555
STUDY MADE OF BENT TRANSFER AND PRESSURE DROP THROUGH TUBES WITH INTERNAL INTERRUPTED FINS
LSWS-10280
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.

B67-10563
INSTRUMENT ACCURATELY MEASURES WELD ANGLE AND OFFSET
BODT, W. G. /B. AM. AVIATION/ DATE- DEC. 1967
M-FS-12849
Weld angle is measured to the nearest arc minute and offset to one thousandth of an inch by an instrument designed to use a reference plane at two locations on a test coupon. A special table for computation has been prepared for use with the instrument.

B67-10567
BUTTERFLY VALVE WITH METAL SEALS CONTROLS FLOW OF HYDROGEN FROM CRYOGENIC THROUGH HIGH TEMPERATURES
JOHNSON, L. D. /AEROGENT-GEN. CORP./ DATE- DEC. 1967
NUC-1003a
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 actuator shaft.

B67-10581
FLAT CABLE INSULATION STRIPPING MACHINE
SCHARRER, J. H. /VIKING IND./ DATE- DEC. 1967
M-FS-13776
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.

B67-10588
HIGH ENERGY FORMING FACILITY
CUBBOLDS, E. /B. AM. AVIATION/ DATE- DEC. 1967
M-FS-14026
Watertight, hi-energy 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.

B67-10591
FLUOROCARBON SEAL REPLACES METAL PISTON RING IN LOW DENSITY GAS ENVIRONMENT
MORGAN, N. /VICKERS, INC./ MORGAN, N. E.
DATE- DEC. 1967
LSWS-10277
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
flurocarbon seal may be used as cryogenic compressor piston seals.

B67-10594
SELF-ALIGNING ROD PREVENTS ECCENTRIC
LOADING OF TENSILE 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 semieliptical head and socket reduces misalignment and permits only limited side travel.

B67-10607
HONEYCOMBS SEAL RACKING RING INCREASES
TURBOPUMP DISK LIFE
BROOKS, W. S. /AM. AVIATION/ LARSON, 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-1001
Rolamite, a mechanical suspension system, provides substantial reductions in friction in the realms of extremely low bearing pressures. In addition, rolamite devices are easily microminiaturized, 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
TAGEE, S. F. DATE- DEC. 1967
JPL-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 load-less feed-thru for the cryogenic liquid.

B67-10622
FIRE DESTROYS CONTROL SYSTEM PROVIDES
RELIABLE COLD WEATHER OPERATION
BRUNES, J. C. /AM. AVIATION/ DATE- DEC. 1967
M-PS-13031
Fast acting, pneumatically and centrally controlled fire extinguisher/fixer/ 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
LARSON, A. V. /GEN. DY./CONVAIR/ TINENHAM, 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
GALEA, J. /WESTINGHOUSE ASTRONUC.
LAB./ VANDERGRIFT, E. F. DATE- DEC. 1967
NUC-10524
Split-screw grips for tensile testing provide uniform loading 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 afford positive seating, and precision machining of mating surfaces minimizes misalignment effects.
Study determines the most efficient method for magnetic tapes rehabilitation and storage for reuse. Investigated 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.

B68-10036
TREE DIMPLING TOOL ASSURES ACCURATE
DIP-ZERED JOINTS
MSC-11464
Portable, hand-held dimpling tool assures accurate 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 dispels so formed.

B68-10037
SWING ARM CARRIER PROTECTS FLEXIBLE LINES
DURING TEST ITEM ROTATION
WARD, D. P. /W. AM. AVIATION/ DATE- FEB. 1968
MSC-11464
Swing arm carrier provides protection for flexible lines/liquid, 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.

B68-10038
CONCEPT TO STANDARDIZE SPACE VEHICLE
PIECEBACK EXPERIMENT PROGRAM
Eng-16797
Study investigates the use of spent launch vehicle stages and modules to support earth orbit 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.

B68-10039
FUEL TRANSFER SYSTEM PERMITS RAPID
COUPLING
LIMP, A. H. /LOCKHEED MISSILES AND SPACE CO./ DATE- FEB. 1968
Eng-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 rings of shock absorbers, and no separate fuel line coupling action is required.

B68-10040
HEAT-SHRINK PLASTIC TUBING SEALS JOINTS IN
GLASS TUBING
SCOTT, S. SWIFT, A. DATE- FEB. 1968
LWIS-10326
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.

B68-10041
IMPROVED TORCH INCREASES WELD QUALITY IN
REFRACTORY METALS
LESSER, G. G. SPEICHE, R. /WESTINGHOUSE ELEC. CORP./ DATE- FEB. 1968
LWIS-10326
Specially designed torch weds refractory metals in a vacuum purged, inert gas backfilled welding chamber/ the system has 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 asperities.

B68-10042
SUSPENDED CHAINS DAMP WIND-INDUCED
OSCILLATIONS OF TALL FLEXIBLE STRUCTURES

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Hanging-chain system, which is a form of impact damping, suppresses wind-induced bending oscillations of tall cylindrical antenna masts. A cluster of chains enclosed in a neoprene shroud is suspended inside the tip of the antenna mast, forming a simple method of damping structural vibrations.

**868-10067**

**FAST METHOD FOR OBTAINING SCALE DIMENSIONS**

**ON TAPE-CONTROLLED MILLING MACHINE**

**THOMPSON, L. J. /N. A. AVIATION/ DATE- MAY 1968**

**MSC-11609**

Calculator obtains the Rail and Scale dimensions on the tape-controlled Sendbrand milling machine. It provides computer with depth information required to process numerical control programs which, in turn, provide the tapes for operation of N/C milling machines.

**868-10052**

**MULTICHANNEL KEEWAY ADAPTER BOX**

**BLAKE, W. /N. A. AVIATION/ DATE- MAR. 1968**

**MSC-90645**

Adapter box provides continuous separation of different electrical leads at points where their runs must intersect. Thus, multichannel conduits of standard commercial design may be used in a manner that prevents crossing of wire leads carrying different currents where the runs intersect and change direction.

**868-10053**

**REMOTELY INSTALLED PIPE PLUG PROVIDES EFFECTIVE SEAL IN HAZARDOUS ENVIRONMENT**

**CLIFTON, E. F. /AMERICAN CORP./ DATE- MAR. 1968**

**NRC-10303**

Pipe plug for remote installation in an open-ended pipe used in a hazardous environment provides a gastight seal by expanding a rubber seal against the inside surface of the pipe opening, with mechanical clamps contacting the pipe flange for positive retention of the plug.

**868-10057**

**Synchronized Circuit Improves Accuracy of Fluid Transfer Measurements**

**VENDL, C. J. /N. A. AVIATION/ DATE- MAR. 1968**

**MSC-11617**

Shut-off valve at the destination of a transferred fluid, improves the accuracy of measurements determining the quantity of liquid transferred from a storage source to a remote location. By synchronizing thin valve with the measuring device /hysterizer/, the inaccuracies resulting from unfitted transfer lines can be reduced.

**868-10064**

**FLEXIBLE BUNG BALLETS FOR DAMPING LIQUID SLOSH**

**BROOKS, G. W. STEEPENS, D. G. DATE- FEB. 1968**

**BEAN- SEE ALSO NASA- TP-3678**

**LANGLEY-90194**

Slosh damping, obtained through the use of small, leen mass, flexible baffles, provides a relatively lightweight system for damping the motions of liquid propellants in launch vehicles, missiles, and other tankage systems.

**868-10072**

**CLAMP FOR DETONATING FUZE**

**HOLDEN, E. J. /DOUGLAS AIRCRAFT CORP./ DATE- MAR. 1968**

**NPS-13399**

Quick acting clamp provides physical support for a closely confined detonating faze in an application requiring removal and replacement at frequent intervals during test. It can be designed with a base of any required strength and configuration to permit the insertion of an object.

**868-10075**

**MAINTAINABILITY METHODOLOGY AND MAINTENANCE ANALYSES**

**BEACH, E. B. /DOUGLAS AIRCRAFT CORP./ DATE- MAR. 1968**

**NPS-13399**

Initial approach is performing maintainability studies involves detailed description of methodology used. Maintenance analyses are formulated for system, subsystem, and component levels. These are performed to ensure that complete, integrated, logistics system support elements are identified.

**868-10078**

**DEVICE DAMPS FLUID PRESSURE OSCILLATIONS IN VENT VALVE**

**NEIL, R. J. DATE- MAY 1968**

**NPS-13230**

Device, containing a tuned series arrangement of two pleat chambers and two orifices, damps high pressure fluid oscillations in a vent valve. Used in conjunction with vent valves, it relieves gas pressure that develops in liquid hydrogen and liquid oxygen tanks used on a space vehicle.

**868-10080**

**NUMERICAL CONTROL MACHINE DATA MANUAL**

**MACKEY, R. T. SR. /N. A. ROCKWELL CORP./ DATE- MAY 1968**

**NPS-14342**

Numerical Control Machine Data Manual provides programmers with specific information for various types and sizes of numerical control machine tools and auxiliary equipment.

**868-10082**

**DEPLOYABLE LATTICE COLUMN**

**MACKEY, R. E. /ASTRO RESEARCH CORP./ DATE- MAY 1968**

**NPS-10228**

Lattice column, made up of many individually collapsible sections connected in tandem, rapidly raises measuring instruments to a level appreciably above that where data is to be recorded and evaluated. The column may be collapsed by collapsing each section in sequence and is deployed by extending each section in sequence.

**868-10099**

**SYSTEM FOR MEASURING ROUNDESS AND CONCENTRICITY OF LARGE TANKS**

**BELTON, J. DATE- MAY 1968**

**BEAN- SEE ALSO 868-10214**

**NPS-13362**

Equipment measures the roundness and concentricity of large, massive tanks. The equipment includes a 36-foot rotating table, a variable reluctance displacement transducer, an electronic console, a digital computer, and a 5-foot plotter used for final data display.

**868-10107**

**ELECTROFORMED SCREENS WITH UNIFORM HOLE SIZE**

**SCHAEFFER, G. E. /BATTLESHELL RESEARCH INSTR./ DATE- APR. 1968**

**LEWIS-10117**

Efficient method electroforms fine-nee nickel screens, or plagues, with uniform hole size and accurate spacing between holes. An electroformed nickel mandrel has nonconducting silicone rubber projections that duplicate the desired hole size and shape in the finished nickel screen.

**868-10110**

**VISCOUS DAMPER**

**BEAN, W. C. /UNITED AIRCRAFT CORP./ DATE- APR. 1968**

**MSC-12071**

Damping device exhibiting no hysteresis effect and capable of preload is used in place of a preload spring in an aneroid bellows to provide viscous damping. It operates about the action of a pressure sensing outer bellows attached to an active header above and a static header below.

**868-10111**

**SLEEVED DAMPER LIMITS SPRING SURGING**

**BEAN, W. C. /UNITED AIRCRAFT CORP./ DATE- APR. 1968**

**MSC-12071**

Damping device limits spring surging in delicate
improvement in active vibration isolator DIXON, G. V. /N. AM. AVIATION/ DATE- APR. 1968
LANKLEY-10105
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.

B66-10125
VACUUM-JACKETED TRANSFER LINE INSTALLATION TECHNIQUE BOWERS, W. M. /N. AM. ROCKWELL CORP./ DATE- APR. 1968
FSC-10496
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.

B66-10132
IMPROVED MOLDING PROCESS ENSURES PLASTIC PARTS OF HIGHER TENSILE STRENGTH BREVIER, W. C. DATE- APR. 1968
LANKLEY-10033
Single molding process ensures that plastic parts

of a given mechanical design/produced from a conventional thermosetting molding compound will have a maximum tensile strength. The process can also be used for other thermosetting compounds to produce parts with improved physical properties.

B66-10134
SHALLOW GROOVES IN JOURNAL IMPROVE AIR BEARING PERFORMANCE ANDERSON, W. J. CUNNINGHAM, B. E. FLEXING, D. P. DATE- APR. 1968
LEWIS-10036
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 barreling-grooved journals or rotors show most promise of stable operation, with no sacrifice in load capacity.

B66-10161
FSC-14056
Roll diffusion bonding technique is used for fabricating F-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.

B66-10162
ASBESTOS AND INCONEL COMBINED TO FORM HOT-GAS SEAL WOOSTER, C. W., JR. /N. AM. AVIATION/ DATE- MAY 1968
LEWIS-10432
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.

B66-10165
BEARINGS USE DRY SELF-LUBRICATING CAGE MATERIALS ANDERSON, W. J. GLENN, D. C. SCHEBBE, R. W. DATE- MAY 1968
LEWIS-10462
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.

B66-10168
BALLAST BARGE CONCEPT FOR UNDERWATER STRUCTURES PAYNE, V. E. DATE- JUN. 1968
KSC-10176
Ballast barge for underwater structure consists of a reinforced concrete structure partitioned into watertight compartments. The barge structure includes a 3-way walking valve, a compressed air manifold, a master valve for connecting the manifold to an air line, and an open port in each compartment for admitting and expelling sea water.

B66-10176
HIGH-TEMPERATURE BEARING-CAGE MATERIALS ANDERSON, W. J. ZAHRECKY, E. V. DATE- JUN. 1968
LEWIS-10463
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.

B66-10180
SQUEEZE-FILM GAS BEARING TECHNOLOGY
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.

Proposed gas generation assembly would recover deeply submerged objects.

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 welding units.

Packaging criteria for transportation and handling shock and vibration.

Spool innovation not given.

Computerized simulation model of a launch vehicle/ground support system optimizes assembly, checkout, and operation of the system. The model is used to determine performance parameters in three phases or modes - 1/3 systems optimization techniques, 2/3 operation analysis methodology, and 3/3 system effectiveness analysis technique.

Laser system used for dynamic balancing of gyros.

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.

Effect of surface irregularities on bellows fatigue life.

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.

Tubing swaging device uses explosive force.

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 value housing contains a sleeve, inlet port, outlet port, an orifice, a ball and seat arrangement, and a bellville spring diaphragm.

Manual of industrial diamonds plus dressing and grinding criteria for machining superalloys.

Tensile testing grips ensure uniform loading of bimetal tubing specimens.

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.

High-temperature bearing lubricants.

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.
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 the primary projectile, launched by the gun, to achieve high velocities of a light secondary projectile accelerated from rest in the accelerator.
porous material with an electron beam so that the melted material fills all surface pores.

B68-10332
DUAL WIRE WELD FEED PROPORTIONER
NOGART, R. E. /W. AM. ROCKWELL CORP./ DATE- SEP. 1968
M-FS-18037
Dual feed mechanisms enables proportioning of two different weld 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.

B68-10388
TWO-FLUID, IMPINGING-SHEET INJECTOR
RIBEILLING, R. W. DATE- SEP. 1968
NPO-1059
Two-fluid, impinging-sheet propellant injector reduces the severe erosion found to occur when injector 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 stream of combustion gases generated by backfire reaction.

B68-10343
X-RAY FILM HOLDER FERMITS SINGLE CONTINUOUS PICTURE OF TUBING JOINT
DIAMOND, J. W. HUNT, V. R. NIEGSELL, C. /BOEING-GEN. CORP./ DATE- SEP. 1968
LEWIS-10392
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
RUSCHINI, R. E. ROSTERS, D. M. DATE- SEP. 1968
LEWIS-10281
Machining technique prevents undercutting at the test 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-FS-18972
Study of the shock and vibration response of a multistage structure employed analytically, lumped-mass, continuous-beam, 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
REMOTELY OPERATED GRIPPER PROVIDES VERTICAL CONTROL ROG MOVEMENT
HOBBS, L. J. DATE- SEP. 1968
ARG-10160
Remote actuation of a gripper shaft effects vertical engagement between a drive shaft and control rod. A secondary function of the gripper is to provide remote indication of positive coaptation of the gripping or ungripping operation.

B68-10371
VERSATILE IMPACT HAND TOOL
NOBIL, E. R. /ULIN WINCHESTER/ DATE- OCT. 1968
M-FS-20140
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. GRIMSON, J. KINGSBY, D. HOPPS, 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.

B68-10383
EFFECTS OF HIGH FREQUENCY CURRENT IN WELDING ALUMINUM ALLOY 6061
FISH, R. E. /W. AM. ROCKWELL CORP./ DATE- OCT. 1968
M-FS-18337
Uncontrolled high frequency current causes cracking in the heat-affected zone of aluminum alloy 6061 welds in the center of inert gas welding. Cracking developed when an improperly adjusted superimposed high frequency current was agitating the semisolid metal in the areas of grain boundary.

B68-10387
MINIATURE PAINT-SPLAT-GUN FOR RECESSED AREAS
VARASSE, M. A. /W. AM. ROCKWELL CORP./ DATE- OCT. 1968
MNC-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
DECASTRA, J. E. WELLIS, F. E. DATE- OCT. 1968
M-FS-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
CEELACH, E. /SOUTHWEST RES. INST./ DATE- OCT. 1968
M-FS-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
MNC-11839
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
M-FS-14874
Compact monitoring and control console dispenses
gas over a range of pressures from conventional compressed-gas cylinders. It incorporates in a single unit all 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. /BOEING CO./ DATE- DEC. 1968

Mechanisms for particle movement in gas-fluidized beds were 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
MEYER, W. A. /ROCKWELL CORP./ DATE- DEC. 1968
N-PS-18416

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
HYDROSTATIC TESTING OF POROUS ASSEMBLIES
BIGELOR, I. /ROCKWELL CORP./ DATE- DEC. 1968
N-PS-18298

Pores of the porous material were plugged with dust particles suspended in water. The plugging material used was a standard test dust prepared as a slurry in distilled 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
DOTSON, N. G. /ROCKWELL CORP./ 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
SCHNEIDER, 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. /TYCO LABS./ 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. /BOEING CO./ DATE- NOV. 1968
EHC-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
DIBBS, R. S. /BOEING CO./ DATE- NOV. 1968
NFO-10283

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
N-PS-14637

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
ROTARY-KNIFE, A POSITIVE-LATCH, SIMPLE-RELEASE FASTENER
BRUGGER, J. KESSKE, T. HAMILL, W. KATZ, M. /ROCKWELL CORP./ DATE- NOV. 1968
MSC-13061

Fastener 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
CHAO, C. G. /WILEY LABS./ DATE- NOV. 1968
N-PS-14980

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. /ROCKWELL CORP./ DATE- NOV. 1968
N-PS-16196

Commercially available vertical boring mill with a nominal capacity to 27 feet in diameter of workpiece has been modified in-shop to handle work up to 36 feet in diameter. Capacity was increased by adding extension saddles to the sill support columns on each side.

B68-10531
DESIGN ELIMINATES RADIAL THERMAL EXPANSION IN TURBINE STATOR COMPONENTS
ANDERSON, M. J. /BOEING CO./ DATE- NOV. 1968
N-PS-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
COX, F. N. /TYCO LABS./ DATE- DEC. 1968
N-PS-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
PYROTECHNIC-ACTUATED CABLE RELEASE
HANSON, R. W. DATE- DEC. 1968
XWP-10049

203
Remote, unattended means has been designed and reduced 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.

B68-10537
FLUIDIC TRANSDUCER GIVES PRESSURE OUTPUT AS FUNCTION OF TEMPERATURE
WALL, R. E. /MARTIN CO./ DATE- DEC. 1966 REAR-SEE ALSO B68-10538 REC-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.

B68-10538
FLUIDIC ANALOG AMPLIFIER
MC E Wcos, C. F. / M A R T IN CO./ DATE- DEC. 1968 REAR-SEE ALSO B68-10537
REC-1002
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.

B69-10540
TUBE JOINT LEAK REPAIR COUPLING
FERGUOSON, W. E. /W. A M. ROCKWELL CORP./ DATE- DEC. 1968 REC-10022
Tube joint leak repair coupling consists of 2 split seals, 1 male split nut, 1 female split nut, and 2 aligning pins. Each of split nut consists of 2 half-shell sections which, when engaged, are held together by a dovetail joint and an aligning pin.

B69-10549
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.

B69-10550
CONTACT-SPRING FORKING MACHINE FOR FLAT CONDUCTOR CABLE RECEPACLES
ANGIELE, W. /MARTIN CO./ DATE- DEC. 1968 REAR-SEE ALSO B68-10526
R-P-10216
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.

B69-10551
WELD PREPARATION TOOL FOR PIPES AND TUBING
WALLACE, R. D. DATE- DEC. 1968 REC-09959
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.

B69-10557
RADIAL EXPLOSION FEEDBACK DESIGN CHARTS
POLK, 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.

B69-10573
FIXTURE FACILITATES SOLDERING OPERATIONS
WHITE, C. L. /CHRYSLER CORP./ DATE- DEC. 1968 R-P-14456
Soldering fixture, designed for printed circuit boards, 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 HANDLING LARGE OBJECTS
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 with a boom or gantry crane. In addition forklifts of this type are more readily available.

B69-10008
TAPE READING FIXTURE
SPUR- INNOVATORS NOT GIVEN /CHRYSLER CORP./ DATE-JAN. 1969 R-P-20299
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, B. K., SIMPSON, W. G. DATE- JAN. 1969 R-P-39704
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
SERRITRONAL-DIAPHRAGM CAVITATING VALVE
DESIGNED FOR BIPROPELLANT FLOW CONTROL
YOUNG, A. L. /TENCH, INC./ DATE- FEB. 1969 R-P-15978
Valve controls the flow of bipropellant liquids in rocket engines. Throttling 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, R. N. /W. A. ROCKWELL CORP./ DATE- FEB. 1969 R-P-15978
Compound taper milling machine tapers panels from a common apex to a uniform height at panel edge regardless of the panel peripherter configuration. The machine consists of an adjustable angled beam upon which the milling tool moves back and forth a revolute table upon which the workpiece is held.

B69-10019
BERYLLIUM FASTENER TECHNOLOGY
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 fork lift truck provides a fast, safe, and economical way of moving small trailers in close quarters at plants and warehouses. One operator can move and
locate a semitrailer without dismounting from a fork lift truck.

B69-10030
MULTIPLE-ORIFICE THROTTLE VALVE
PITTMAN, J. S.; J.B. BOGLES, L. A. /TWA, INC./
DATE- FEB. 1969
M6-10279
Multiple-orifice throttle valve is not subject to cold welding in a vacuum environment and is compatible with strong oxidizing fluid. The valve is made of 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
GOTTWALD, W. L. DATE- FEB. 1969
ARC-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 ENSL ABDUPTION
FISHER, S. H.; SOBERSEN, R. C. DATE- FEB. 1969
BEAN- SEE ALSO ANL-7214
ANG-10242
Fluid dynamical analysis for idealized reactors 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 INCONEL 718 WELD-HEAT-AFFECTED ZONES
THOMPSON, E. G. /M. R. 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 NUMBER
WILS, E. J. /M. R. ROCKWELL CORP./ DATE- MAR. 1969
M-PS-16133
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 again 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. V. /M. R. 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. /M. R. 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. /FABCO, G. G. /M. R. ROCKWELL CORP./ DATE- MAR. 1969
M-PS-10705
To prevent fatigue due to flow-induced vibrations in metal bellows connected to ducts carrying liquid hydrogen, a study was made which showed 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 MICROPOG PARTICLES
LEONARDI, S. J.; STHM, J. /MOBIT RES. AND DEVELOP. CORP./ DATE- MAR. 1969
BEAN- SEE ALSO ANL-6997
ARC-10146
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.

B69-10083
DIRECT INDICATION OF PARTICLE SIZE IN FLUIDIZED BENDS
KNudDEn, E. G.; OLSEN, W. P. DATE- MAR. 1969
BEAN- SEE ALSO ANL-6997
ARC-10146
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
TOBEE WELDING AND BRAZING
POGEMAN, E. G. DATE- APR. 1969
M-PS-20348
Brochures outline the tools, equipment, materials, and techniques used for joining tubes by automatic and semi-automatic welding and brazing. A few of the metals being joined are stainless steels of various diameters and thicknesses. Techniques have been developed for on-site or work-bench repair.

B69-10086
TECHNIQUES FOR CONTROLLING WARPING AND RESIDUAL STRESSES IN WELD STRUCTURES
COLE, D. G. /HEARNEY 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
OPERATES OVER WIDE TEMPERATURE RANGE
SULLIVAN, S. F. /N. AM. ROCKWELL CORP./ DATE- APR. 1969
M-FS-18602
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.

B69-10109
CALIBRATED WATER TANK FACILITATES PROOF-LOADING OF CRANES AND DERRICKS
KOPPIT, 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.

B69-10110
COLD MACHINING OF HIGH DENSITY TUNGSTEN AND OTHER MATERIALS
ZIEGЛЕR, P. DATE- APR. 1969
ABO-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.

B69-10119
MAGNETRON TUNER HAS LOCKING FEATURE
PARTUCZ, V. J. /METC0N, INC./ DATE- APR. 1969
M-FS-09771
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 lead screw. The shaft positions the tuning ring for the desired magnetron output frequency, and a washer prevents backlash.

B69-10127
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.

B69-10128
SELF-STARTING CIRCUIT FOR SWITCHING REGULATORS
SCHEUTZ, H. 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.

B69-10137
HELICAL TAPE FORMING DEVICE
BUSH, J. E. COLT, F. 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.

B69-10141
MECHANICAL PROPERTIES OF A LAP JOINT UNDER UNIFORM CLAMPING PRESSURE
DILLER, S. V. NETTERELL, A. F. /MCDONNELL DOUGLAS CORP./ DATE- MAY 1969
M-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.

B69-10144
ADVANCES IN ALUMINUM ANODIZING
DALE, K. H. /REYNOLDS METALS CO./ DATE- MAY 1969
M-FS-16000
White anodize is applied to aluminum alloy surfaces by specific surface preparation, anodizing, pigmentation, and sealing techniques. The development techniques resulted in alloys, which are used in space vehicles, with good reflectance values and excellent corrosive resistance.

B69-10145
HOT MIXING WELD GASES OFFERS ADVANTAGES
WATTS, J. /M. ENDEHALL, M. N. /N. AM. ROCKWELL CORP./ DATE- MAY 1969
M-FS-16413
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.

B69-10150
RENEWAL OF CORROSION PROTECTION OF COATED ALUMINUM AFTER WELDING
RIGGINS, R. B. 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.

B69-10164
DEPARTMENT CASTER ADAPTER
MURR, R. J. /N. AM. 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.

B69-10178
DESIGN AND TESTING OF LIQUID HYDROGEN-COOLED, ULTRAHIGH-SPEED BALL BEARINGS
BUTNER, M. P. /ROCKETDYNE/ WAGNER, D. A. DATE- JUN. 1969
M-FS-19453
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.

B69-10180
SPACE-SAVING HOIST FOR TANK MANHOLES
ZEHRBACH, W. R., JR. /N. AM. ROCKWELL CORP./ DATE- JUL. 1969
M-FS-16508
Working platforms 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.

B69-10182
JOURNAL BALL BEARING FOR CURVED SURFACES
REDMON, J. W. DATE- JUN. 1969
M-FS-20423
Optimizing bearing length and permissible axis
curvature alleviates distortion of fill gap of gas lubricated journal bearing in deployment mechanisms. Required bearing length is divided into two shorter bearings interconnected by links which allow satisfactory conformity with the bent, load-carrying member.

B69-10183
ASTRONAUT'S TOOL FOR WITHDRAWING/REPLACING COMPUTER CARDS
WEST, E. L. /SPERRY RAND CORP. / DATE- JUL. 1969
M-7S-20453
Symmetrical tool allows astronauts to withdraw and replace Apollo Telecon. Non-repl control computer cards. It is easily manipulated by a gloved hand, provides positive locking of a withdrawn card, and has a visible locking device.

B69-10184
ADJUSTABLE WRENCH FOR ELECTRONIC CONNECTORS
JOHNSON, W. C. /ROCKETDYNE / DATE- JUN. 1969
M-7S-18547
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 jaw provides legs for engaging the standard size slots on the different connectors.

B69-10190
TOOLS FOR APPLYING LEAD TAPE TO FLAT CONDUCTOR CABLES FOR CHEMICAL STRIPPING
ANGELL, W. DATE- JUN. 1969; SEE ALSO NASA-SP-5049, AND NASA-SP-5924 /01/
M-7S-20429
Two tools facilitate chemical stripping of insulation on flat conductor cables. A tape pressing tool and a taping 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 CO./ BASSY, J. G., JR.
SCHINBECKLER, K. D. DATE- JUN. 1969
KSC-1026
Tools made of ice facilitate the forging or shaping of materials that are soft and sticky in the uncrated 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 CERAMIC'S CABLE
GEHA, J., JR. / W. K. ROCKWELL CORP. / DATE- JUN. 1969
M-7S-16496
Proposed vertical alignment technique senses the attitude of a ceramic 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 or gantries.

B69-10209
DETERMINATION OF THE ABSOLUTE CONTOURS OF OPTICAL FLATS
PIIAK, W. DATE- JUL. 1969
AR6-10352
Nefferson'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 Pizame fringe.

B69-10227
ELECTROCHEMICAL SINTERING PROCESS FOR PRODUCING ELECTRODES FROM CADMIUM FELT AND A NICKEL OR SILVER BOUND
GSFC-10764
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
HATOS, S. T. /BENDIX CORP. / DATE- JUL. 1969
BEAM- SEE ALSO B66-10145, B66-10551, AND B69-10231
KSC-10356
Adapted cutter, driven by a hand-held, variable-speed power drill, is used in the field to cut J-bevels on the ends of stainless-steel or aluminum pipe to be joined by precision welding. With this tool an acceptable bevel is cut within 3 percent of the time required for gridding and filing.

B69-10231
TOOL SIMPLIFIES MACHINING OF PIPE ENDS FOR PRECISION WELDING
HATOS, S. T. /BENDIX CORP. / DATE- JUL. 1969
KSC-10361
Single tool prepares a pipe end for precision welding by simultaneously performing internal machining, end facing, and bevel cutting to specification standards. 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
EISENBERGER, B. H. / N. COPT./ SHUCK, A. B. DATE- JUN. 1969
AR6-10387
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
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 90 degrees to position a clean filter in the line.

B69-10261
REPAIR OF HONEYCOMB PANELS WITH WELDED BREAKAWAY STUDS
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
ROSTAFINSKI, S. DATE- AUG. 1969
LINE-10990
Method which calculates start-up characteristics of centrifugal pumps reveals a capacity to predict pressure drop characteristics of pumps with vaned diffusers. Calculations are based on pump geometry, design-point flow, speed, and pressure rise, and the pump characteristics within range of approximately ten percent of the design-point flow.
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.

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.

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.

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.

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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.
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
NNO-11110
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-ABSORBENT MOUNTINGS FOR BEARINGS
TOPITS, A., JR. DATE- SEP. 1969
NNO-10626
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 from shock.

**B69-10335**
MASKING OF ALUMINUM SURFACE AGAINST ANODIZING
CRAWFORD, G. E. /DOUGLAS AIRCRAFT CO./ TECHNOS/ E. DATE- SEP. 1969
M-PS-12364
Masking material and a thickening agent preserve limited anodized 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. LEVITT, W. M. DATE- AUG. 1969
ARG-10324
Sintered-metal filters remove entrained particulate solids from the fluidized 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. VEITCH, 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
JECB, R. E. NABEY, D. W. DATE- AUG. 1969
ARG-10346
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.

**B69-10346**
IMPROVED TABLE FOR CUTTING AND WELDING
MFC-15357
Welding table covered with parallel inverted steel angles improves metal torch cutting of various types and thicknesses.

**B69-10348**
VIBRATION DAMPER FOR MILLS VERTICAL BALANCE MILL BAR
YOUNG, R. J. /W. A. ROCKWELL CORP./ DATE- SEP. 1969
MFC-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
MARELLO, R. A. /W. A. ROCKWELL CORP./ DATE- SEP. 1969
NFC-15531
Special tool removes quick-locking fasteners incorporating waffle-spring retaining washers without damage.

**B69-10355**
SHAFTING A RUBBER BLADDER BETWEEN TWO SECTIONS OF AN ACCUMULATOR
SCHNITZ, G. M. /IBM/ DATE- SEP. 1969
M-PS-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.

**B69-10356**
STRESS-TESTING OF THE THROAT OF A ROCKET'S NOZZLE
ESTES, E. G. /B. DONWELL DOUGLAS CORP./ DATE- SEP. 1969
NNO-10311
Test motor in which high initial pressure can be reduced suddenly provides a method of testing stress effects in the throat of a rockets nozzle. Motors operating pressure is increased to aggravate tensile stresses in a submerged throat. Opposing compression stresses are limited by control of the operating plastic pressure.

**B69-10367**
STUDY OF HIGH-SPEED ANGULAR-CONTACT BALL BEARINGS UNDER DYNAMIC LOAD
M-P-20562
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.

**B69-10373**
IMPROVED DESIGN OF ITEM IN HIGH SPEED ROTATING MACHINERY
M-P-10441
Greater centrifugal radial growth of the preimpeller 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 preimpeller.

**B69-10375**
CONNECT-DISCONNECT COUPLING FOR PREADJUSTED RIGID SHAFTS
BAJOWSKI, A. /W. A. ROCKWELL CORP./ DATE- SEP. 1969
MFC-15340
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 extending from the fixed base.

**B69-10377**
TOOL REPAIRS TUBE COMPONENTS IN SITU
RUSH, R. J. /W. A. ROCKWELL CORP./ TUCKER, P. E. DATE- SEP. 1969
MFC-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
HITCHEN, R. E. DATE- OCT. 1969
ESC-10950
Joists 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 TIG WELDING TOadia-ARC OPERATION
LIEN, D. R. /N. AM. ROCKWELL CORP./ DATE- OCT. 1969
F-75-16411
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
JOHNSON, L. L. /N. AM. ROCKWELL CORP./ DATE- SEP. 1969
F-75-18404
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. /N. AM. ROCKWELL CORP./ SEID, S. DATE- SEP. 1969
F-75-10581
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
BERSON, J. A. /N. AM. ROCKWELL CORP./ DATE- SEP. 1969
F-75-18052
Hydraulic calipers determine area of annular openings in irregular or concealed passageways. 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. /N. AM. ROCKWELL CORP./ DATE- SEP. 1969
F-75-18373
Pneumatic flow comparator provides simple go-no-go evaluation of individual tubes. Flow characteristics of tubes used to form the walls of large-diameter ducts. It consists of a pneumatic flow comparator, providing simple go, no-go evaluation of individual tubes. A nonconducting mandrel or forming 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.

B69-10407
CALIBRABLE SOLID-STATE PRESSURE SWITCH
SPUR-THROTTLE WOG NOT GIVEN /FAIRCHILD HILLER CORP./ DATE- SEP. 1969
F-75-20474
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.

B69-10408
AIR-CUSHION LIFT PA
KLAASEN, R. T. DANE, R. H. DATE- SEP. 1969
F-75-14685
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
ROBINSON, D. A. /N. AM. ROCKWELL CORP./ DATE- SEP. 1969
F-75-16600
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 NOISE PATTERN
ANGEL, W. DATE- SEP. 1969
F-75-20426
Noise 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 noise, 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-PILOTER
MOULTON, K. S. /N. AM. ROCKWELL CORP./ DATE- SEP. 1969
F-75-16476
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 blend by cylindrical developments of known radii.

B69-10459

FLEXIBLE RIVET-SET

HESPELMIDE, 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

PARKS, R. E. /N. AM. ROCKWELL CORP./
M-PS-18607

E. KUSTER, C. A. DATE- SEP. 1969

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

RAWL, R. A. /DOUGLAS AIRCRAFT CORP./
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

WILCOX, W. P. /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 employs 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.

B69-10485

FRROW, T-81 CUTTING FLUID

PETZERS, 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 SPECIMEN

LEGERS, L. J. SPIKER, I. K. DATE- OCT. 1969

BSC-13195

Heat-shrinkable plastic tubing can be quickly sealed around a metal tensile test specimen and used as a jacket for any compatible liquid.

B69-10496

IRIS-LEAF CORE RETAINER FOR A SURFACE DRILL

OLIVARI, R. /MARTIN-BABBITT CORP./
DATE- SEP. 1969

MSC-11402

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

TORSONAL TUBULAR DISCONNECT

CODY, E. C. STARKY, D. J. DATE- OCT. 1969

NPO-11193

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

SHIPLEY, J. W. DATE- OCT. 1969

B69-11193

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, E. 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

N-PS-16549

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.

B69-10519

FLARED-TUBE FITTINGS WITH REPLACEABLE SHAT INSERTS

BALLINGER, V. J. /N. AM. ROCKWELL CORP./
DATE- OCT. 1969

MSC-15372 MSC-15373 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 PSYCHOMETRIC CHARTS

DI ANGELO, F. T. /BOEING CO./
DATE- OCT. 1969

MSC-10282

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.

B69-10544

RHODIUM-PLATED BARRIER AGAINST HIGH-TEMPERATURE FUSION BONDING

JANIS, R. C. /N. AM. ROCKWELL CORP./
KUSTER, C. A. 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

GILBOE, R. F. /CHRYSLER CORP./
DATE- OCT. 1969

M-PS-17234

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
Improved injector for oxygen difluoride and diborane has better mixing characteristics and is able to project fuel into the wall of the combustion chamber for better cooling. It produces an essentially conical, diverging, continuous sheet of propellant mixture formed by similarly shaped and continuously impinging sheets of fuel and oxidant.

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 vessel or vents the evolving gas to the atmosphere.

Seal, machined from a plastic material, prevents liquid hydrogen leakage from hose connectors. 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.

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.

Transient and steady state aerodynamic flow of turbulent boundary layers are investigated for generalized cylindrical projections and several specific configurations used on the Saturn V launch vehicle. A transonic wind tunnel gave generalized information.

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.

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 dampen vibration and shock in any direction while permitting free rotation of the gimbals.
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
KRAMRATB, P. /W. AM. AVIATION/ DATE- JUN. 1967
WPO-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
HOLDRIDGE, D. B. DATE- JUN. 1967
WPO-10125
Space trajectories Program studies the motion of a space probe confined to the solar system and solves a linear network containing 15 nodes and 45 branches.

B67-10173
LINEAR CIRCUIT ANALYSIS PROGRAM FOR IBM 1620
WINTER, J. DATE- JUN. 1967
WPO-10131
CIRCU in modification of the SNAP Circuit Analysis Program, for use on smaller systems. This data processing system retains the basic algebra, transient analysis, and FORTAN 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 DESCRIBING THE SYSTEMS
MANSKITZ, B. J. DATE- JUN. 1967
WPO-10119
Diana, a digital-analog simulation program for IBM 1620 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 alteration, and minimizes the computational time.

B67-10217
A MODAL COMBINATION COMPUTER PROGRAM FOR DYNAMIC ANALYSIS OF STRUCTURES
HANDBOARD, R. M. DATE- JUN. 1967
WPO-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 practice and closed-loop stability of autopilot controlled space vehicles. It is written for the IBM 7094 in FORTRAN IV language.

B67-10222
WUC-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, proper labeling of axes, numbering, lettering, and tic marking.

B67-10223
CALCULATION OF RESONANCE NEUTRON ABSORPTION IN TWO-REGION PROBLEMS THE CAROL CODE
SMITH, C. V. STEVENS, C. A. /GEN. ENG./ DATE- JUL. 1967
WUC-10045
CAROL computer program explicitly takes into account those effects which arise from neutron resonance overlap of an individual resonance absorber and of mixtures of different resonance absorbers. CAROL computes effective group cross-sections for the resolved resonances of a mixture of isotopes in a two-region cell.

B67-10226
COMPUTER PROGRAM CALCULATES STEADY-STATE TEMPERATURE DISTRIBUTION WITHIN PLATE OR AXISYMMETRIC SOLIDS
WILSON, R. L. /AEROPOST-GEN. CORP./ DATE- JUL. 1967
WUC-10049
Digital computer program, using the finite element analysis technique, determines the steady-state temperature within planar or axisymmetric solids composed of any different materials of various geometry. Program output is used to plot isotherms and provide data enabling the performance of stress analysis or heat transfer calculations upon the bodies.

B67-10233
LAND LANDING COUCH DYNAMICS COMPUTER PROGRAM
WUC-1210
Computer program performs landing stability studies of mechanical impact system designs for advanced spacecraft. The program considers variation in spacecraft vertical and horizontal velocity, altitude and orientation, shock stress, load-stroke characteristics, and ground coefficient of friction.
M-P-2298

Dimensionless multiion systems compiler computer program constructs and analyzes a mathematical 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.

B-67-10279

COMPUTER PROGRAM FOR DETERMINATION OF NATURAL FREQUENCIES OF CLOSED SPHERICAL SANDWICH SHELLS

WILKINSON, J. P. D. /B. AM. AVIATION/ DATE- AUG. 1967

BSC-1286

Solutions for the axially 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.

B-67-10280

MASTER CONTROL DATA HANDLING PROGRAM USES AUTOMATIC DATA INPUT

ALLISTON, W. DANIEL, J. /BOEING CO./ DATE- AUG. 1967

M-P-2259

General purpose digital computer program is applicable for use with analysis programs that require basic data and calculated parameters as input. It is designed to automate input data preparation for flight control computer programs, but it is general enough to permit application in other areas.

B-67-10281

COMPUTER PROGRAM PREDICTS THERMAL AND FLOW TRANSIENTS EXPERIENCED IN A REACTOR LOSS-OF-FLOW ACCIDENT

BULE, C. J. /GEN. DYNAMICS/ DATE- AUG. 1967

BSC-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 of x,y/z which includes fuel surface temperatures relative to the time the pump power was lost.

B-67-10287

COMPUTER PROGRAM PROVIDES LINEAR SAMPLES-DATA ANALYSIS FOR HIGH ORDER SYSTEMS

BUNN, R. B. /B. AM. AVIATION/ DATE- AUG. 1967

M-P-12821

Computer program performs transformations in the order S-to-W-to-Z so as to allow arithmetic 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 transformed into Z-plane poles and zeros using the bilinear transformation algorithm.

B-67-10306

COMPUTER PROGRAM USES MONTE CARLO TECHNIQUES FOR STATISTICAL SYSTEM PERFORMANCE ANALYSIS

WRODE, D. F. /B. AM. AVIATION/ DATE- AUG. 1967

M-P-2298

Computer program with Monte Carlo sampling techniques 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.

B-67-10307

COMPUTER PROGRAM DETERMINES THERMAL ENVIRONMENT AND TEMPERATURE HISTORY OF LUNAR ORBITING SPACE VEHICLES

HEAD, L. E. MITCHELL, K. L. /BOEING CO./ DATE- AUG. 1967

M-P-12916

Program computes the thermal environment of a spacecraft in a lunar orbit. The quantities determined include the incident flux/solar and lunar emitted radiation, total radiation absorbed by a surface, and the resulting surface temperature as a function of time and orbital position.

B-67-10309

STUDY OF RANDOM PROCESS THEORY AIDS DIGITAL DATA PROCESSING

HODENES, G. W. /CORNELL AERON. LAB./ DATE- AUG. 1967

M-P-1475

Study of techniques for all random process technology, 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.

B-67-10310

COMPUTER PROGRAM FOR MASS OPTIMAL SOLUTIONS OF SOME ENDPOINT TraJECTORY PROBLEMS


B-67-12976

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 vectors, without restrictions on thrust or orbit characteristics.

B-67-10319

TRANSIENT ANALYSIS GENERATOR /TAG/ SIMULATES BEHAVIOR OF LARGE CLASS OF ELECTRICAL NETWORKS

THOMAS, W. J. DATE- SEP. 1967

SP-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 described in an easily understood and manipulated programming language. A generator or preprocessor and a simulation system make up the TAG system.

B-67-10323

COMPUTER PROGRAM UTILIZES FORTRAN 4 SUBROUTINES FOR CONTOUR PLOTTING

BROWN, N. GABBET, B. LAWSON, C. DATE- SEP. 1967

SP-10127

Computer program constructs lists of x-y-coordinate pairs that define contour curves for an arbitrary function of two variables and transmits those lists to plotting equipment to produce contour plots. The principal subroutines, CONTOUR, is independent of any specific system of plotting subroutines and equipment.

B-67-10327

MULTIPLE CORRELATION COMPUTER PROGRAM DETERMINES RELATIONSHIPS BETWEEN SEVERAL INDEPENDENT AND DEPENDENT VARIABLES

KASPAR, H. /B. AM. AVIATION/ NEWSBADM, J. E. DATE- SEP. 1967

M-P-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.

B-67-10328

COMPUTER OPTIMIZATION PROGRAM FINDS VALUES FOR SEVERAL INDEPENDENT VARIABLES THAT MAXIMIZE A DEPENDENT VARIABLE

WANG, E. J. /B. AM. AVIATION/ DATE- SEP. 1967

M-P-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 computes temperature distribution as a function of time in a given body which has been subdivided into a network of nodes. Thermal resistances and capacitances may be computed from nodal geometry.


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.

B67-10331  GENERAL PURPOSE COMPUTER PROGRAMS FOR NUMERICAL ANALYZING LINEAR ELECTRICAL AND ELECTRONIC CIRCUITS FOR STADY-STATE CONDITIONS EGGBREU, R. A./BOEING CO./ THOEBBREU, A. H./DATE-SEP. 1967 M-FS-13094

Digital computer programs determine 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.

B67-10334  COMPUTER SUBROUTINE ISUDS ACCURATELY SOLVES LARGE SYSTEM OF SIMULTANEOUS LINEAR ALGEBRAIC EQUATIONS COLLINS, G./WESTINGHOUSE ASTRONUC. LAB./DATE-SEP. 1967 NUC-10051

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 AX equals B, where A is a square non-singular coefficient matrix, X is a vector, and B is a vector.

B67-10345  COMPUTER PROGRAM VARI-QUIR 3 PROVIDES SOLUTION OF STEADY-STATE, MULTI-GROUP, TWO-DIMENSIONAL NEUTRON DIFFUSION EQUATIONS COLLINS, G./WESTINGHOUSE ASTRONUC. LAB./DATE-SEP. 1967 NUC-10052

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.

B67-10348  COMPUTERIZED PARTS LIST SYSTEM COORDINATES ENGINEERING RELEASES, PARTS CONTROL, AND MANUFACTURING PLANNING HORTON, W./WESTINGHOUSE ASTRONUC. LAB./KINSB, R./DATE-SEP. 1967 NUC-10073

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.

B67-10405  SATURN S-2 AUTOMATIC SOFTWARE SYSTEM
library of 254 nuclides, and calculates the time-dependent behavior of the fission product nuclides formed by fissioning of U-235.

B67-10956
COMPUTER MCAP-TOSS CALCULATES
STATE-SPACE FLUID DYNAMICS OF COOLANT IN PARALLEL CHANNELS AND TEMPERATURE DISTRIBUTION IN SURROUNDING HEAT-GENERATING SOLID
LIEB, 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.

B67-10957
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 tolesences, the pressure drop at a given flowrate, or the flowrate for a specific pressure drop.

B67-10976
COMPUTER PROGRAM CONDUCTS FACILITIES UTILIZATION AND OCCUPANCY SURVEY
MINEH, R. R. SPRAGUE, H. R. ZIMMERMAN, J. S.
DATE-DEC. 1967
MFR-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.

B67-10978
KOEPE/KALENDAR ORIENTED PROGRAM EFFECTS/ PROVIDES DATA FOR MANAGEMENT DECISIONS
KARKAINEN, T. A. /CHRYSLER CORP./ DATE-DEC. 1967
M-PS-12331

KOEPE/Kalendax Oriented Program Effects/ is a computer program that establishes control over project efforts to assure management of meeting a specified completion date. With the appropriate input data, KOEPE computes the starting and completion dates, the running level for each activity, and the composite running level for the program.

B67-10979
SOFTWARE FOR PROGRAM TWO-IMPULSE RENDEZVOUS ANALYSIS
BARING, W. H., JE. BROTHERS, W. J. /LOCKHEED MISSILES AND SPACE CGO/ DATE-DEC. 1967
M-PS-13971

Software 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.

B67-10980
NUMERICAL LEAST-SQUARE METHOD FOR RESOLVING COMPLEX PULSE HEIGHT SPECTRA
SCHMIDTKE, E. /SLOFF/ THOMAHA, J. I. DATE-DEC. 1967
GSPC-10142

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 to gamma-ray, X-ray, and charged-particle spectroscopy.

B67-10989
COMPUTER PROGRAM CALCULATES SONIC-BOOM PRESSURE SIGNATURES
CRAIDON, C. B. DATE-DEC. 1967
LANGLEY-10086

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 or far field pressure signature, including shock wave strengths and locations.

B67-10990
COMPUTER PROGRAM USES CHARACTERISTICS METHOD FOR FREE-JET INVESTIGATION
CRAIDON, C. B. DATE-DEC. 1967
LANGLEY-10117

Computer program computes the free-jet boundary contours and other flow properties within the exhaust plume from highly underexpanded 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.

B67-10992
COMPUTER PROGRAM REDUCES AND PROVIDES PROFILE PLOT OF SURFACE PLATE CALIBRATION DATA
REEB, E. W. /N. AM. AVIATION/ DATE-DEC. 1967
M-PS-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.

B67-10993
ASSEMBLY PROCESSOR PROGRAM CONVERTS SYMBOLIC PROGRAMMING LANGUAGE TO MACHINE LANGUAGE
PELTO, E. V. /N. AM. AVIATION/ DATE-DEC. 1967
M-PS-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.

B67-10999
COMPUTER PROGRAM PERFORMS AEROTHERMODYNAMIC FLIGHT TEST DATA CORRELATION
SCHMUS, F. /N. AM. AVIATION/ SOWERS, D. A.
DATE-DEC. 1967
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.

B67-10995
MULTIDIMENSIONAL REACTION KINETIC ABLATION PROGRAM /SKEAP/
ACTON, B. A. /SKEAP/ BINK, C. COLLINGSWOOD, B.
DATE-DEC. 1967
NRC-10079

Multidimensional reaction kinetic ablation program provides an improved capability for analyzing thermal performance of partially penetrated charring ablators 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.

B67-10508
COMPUTER PROGRAMS FOR ANTENNA FEED SYSTEM
of overall schedule-effectiveness. The schedule-effectiveness index is a measure 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
M-FS-13999
Dynamic Analysis Program, FORTRAN 4 Level 8 /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, pneumatic, and hydraulic dynamic systems.

**B67-10528**
DYANA — AN ADVANCED PROGRAMMING SYSTEM FOR LARGE CLASSES OF DYNAMIC AND EQUIVALENT SYSTEMS
MC CORNICK, W. J. /BOEING CO./ DATE- NOV. 1967
M-FS-12084
DYANA /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 three zones and frequency response of dynamic and equivalent systems.

**B67-10530**
PROGRAM COMPUTES ZERO LIFT WAVE DRAG OF ENTIRE AIRCRAFT
CLAYDON, C. H. /NORTHWESTERN/ DATE- DEC. 1967
LANSLEY-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 wave drag 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
S, W. W. /EDISON/ DATE- DEC. 1967
LANSLEY-10093
Computer program calculates axisymmetric launch vehicle steady-state response to axisymmetric sinusoidal loads. A finite element technique is utilized to construct the total launch vehicle stiffness matrix and mass matrix by subdividing the prototype structure into a set of axisymmetric shell elements, fluid components, and spring-mass components.

**B67-10536**
G-SAP AND G-SAP NEUTRON AND GAMMA RAY ALBEDO MODEL SCATTER FIELD ANALYSIS PROGRAM
SAPOVCHAK, E. J. /WESTINGHOUSE ASTRONUC. LAB./ DATE- DEC. 1967
RUC-10126
Computer program calculates neutron or gamma rays first order scattering from a plane or cylindrical surface to a detector point. The G-SAP Code, G-SAP and E-SAP, constitute a multiple scatter albedo model shield analysis.

**B67-10537**
SOC-5S COMPUTER CODE PROVIDES TOOL FOR DESIGN EVALUATION OF HOMOGENEOUS TWO-MATERIAL NUCLEAR SHIELD
DZANET, E. K. /WESTINGHOUSE ASTRONUC. LAB./ DATE- DEC. 1967
RUC-10142
SOC-5S Code /Shield Optimization Code-Direct Search/, selects a nuclear shield material of optimum volume, weight, or cost to meet the requirements of a given radiation dose rate or energy transmittance constraint. It is applicable to evaluating neutron and gamma ray shields for all nuclear reactors.
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.

Computer program for optical systems ray tracing

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.

Computer program for video data processing

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.

Digital computer program predicts effects of local pressure transients on deformation and stresses in cylindrical ducts

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.

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.

Computer program calculates gamma ray source strengths of materials exposed to neutron fluences

Computer program contains an input library of nuclear data for 46 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.

Computer program calculates wing aerodynamic characteristics.
CHARACTERISTICS FOR FIXED WINGS WITH DISREABLE AND VARIABLE-SHEEP WINGS AT SUBSONIC SPEEDS
LANZ, J. E. MARGASON, R. J. DATE-DEC. 1967
LANGLEY-10191

Forces lattice is used to describe the lifting surface of an arbitrary wing planform in steady potential subsonic compressible flow computer program which calculates wing 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 P=O AND P=F TRANSFER MATRICES FOR NEUTRON MODERATION IN A MONOTOMIC GAS
COLLIER, G. WESTINGHOUSE ASTRONAUT. LAL./ GIBSON, G. DATE- JUN. 1968
NRC-10461

FORTRAN 4 program /PI-GAS/ calculates the P=O and P=F transfer matrices for neutron moderation in a monatomic gas. The equations used are based on the conditions that there is isotropic scattering in the center-of-mass coordinate system, the scattering cross section is constant, and the target nuclear velocities satisfy a Maxwellian distribution.

B68-10005

MOP/MATRIX OPERATION PROGRAMS/ SYSTEM
MULLER, P. H. DATE- JAN. 1968
NRC-10429

MOP /Matrix Operation Programs/ system consists of a set of FORTRAN 4 subroutines which are related through a small core allocation. The system accomplishes all matrix algebra operations plus related input-output and housekeeping details.

B68-10006

COMPUTER PROGRAM PERFORMS FREQUENCY ANALYSIS OF NONUNIFORM TURBINE DISK
SUBJECTED TO TEMPERATURE GRADIENTS
SUG, P. F. /AEROB/GEN. CORP./ DATE- JAN. 1968
NRC-10301

Computer program determines the natural frequencies of a turbine disk of variable thickness subjected to uniform rotation and radial temperature gradients by using Rayleigh-Ritz procedure. The program involves the potential and kinetic energy expressions for a circular flat plate of variable thickness.

B68-10009

COMPUTER PROGRAM CALCULATES AND PLOTS SURFACE AREA AND PORE SIZE DISTRIBUTION DATA
HALPERT, G. DATE- MAY 1968
GSPC-10362

Computer program calculates surface area and pore size distribution of powders, metals, ceramics, and catalysts, and prints and plots the desired data directly. Surface area calculations are based on the gas adsorption technique of Brunauer, Emmett, and Teller, and pore size distribution calculations are based on the gas adsorption technique of Pierre.

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 and MAP.

B68-10033

COMPUTER PROGRAM FOR INTERPLANETARY CONIC PARABOLAS
DAVIS, D. A. GUSOW, D. G. /BOEING CC./ DATE- MAR. 1968
N-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 THETRUMESCENT, NONSTOIC, NONISOTHERMAL ROCKET EXHAUST PLUMES
DASH, R. J. SUFFAKES, R. M. DATE- FEB. 1968
M-PS-1434

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. H. DATE- MAR. 1968
NFO-1050

Modular decoder, which lends itself best to special purpose digital equipment using sequential access memories, decodes the first order Bennett-Miller codes. It functions as a maximum-likelihood exhaustive-search decoder and is a modular implementation to accommodate codes of any length.

B68-10050

SITE SURVEY FOR OPTIMUM LOCATION OF OPTICAL COMMUNICATION EXPERIMENTAL FACILITY
SPRO- INNOVATOR NOT GIVEN /STELVIANA ELECTRON.
SISTERS-EAST/ DATE- JUL. 1968
N-PS-13155

Site survey was made to determine the optimum location for an Optical Communication Experimental Facility /OCER/ 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
SAlLET, G. C. WOOD, C. H., JR. DATE- MAR. 1968
LANGLEY-10017

TAPROUTE, 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. TAPROUTE computes the machine tool path necessary and the information is passed on to a post-processor which produces a control tape.

B68-10096

COMPUTER PROGRAM PERFORMS STIFFNESS MATRIX STRUCTURAL ANALYSIS
BAYTON, B. B. SULLIVAN, B. SCHIELE, L. WADE, B. W. DATE- APR. 1968
NFO-10502

Computer program generates the stiffness matrix for a particular type of structure from geometrical data, and performs static and normal modal 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, T. 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 model, i.e., axisymmetric nonviscous 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
B68-10137
COMPUTER PROGRAM CONDUCTS FACILITIES UTILIZATION AND OCCUPANCY SURVEY
BINDER, R. A. SPRAGUE, R. E. ZIMMERMAN, J. S.
DATE- APR. 1968 NRM- SEE ALSO B67-10476
WFO-10536
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
FINNEST, P. GERRITSEN, R. JARLIE, P.
/INFORAMICS, INC./ LSDWIG, A. 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
WALL, W. J. MC CAPT, R. D. SODER, H. M. /NATL.
SUBR. OF STD./ DATE- MAY 1968
NUC-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, H. A. WEISS, S. R. /R. M. ROCKWELL
CORP./ DATE- MAY 1968
N-PS-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
DODGE, W. G. /W. M. AVIATION/ DATE- MAY 1968
N-PS-12226
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 and of the analytical model to change orientation at any point along its length. This program is used by industries in which structural design dynamic analyses are performed.

B68-10164
DIGITAL FILTER SYNTHESIS COMPUTER PROGRAM
HOEL, R. A. HONG, R. H. DATE- MAY 1968
ARC-10130
Digital filter synthesis computer program expresses any continuous function of a complex variable in approximate form as a computational algorithm 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 EQUILIBRIUM PROBLEMS OF LINEAR STRUCTURES
AKEY, F. A. OKEY, S. DATE- JUN. 1968
NPO-10546
Digital computer program ELAS handles the equilibrium problems of linear structures of one, two, or three dimensional continua. It 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 SCALER DIGITAL AVERAGING SYSTEMS
GOODMAN, L. S. SALTER, F. O. DATE- JUN. 1968
ARC-9043
Digital filter suppresses the effects of nonstatistical noise bursts on data averaged over multichannel data. 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
JFKWIC - GENERAL KEY WORD IN CONTEXT AND SUBJECT INDEX REPORT GENERATOR
JIREK, A. PAPACHAR, N. FELTY, D. PLESSET, N.
DATE- JUN. 1968
NPO-10569
JFKWIC computer program is 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 JFKWIC index, a subject index, an edit report, a summary report, and an exclusion list.

B68-10216
COMPUTER PROGRAM DETERMINES SYSTEM STABILITY /DIGSTA/
LOBRESO, C. F. SCALZOTT, L. D. DATE- JUN. 1968
LEWIS-10395
Computer program implements a stability criterion that can be applied directly to the numerical 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
BENNET, A. G. HAMPT, L. L. PALKER, J. I.
DATE- JUN. 1966
N-PS-14654
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 two point boundary problems.

B68-10226
COMPUTER PROGRAM ANALYZES BUCKLING OF SHELLS UNDER REVOLUTION WITH VARIOUS WALL CONSTRUCTIONS, BOSOR
ALBOTE, E. O. BUSHRELL, S. SOBEL, L. H.
/LOCKHEED MISSILES AND SPACE CO./ DATE- JUN. 1968
LANGLEY-10290
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 almost any buckling problem for shells exhibiting orthotropic behavior.

B68-10227

B68-10271
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 - BENTLEY-RAPFORD CALCULUS OF VARIATION WITH AUTOMATIC TRANSVERSALITIES HEINTSHEL, T. J. /GRI/ DATE- JUL. 1968

HFS-14866
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 FORBAC for the IBM 7094 computer.

B68-10287
DEVELOPMENT OF ELECTRONIC DATA PROCESSING /MED/ AUGMENTED MANAGEMENT SYSTEM SCOTT, J. E. /MCNAIR, T. H. /BOEING CO./ DATE- AEG. 1968

HFS-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.

B68-10292
LINEAR SYSTEMS OF EQUATIONS SOLVED USING MATHEMATICAL ALGORITHMS BAREISS, E. H. /DATE- AEG. 1968 BEAN- SEE ALSO ARS-7213

AR5-1046
New mathematical algorithms solve linear system of equations, AX equals B, and preserve the integer properties of the coefficients. The algorithms presented can also be used for the efficient evaluation of determinates and their leading minors.

B68-10296
COMPUTER GRAPHICS DATA CONDITIONING HAGEDOSS, R. H. /MC MILLEN, G. C. /BOEING CO./ DATE- AEG. 1968

HFS-14695
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-ADJACENT COMBINATIONS WOODWARD, F. A. /BOEING CO./ DATE- SEP. 1968

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

NPO-10603
Computer program uses the principles of geometrical optics to design optical systems containing up to 100 planes, conic or polynomial aspheric surfaces, 6 object points, and 200 rays. This program can be used for the automatic design of optical systems or for the evaluation of existing optical systems.

B68-10356

LEWIS-10399
Computer program is used for analysis 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 PARAFFINS PRODUCED GOLDBERG, F. W. /HAFERD, A. M. /DATE- SEP. 1968

LEWIS-10658
Computer program calculates the real fluid properties of normal or paraffin hydrocarbons using a library of single function calls without initial estimates. Accurate transport and thermodynamic properties of molecular hydrocarbons are needed for advanced propulsion systems.

B68-10374

MSC-11774
Computer program calculates the inviscid axisymmetric nozzle expansion of propellant systems having both gaseous and condensed exhaust products. The program uses velocity and thermal lags and will perform calculations for contoured and conical nozzles.

B68-10375

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, fluorine, chlorine, and either alkali metals or lithium. The program performs calculations for conical nozzles only.

B68-10376

MSC-11780
Computer program calculates the inviscid one-dimensional equilibrium, frozen, and nonequilibrium nozzle expansion of propellant exhaust mixtures containing carbon, hydrogen, oxygen, nitrogen, fluorine, chlorine, and either aluminum, beryllium, boron or lithium. This program performs calculations for conical nozzles only.

B68-10377

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
This computer program analyzes the entries and obtains the equivalence of altitude with respect to velocity for a given inertial velocity.

B68-10405
ANALYSIS OF FILAMENT REINFORCED METAL-HELICAL PRESSURE VESSELS
LANDERS, R. E., BEVAN, R. Z. /PBOY-JET GEN. CORP./ DATE- NOV. 1968
This computer program analyzes design requirements and computes designs for metal-lined filament-wound cylindrical portion and over the ends, reinforced with either geodesic /helical/ or in-plane filament winding patterns on the cylindrical portion and over the ends, reinforced by circumferential windings on the cylindrical portion.

B68-10410
DSN SEVEN DAY/TWELVE WEEK SCHEDULE PROGRAM
DOLLWAN, R. E. DATE- DEC. 1968
This 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 is in a radiation environment is determined.

B68-10416
CIRCUS-A DIGITAL COMPUTER PROGRAM FOR TRANSIENT ANALYSIS OF ELECTRONIC CIRCUITS
RUGAS, W. T., STEINBERG, L. L. /BOEING CO./ DATE- DEC. 1968

B68-10502
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 is in a radiation environment is determined.

B68-10421
COMPUTER PROGRAM FOR MACHINE DESIGN OF CAMERGAN FEED SYSTEMS
POTTER, R. D. DATE- NOV. 1968
This 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, beamswidth, and approximate radiation pattern are specified.

B68-10422
GENERALIZED NEWTON-RAPHSON TRAJECTORY OPTIMIZATION-GENERATOR 1
Two computer programs - one written in FORTRAN 4 to numerically evaluate the expressions are announced. The FORTRAN program accepts the symbolic punched output from the FORTRAN 4 program in either expanded or expanded form. It numerically evaluates the expressions.

B68-10435
DEEP EXCLUSIVE-OR COMBINING PATHS AND LOGS OF ELECTRICAL NETWORKS
CHEN, K., HUTCH, H. /ARIZONA ST. UNIV./ DATE- DEC. 1968
This computer program performs the computations probability, the current, and variance in the time to go from one source node to each sink node of the BELT network.

B68-10445
ENVIRONMENTAL TEST PLANNING, SELECTION AND STANDARDIZATION AIDS AVAILABLE
COPeland, E. D. DATE- DEC. 1968
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 MULTICOMP MOUNT CAMBER COMPUTER PROGRAM
LAMAR, J. E. DATE- DEC. 1968
This computer program which determines the mean camber 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., VOS, C. A. /N. AM. ROCKWELL CORP./ DATE- OCT. 1968

B68-10448
PERFORMANCE ANALYSIS OF ELECTRICAL CIRCUITS /PANE/
JOHNSON, K. L., STEINBERG, L. L. /BOEING CO./ DATE- OCT. 1968

Automated statistical and worst case computer program has been designed to perform ac and dc and steady circuit analyses. The program determines the worst case circuit performance by solving circuit equations.

B68-10449
SINGLE DEGREE OF FREEDOM ANTENNA POINTING PROGRAM /ANTENNA/
FLEISHER, S. E. DATE- NOV. 1968

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 ASTROD. LAB./ DATE- NOV. 1968

Computer program called TRACK was developed by combining a transient fluid flow computer code with the existing modified TOS3 heat conduction code to perform the computation.

B68-10451
A REQUEST-ORIENTED INFORMATION SELECTION PROGRAM
222
LEWIS-10255
RYAN, E. DATE- OCT. 1968
LAMAR, R. ARCH-10168
DIGITAL COMPUTER TECHNIQUE FOR SETUP AND
GLATT, OPTIMIZATION
B68-10453
LANCE, J. B. DATE- NOV. 1968
LANGLEY-10375
Computer program determines the longitudinal
subsonic aerodynamic characteristics of composite
wing. The program uses the basic theoretical
method of Multhopp in predicting the loading
data.

B68-10452
MODIFIED MULTHOPE LIFTING SURFACE LOADING
PROGRAM
LANE, J. B. DATE- NOV. 1968
LANGLEY-10375
Computer program determines the longitudinal
subsonic aerodynamic characteristics of composite
wing. The program uses the basic theoretical
method of Multhopp in predicting the loading
data.

B68-10453
COMPUTER PROGRAM FOR PARAMETER
OPTIMIZATION
GLATT, C. R. HAGUE, D. S. /BOEING CO./ DATE-
DRC. 1968
ARC-10168
Flexible, large scale digital computer program was
designed for the solution of a wide range of
multivariable parameter optimization problems.
The program has the ability to solve constrained
optimization problems involving up to one hundred
parameters.

B68-10457
GEAT-SIMULATION PROGRAM FOR GEAT NETWORK
ANALYSIS
ALAN, A. FRITZKIN, B. /ARIZONA STATE UNIV./
DATE- OCT. 1968
SRC-10209
GEAT Simulation Program simulates GEAT
networks to obtain statistics on specified nodes
of the network. It performs sampling experiments
to determine which branches of the network are
taken and how long it takes to traverse a branch
of the network.

B68-10567
DIGITAL COMPUTER TECHNIQUE FOR SETUP AND
CHECKOUT OF AN ANALOG COMPUTER
Abelson, R. /IBM/ DATE- NOV. 1968
M-PS-13969
Computer program technique, called Analog
Computer Check-Out Routine Digitally
/ACCORD/, generates complete setup and checkout
data for an analog computer. In addition, the
correctness of the analog program implementation
is validated.

B68-10007
PROPELLANT TANK PRESSURIZATION ANALYSIS
PROGRAM
KNAUSE, M. /W. A. ROCKWELL CORP./ DATE- JAN.
1969
M-PS-12623
Propellant tank pressurization analysis program
considers fluid dynamics related to pressures and
temperatures acting on the components, heat
transfer between the fluids, the components, the
ambient, plus component volumes, materials, and
configurations in the formation of a mathematical
model. This program is written in FORTRAN
B and MAP.

B69-10023
COMPUTER PROGRAM DEVELOPED FOR SLOWFISH
CALCULATIONS AND PROCESS DATA REDUCTION
ALFREDSON, P. G. ANASTASSIS, L. J. HUDEZ, L. R.
KOPPEL, L. E. VOGEL, G. J. DATE- FEB. 1969
ERAM- SEE ALSO AM-7197
ARCH-10134
Computer program PACER-65, is used for flowsheet
calculations and easily adapted to process data
reduction. Each unit, vessel, heat and
processing operation in the overall flowsheet is
represented by a separate subroutine, which the
program calls in the order required to complete an
overall flowsheet calculation.

B69-10031
THE COMPATIBLE CONVERSION SYSTEM
HOFFMAN, F. KOTHE, J. RANDY, J. MC VAY, L.
WINNINGOFF, K. STRAGEN, E. /BOEING CO./ DATE-
FEB. 1969
M-PS-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 WEIR CRITICAL
SPEEDS AND BEARING LOADS FOR SHAFTS COUPLED
BY NONLINEAR SPRINGS TO MACHINE HOUSING
SBEVURD, L. A. /AERCQJ 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-inbalance forcing functions are all included
in the system dynamics analysis.

B69-10035
GENERAL SERIES SOLUTION TECHNIQUE FOR
BINDING OF TERRIGRAB LATERALLY LOADED
FLAT PLATES
SWANSON, J. L. /WESLINGHUSE 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 different boundary
conditions. The program is written in FORTRAN
4 for use on the CDC 6600 computer.

B69-10036
COMPUTER PROGRAM CALCULATES THE EFFECTIVE
TEMPERATURE FOR A CRYSTALLINE SOLID
/DOITS/
JOHNSTON, A. S. SOWDEN, N. M. /WESLINGHUSE
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. SCICHT, J. H. /BOEING CO./
DATE- FEB. 1969
M-PS-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 - THERMAL STERILIZATION PROCESS
ANALYSIS PROGRAM
DATE- FEB. 1965 RED- SEE ALSO B69-10104
M-PS-10005
Computer program, SPAN- C, 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 cards.

B69-10040
RATIO MATCHING OF HALF-BRIDGE WELDABLE
STRAIN GAGES, COMPUTER PROGRAM
ANDERSON, K. F. BROWN, G. L. DATE- FEB. 1969
PHC-10032
Computer program reduces the unbalance of weldable
half-bridge strain gage installations. The
Computer program, MAGNFI, 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, MAGNFI obtains velocities on smaller than normal finite difference mesh in any part of the blade-to-blade passage.

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.

Computer program corrects various photometric, geometric and frequency response distortions in pictures. The program converts pictures to a number of elements, with each element 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.

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.

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.

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.

Computer program makes 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.
A method, using IBM cards and computer processing, automates examination grading and recording and permits use of computational problems. The student generates his own answers, and the instructor has much greater freedom in writing questions than is possible with multiple choice examinations.

An ENCODE and DECODE facility, a subroutine added to a FORTRAN 4 library, allows alphanumeric data to be transferred to or from an area in memory rather than to or from external input/output devices. A buffer storage array allows the operations on the data prior to writing.

Computer programs provide preliminary trajectory and guidance information required for feasibility studies in space mission analysis. The advanced mission analysis computer programs include programs for approximate solutions, programs for targeting and output, and programs for Monte Carlo and linear guidance analysis.

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 distribution of total pressure, and off-design performance calculation.

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.

Literature review provides compilations of properties of coating materials used for external application on space vehicles. Attention is given to absorption-emittance data and experimental spectral reference curves.

Flip and TMC are a FORTRAN pre-processor and a Syntax-Directed-Compiler used to describe the language in which the former is written. They provide those who write in FORTRAN 4 with greater language flexibility and power.

Computer program gives blade-to-blade solution of the two-dimensional, subsonic, compressible, nonviscous flow problems for a circular or straight infinite cascade of tandem or slotted turbine blades. The method of solution is based on the stream function using iterative solution of nonlinear finite-difference equations.

Computer program obtains the real-gas isentropic flow functions and thermodynamic properties of gases for which the equation of state is known. The program uses FORTRAN 4 subroutines which were designed for calculations of nitrogen and helium. These subroutines are easily modified for calculations of other gases.

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.

Finite-element computer programs solve 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 strain.

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.

Time-shared cathode ray tube provides high quality display at low cost display stations which utilize television monitors. It updates a cluster of graphics displays from a computer and is useful in systems not equipped for graphics time-sharing.

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.

Buckling of shells of revolution with various wall constructions.

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 EXCursion PROBABILITY
YANG, J. N. DATE- SEP. 1969
B69-11158
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
HERE, K. /CALIF. INST. OF TECHNOLOGY/ THIBERT, H. R. DATE- SEP. 1969
B69-11162
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, H. E. /BRATT AND WHITNEY AIRCRAFT/ DATE- SEP. 1969
B69-10391
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
LH LOOKANGLE PROGRAM
PARZI, W. E. /LOCATED ELECTRON. CO./ DATE- SEP. 1969
B69-13179
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
HARFELL, R. C. /AERONAUTICAL RES. ASSOCIATES OF PRINCETON, INC./ HAYES, W. D. KULSKOUD, R. E. DATE- SEP. 1969
B69-10480
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-tube area calculation, and results in the form of complete signatures.

B69-10394
VISUAL TASK ANALYSIS /VISTA/
BUFFET, T. /BOEING CO./ KELLY, A. MERRETT, H. JR. DATE- SEP. 1969
B69-14716
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
LOCK, R. O. /W. A. ROCKWELL CORP./ DATE- SEP. 1969
B69-16551
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.

B69-10432
STRUCTURE OF THE ISOTROPIC TRANSPORT OPERATORS IN THREE INDEPENDENT SPACE VARIABLES
B69-7320
Based on the idea of separation of variables, a spectral theory for the three-dimensional, stationary, isotropic transport operator in a vector space of complex-valued Bessel functions results in continuous sets of regular and generalized eigenfunctions.

B69-10433
GAMBIT PROGRAM
COLLINS, G. /WESTCHESTER ASTRON. LAB./ GIBSON, G. ROANE, L. I. DATE- SEP. 1969
B69-10434
PART FOURIER TRANSFORM SPECTRAL ANALYSIS PROGRAM
DANIEL, J. L. JR. /BOEING CORP./ GRAVES, R. L. HOFER, W. M. DATE- SEP. 1969
M-FS-15062
Fast Fourier Transform Spectral Analysis Program is used in frequency spectrum analysis of postflight, space vehicle telemetered trajectory data. The computer program with a digital algorithm can calculate power spectrum r.m.s. amplitudes and cross spectrum of sampled parameters at even time increments.

B69-10435
DETERMINATION OF QUADRATIC EQUATION COEFFICIENTS DESCRIBING THREE-DIMENSIONAL SURFACES, THEIR CONSTRAINT AND SERVED AREAS, AND VIEW POINT AREAS
PAOLETTI, C. J. /BOEING CO./ FORD, J. E. VANCE, J. H. DATE- SEP. 1969
M-FS-15043
Mathematical model and a digital computer BLITS language programming technique computes coefficients of quadratic equations describing cylinders, paraboloids, ellipsoids, or planes with any orientation to a reference system, coordinates of a vertex, and coefficients of quadratic surfaces which limit the surface of three-dimensional space.

B69-10454
SPECIAL PURPOSE COMPUTER PROVIDES PROGRAMMABLE DIGITAL FILTER FOR SAMPLED-DATA CONTROL SYSTEMS
CAREOLL, C. C. DATE- DEC. 1969
M-FS-20290
Generalized digital filter is a special purpose computer. The term digital filter is an algorithm which accepts an input sequence of numbers and transforms it into an output number sequence. The organization of the computer, the logical design and synthesis, and experimentation with the computer in two sampled data control systems is discussed.

B69-10524
METHOD REDUCES COMPUTER TIME FOR SMOOTHING FUNCTIONS AND DERIVATIVES THROUGH NINTH ORDER POLYNOMIALS
GLAES, R. D. /AEROSAN. CORP./ WILGUS, C. A. DATE- OCT. 1965
NDC-10334
Analysis presented is an efficient technique to adjust previously calculated orthogonal polynomial...
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. /ROCKWELL CORP./ DATE- OCT. 1965
M-FS-16410
SCOPE system computes an expression relating the probability of 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
N-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
LETS-10819
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
LLESSOFF, E. DATE- NOV. 1969
ERC-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
5FS- INNOVATOR 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.
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., B69-10062, 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.

A

ABERRATION
Liquid micromanipulation chamber and microsyringe designs allow more efficient micromanipulations
ARG-251 B67-10305 04
Aerial-image enables diagrams and animation to be inserted in motion pictures
ARG-165 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
LANGLEY-287 B66-10592 01
Multidimensional reaction kinetic ablation program /BEKAP/
KSC-10079 B67-10495 06

ABLATIVE MATERIALS
Computer simulation program is adaptable to industrial processes
LEWIS-240 B66-10426 01
Improved method facilitates debbling and curing of phenolic impregnated asbestos
MSC-949 B66-10459 05
High intensity radiation heat source is capable of sustained operation
ABC-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
LANGLEY-10027 B67-10302 03
Fire retardant foams developed to suppress fuel fires
ABC-10098 B66-10356 03

New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
LEWIS-10576 B69-10118 03

ABNORMALITIES
Phase plane displays detect incipient failure in servo system testing
BG-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
H-FS-302 B66-10174 05
Portable sandblaster cleans small areas
HSC-523 B66-10242 05
Grit blasting nozzle fabricated from mild tool steel proves satisfactory
H-FS-1420 B66-10597 05
Abrasion and fracture testing in a high-pressure hydrogen environment
H-FS-16460 B69-10457 03

ABRASION RESISTANCE
Epoxy blanket protects milled part during explosive forming
H-FS-307 B66-10029 03
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<td>HQ-10039</td>
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<td>Electrothermal linear actuator</td>
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<td>MPO-10637</td>
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<td>Remote control thermal actuator</td>
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<td>LEWIS-10873</td>
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<td>Separation simulator</td>
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<td>KSC-67-15</td>
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<td>Calibratable solid-state pressure switch</td>
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<td>M-PS-20472</td>
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<td>Piezoelectric linear actuator</td>
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<td>M-PS-13194</td>
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<td>Testing the flammability of materials exposed</td>
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<td>to arcs</td>
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I-7
**ADDING CIRCUITS**

**Method of disjoining adhesively bonded electronic cordwood modules**
- JPL-12050
- B66-10086

**Improved circuit minimizes generation time of pseudonoise check bits**
- JPL-698
- B65-10275

**Simple circuit performs binary addition and subtraction**
- JPL-SC-152
- B65-10355

**Security warning system monitors up to fifteen remote areas simultaneously**
- KSC-66-39
- B66-10433

**Self-correcting, synchronizing ring counter using integrated circuit devices**
- M-PS-13901
- B66-10067

**ADDITIONS**

**Quick-hardening problems are eliminated with spray-gun modification which mixes resin and accelerator liquids during application**
- LANGLEY-6A
- B63-10318

**Didymium compound improves nickel-cadmium cell**
- GSFC-295
- B65-10083

**Run-in with chemical additive protects gear surface**
- M-PS-588
- B66-10069

**Aluminum doping improves silicon solar cells**
- LEWIS-206
- B66-10181

**Chromium oxide coatings improve thermal emissivity of alumina**
- WO-263
- B66-10227

**Photosensitive filler minimizes internal stresses in epoxy resins**
- M-PS-1600
- B67-10227

**Process controls introduction of selected impurities into semiconductor wafers**
- GSFC-523
- B67-10303

**Steel test panel helps control additives in pyrophosphate copper plating**
- LEWIS-10101
- B67-10358

**High-temperature bearing lubricants**
- LEWIS-10408
- B67-10249

**Ignition of binary alloys of uranium**
- ARG-10057
- B66-10280

**Precise doping of metals by small gas flows**
- LEWIS-10444
- B68-10526

**ADUBTS**

**Adhesive for cryogenic temperature applications**
- LEWIS-10264
- B69-10074

**ADHESION**

**Refractory thermal insulation for smooth metal surfaces**
- M-PS-160
- B64-10099

**Multilayer refractory nozzles produced by plasma-spray process**
- WO-318
- B66-10611

**Repairable, high-density microelectronic module provides effective heat sink**
- M-PS-13075
- B67-10356

**Technique for measuring magnetic tape interlayer adhesion**
- NFO-10011
- B67-10477

**Copper and nickel adherently electroplated on titanium alloy**
- M-PS-13522
- B67-10532

**SUBJECT INDEX**

**Method of disjoining adhesively bonded electronic cordwood modules**
- JPL-12050
- B66-10086

**Indium adhesion provides quantitative measure of surface cleanliness**
- SAM-10024
- B66-10342

**Gun facilitates adhesive bonding of studs to surfaces**
- M-PS-20299
- B69-10009

**Effect of interparticle forces on the fluidization of fine particles**
- ARG-10264
- B69-10195

**Pulsed high-voltage dc RF sputtering**
- LEWIS-10920
- B69-10009

**Security warning system monitors up to fifteen remote areas simultaneously**
- KSC-66-39
- B66-10548

**Self-correcting, synchronizing ring counter using integrated circuit devices**
- M-PS-13901
- B66-10067

**Ultrasonic emission method enables testing of adhesive bonds**
- I-PS-862
- B66-10341
SUBJECT INDEX

Compound improves thermal interface between thermocouple and sensed surface
HU-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-192 B66-10185 03

Rubber-coated bellows improves vibration damping in vacuum lines
LEVIS-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-484 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
MFC-747 B66-10375 05

Mylar film eliminates silk screening of equipment panels
MFC-799 B66-10455 05

Adhesive for polyester film 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
LEVIS-337 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
LEVIS-1010 B67-10197 03

Photosensitive filler minimizes internal stresses in epoxy resins
M-FS-1808 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-1206 B67-10429 03

Proposed method of rotary dynamic balancing by laser
M-FS-12422 B67-10452 02

Solvent permits solid curing agents to be used at room temperatures
M-FS-1334 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
MFC-11869 B67-10246 01

Fiber glass reinforced structural materials for aerospace application
M-FS-14806 B67-10360 03

Improved radiographic image amplifier panel
M-FS-14522 B67-10363 02

High-emittance coatings on metal substrates
LEVIS-10325 B68-10381 03

Battery-package design provides for cell cooling and constraint
MSC-11839 B68-10398 05

Frangible electrochemical cell and sealing technique
XGS-10010 B69-10056 01

Adhesive for cryogenic temperature applications
LEVIS-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
MFC-10842 B69-10246 01

Instrumentation for nondestructive testing of composite honeycomb materials
M-FS-20405 B69-10336 03

Quick-set temporary bonding clamps
MFC-10695 B69-10406 03

Heat-shrinkable jacket holds fluid in contact with tensile test specimen
MSC-13195 B69-10495 05

Improved primer for bonding polyurethane adhesives to metals
M-FS-90591 B69-10540 03

ADJUSTER CONDITIONS

Computer program CAP 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
LANGLEY-21 B64-10119 05

Calibrated clamp facilitates pressure application

I-9
T-handle wrench has torque-limiting action
MSC-280 B66-10065 05

Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01

Fixture aids soldering of electronic components on circuit board
ARC-56 B66-10162 01

Multisurface fixture permits easy grinding of tool bit angles
M-FS-586 B66-10171 05

Lifting clamp positively grips structural shapes
M-FS-593 B66-10176 05

Tool post modification allows easy turret lathe cutting-tool alignment
M-FS-598 B66-10204 05

Mount enables precision adjustment of optical-instrumentation mirror
MSC-184 B66-10199 02

Torque wrench allows readings from inaccessible locations
M-FS-590 B66-10204 05

Automatic reel controls filler wire in welding machines
MSC-416 B66-10236 05

Adjustable knife cuts honeycomb material to specified depth
MSC-475 B66-10237 05

Lathe chuck key incorporates safety feature
MSC-506 B66-10243 05

Device facilitates centering of workpieces in lathe chuck
M-FS-605 B66-10277 05

Concealed hinge permits flush mounting of doors and hatches
MSC-623 B66-10336 03

Versatile machine mills, saws light materials
M-FS-827 B66-10364 05

Motion drive system is accurately controlled in the 1-micron range
JPL-864 B66-10695 05

Tool facilitates installation of Watson clamps
M-FS-2039 B67-10105 05

A calibration means for spectrum analyzers
MSC-10987 B67-10254 01

Eccentric drive mechanism is adjustable during operation
M-FS-2576 B67-10373 05

Apparatus makes klystron operating frequency adjustable from remote point
NPO-09831 B67-10514 01

Electron beam standby absorber system
M-FS-14108 B67-10650 01

Tunable bandpass filter with variable selectivity
ARC-10191 B69-10130 01

Adjustable wrench for electronic connectors
M-FS-18547 B69-10184 05

Tool simplifies machining of pipe ends for precision welding
KSC-10361 B69-10231 05

ADSORPTION

MSC-298 B66-10059 05

T-handle wrench has torque-limiting action
MSC-280 B66-10065 05

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KSC-10361 B69-10231 05

ADSORPTION

Radiactive method enables determination of surface areas rapidly and accurately
NU-0088 B66-10710 03

Separation of traces of metal ions from sodium matrices
ARG-10341 B69-10168 03

Detection of molecular infrared spectra
BG-10377 B69-10172 02

Separation of the rare earths by anion-exchange in the presence of lactic acid
ARG-10436 B69-10377 03

Improved cure method for single component silicone rubber
MSC-12230 B69-10749 03

ADSORPTIVITY

Computer program calculates and plots surface area and pore size distribution data
GSFC-10362 B69-10009 06

ADVANCED VIDEICON CAMERA SYSTEM (AVCS)

Master linearizer of video cameras calibrated with precision tester
GSFC-200 B64-10209 01

AERATION

Continuous microbial cultures maintained by electronically-controlled device
ARG-177 B67-10556 04

AERIAL EXPLOSIONS

Instrumentation for nondestructive testing of composite honeycomb materials
M-FS-20405 B69-10366 03

AERIAL PHOTOGRAPHY

Aerial-image enables diagrams and animation to be inserted in motion pictures
ARG-165 B67-10398 02

AEROGES

Mass culture of photobacteria to obtain luciferase
GSFC-10563 B69-10294 04

AERODYNAMIC BALANCE

Device facilitates fluid drag on test vehicles LANGLEY-14 B65-10195 01

Laser system used for dynamic balancing of gyros
M-FS-12218 B66-10225 05

AERODYNAMIC CHARACTERISTICS

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 B69-10452 06

Experimental program to investigate transonic flow around protruberances
M-FS-20337 B69-10609 05

Optimum structural design based on reliability and proof-load testing
NPO-11228 B69-10723 31

AERODYNAMIC COEFFICIENTS

New anemometer has fast response, measures dynamic pressure directly
LANGLEY-28 B63-10530 05

Computer program analyzes and designs supersonic wing-body combinations
ARC-10141 B69-10335 06

Modified Multhopp mean camber computer program
LANGLEY-10376 B68-10446 06
AERODYNAMIC CONFIGURATIONS
Averaging probe reduces static-pressure sensing errors
LANGLEY-36 B65-10114 05
Computer program analyzes and designs supersonic wing-body combinations
ARC-10141 B68-10335 06

AERODYNAMIC DRAG
Rough surface improves stability of air-sounding balloons
M-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
M-PS-20497 B69-10781 02

AERODYNAMIC HEATING
Insulation for cryogenic tanks has reduced thickness and weight
M-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
M-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 B67-10066 05

AERODYNAMIC NOISE
Study of hot wire techniques in low density flows with high turbulence levels
M-PS-1269 B66-10687 01

AERODYNAMIC STABILITY
Rough surface improves stability of air-sounding balloons
M-PS-320 B65-10326 05

AERODYNAMICS
Computer program analyzes and designs supersonic wing-body combinations
ARC-10141 B68-10335 06

AERORHEOLOGY
Titanium treatment improves brazed joints
MSC-127 B65-10153 05

AEROSOLS
Solvent residue content measured by light scattering technique
M-PS-850 B66-10320 01
Cleanroom air sampler counts, categorizes, and records particle data
M-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-10876 B69-10268 04
Conditioning of pulses from aerosol-particle detectors
BRC-12250 B69-10691 01

AEROSPACE ENGINEERING
Pressure transducer system is force-balanced, has digital output
M-PS-154 B65-10174 05
Improved electro-optical tracking system
M-PS-14791 B68-10311 01
An overview of electromagnetic interference problems in spacecraft
NPO-11770 B69-10362 01
System for computing operational probability equations
M-PS-16410 B69-10566 06

AEROSPACE ENVIRONMENTS
Test device prevents molecular bounce-back
GSFC-82 B63-10546 03
Modular Porous Plate Sublimator /MPS/ requires only water supply for coolant
M-PS-13774 B66-10409 01
Study made of explosive cutting in simulated space environments
M-PS-1597 B67-10040 01
Study indicates fluid digital computation systems are feasible
M-PS-520 B67-10181 01
Environmental study of miniature slip rings
M-PS-2443 B67-10210 05

AEROSPACE INDUSTRY
Lightweight magnesium-lithium alloys show promise
M-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
M-PS-2455 B67-10141 03
Computer program performs rectangular fitting stress analysis
M-PS-13010 B67-10520 06
Weight Control System
M-PS-15028 B69-10041 06
Countersunk head screw retainer
M-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
M-PS-20256 B69-10580 03

I-11
An investigation of phase-lock loop swept-frequency synchronization
M-FS-856  B66-10423  01

Fiber glass reinforced structural materials for aerospace application
M-FS-18086  B66-10360  03

Thermal expansion properties of aerospace materials
M-FS-18335  B66-10555  03

Diffusion of trace gases for leak detection
M-FS-20294  B66-10067  03

A new method for the determination of particulate contamination levels for surface cleanliness of fluid systems
KSC-10267  B66-10520  02

Study of hydrogen slush-hydrogen gel utilization
M-FS-13068  B66-10413  02

Precise gimbaling mechanism
NPO-11057  B66-10270  01

Optimum structural design based on reliability and proof-load testing
NPO-11228  B66-10723  31

Addition of solid oxidizer increases liquid fuel specific impulse
JPL-1861  B67-10058  03

Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer
KSC-924  B67-10083  03

Ultraviolet photographic pyrometer used in rocket exhaust analysis
M-FS-493  B66-10095  02

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LEWIS-263  B66-10104  03

Study of radiation effects on mammalian cells in vitro
ARG-10191  B66-10294  02

Experiments to investigate particulate materials in reduced gravity fields
M-FS-13308  B66-10394  02

Aggregation of metallochlorophylls - Examination by spectroscopy
ARS-10273  B66-10163  04

Development of technology for hot-drape forming of large torus sections
M-FS-12141  B66-10341  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

Investigation of temperature dependence of development and aging
ARG-10145  B66-10022  04

Rapid and precise analysis for calcium in blood serum
ARG-10246  B66-10160  04

Thermal stress-relief treatments for 2219 aluminum alloy are evaluated
M-FS-1213  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 805
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 546
M-FS-14817  B66-10184  03

Resistance measurements of neutron-irradiated pure metals and Al-Ta alloys
ARG-10180  B66-10200  03

Strain-age cracking in Rene 41 alloy
M-FS-1865C  B66-10605  03

Large volume continuous countercflow dialyzer has high efficiency
JPL-851  B67-10058  03

Shortened processing time technique for color industrial radiography
ARG-10235  B66-10001  02

Sampling and handling of desert soils
NPO-11171  B66-10304  04

Rapid helium-air analyzer can measure other binary gas mixtures
LANGLEY-16  B66-10557  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
KSC-0086  B66-10708  05

High conductance vapor thermal switch
GSFC-10109  B66-10519  02

Prediction of friction coefficients for gases
LEWIS-10774  B66-10112  02

Plasma-heating by induction
LEWIS-10526  B66-10185  02

Properties of air and combustion products of fuels with air
LEWIS-11030  B66-10711  03

Chromatographic detection and analysis of traces of hydrocarbons
KSC-10386  B66-10716  02

Surface-renewal models for heat-transfer between walls and fluidized beds
ARG-10372  B66-10772  02

New nut and sleeve improve flared connections
X-12
SUBJECT INDEX

M-PS-194  B65-10180  05
Bench vise adapter grips tubing securely and safely
MSC-279  B66-10056  05
Tool for reading psychrometric charts
KSC-10358  B69-10527  05

AIRCRAFT

Electronic beam seals outer surfaces of porous bodies
M-PS-562  B66-10033  03
Noise study of single stage compressor rotor-stator interaction
LANGLEY-137  B67-10516  02
Vacuum probe sampler removes micrometer-sized particles from surfaces
SAN-10003  B68-10231  04
Modified sine bar device measures small angles with high accuracy
GSFC-438  B69-10322  02
Analysis of annular combustors
LEWIS-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
ARG-10182  B69-10407  05
Combination probe for airflow measurements
LEWIS-10281  B68-10558  01
Propagation of density disturbances in air-water flow
ARG-10260  B69-10043  02
Instrumentation for nondestructive testing of composite honeycomb materials
M-PS-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
LEWIS-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
ARG-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 SAMPLES

Cleanroom air sampler counts, categorizes, and records particle data

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### AIRCRAFT INSTRUMENTS

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<tr>
<th>Description</th>
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<th>Year</th>
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<tbody>
<tr>
<td>Flexible rivet-set</td>
<td>M-FS-20317</td>
<td>B69-10459</td>
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<td>Nondestructive determination of cohesive strength of adhesive-bonded composites</td>
<td>M-FS-20397</td>
<td>B69-10464</td>
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<td>Literature review on pickling inhibitors and cadmium electroplating processes</td>
<td>M-FS-14421</td>
<td>B69-10406</td>
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<td>Explosive bonding of metal-matrix composites</td>
<td>M-FS-20657</td>
<td>B69-10804</td>
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<tr>
<td>FM/CW system measures aircraft attitude</td>
<td>M-FS-276</td>
<td>B65-10290</td>
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<tr>
<td>Alternating current electromagnetic servo induction meter</td>
<td>XPR-03838</td>
<td>B68-10100</td>
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### AIRCRAFT LANDING

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<th>Description</th>
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<th>Year</th>
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<tbody>
<tr>
<td>New anemometer has fast response, measures dynamic pressure directly</td>
<td>LANGLEY-28</td>
<td>B63-10530</td>
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</table>

### AIRCRAFT MODELS

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<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Built-in templates speed up process for making accurate models</td>
<td>LANGLEY-23</td>
<td>B63-10526</td>
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### AIRCRAFT STRUCTURES

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<thead>
<tr>
<th>Description</th>
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<th>Year</th>
</tr>
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<tbody>
<tr>
<td>Drill bit design assures clean holes in laminated materials</td>
<td>WOO-098</td>
<td>B65-10386</td>
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<tr>
<td>Program computes zero lift wave drag of entire aircraft</td>
<td>LANGLEY-10079</td>
<td>B67-10530</td>
</tr>
</tbody>
</table>

### AIRCRAFT MODELS

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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<tbody>
<tr>
<td>Program computes zero lift wave drag of entire aircraft</td>
<td>LANGLEY-10079</td>
<td>B67-10530</td>
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</tbody>
</table>

### AIRPORTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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<tbody>
<tr>
<td>Scanning photometer system automatically determines atmospheric layer height</td>
<td>MSC-245</td>
<td>B66-10170</td>
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### ALBEDO

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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<tbody>
<tr>
<td>N-SAP and G-SAP neutron and gamma ray albedo model scatter shield analysis program</td>
<td>NUC-10126</td>
<td>B67-10536</td>
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### ALCOHOLS

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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<tbody>
<tr>
<td>Surfactant for dye-penetrant inspection is insensitive to liquid oxygen</td>
<td>M-FS-975</td>
<td>B66-10131</td>
</tr>
<tr>
<td>Gas chromatographic column enables analysis of propellant hydrazines</td>
<td>MSC-1161</td>
<td>B66-10586</td>
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### ALKALIESS

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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<tbody>
<tr>
<td>Improved electrode paste provides reliable measurement of galvanic skin response</td>
<td>MSC-1146</td>
<td>B66-10049</td>
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### ALGEBRA

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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<tbody>
<tr>
<td>Cytology is advanced by studying effects of deuterium environment</td>
<td>ARG-205</td>
<td>B67-10304</td>
</tr>
<tr>
<td>The preparation, identification and properties of chlorophyll derivatives</td>
<td>ARG-10205</td>
<td>B69-10409</td>
</tr>
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</table>

### ALGEBRA

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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<tbody>
<tr>
<td>Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors</td>
<td>M-FS-1887</td>
<td>B67-10434</td>
</tr>
<tr>
<td>Technique for predicting temperature distribution in gases</td>
<td>LEWIS-10918</td>
<td>B69-10329</td>
</tr>
<tr>
<td>Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices</td>
<td>ARG-10445</td>
<td>B69-10415</td>
</tr>
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</table>

### ALGORITHMS

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<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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<tbody>
<tr>
<td>Binary sequence detector uses minimum number of decision elements</td>
<td>JPL-673</td>
<td>B66-10264</td>
</tr>
<tr>
<td>Computer program calculates monotonic maximum likelihood estimates using method of reversals</td>
<td>M-FS-1516</td>
<td>B67-10136</td>
</tr>
<tr>
<td>Computer program provides linear sampled-data analysis for high order systems</td>
<td>M-FS-12821</td>
<td>B67-10267</td>
</tr>
<tr>
<td>Digital filter synthesis computer program</td>
<td>ARC-10130</td>
<td>B68-10164</td>
</tr>
<tr>
<td>Linear system of equations solved using mathematical algorithms</td>
<td>ARC-10146</td>
<td>B68-10292</td>
</tr>
<tr>
<td>Computer program for parameter optimization</td>
<td>ARC-10168</td>
<td>B68-10453</td>
</tr>
<tr>
<td>Improved first order interpolator</td>
<td>ARC-11085</td>
<td>B69-10291</td>
</tr>
<tr>
<td>Sonic boom propagation in stratified atmosphere</td>
<td>LANGLEY-10480</td>
<td>B69-10391</td>
</tr>
<tr>
<td>Numerical inversion of finite Toeplitz matrices and vector Toeplitz matrices</td>
<td>ARG-10445</td>
<td>B69-10415</td>
</tr>
<tr>
<td>Fast Fourier Transform Spectral Analysis Program</td>
<td>M-FS-15062</td>
<td>B69-10434</td>
</tr>
<tr>
<td>Special purpose computer provides programmable digital filter for sampled-data control systems</td>
<td>M-FS-20290</td>
<td>B69-10454</td>
</tr>
</tbody>
</table>

### ALIGNMENT

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>Design of valve permits sealing even if the stem is misaligned</td>
<td>LEWIS-38</td>
<td>B63-10341</td>
</tr>
<tr>
<td>Novel clamps align large rocket cases, eliminate backup bars</td>
<td>M-FS-1</td>
<td>B63-10376</td>
</tr>
<tr>
<td>Mirror device aligns machine surface perpendicular to sight lines</td>
<td>WOO-5</td>
<td>B63-10421</td>
</tr>
<tr>
<td>Tool facilitates sealing of metal fill tubes</td>
<td>MSC-24</td>
<td>B63-10519</td>
</tr>
<tr>
<td>Guide for extrusion dies eliminates straightening operation</td>
<td>LEWIS-152</td>
<td>B68-10014</td>
</tr>
</tbody>
</table>
Pressure transducer 3/8-inch in size can be faired into surface

Attachment converts microscope to point source autocollimator

Simple optical system used to align spectrograph

New coupling compensates for shaft misalignment

Light ray modulation controls optical system alignment

Voltage controlled oscillator is easily aligned, has low phase noise

Lightweight coaxial cable connector reduces signal loss

Oil-damped mercury pool makes precise optical alignment tool

Titanium diaphragm makes excellent anplitron cathode support

Modified procedure speeds camera copy layout for offset printing

Photosensors used to maintain welding electrode-to-joint alignment

Instrument quickly transposes ground reference target to eye level

Threaded pilot insures cutting tool alignment

Tool post modification allows easy turret lathe cutting-tool alignment

Mount enables precision adjustment of optical-instrumentation mirror

Tool enables proper mating of accelerometer and cable connector

Adjustable cutting guide aligns and positions stacks of material

Fastener provides for bolt misalignment and quick release of flange

Friction loading device enables accurate testing of brittle materials

Direction indicator system does not require complicated optics

Alignment tool facilitates pin placement on irregular horizontal surfaces

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill

Simplified fixture permits precision alignment of an optical target

Turbine blade root design concept promises superior alignment

Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line

Visual attitude orientation and alignment system

Spherical joint connects axially misaligned flanges

Precision metal molding

Lamb waves increase sensitivity in nondestructive testing

Tensile testing grips are easily assembled under liquid nitrogen

Connector shorting cap provides pin alignment, inspection, and stray voltage protection

Reconnect mechanism

Telescope mount with azimuth-only primary

Laser-Doppler gas-velocity instrument

Machining technique prevents undercutting in tensile specimens

High-torque precision stepping drive

Ring laser angle encoder

Proposed technique for vertical alignment of a crane's cable

Technique for anchoring fasteners to honeycomb panels

Precision mounting for instrument optical elements provided by polyimide bonding

Improved design of items in high speed rotating machinery

Quick-acting backup tool for welding ducts

Method of directing a laser beam with very high accuracy

Improved cameras for better X-ray powder photographs

Aliphatic Compounds

Flowmeter determines mix ratio for viscous adhesives

Alkali Halides

Zone purification of potassium chloride
ALKALI METAL COMPOUNDS

<table>
<thead>
<tr>
<th>ALKALI METAL COMPOUNDS</th>
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</thead>
<tbody>
<tr>
<td>ABG-10377</td>
<td>B69-10241 03</td>
</tr>
<tr>
<td>Self-discharge in bimetallic cells containing alkali metal</td>
<td>B69-10631 01</td>
</tr>
<tr>
<td>B69-10347</td>
<td>B69-10631 01</td>
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ALKALI METALS

<table>
<thead>
<tr>
<th>ALKALI METALS</th>
<th>SUBJECT INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastomers bonded to metal surfaces seal electrochemical cells</td>
<td>GSPC-168</td>
</tr>
<tr>
<td>Apparatus enables accurate determination of alkali oxides in alkali metals</td>
<td>LEWIS-256</td>
</tr>
<tr>
<td>B69-10296 03</td>
<td></td>
</tr>
<tr>
<td>Precise doping of metals by small gas flows</td>
<td>LEWIS-10444</td>
</tr>
<tr>
<td>B69-10526 03</td>
<td></td>
</tr>
<tr>
<td>Performance of low-pressure thermionic converters in evaluated</td>
<td>ARG-10276</td>
</tr>
<tr>
<td>B69-10090 01</td>
<td></td>
</tr>
<tr>
<td>Separation of traces of metal ions from sodium matrices</td>
<td>ARG-10341</td>
</tr>
<tr>
<td>B69-10160 03</td>
<td></td>
</tr>
<tr>
<td>Zone purification of potassium chloride</td>
<td>ARG-10377</td>
</tr>
<tr>
<td>B69-10241 03</td>
<td></td>
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<tr>
<td>Channel-wall limitations in the magnetohydrodynamic induction generator</td>
<td>ARG-10128</td>
</tr>
<tr>
<td>B69-10255 02</td>
<td></td>
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<tr>
<td>Production of solvated electrons</td>
<td>ARG-10416</td>
</tr>
<tr>
<td>B69-10430 03</td>
<td></td>
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<tr>
<td>Self-discharge in bimetallic cells containing alkali metal</td>
<td>ARG-10347</td>
</tr>
<tr>
<td>B69-10631 01</td>
<td></td>
</tr>
<tr>
<td>Device separates hydrogen from solution in water at ambient temperatures</td>
<td>M-1-13335</td>
</tr>
<tr>
<td>B69-10635 03</td>
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ALKALIES

<table>
<thead>
<tr>
<th>ALKALIES</th>
<th>SUBJECT INDEX</th>
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<tbody>
<tr>
<td>Method of welding joint in closed vessel improves quality of seam</td>
<td>JPL-170</td>
</tr>
<tr>
<td>B63-10139 05</td>
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<tr>
<td>Electroless nickel resist used in alkali etching of aluminum</td>
<td>GSPC-284</td>
</tr>
<tr>
<td>B65-10162 03</td>
<td></td>
</tr>
<tr>
<td>Chemical milling solution produces smooth surface finish on aluminum</td>
<td>M-1-549</td>
</tr>
<tr>
<td>B66-10312 03</td>
<td></td>
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<tr>
<td>Primary radical yield in pulse irradiated alkaline aqueous solution</td>
<td>ARG-10322</td>
</tr>
<tr>
<td>B69-10167 02</td>
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ALKALINE BATTERIES

<table>
<thead>
<tr>
<th>ALKALINE BATTERIES</th>
<th>SUBJECT INDEX</th>
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</thead>
<tbody>
<tr>
<td>Apparatus measures swelling of membranes in electrochemical cells</td>
<td>GSPC-280</td>
</tr>
<tr>
<td>B65-10087 01</td>
<td></td>
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<tr>
<td>Composite seal reduces alkaline battery leakage</td>
<td>GSPC-337</td>
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<tr>
<td>B65-10271 01</td>
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<tr>
<td>Hermetically sealed cells protected from internal gas pressure</td>
<td>B66-10692 01</td>
</tr>
<tr>
<td>Battery-package design provides for cell cooling and constraint</td>
<td>HSC-11039</td>
</tr>
<tr>
<td>B68-10398 05</td>
<td></td>
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<tr>
<td>Separator for alkaline batteries</td>
<td>GSPC-10175</td>
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<tr>
<td>B68-10557 03</td>
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ALKALIC BATTERIES OXIDES

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<thead>
<tr>
<th>ALKALIC BATTERIES OXIDES</th>
<th>SUBJECT INDEX</th>
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<tbody>
<tr>
<td>Electrolytic separation of crystals of transition-metal oxides</td>
<td>ARG-10506</td>
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<tr>
<td>B69-10642 03</td>
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ALKALIS

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<tr>
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<tr>
<td>Xenon fluorides show potential as fluorinating agents</td>
<td>ARG-113</td>
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<td>B67-10185 03</td>
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ALKYL COMPOUNDS

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<tr>
<th>ALKYL COMPOUNDS</th>
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<tbody>
<tr>
<td>Substituted silane-diol polymers have improved thermal stability</td>
<td>M-PS-1469</td>
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<tr>
<td>B66-10259 03</td>
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ALLOCATIONS

<table>
<thead>
<tr>
<th>ALLOCATIONS</th>
<th>SUBJECT INDEX</th>
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<tbody>
<tr>
<td>Probabilistic approach to long range planning of manpower</td>
<td>HSC-11024</td>
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<tr>
<td>B67-10510 06</td>
<td></td>
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ALLOWANCES

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<tr>
<th>ALLOWANCES</th>
<th>SUBJECT INDEX</th>
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<tr>
<td>Static seal concept to accommodate seat tolerances</td>
<td>M-PS-1854</td>
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<tr>
<td>B67-10285 05</td>
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ALLOYS

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<thead>
<tr>
<th>ALLOYS</th>
<th>SUBJECT INDEX</th>
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<tbody>
<tr>
<td>New method used to fabricate light-weight heat exchanger for rocket motor</td>
<td>LEWIS-43</td>
</tr>
<tr>
<td>B63-10346 02</td>
<td></td>
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<tr>
<td>Integral coolant channels supplied by melt-out method</td>
<td>M-PS-91</td>
</tr>
<tr>
<td>B63-10497 05</td>
<td></td>
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<tr>
<td>New alloy brazes titanium to stainless steel</td>
<td>M-PS-102</td>
</tr>
<tr>
<td>B65-10060 05</td>
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<tr>
<td>New brazing alloy eliminates metal-stress cracking</td>
<td>W00-249</td>
</tr>
<tr>
<td>B65-10397 03</td>
<td></td>
</tr>
<tr>
<td>Braze alloys used as temperature indicators</td>
<td>BU-0063</td>
</tr>
<tr>
<td>B66-10274 01</td>
<td></td>
</tr>
<tr>
<td>Union would facilitate joining of tubing, minimize braze contamination</td>
<td>BU-0077</td>
</tr>
<tr>
<td>B66-10311 05</td>
<td></td>
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<tr>
<td>Use of steel and tantalum apparatus for molten C5-C6-Zn alloys</td>
<td>ARG-199</td>
</tr>
<tr>
<td>B66-11054 03</td>
<td></td>
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<tr>
<td>Thermoelectric metal comparator determines composition of alloys and metals</td>
<td>ARG-235</td>
</tr>
<tr>
<td>B67-10035 01</td>
<td></td>
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<tr>
<td>Recommended values of the thermophysical properties of eight alloys, their major constituents and oxides</td>
<td>BU-0095</td>
</tr>
<tr>
<td>B67-10062 03</td>
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<tr>
<td>Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by torsion-evaporation technique</td>
<td>ARG-277</td>
</tr>
<tr>
<td>B67-10324 03</td>
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<tr>
<td>Braze joint quality tested electrothermally</td>
<td>M-PS-12759</td>
</tr>
<tr>
<td>B67-10333 01</td>
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<tr>
<td>Development of technology for hot-drape forming of large torus sections</td>
<td>M-PS-12144</td>
</tr>
<tr>
<td>B67-10341 05</td>
<td></td>
</tr>
<tr>
<td>Study made of procedures for externally loading and corrosion testing stress corrosion specimens</td>
<td>SM-PS-10264</td>
</tr>
<tr>
<td>B67-10451 03</td>
<td></td>
</tr>
</tbody>
</table>

Device separates hydrochloric acid from solution in use of steel and tantalum apparatus for molten C5-C6-Zn alloys.
Computer program calculates gamma ray source strengths of materials exposed to neutron fluxes

SUBJECT INDEX

Twin solution calorimeter determines heats of formation of alloys at high temperatures

High temperature alloy

Dual wire weld feed proportioner

Electroactive series established for metals used in aerospace technology

Levitation-melting technique for metals and alloys

Welding, brazing, and soldering handbook

Metallic diffusion measured by a modified Knudsen technique

Improved method of producing oxide-dispersion-strengthened alloys

Technique for predicting the thermal expansion coefficients of cryogenic metallic alloys

ALPHA PARTICLES

Instrument performs nondestructive chemical analysis, data can be telemetered

Self-supported aluminum thin films produced by vacuum deposition process

Status of ultrachemical analysis for semiconductors

Alpha particle backscattering measurements used for chemical analysis of surfaces

Aluminum-titanium hydride-boron-carbide composite provides lightweight neutron shield material

Training course for radiation safety technicians

Neutron irradiation of Am-241 effectively produces curium

Compilation of detection sensitivities in thermal-neutron activation

Isothermal drop calorimeter provides measurements for alpha active, pyrophobic materials

Recent development in organic scintillators

ALPHANUMERIC CHARACTERS

Density trace made with computer printout

Automated drafting system uses computer techniques

SUBJECT INDEX

ALTERNATING CURRENT

Subroutines GEORGE and DRASTC simplify operation of automatic digital plotter

Encode/Decode facility for FORTRAN

Dc to ac converter operates efficiently at low input voltages

Logic circuit exhibits optimum performance

Field effect transistor presents high input impedance in ac amplifier

High-speed square-wave current limiter operates efficiently

Added diodes increase output of balanced mixer circuit

Electrostatically driven dynamic capacitor employs capacitive feedback

Vibrating diaphragm measures high electrostatic field strengths

Noncontacting vibration transducer has constant sensitivity

Dual-voltage power supply has increased efficiency

Two-light circuit continuously monitors ac ground, phase, and neutral wires

Substituting transistor for diode improves rectifying means

Solid state detectors monitor relay contacts

Electronic bidirectional valve circuit prevents crossover distortion and threshold effect

Remote preamplifier circuit maintains stability over wide temperature range

Shaft encoder presents digital output

Thermionic scanner pinpoints work function of emitter surfaces

Rectilinear accelerometer possesses self-calibration feature

Instrument automatically selects peak acceleration signal from several accelerometers

Solid state circuit switches ac load

Simple technique determines ac properties of hard superconductive materials

Instrument sequentially samples ac signals from several accelerometers

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<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>ALUMINUM CONT</th>
</tr>
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<tbody>
<tr>
<td>Weld leaks rapidly and safely detected</td>
<td>B66-10265 01</td>
</tr>
<tr>
<td>Anodization process produces opaque, reflective coatings on aluminum</td>
<td>B65-10336 03</td>
</tr>
<tr>
<td>Electromagnetic hammer removes weld distortions from aluminum tanks</td>
<td>B65-10342 05</td>
</tr>
<tr>
<td>Pasteur distributes stress evenly from sandwich-panel-hung items</td>
<td>B65-10358 05</td>
</tr>
<tr>
<td>Improved wire memory matrix uses very little power</td>
<td>B65-10359 01</td>
</tr>
<tr>
<td>High-intensity flashing beacon powered by mercury cells</td>
<td>B66-10361 01</td>
</tr>
<tr>
<td>PTFE-aluminum films serve as neutral density filters</td>
<td>B66-10017 02</td>
</tr>
<tr>
<td>Flexible protective coatings made from silicon-nitrogen materials</td>
<td>B66-10027 03</td>
</tr>
<tr>
<td>Reflective insulator layers separated by bonded silica beads</td>
<td>B66-10070 03</td>
</tr>
<tr>
<td>New television camera eliminates vidicon tube</td>
<td>B66-10112 01</td>
</tr>
<tr>
<td>Chart case opens to form briefing easel</td>
<td>B66-10135 05</td>
</tr>
<tr>
<td>Cryogenic trap valve has no moving parts</td>
<td>B66-10136 05</td>
</tr>
<tr>
<td>Bismuth alloy potting seals aluminum connector in cryogenic application</td>
<td>B66-10136 03</td>
</tr>
<tr>
<td>Aluminum doping improves silicon solar cells</td>
<td>B66-10181 02</td>
</tr>
<tr>
<td>Insulation for cryogenic tanks has reduced thickness and weight</td>
<td>B66-10183 02</td>
</tr>
<tr>
<td>Adjustable knife cuts honeycomb material to specified depth</td>
<td>B66-10237 05</td>
</tr>
<tr>
<td>Jig protects transistors from heat while tinning leads</td>
<td>B66-10240 05</td>
</tr>
<tr>
<td>Pressure-welded flange assembly provides leaktight seal at reduced bolt loads</td>
<td>B66-10247 05</td>
</tr>
<tr>
<td>Critical parts are stored and shipped in environmentally controlled reusable container</td>
<td>B66-10250 05</td>
</tr>
<tr>
<td>High-speed furnace uses infrared radiation for controlled brazing</td>
<td>B66-10268 02</td>
</tr>
<tr>
<td>Fixed vacuum plate clamps styrofoam for machining</td>
<td>B66-10268 02</td>
</tr>
<tr>
<td>Chemical milling solution produces smooth surface finish on aluminum</td>
<td>B65-10312 03</td>
</tr>
<tr>
<td>Hollow spherical rotors fabricated by electroplating</td>
<td>B66-10366 05</td>
</tr>
<tr>
<td>Self-supported aluminum thin films produced by vacuum deposition process</td>
<td></td>
</tr>
<tr>
<td>ARC-56</td>
<td>B66-10387 03</td>
</tr>
<tr>
<td>System for etching thick aluminum layers minimizes bridging and undercutting</td>
<td>B66-10400 03</td>
</tr>
<tr>
<td>Special tool kit aids heavily garmented workers</td>
<td>B66-10403 05</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>Rectilinear accelerometer possesses self-calibration feature</td>
<td>B66-10452 01</td>
</tr>
<tr>
<td>Heat treatment stabilizes welded aluminum jigs and tool structures</td>
<td>B66-10458 03</td>
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LEWIS-10782  B69-10476  01

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MSC-13276  B69-10507  01

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M-PS-20545  B69-10756  01

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ABC-39  B65-10208  01

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EQ-10290  B69-10308  01

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KSC-10151  B69-10359  01

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MSC-121  B65-10238  01

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MSC-193  B66-10420  01

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M-PS-1476  B66-10583  02

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Monitor assures availability and quality of communication channels  
KSC-66-38  B67-10028  01

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**ANALOG DATA**

- Electronic stepping circuit monitors' exact position of object underwater
  - NUC-10146 | B67-10629 01
- Pneumatic analog-to-pulse frequency converter
  - ANUS-10345 | B69-10276 02
- Current-switching technique for analog pulse circuits
  - ARG-10479 | B69-10465 01

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  - JPL-0031 | B65-10013 01
- Hybrid computer technique yields random signal probability distributions
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- Scanning photometer system automatically determines atmospheric layer height
  - NMC-160 | B66-10170 01
- FFT comparator detects analog signal levels without loading analog device
  - NPS-503 | B66-10224 01
- Instrument calculates moments of inertia of complex plane figures
  - NPD-620 | B66-10306 01
- Susan transfer functions used to predict system performance parameters
  - LANGLEY-203 | B66-10379 01
- Automatic system determines moments of inertia of asymmetrical objects
  - NPS-1769 | B66-10636 01
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  - LEWIS-340 | B67-10063 05
- CTFDA - Chrysler Improved Numerical Differentiating Analyzer computer program
  - NPS-2296 | B67-10278 06
- Analog voiceing detector responds to pitch
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  - LEWIS-10711 | B69-10073 01
- Reducing quantizer deadband with a range switching digital filter
  - NPS-20417 | B69-10259 01
- Electronic analog equalization for vibrational testing
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- Airborne Fraunhofer Line Discriminator
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- Plant respirometer enables high resolution of oxygen consumption rates
  - FG-47 | B66-10406 04
- MOSFEET analog memory circuit achieves long duration signal storage
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M-PS-709 B67-10257 01

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M-PS-13096 B67-10396 01

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mechanical checkout
M-PS-13372 B67-10430 02

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M-PS-10173 B67-10467 01

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GSFC-391 B65-10260 01

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ARG-10202 B69-10027 01

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ANALOGS

Thermal Network Analyzer Program
NWC-10540 B69-10239 06

ANALYSIS (MATHEMATICS)

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New method for critical failure prediction
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JPLC-562 B66-10306 01

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JPLC-759 B66-10451 03

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JPL-504 B64-10280 01

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JPLC-329 B65-10213 01

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JPLC-10198 B68-10254 01

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MFO-10031 B67-10319 01

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ARG-10312 B69-10177 01

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M-PB-177 B65-10035 05

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MSC-12068 B67-10498 05

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M-PB-1660C B69-10450 05

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MFO-10563 B68-10436 01

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- Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods  
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- Separation of the rare earths by anion-exchange in the presence of lactic acid  
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- Proposed acousto-optic filter  
  HQ-10440  B96-10466  03
- Production of crystalline polymers via liquid crystal monomers  
  HQ-10235  B69-10744  03

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- Ignition of binary alloys of uranium  
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- Study of behavior of steroids at interfaces  
  A9G-10085  B68-10281  01
- Correction for losses in optical birefringent networks, a concept  
  M-P5-20088  B60-10571  01
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  A9G-10303  B69-10206  03

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- Integral ribs formed in metal panels by cold-press extrusion  
  N-P5-230  B65-10181  05
- Angular glass tubing drawn from round tubing  
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- Etching process mills EH 44-8 Mo alloy steel to precise tolerances  
  MSC-270  B66-10110  03
- Gage of 6.5 per cent Si-Fe sheet is chemically reduced  
  MSC-537  B66-10454  03
- Process yield Co-Fe alloys with superior high temperature magnetic properties  
  LEWIS-333  B66-10535  03
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  M-P5-12720  B67-10381  03
- Aluminum and stainless steel tubes joined by simple ring and welding process  
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- Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area  
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- Weld microfracturing in Inconel 718 minimized by minor elements  
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- Consolidation and fabrication techniques for vanadium-20 w/o titanium /TV-20/  
  A9G-10148  B69-10368  03
- Inverted grounding technique for electron beam heating  
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- Conditioning flat conductors for flat conductor cable production  
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- Superconductivity in zirconium-rhodium alloys  
  A9G-10223  B69-10010  03
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- Evaluation of magnetic materials for static inverter and converters  
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- Basal-plane metallography of deformed pyrolytic carbon  
  NPO-11196  B69-10488  03
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- Fluid check valve has fail-safe feature  
  JPL-0019  B65-10207  05
- Miniature valve accurately controls small volume fluid flow  
  A9G-66  B66-10473  05
- Cryogenic fluid flow instabilities in heat exchangers  
  M-P5-20436  B69-10541  05

### ANNULAR NOZZLES

- Hydraulic calipers  
  8-FS-18052  B69-10399  05
- Fluid check valve accurately controls small volume fluid flow  
  JPL-0019  B65-10207  05
- Cryogenic fluid flow instabilities in heat exchangers  
  M-P5-20436  B69-10541  05

### ANNULAR PLATES

- Sleeve and cutter simplify disconnecting welded joint in tubing  
  JPL-384  B69-10399  05

### ANNULAR RINGS

- Analysis of annular combustors  
  LEWIS-10399  B68-10356  06
- Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated  
  A9G-10261  B69-10091  02
- Single-element coaxial injector for rocket fuel  
  NPO-11095  B69-10587  05

### ANODES

- High purity electroforming yields superior metal models  
  A9G-6  B63-10007  05
- Ring counter may be advanced or retarded by command signal  
  GSFC-101  B66-10184  01
- Tantalum cathode improves electron-beam evaporation of tantalum  
  JPL-W00-021  B65-10175  03
- Titanium diaphragm makes excellent anode support  
  GSFC-394  B65-10298  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
M-PS-714 B66-10358 03
Electroplating eliminates gas leakage in brazed areas
M-PS-923 B66-10415 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-219 B67-10408 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
MRO-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-90071 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
M-PS-348 B65-10336 03
Gelatin coated electrodes allow prolonged bioelectronic measurements
MSP-153 B66-10088 01
Silver plating ensures reliable diffusion bonding of dissimilar metals
M-PS-1975 B67-10124 03
Study made of anodized aluminum circuit boards
M-PS-13580 B67-10425 01
Copper and nickel adherently electroplated on titanium alloy
M-PS-13952 B67-10532 03
Effects of surface preparation on quality of aluminum alloy weldments
M-PS-13152 B68-10302 03
Corrosion protection of aluminum alloys in contact with other metals
M-PS-10526 B69-10098 03
Advances in aluminum anodizing
M-PS-14600 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
M-PS-20435 B69-10390 01
An interferometer tracking radar system
MSP-10556 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
NU-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
MSP-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
M-PS-57 B64-10806 05
Helical coaxial-resonator makes excellent RF filter
GSPC-243 B65-10012 01
Oceanborne transponder platform has good
SUMECT
IUDBX
APBRTURIS
stability
H-FS-171
Solid-state laser transmitter is amplitude modulated
MSC-121
B65-10035
05
Extendable mast used in one shot soil penetrometer
JPL-685
B65-10238
01
Modified hydraulic braking system limits angular deceleration to safe values
GSFC-476
B66-10146
05
Antenna simulator permits preinstallation system checkout
GSFC-522
B66-10518
01
Movable RF probe eliminates need for calibration in plasma accelerators
LEWIS-10127
B67-10362
01
Range recording technique enables four-way polarization measurements
N-PS-12447
B67-10460
01
Broadband choke suppressed spurious currents in antenna structure
MSC-10013
B67-10675
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Diversity RF receiving system with improved phase-lock characteristics
XGS-01222
B68-10068
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Astronaut space suit communication antenna
MSC-12101
B68-10238
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Deep space FM system, a concept
MSC-11025
B68-10289
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High-torque precision stepping drive
N-PS-10772
B68-10549
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Technique for tuning antenna systems producing negligible signal radiation
KSC-10060
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RF noise suppression using the photodielectric effect in semiconductors
MSC-12259
B69-10225
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High-power microwave power divider concept
NPO-11093
B69-10290
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Combination ranging system and mapping radar
NPO-11001
B69-10325
01
The effect of mismatched components on microwave noise-temperature calibrations
NPO-11163
B69-10333
01
Energy-storage of a prescribed impedance
NPO-10303
B69-10380
01
Improved circularly polarized planar-array antenna
NPO-10301
B69-10382
01
Improved fire resistant radio frequency anechoic materials
N-PS-16600
B69-10450
05
Measurement technique for the determination of antenna directivity
N-PS-12799
B69-10677
01
A sterilizable high-impact antenna
NPO-10231
B69-10697
01
ANTICOAGULANTS
Heparin insolubilized with crosslinking agent
NPO-10634
B69-10299
03
ANTIFRiction BRANes
Fluoride coatings make effective lubricants in molten sodium environment
LEWIS-229
B66-10005
03
Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics
LEWIS-320
B66-10373
03
Low friction servo valve
LEWIS-10574
B68-10440
05
Fluid power-transmitting gas bearing
BRC-10097
B68-10503
05
ANTIPRADIATION DRUGS
Experimental study and evaluation of radioprotective drugs
ABG-10196
B68-10320
04
ANTISEPTICS
Improved pH buffering agent for sodium hypochlorite
MSC-15443
B69-10084
03
ARMS
Self sealing disconnect for tubing forms metal seal after breakaway
JPL-354
B63-10226
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Low power heating element provides thermal control during swaging operations
N-PS-457
B66-10206
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APERTURES
Variable light source with a million-to-one intensity ratio
JPL-WOC-008
B63-10424
03
Microscoaching produces optical apertures to micron dimensions
GSFC-206
B64-10211
05
Wide-aperture solar energy collector is light in weight
JPL-SC-055
B65-10046
02
Improved system measures output energy of pyrotechnic devices
WOC-256
B66-10159
01
Submicron holes in thin films increase sampling range of mass spectrometers
JPL-SC-097
B66-10380
03
A radiometer-pyrometer
LEWIS-284
B66-10606
01
A conceptual, parallel operating data compression processor
NPO-10068
B67-10204
01
Self-sealing closure enables access to several fluid containers
NPO-10123
B67-10207
04
Fresnel diffraction plates are simple and inexpensive
N-PS-12731
B67-10297
02
Modified blackbody device emits high-density radiation
N-PS-12744
B67-10388
02
Aerial-image enables diagrams and animation to be inserted in motion pictures
ANG-165
B67-10398
02
Infrared radiometer
N-PS-13373
B67-10422
01
Telescope mount with azimuth-only primary
NPO-10460
B67-10671
02
Electronic aperture control devised for solid state imaging system

I-33
APOLLO PROJECT

Electro-optic modulator for infrared laser using gallium arsenide crystal
GSPC-1068

Spherical ion source, XIP-0898

Energy-storage of a prescribed impedance NPO-1030

Improved circularly polarized planar-array antenna NPO-10301

Proposed acousto-optic filter HQ-10440

Method of directing a laser beam with very high accuracy NPO-11087

Fine-line sensitivity for holographic interferograms HQ-10348

Deposition monitor and control NPO-10706

APOLLO PROJECT

Automatic reel controls filler wire in welding machines M-PS-1416

Logic system aids in evaluation of project readiness M-PS-375

Spiral spring/strain gage combination accurately measures shock induced deflection M-PS-709

New method for critical failure prediction of complex systems M-PS-14133

APOLLO SPACECRAFT

Predicting surface heating rates and pressures resulting from hot exhaust gases M-SC-971

Star/horizon simulator used to test space guidance system M-SC-807

Analytical technique characterizes all trace contaminants in water M-SC-1132

Computer program provides steady state analysis for liquid propellant propulsion systems M-SC-14133

APOLLO TELESCOPE MOUNT

Improved phase-shift-keyed detector M-PS-20064

APPLICATIONS OF MATHEMATICS

Contact stresses calculated for miniature slip rings M-PS-280

Study of random process theory aids digital data processing M-PS-1475

Controllability of distributed-parameter systems M-PS-14929

Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated ARG-1026

Reducing quantizer deadband with a range switching** digital filter

APPLICATIONS TECHNOLOGY SATELLITES

An overview of electromagnetic interference problems in spacecraft NPO-11170

APPROXIMATION

An orthosnormalization procedure for multivariable function approximation M-PS-1313

Linear circuit analysis program for IBM 1620 Monitor 2, 1311/1443 data processing system CIRCS/ NPO-1073

Calculation of resonance neutron absorption in two-region problems /the GAROOL code/ NUC-10045

Computer program simplifies design of rotating components of turbomachinery NUC-10046

Quantum mechanical calculations of reactive scattering cross sections in bimolecular encounters M-PS-13594

The X square statistic and goodness of fit test GSFC-10547

Independent doubly truncated gamma variables I-PS-20143

General series solution technique for bending of irregular laterally loaded flat plates NUC-10170

Advanced mission analysis programs GSFC-10575

ARC CHAMBERS

Electric arc heater is self starting LANGLY-208

ARC DISCHARGES

Improved carbon electrode reduces arc sputtering MSC-219

Electric arc heater is self starting LANGLY-208

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum ARG-109

System measures arc energy dissipated in relay contact cycling B66-10230

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 MELTING
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 highasperage 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

ARGON
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
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blood pressure research
ABC-53  B65-10325  01

ARTIFACTS
Neutron activation analysis traces copper artifacts to geographical point of origin
ABC-119  B66-10036  02

ARTIFICIAL INTELLIGENCE
Review of research and development in fluid logic elements
M-PF-420  B67-10438  01

ASBESTOS
Refractory thermal insulation for smooth metal surfaces
M-PF-160  B64-10099  03
Air-cured ceramic coating insulates against high heat fluxes
M-PF-150  B65-10357  03

Spray-on technique simplifies fabrication of complex thermal insulation blanket
M-PF-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
Purification train produces ultrapure hydrogen gas
M-PF-1913  B67-10078  03
A ceramic composite thermal insulation
M-PF-13991  B67-10606  03
Development of helical seal for high temperature /2000 degrees F/ application
M-PF-13304  B67-10655  05

Asbestos and Inconel combined to form hot-gas seal
M-PF-14004  B68-10162  05
Remote balance weighs accurately at high temperature
ARC-10387  B69-10242  05

ASPHALT
Thermoplastic rubberlike material produced at low cost
JPL-793  B66-10453  03

ASPERICITY
Lathe converted for grinding aspheric surfaces
GSFC-115  B69-10556  05

ASTIGMATISM
Two devices for analysis of nystagmus
FQ-10273  B69-10224  01

ASTRONAUT LOCOMOTION
Technique simulates effect of reduced gravity
LANGLEY-44  B64-10146  04
Integrated mobility measurement and notation system
MSC-726  B67-10114  04

ASTRONAUT PERFORMANCE
Helmet system broadcasts electroencephalograms of wearer
ARC-70  B66-10536  01
A phonocardiogram simulator
KSC-67-94  B67-10239  01

ASTRONAUT TRAINING
Technique simulates effect of reduced gravity
LANGLEY-44  B64-10146  04

ASTRONOMES
Three-axis attitude and direction reference instrument has only one moving part
M-PF-1819  B66-10644  01
Astronaut space suit communication antenna
MSC-12105  B68-10238  01
Food products for space applications
MSC-11697  B68-10324  04
Astronauts tool for withdrawing/replacing computer cards
M-PF-20453  B69-10163  05
Measurement of gas flow at extremely low pressures
MSC-13261  B69-10522  03

ASTRONOMICAL MODELS
Analog solar system model relates celestial bodies spatially
JPL-195  B66-10143  01
Solar activity history model
M-PF-20525  B69-10776  01

ASTRONOMICAL OBSERVATORIES
Feasibility study of wireless power transmission systems
MSC-11697  B68-10309  01

ASTRONOMICAL TELESCOPES
Glancing incidence telescope for far ultraviolet and soft X-rays
JPL-392  B63-10247  05
SUBJECT INDEX

ASTROLOGY

Binary system generates sidereal rate from standard solar rate
GSPC-190  B67-10508  02

Electron beam parallel x-ray generator
HSC-11022  B64-10200  01

A new method for producing optical mirrors
NQ-10227  B69-10529  02

Spacecraft Thermal Radiation Environment
Computer Program
H-PS-15054  B69-10574  06

Method for determining properties of microinstabilities of a magnetized plasma
NQ-10447  B69-10462  02

Electron beam parallel X-ray generator
ISC-11022 B67-10372  02

A new method for producing optical mirrors
NQ-10227  B69-10529  02

Spacecraft Thermal Radiation Environment
Computer Program
H-PS-15054  B69-10574  06

ATMOSPHERES

High temperature thermocouple operates
in reduction atmosphere
NU-0046  B66-10134  01

High voltage pulse generator
MSC-12178  B69-10548  01

ATMOSPHERIC ATTENUATION

Optical automatic gain channel
H-PS-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
MSC-15225  B69-10531  03

ATMOSPHERIC DENSITY

Pneumatic power is transmitted through air
bearing
MSC-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
WQ-266  B66-10214  05

ATMOSPHERIC MODELS

Design of multilayer insulation system
ABC-10166  B69-10615  05

ATMOSPHERIC PRESSURE

Segmented electrode increases operating
pressure of MSD accelerator

ATOMIC PHYSICS

Handbook explaining the fundamentals of nuclear and atomic physics
NRC-10330  B69-10705  02

Status of ultrachemical analysis for semiconductors
H-PS-2254  B69-10138  03

Uranium isotopes quantitatively determined
by modified method of atomic absorption
spectrophotometry
ABC-210  B67-10236  03

Improved atomic resonance gas cell for use
in frequency standards
MSC-11666  B69-10230  01

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
ABU-90259  B68-10172  03

Improved atomic resonance gas cell for use
in frequency standards
MSC-11666  B69-10230  01

ATOMIZERS

Quick-hardening problems are eliminated with
spray gun modification which mixes resin and
accelerator liquids during application
LANGLEY-6A  B63-10316  03

Miniature paint-spray gun for recessed
areas
MSC-13060  B68-10387  05

ATOMIZING

Two-fluid, impinging-sheet injector
SUBJECT INDEX

NEP-10547  B66-10338  05
Miniature paint-spray gun for recessed areas
MSC-13060  B66-10387  05
Nozzles for size reclassification of microfog particles
LEWIS-10705  B66-10076  05

ATMOS
An improved atomic hydrogen frequency and time standard
GSFC-10706  B66-10341  02

ATTACHMENT
Quick-attach clamp
XPR-0542  1

ATTENUGATION
Microwave technique measures plasma characteristics
LANGLEY-134  B65-10122  02
Remote rapidly varying pressures accurately measured
PFC-28  B65-10301  01
Current pulse amplifier transmits detector signals with minimum distortion and attenuation
MSC-10055  B67-10347  01
Shock and vibration response of multistage structure
M-FS-19472  B68-10353  05
Rotary antenna attenuator
NPO-10446  B69-10502  01

ATTENUATION COEFFICIENTS
The response of monoenergetic gamma rays in finite media are investigated
ARG-10295  B69-10080  02

ATTENUATORS
Variable light source with a million-to-one intensity ratio
JPL-WOO-006  B63-10424  03
Small foamed polystyrene shield protects low-frequency microphones from wind noise
M-FS-123  B63-10579  01
Nonlinear feedback reduces analog-to-digital converter error
ARC-46  B65-10277  01
Linear signal noise summer accurately determines and controls S/N ratio
JPL-SC-152  B66-10433  01
Electro-meter amplifier operates over dynamic range of five orders of magnitude
ARC-75  B67-10199  01
Dielectric prisms would improve performance of quasi-optical microwave components
NPO-10011  B67-10416  01
Combined actuator and latch for cartridge powered actuator
MSC-11242  B67-10488  05
Laser-Doppler gas-velocity instrument
M-FS-20039  B68-10349  02
Optima FM pre-emphasis
KSC-10151  B69-10359  01
A compact rotary vane attenuator
NPO-10562  B69-10427  01

ATTITUDE (inclination)
Lifting clamp positively grips structural shapes
M-FS-593  B66-10176  05
Analog solar system model relates celestial bodies spatially
JPL-195  B66-10413  01
Three-axis attitude and direction reference instrument has only one moving part
M-FS-1819  B66-10644  01
Improved head-controlled TV system produces high-quality remote image
ARG-128  B67-10317  01

ATTITUDE 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
Visual attitude orientation and alignment system
MSC-647  B67-10120  02
Rectilinear display gives acceleration load factor and velocity information
MSC-1045  B67-10248  01
Precise gimballing mechanism
NPO-11057  B69-10270  01
Two-step rocket engine bipropellant valve concept
MSC-10951  B69-10280  05

ATTITUDE INDICATORS
Hydraulic device provides accurate displacements to microinches
MSC-112  B65-10230  05
FR/CW system measures aircraft attitude
M-FS-276  B65-10290  01
Miniature servo accelerometer in force-balanced
JPL-155  B65-10340  01
Developmental instrument supplies accurate attitude and attitude-rate data
NPO-57  B66-10607  01
Visual attitude orientation and alignment system
MSC-647  B67-10120  02
Instrumentation monitors transported material through variety of parameters
M-FS-12938  B67-10545  01
Proposed technique for vertical alignment of a crane's cable
M-FS-16496  B69-10202  05
A polar graphic method for determining the attitude of rocket vehicles
GSFC-10860  B69-10591  02

AUDIO EQUIPMENT
High-gain amplifier has excellent stability and low power consumption
GSFC-272  B65-10138  01
Solid-state laser transmitter is amplitude modulated
MSC-121  B65-10238  01
Phonocardiograph microphone is rugged and moistureproof
MSC-212  B66-10314  04
Literal readout of identification signals in Morse code
LANGLEY-10222  B69-10479  01

AUDIO FREQUENCIES
Circuit reduces distortion of FM modulator
GSFC-257  B65-10152  01
Pressure transducers dynamically tested with
AUDITORY SIGNALS

1. Sinusoidal pressure generator
   LEWIS-268
   B66-10031 01

2. Ultrasonic emission method enables testing of adhesive bonds
   B-P-799
   B66-10341 01

AUDITORY SIGNALS

1. Speed-sensing device aids crane operators
   WS-4
   B64-10006 05

2. Device detects unbonded areas in plastic laminates
   WOO-206
   B65-10380 01

3. Microphone multiplex system provides multiple outlets from single source
   GSFC-426
   B66-10308 01

4. Phonocardiograph microphone is rugged and moistureproof
   MSC-212
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Stringent cleaning technique assures reliable
epoxy bond
GSPC-161  B64-10142  03

Manganese-56 coincidence-counting facility
precisely measures neutron-source strength
ARG-90261  B69-10621  01

Circuit prevents overcharging of secondary
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GSPC-454  B66-10492  01

Battery charge regulator is coulometer
controlled
GSPC-561  B67-10446  01

Converter provides constant electrical
power at various output voltages
GSPC-519  B67-10481  01

Optimum structural design based on
reliability and proof-load testing
WPO-11228  B69-10723  31

High-intensity flashing beacon powered by
mercury cells
LANGLEY-80  B65-10361  01

Occluding-filter method for obtaining
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MSC-13097  B69-10107  02

Literal readout of identification signals
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LANGLEY-10222  B69-10479  01

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WPO-10231  B69-10697  01

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MSC-42  B64-10058  05

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MSC-215  B66-10070  03

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steel proved satisfactory
M-PS-1420  B66-10597  05

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M-PS-1817  B67-10023  05

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M-PS-2318  B67-10177  05

Glass bead peening retards stress
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LANGLEY-319  B67-10198  05

Design concept for improved photo-scan tube
JPL-818  B67-10157  01

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LANGLEY-10469  B69-10212  01

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LANGLEY-10263  B69-10407  01

Interferometer combines laser light source
and digital counting system
MSC-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

Beam splitter used in dual filming technique
M-PS-507  B66-10072  01

Sorfant measure spacecraft altitude without
gravitational reference
MSC-200  B66-10143  02

Laser measuring system accurately locates
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WPO-11087  B69-10508  02

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MSC-1747  B69-10633  02

Optical frequency waveguide and ion
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HQ-10541  B69-10746  01

Brushless dc motor uses electron beam
switching tube as commutator
GSPC-345  B65-10237  01

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JPL-946  B67-10174  05

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for local oscillator
M-PS-1605  B66-10534  01
Twin helix system produces fast scan in infrared detector
M-PS-1598 B66-10638 02

Local measurements in turbulent flows
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M-PS-1268 B67-10030 01

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ARG-10359 B69-10165 02

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ARG-10275 B69-10247 02

Simplified system displays complex curves corresponding to input data
Hq-10973 B69-10247 01

Multilayer infrared beamsplitter film system
XGS-11036 B69-10260 02

Energy-storage of a prescribed impedance
MGO-10903 B69-10380 01

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M-PS-20160 B69-10447 02

Technique for pinpointing submicron particles in the electron microscope
Hq-10043 B69-10465 01

Long range holographic contour mapping concept
Hq-10350 B69-10700 02

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ARC-5 B63-10006 01

Self-balancing beam permits safe, easy load handling under overhang
M-PS-94 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-through thresher 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

BEARINGS
Device measures curved surface finish on gear teeth
WGO-112 B65-10064 05

BEARING (DIRECTION)
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LANG-1259 B66-10315 01

Improved head-controlled TV system produces high-quality remote image
ARG-128 B67-10317 01

BEARING ALLOYS
Gallium alloy films investigated for use as boundary lubricants
LEWIS-245 B66-10165 03

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics
LEWIS-320 B66-10373 03

BEARINGS
Gallium useful bearing lubricant in high-vacuum environment
LEWIS-12 B63-10337 03

Molybdenum disulfide mixtures make effective high-vacuum lubricants
M-PS-54 B63-10453 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-12966 B68-10673 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 B68-10414 05

Computer program analyzes whirl critical speeds and bearing loads for shafts coupled by nonlinear springs to machine housing
MGC-10308 B65-10034 06

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NFO-10626 B69-10331 05

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***BEAT FREQUENCIES SUBJECT INDEX***

**BEAT FREQUENCIES**

- Segmented ball valve is easy to open and close
- Device without electrical connections in tank measures liquid level
- Portable sandblaster cleans small areas
- Fluid damping reduces bellows seal fatigue failures
- External linkage tie permits reduction in ducting system flange thickness
- Bellows joint absorbs torsional deflections in duct system
- Fluid logic control circuit operates nutator actuator motor
- Method for predicting frictional loss in metal bellows and flexible hose
- Simple pump maintains liquid helium level in cryostat
- Vacuum chamber is remotely sealed by eutectic metal
- Fixture tests bellows reliability through repetitive pressure/temperature cycling
- Method for X-ray study under extreme temperature and pressure conditions
- Feed-thru conduit minimizes heat pickup
- Predicting fatigue life of metal bellows
- Viscous damper
- Effect of surface irregularities on bellows fatigue life
- Conceptual hermetically sealed elbow actuator
- Multiple-orifice throttle valve
- Two-axis winch installer for heavy ducts in confined space
- Fatigue failure in metal bellows due to flow-induced vibrations
- Magnetron tuner has locking feature
- Teflon-fluorocarbon liners for flexible hoses
- Integral valve provides automatic relief and remote venting
- A simple electrometer for measuring small

**BEAT FREQUENCIES**

- Automatic leveling and equalizing hoist device
- Deposition monitor and control device
- Device without electrical connections in tank measures liquid level
- BEAT FREQUENCIES, synchronizing redundant power oscillators
- Portable sandblaster cleans small areas
- Fluid damping reduces bellows seal fatigue failures
- Bellows joint absorbs torsional deflections in duct system
- Device transmits rotary motion through hermetically sealed wall
- Composite, vacuum-jacketed tubing replaces bellows in cryogenic systems
- Low-cost tape system measures velocity of acceleration
- Injector device for handling hot corrosive materials
- Fastener provides cooling and compensates for thermal expansion
- Mouthpiece adapter for pipettes protects mouth from harmful liquids
- Metal bellows custom-fabricated from tubing
- Hydraulic device provides accurate displacements to microradians
- One-shot valve may be remotely actuated
- Lightweight hinged bellows restraint has high load capacity
- Universal bellows joint restraint permits angular and offset movement
- Transmission system isolates pressure transducer from severe environment
- Mount makes liquid nitrogen-cooled gamma ray detector portable
- Extendable mast used in one shot soil penetrometer
- Dual regulator controls two gases from a single reference
- Rubber-coated bellows improves vibration damping in vacuum lines
- Bellows design features low spring rate and long life

**BEHAVIOR**

- Experiments to investigate particulate materials in reduced gravity fields
- Characteristics of fluidized-packed beds
- Experiments to investigate particulate materials in reduced gravity fields
- Method for predicting frictional loss in metal bellows and flexible hose
- Simple pump maintains liquid helium level in cryostat
- Methods for predicting frictional loss in metal bellows and flexible hose
- Predicting fatigue life of metal bellows
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- Two-axis winch installer for heavy ducts in confined space
- Fatigue failure in metal bellows due to flow-induced vibrations
- Magnetron tuner has locking feature
- Teflon-fluorocarbon liners for flexible hoses
- Integral valve provides automatic relief and remote venting
- A simple electrometer for measuring small
photoelectric currents
GSPC-10603

BENDING

Metal-bending brake facilitates lightweight, close-tolerance fabrication
AEC-29
B69-10059

Hand tool bends component leads accurately
N-PS-308
B65-10181

Plastic tubing protects flexible copper hose
N-PS-772
B66-10588

Pressure probe compensates for dimensional tolerance variations
LEWIS-302
B66-10599

Hydraulically controlled flexible arm can bend in any direction
MSC-66-20
B66-10626

Method for predicting frictional loss in metal bellows and flexible hose
N-PS-883
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Technique cuts time and cost of bending jacketed piping
$50-333
B67-10018

Jacketed cryogenic piping in stress relieved
N-PS-905
B67-10308

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N-PS-2540
B67-10321

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B67-10340

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B67-10367

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MSC-12017
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Conceptual hermetically sealed elbow actuator
N-PS-104710
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N-PS-20176
B66-10395

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N-PS-104788
B60-10570

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B69-10035

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NUC-104138
B69-10041

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MSC-15633
B69-10509

Two-functional seal for hose connection
N-PS-14062
B69-10588

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MSC-15660
B69-10742

BENDING FATIGUE

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JPL-604
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Effect of surface irregularities on bellow fatigue life
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MSC-11022 E67-10372 02
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MSC-11022 E67-10474 02
Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures
NUC-10521 E67-10617 02
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NUC-10523 E67-10618 02
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NUC-10524 E67-10626 05
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MSC-11587 E68-10205 01
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ARG-90250 E68-10243 02
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ARG-10210 E68-10298 02
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MSC-11353 E68-10329 02
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LEWIS-10325 E68-10381 03
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LEWIS-10353 E68-10543 01
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MSC-14959 E69-10417 03
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MSC-15065 E69-10652 01
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BERYLLIUM ALLOYS

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MSC-127 E65-10153 05
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MSC-561 E66-10018 05
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MSC-276 E66-10079 02
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GSFC-10366 B65-10453 01

BERYLLIUM COMPOUNDS

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GSFC-11022 E67-10372 02

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Beryllium fluoride film protects beryllium against corrosion
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ARG-22 E66-10527 03
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M-FS-13565 E67-10534 01

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ARG-208 E67-10129 04
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Binary counter accumulates time by complementary preset
MSC-242 B65-10399 01

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M-PS-369 B66-10062 01

Low-power ring counter drives high-level loads
GSFC-431 B66-10106 01

Simplified circuit corrects faults in parallel binary information channels
JPL-SC-090 B66-10261 01

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JPL-673 B66-10264 01

Subroutine allows easy computation in extended precision arithmetic
M-PS-1136 B66-10954 01

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GSFC-490 B66-10511 01

Numerical data frame readout system used in testing telemetry systems
GSFC-551 B67-10175 01

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JPL-907 B67-10357 01

Pocket-size manual tape reader device aids computer tape checking
ESC-10058 B67-10361 01

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Brakes

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Improved sample capsule for determination of oxygen in hemolyzed blood

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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

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Brazing process using Al-Si filler alloy reliably bonds aluminum parts

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Boros-deoxidized copper withstands brazing temperatures

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Brazing process provides high-strength bond between aluminum and stainless steel

Aluminum core structures brazed without use of flux

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Braze alloy holds bonding strength over wide temperature range

Silver-palladium braze alloy recovered from masking materials

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Metal-bending brake facilitates lightweight, close-tolerance fabrication
ARC-29 B64-10069 05

Cam-operated limit switch features safe fuse replacement
M-PS-218 B65-10322 01

Respiratory transfer value has fail-safe feature
ARC-1 B65-10369 01

Braking mechanism is self actuating and bidirectional
M-PS-1299 B66-10484 05

Computer used to program numerically controlled milling machine
Astronauts tool for withdrawing/replacing computer cards

Eighth-performance RC bandpass filter is adapted to miniaturized construction

Neutron therapy of cancer

SCIENTIFIC TERMS

Design techniques - Stochastic controllers

Scoop attachment makes helicopter recoveries easier and safer

Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system

Identification and evaluation of linear damping models in beam vibrations

Heat exchanger tubes supported in high vibration environment

Sway-out rail system separates overhead crane rails

Conceptual dead weight device to provide pressure calibration

Welded pressure transducer made as small as 1/8th-inch in diameter

Economical fabrication process produces high quality junction transistors

Circuit improvement produces monostable multivibrator with load-carrying capability

FM oscillator uses tetrode transistor

Vibrating-membrane electrometer has high conversion gain

Thin-film resistors used in functional electronic blocks

Capacitive system detects and locates fluid leaks

Low-power ring counter drives high-level loads

Variable-capacitance tachometer eliminates troublesome magnetic fields

Transducer measures force in vacua environment

Large capacitor performs as a distributed parameter pulse line

SUBJECT INDEX

High-performance RC bandpass filter is adapted to miniaturized construction

New computer program solves wide variety of heat flow problems

Solid-state switch increases switching speed

Miniature capacitive accelerometer is especially applicable to telemetry

Miniature electrometer preamplifier effectively compensates for input capacitance

Electronic test instrument generates extremely small current signals

Improved circuit for measuring capacitive and inductive reactances

Ultraminiature manometer-tipped cardiac catheter

Capacitance-coupled wiper increases potentiometer life

High-voltage pulse generator developed for wide-gap spark chambers

Device for diode tuning in a stripline varactor harmonic multiplier

Electronic visualization of gas bearing behavior

Concept for a multifunctional oscilloscope probe

Remote control thermal actuator

Engineering thermal analyzer

Bandwidth switching is transient-free, avoids loss of loop lock

Improved sensor counts micrometeoroid penetrations

Circuit switches latching relay in response to signals of different polarity

Hot-air soldering technique prevents overheating of electrical components

Unmanned seismometer levels self, corrects drift errors

Transistorized trigger circuit is frequency-controllable

High efficient square-wave oscillator operator at high power levels
Tiny sensor-transmitter can withstand extreme acceleration, gives digital output. (ARC-22)

Circuit controls transients in SCR inverters. (GSPC-120)

Nonostable circuit with tunnel diode has fast recovery. (GSPC-132)

Low-power transistorized circuit provides staircase waveform. (GSPC-48)

Efficient circuit triggers high-current, high-voltage pulses. (MSC-14)

Digital logic elements provide additional functions from analog input. (MSC-64)

Ring counter may be advanced or retarded by command signal. (GSPC-101)

High-pass RF coaxial filter rejects dc and low-frequency signals. (GSPC-73)

Circuit converts AM signals to FM for magnetic recording. (GSPC-227)

Helical coaxial-resonator makes excellent RF filter. (GSPC-243)

Carbon arc ignition improved by simple auxiliary circuit. (MSC-103)

Thermistor connector assembly increases accuracy of measurements. (LANGLEY-62)

Microparticle impact sensor measures energy directly. (GSPC-252)

Feedback oscillator functions as low-level pulse stretcher. (GSPC-261)

Synchronized pulse generator needs no external power. (GSPC-274)

Simple circuit functions as frequency discriminator for FM signals. (GSPC-267)

Improved magnetometer uses toroidal gating coil. (GSPC-249)

Digital-output cardiograph measures rapid changes in heartbeat rate. (MSC-133)

Circuit reduces distortion of FM modulator. (GSPC-257)

Voltage variable oscillator has high phase stability. (LANGLEY-123)

Voltage controlled oscillator is easily aligned, has low phase noise. (JPL-510)

Electrometer has automatic zero bias control. (GSPC-350)

Boron trifluoride nuclear detector preamplifier uses single-cable connection. (GSPC-178)
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    - MSC-244 E67-10143 01
  - Absolute frequency stabilization of laser oscillator against laser amplifier
    - MSC-2559 B67-10255 01

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    - MSC-118 B64-10319 03

- **CARBON STEELS**
  - Aluminum/steel wire composite plates exhibit high tensile strength
    - MSC-401 B66-10262 05

- **CARBON TETRACHLORIDE**
  - Corrosion of aluminum alloys by chlorinated hydrocarbon/methanol mixtures
    - MSC-11365 B67-10442 03

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  - An improved nuclear magnetic resonance spectrometer
    - JPL-762 B67-10234 01

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    - ARG-10237 B69-10092 03
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    - GSPC-366 B65-10278 01
  - Trace levels of metallic corrosion in water determined by emission spectroscopy
    - MSC-1193 B66-10701 03
  - Carbon offers advantages as implant material in human body
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  - Primary radical yields in pulse irradiated alkaline aqueous solution
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    - N-FS-1867 B67-10161 01

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    - ARC-10054 B67-10669 07
  - Ultraminiature manometer-tipped cardiac catheter
    - ARC-10054 B67-10006 01

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    - MSC-274 B65-10142 01
  - Improved system for documenting measurement data
    - 8-FS-18269 B66-10913 05

- **CARBOB EERQOEBCIES**
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    - N-FS-1944 B67-10101 01

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    - MSC-93 B64-10258 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
  - Improved system for documenting measurement data
    - MSC-1144 B67-10170 01

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    - IBS-92 B66-10302 05
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    - MSC-1144 B67-10170 01

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    - ARG-10297 B69-10155 01

- **CARRIAGES**
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    - MU-0092 B66-10711 05
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    - N-FS-1922 B67-10852 02
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    - LEWIS-92 B67-10359 01
  - Swing arm carrier protects flexible lines during test item rotation
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NPO-10475  B69-10608  06

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NPO-11133  B69-10383  01

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N-PS-37  B66-10466  05

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MSC-100  B65-10168  05

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EQ-62  B66-10561  01

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KSC-67-16  B67-10230  01

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MSC-11395  B67-10589  03

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K-PS-20140  B68-10371  05

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NPO-0018  B66-10350  01

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MSC-349  B66-10135  05

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XIP-09704  B69-10016  05

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**CASSEGRAIN OPTICS**

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GSFC-10552  B67-10508  02

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GSFC-188 B64-10151 03

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NS-303 B65-10177 05

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JPL-SC-113 B66-10442 01

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HQ-55 B67-10071 02

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JPL-0024 B63-10280 01

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I-FS-516 B66-10228 05

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Device enables
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Precision metal molding
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Improved cavity-type absolute
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JPL-807 B67-10557 01

Shock-absorbing caster wheel is simple and
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RC-10343 B69-10135 01

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Indium adhesion provides quantitative measure of surface cleanliness
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NO-0062 B66-10276 05

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Swing-out rail system separates overhead crane rails
NO-0094 B66-10713 05

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LANGLEY-10193 B68-10042 05

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JPL-SC-145 B66-10188 05

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ARG-10483 B65-10618 01

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JPL-142 B65-10040 05

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- Unique frequency-shift-keyed demodulation system GSFC-217 B67-10668 01
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  - Optically induced free carrier light modulator GSFC-10216 B69-10114 01
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  - Pulse-height analyzer with digital readout ARG-10503 B69-10640 01
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- Charge Impact Test
  - Study of pneumatic high pressure piping materials /10,000 psi/ KSC-10133 B67-10437 01
- Manual of typical low temperature mechanical properties of several materials N-PS-16331 B69-10179 03
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  - Slide rule-type color chart predicts reproduced photo tones MSC-1227 B66-10680 01
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MSC-214 B65-10389 01
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MSC-256 B66-10007 05
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EISC-214 B65-10389 01
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JPL-750 B66-10451 03
Separation of traces of metal ions from sodium matrices

ARO-10341 B69-10168 03
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GSFC-10592 B69-10234 02
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ARC-07 B65-10316 03
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JPL-30-070 B65-10317 01
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JPL-962 B66-10515 04
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ARO-235 B67-10035 01
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ARG-116 B67-10186 03
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MSC-11032 B67-10243 03
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EQ-10055 B67-10395 04
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Separation of traces of metal ions from sodium matrices

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Liquid laser cavities

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Laser action from a terbium beta-ketoenolate at room temperature

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MSC-244 B65-10385 05
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ARG-10039 B67-10580 03
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ARG-10316 B69-10149 01
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ARG-10322 B69-10167 02
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NPO-10715 B69-10317 04
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MSC-13195 B69-10495 05
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M-FS-2143 B67-10100 03
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ARG-10273 B68-10163 04
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LWTS-276 B66-10434 05
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M-FS-13152 B68-10302 03
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M-FS-20364 B69-10372 03
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M-FS-18604 B69-10463 05
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M-FS-11091 B69-10502 03
CHEMICAL COMPOSITION

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M-FS-267 B65-10092 03
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MSC-11777 B66-10670 01
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M-FS-568 B67-10069 03
Elementary review of electron microprobe techniques and correction requirements

ARG-10062 B68-10195 03
One-dimensional reacting gas nonequilibrium performance program

MSC-11777 B68-10375 06
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Etching process mills PH 14-8 No alloy steel to precise tolerances

Electrical upsetting of metal sheet forms weld edge

Chemical milling solution produces smooth surface finish on aluminum

Gage of 6.5 per cent Si-Fe sheet is chemically reduced

Modified thermocouple is effective from minus 250 deg to 5000 deg F

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Chemical milling solution reveals stress corrosion cracks in titanium alloy

Acid spray technique mills aluminum alloy materials without immersion

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High strength nickel-base alloy with improved oxidation resistance up to 2200 degrees F

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ARG-10219 B69-10044 05

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ARG-10324 B69-10342 05

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MSC-13242 B69-10235 03

Improved method of dicing integrated circuit
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Thermocouple-flexible cable connector
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NU-0082 B66-10709 01

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One-dimensional reacting gas nonequilibrium
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MSC-11780 B68-10376 06

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MSC-11781 B68-10377 06

Analysis of secondary cells with
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ARG-10452 B69-10643 03

CHLORINE COMPOUNDS
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LANGLEY-37 B65-10286 03

Surfactant for dye-penetrant inspection is
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M-FS-375 B66-10131 03

New class of compounds have very low vapor
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ARG-115 B67-10184 03

Corrosion of aluminum alloys by chlorinated
hydrocarbon/methanol mixtures
MSC-11365 B67-10442 03

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Process produces chlorinated aromatic
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M-FS-1658 B66-10646 03

CHLOROPRENE
Solvent residue content measured by light
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M-FS-850 B66-10320 01

Degreasing of titanium to minimize stress
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Liquid oxygen dicting cleaned by falling
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M-FS-11816 B67-10299 03

Cold machining of high density tungsten
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CIRCUIT DIAGRAMS

Current-limiting voltage regulator
USC-11824

Breakaway electrical connector
BSC-11140

Fuse protects circuit from voltage and current overloads
MSC-12135

Breakaway electrical connector
NPO-11140 B69-10474

Fuse protects circuit from voltage and current overloads
USC-12135

Self-starting circuit for switching regulators
BEG-10309

CIRCUIT RELIABILITY

Single connector provides safety fuses for multiple lines
MSC-199

Rugged microelectronic module package supports circuitry on heat sink
MSC-514

Circuit protects regulated power supply against overload current
GSPC-453

Electrical cabling withstands severe environmental conditions
M-PS-1585

Trispace spark gap actuates overvoltage relay
ARC-68

Solid-state recoverable fuse functions as circuit breaker
GSPC-560

Fused diode provides visual indication of fuse condition
MSC-67-16

Circuit provides overcurrent protection to push-pull amplifier
MSC-12033

Eutectic fuse provides current and thermal protection under high vibration
M-PS-13664

Low energy ohmmeter can be used to test sensitive circuits, other meters
SAN-10013

Current-limiting voltage regulator
MSC-11824

Short circuit protection for a power distribution system
M-PS-14993

Method for measuring alternator voltage transients
LMNIS-10373

CIRCUIT RELIABILITY

Increased performance reliability obtained with dual/redundant/oscillator system
GSPC-36

Circuit reliability boosted by soldering pins of disconnect plug to sockets
JPL-447

Continuity tester screens out faulty socket connections
JPL-596

Circuit improvement produces monostable multivibrator with load-carrying capability
GSPC-34A

Logic circuit exhibits optimum performance

SUBJECT INDEX

LANGLEY-129 B65-10193

Tester periodically registers & amplifier characteristics
MSC-199

Two-light circuit continuously monitors ac ground, phase, and neutral wires
MSC-326

Complementary monostable circuits achieve low power drain and high reliability
GSPC-433

Computer program detects transient malfunctions in switching circuits
MSC-604

Test and inspection for process control of monolithic circuits
M-PS-13084

Analogue buffer isolates high impedance source from low impedance load
M-PS-13481

Multipulse current source offers low power losses and high reliability
LANGLEY-66

Improved compensation circuit for direct-coupled amplifiers
MSC-11168

Low energy ohmmeter can be used to test sensitive circuits, other meters
SAN-10013

Solid state high-voltage pulser operates with low supply voltage
M-PS-14034

Analysis and design of a class-D amplifier
M-PS-14083

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
M-PS-10110

Closed circuit TV system automatically guides welding arc
M-PS-20084

Microelectronic oscillator
GSPC-10375

Analysis of magnetically-controlled processes in pulse-modulation systems
GSPC-10241

Concept for a multifunctional oscilloscope probe
M-PS-16390

CIRCUITS

Small digital recording head has parallel bit channels, minimizes cross talk
JPL-0029

Two-stage emitter follower is temperature stabilized
MSC-20

Circuit switches latching relay in response to signals of different polarity
WOO-055

Connector for thermocouple leads saves costly wire, makes reliable connectors
LANGLEY-26

Simple circuit provides adjustable voltage with linear temperature variation
JPL-WOO-029

High efficient square-wave oscillator operator at high power levels
GSPC-112

I-90
Computer determines high-frequency phase stability  GSFC-113  E63-10555  01
Tiny sensor-transmitter can withstand extreme acceleration, gives digital output  ARC-22  E63-10561  01
Simple circuit continuously monitors thermocouple sensor  M-PS-61  E63-10567  01
Device calibrates vibration transducer at amplitudes up to 20 g  M-PS-96  E63-10572  01
Circuit controls transients in SCR inverters  GSFC-120  E63-10600  01
Monostable circuit with tunnel diode has fast recovery  GSFC-132  E63-10603  01
Temperature-sensitive network drives astable multivibrator  GSFC-137  E63-10609  01
Blocking oscillator uses low triggering voltage  HSC-58  E64-10017  01
Efficient circuit triggers high-current, high-voltage pulses  MSC-14  E64-10024  01
Continuity tester screens out faulty socket connections  JFl-596  E64-10065  01
Improved insertion-loss tester  JFl-358  E64-10080  01
Emission tester for high-power vacuum tubes  JFl-628  E64-10158  01
Field effect transistors used as voltage controlled resistors  M-PS-174  E64-10163  01
PTC thermistor protects multiloaded power supplies  GSFC-236  E64-10281  01
Transistorized converter provides nondissipative regulation  GSFC-238  E64-10305  01
Voltage generator sweeps oscillator frequency linearly with time  M-PS-219  E64-10320  01
Bandwidth switching is transient-free, avoids loss of loop lock  WOO-054  E64-10349  01
Circuit converts A/D signals to P/M for magnetic recording  GSFC-227  E65-10001  01
Circuit improvement produces monostable multivibrator with load-carrying capability  GSFC-34A  E65-10011  01
Zener diode function generator requires no external reference voltage  JFl-0031  E65-10013  01
Use of tear ring permits repair of sealed module circuitry  M-PS-210  E65-10014  05
Carbon arc ignition improved by simple auxiliary circuit  HSC-103  E65-10018  01
Circuit detects errors in address current for magnetic core arrays  M-PS-234  E65-10047  01
Pulse generator permits nondestructive testing of component breakdown voltage  HSC-122  E65-10054  01
FM oscillator uses tetrode transistor  JFl-82  E65-10055  01
Feed-through has polymetal feature  H-PS-25  E65-10057  01
Sensitive level sensor made with spirit level, gives electrical output  LAM07-45  E65-10067  01
Feedback oscillator functions as low-level pulse stretcher  GSFC-261  E65-10069  01
Synchronized pulse generator needs no external power  GSFC-274  E65-10072  01
Light-sensitive potentiometer measures product of two variables  GSFC-299  E65-10076  01
Phase detector circuit synthesizes own reference signal  H-PS-247  E65-10080  01
Transducer senses displacements of panels subjected to vibration  ARC-37  E65-10085  01
Digital system accurately controls velocity of electromechanical devices  GSFC-287  E65-10096  01
Variable load automatically tests dc power supplies  GSFC-291  E65-10105  01
Unijunction frequency divider is free of backward loading  JFl-WOO-010  E65-10112  01
Simplified electrometer has excellent operating characteristics  JFl-413  E65-10125  01
Traveling-wave tube circuit simplifies microwave relay  GSFC-299  E65-10127  01
Piezoresistive gage tests pin-connector sockets  JFl-675  E65-10128  01
Simple circuit positions film frames in projector  JFl-506  E65-10132  02
Instrument calibrates low gas-rate flowmeters  HSC-134  E65-10137  01
High-gain amplifier has excellent stability and low power consumption  GSFC-272  E65-10138  01
Auxiliary circuit enables automatic monitoring of EKG'S  HSC-106  E65-10142  01
Logarithmic amplifier uses field effect transistors  JFl-505  E65-10145  01
Rotor position sensor switched currents in brushless dc motors  GSFC-315  E65-10151  01
Circuit reduces distortion of FM modulator  GSFC-257  E65-10152  01
Phase shift frequency synthesizer is efficient, small in size  M-PS-250  E65-10169  01
Pressure transducer system is force-balanced.
has digital output
N-PS-154 B65-10174 05

DC to ac converter operates efficiently at low input voltages
GSFC-130 B65-10178 01

Oscillator circuit measures liquid level in tanks
N-PS-245 B65-10209 01

Detector circuit compensates for vidicon beam current variations
GSFC-310 B65-10212 01

Simple ECL 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 chopper 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
N-PS-331 B65-10281 01

Boron nitride housing cools transistors
W00-079 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-382 B65-10314 01

Compact SCR trigger circuit for igniton switch operates efficiently
N-PS-371 B65-10347 01

Frequency discriminator with binary output eliminates tuned circuits
N-PS-376 B65-10349 01

Multiphase clock-pulse generator uses simplified circuitry
N-PS-297 B65-10353 01

Adhesive-backed terminal board eliminates mounting screws
MSC-173 B65-10396 01

Computer circuit calculates cardiac output
N-PS-274 B65-10006 01

Portable self-powered device detects internal flaws in tubular structures
NU-0019 B65-10028 01

Circuit operates as sine function generator
MSC-255 B66-10038 01

Noncontacting transducer measures shaft torque
N-PS-474 B66-10048 01

Function generator eliminates necessity of series summation
GSFC-214 B66-10351 01

Hydrogen fire detection system features sharp discrimination
N-PS-643 B66-10360 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
W00-278 B66-10432 01

Shaft encoder produces high-speed, fixed duration pulses
GSFC-285 B66-10228 01

Siaple BCD circuit accurately counts to 24
GSFC-317 B65-10225 01

Remote preamplifier circuit maintains stability over wide temperature range
W00-278 B66-10432 01

Simple, one transistor circuit boosts pulse amplitude
JPL-785 B66-10368 01

Circuit prevents overcharging of secondary cell batteries
GSFC-454 B66-10492 01

Electrometer preamplifier has drift correction feedback
JPL-SC-074 B65-10267 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
CI-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 B66-10543 01

Electronic circuit provides accurate sensing and control of dc voltage
NU-0089 B66-10563 01

MOSFET analog memory circuit achieves long duration signal storage
N-PS-860 B66-10603 01

Electrical continuity scanner facilitates identification of wires for soldering to connectors
NU-0108 B66-10605 01

Resistance thermometer has linear resistance-temperature coefficient at low temperatures
W00-190 B66-10612 01

Magnetoresistor monitors relay performance
N-PS-1754 B66-10550 01

Actuator device schedules rate of valve closure
N-PS-1556 B66-10686 05

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
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GSFC-10106 B68-10317 01

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LEWIS-10143 B68-10386 01

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BHC-10055 B68-10437 01

Performance analysis of electrical circuits
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N-PS-15001 B68-10448 06

Readout system for radiation detector
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Locating **sneak paths** in electrical
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N-PS-15018 B68-10565 01

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N-PS-20153 B69-10013 01

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N-PS-16390 B69-10129 01

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N-PS-20229 B69-10189 02

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N-PS-16496 B69-10202 05

Technique for abrasive cutting of
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N-PS-13242 B69-10235 B6

Piezoelectric lock mechanism resists
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SAN-10037 B69-10285 01

Semiautomatic inspection of microfilm
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N-PS-20420 B69-10301 02

Circuit counts pulses and indicates time of
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XNP-06238 B69-10311 03

Simple, accurate automatic frequency
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KSC-10393 B69-10323 01

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ARG-10482 B69-10603 01

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Flexible coiled spline securely joins mating
cylinders
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Cylindrical claw clamp has quick release
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N-PS-513 B66-10213 05

Special mandrel permits uniform welding of
out-of-round tubing
N-PS-706 B66-10323 05

Friction loading device enables accurate
testing of brittle materials
BU-0051 B66-10345 05

A design procedure for the weight
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GSFC-547 B66-10618 05

Metal flame spray coating protects electrical
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Digital computer program predicts effects
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N-PS-15020 B68-10422 06

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ARG-151 B66-10601 05

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N-PS-11980 B67-10336 01

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Omnidirectional antennas transmit and
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GSFC-436 B66-10133 01

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Radial coolant channels fabricated by
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N-PS-706 B66-10267 05

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N-PS-706 B66-10323 05
Niobium-uranium alloys with voids of predetermined size and total volume: ARG-10490

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Welds chilled by liquid coolant manifold: M-FS-679

Two systems developed for purifying inert atmospheres: ARG-10234

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-boiling loop: ARG-10461

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Improved sample capsule for determination of oxygen in hemolyzed blood: MSC-11017

Self-sustained hydrodynamic oscillations in a natural-circulation two-phase-flow boiling loop: ARG-10461

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Zirconium alloys with small amounts of iron and copper or nickel show improved corrosion resistance in superheated steam: ARG-226

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Consolidation and fabrication techniques for vanadium-20 w/o titanium /TV-20/: ARG-10148

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Increased performance reliability obtained with dual/redundant/oscillator system: GSFC-36

Transistorized circuit clamps voltage with 0.1 percent error: GSFC-196

Simple circuit provides reliable multiple signal average and reject capability: NU-0069

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Reference black body is compact, convenient to use: ARC-3

Sleeve and cutter simplify disconnecting welded joint in tubing: JPL-384

Novel clamps align large rocket cases, eliminate back-up bars: M-FS-1

Buckle joins web straps quickly, adjusts easily: MSC-563

LANGLEY-21: B64-10119

Apparatus permits flexure testing of specimens at cryogenic temperatures: N-FS-257

Spiral heater coils hand-formed with fixture: LEWIS-208

Self-aligning fixture used in lathe chuck jaw facing: PBC-21

Electrical cable connector-clamp has smooth exterior surface: MSC-154

Remotely operated clamping tool has positive grip: NU-0020

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Bench vice adapter grips tubing securely and safely: MSC-279

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Pipe cutting tool is useful in limited space: MSC-36

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Split glass tube assures quality in electron beam brazing: M-FS-564

Fixture aids soldering of electronic components on circuit board: ARC-56

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Lifting clamp positively grips structural shapes: M-FS-593

Cylindrical claw clamp has quick release feature: M-FS-513

Hand tool permits shrink sizing of assembled tubing: MSC-504

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Swiveling lathe jaw concept for holding irregular pieces: M-FS-783

Adapter assembly prevents damage to tubing during high pressure tests: MSC-563

Latching mechanism operates in limited access area: MSC-563
Welds chilled by liquid coolant manifold
I-FS-679 B66-10354 05

Micromanipulation tool is easily adapted to many uses
JPL-129 B67-10004 05

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LWIS-331 B67-10110 05

Tool facilitates installation of Harmon clamps
I-FS-2039 B67-10105 05

Clamp provides efficient connection for high-density currents
I-FS-2417 B67-10140 01

Fixture facilitates helium leak testing of pipe welds
I-FS-2417 B67-10178 05

Cable clamp bolt fixture facilitates assembly in close quarters
KSC-67-80 B67-10244 05

Metal flange spray coating protects electrical cables in extreme environment
NOC-10077 B67-10584 01

Torque meter aids study of hysteresis motor rings
I-PS-12919 B67-10040 01

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I-FS-13899 B67-10072 05

Improved traveling wave maser amplifier
I-PS-10548 B67-10244 01

Quick-attach clamp
IFR-05421 B68-10250 05

Detachable caster adapter
MSC-91215 B69-10164 05

Sealing a rubber bladder between two sections of an accumulator
I-FS-20403 B69-10355 05

Improved design of item in high speed rotating machinery
I-FS-18447 B69-10373 05

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I-PS-15348 B69-10379 05

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I-PS-10659 B69-10406 03

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ANG-10222 B69-10054 03

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I-FS-14716 B69-10394 06

Colloidal suspension simulates linear dynamic pressure profile
WRO-266 B66-10214 05

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ERCC-33 B67-10231 01

Fogging technique used to coat magnesium with plastic
LEWIS-10361 B67-10584 03

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NOC-10304 B68-10024 05

Vacuum probe sampler removes micron-sized particles from surfaces
SAN-10003 B68-10231 04

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MSC-12206 B68-10500 04

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NFO-11197 B69-10593 04

Dispenser leak-tests and sterilizes rubber gloves
MSC-285 B66-10166 03

Apparatus automatically measures soluble residue content of volatile solvents
SAN-10092 B69-10292 03

A method for precision anodize stripping
MSC-15040 B66-10581 03

Dispenser leak-tests and sterilizes rubber gloves
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Apparatus automatically measures soluble residue content of volatile solvents
SAN-10092 B69-10292 03

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Ceramic-coated boat is chemically inert, provides good heat transfer
LANGLEY-9C B67-10063 05

Portable tool cleans pipes and tubing
MSC-238 B66-10375 05

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I-FS-475 B66-10131 03

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I-PS-540 B66-10298 03

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I-PS-850 B66-10320 01

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Ultrasonic cleaning restores depth-type filters
I-PS-540 B66-10298 03

Solvent residue content measured by light scattering technique
I-PS-850 B66-10320 01

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MSC-1420 B66-10597 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
I-PS-1975 B67-10124 03

Degreasing of titanium to minimize stress corrosion
LEWIS-392 B67-10147 03

Liquid oxygen dieting cleaned by falling
Simple BCD circuit accurately counts to 24
GSPC-317

Nonlinear feedback reduces analog-to-digital converter error
ARC-46

Electronic phase-locked-loop speed control system is stable
JPL-SC-084

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H-PS-2166

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H-PS-2573

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Infrared television used to detect hydrogen fires
H-PS-654

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KSC-66-22

Closed circuit TV system monitors welding operations
HSC-11002

Thermal neutron image intensifier tube provides bright visible radiographic pictures
ARG-120

Improved head-controlled TV system produces high-quality remote image
ARG-128

Closed circuit TV system automatically guides welding arc
H-PS-20084

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BG-10412

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ARG-10316

New low-level a-c amplifier provides adjustable noise cancellation and automatic temperature compensation
ARC-2

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GSFC-241

Solenoid permits remote control of stop watch and assures restarting
FRC-17

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GSFC-190

Variable frequency magnetic multivibrator generates stable square-wave output
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LEWIS-393 B67-10259 01

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GSFC-143 B64-10028 05
Torque wrench designed for restricted areas
LEWIS-246 B66-10011 05
Diaphragm spring gives clutch over-center toggle effect
GSFC-499 B66-10297 05
Gear drive automatically indexes rotary table
PFS-753 B66-10383 05
Electromechanical rotary actuator operates over wide temperature range
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GSFC-198 B64-10151 03
Solid film leaves corrosion-resistant coating on metal
JPL-611 B64-10206 03
Flexible curtain shields equipment from intense heat fluxes
MFS-48 B65-10044 03
Coating method enables low-temperature brazing of stainless steel
NUS-0930 B65-10250 03
Pigmented coating resists thermal shock
JPL-SC-083 B65-10354 03
Gage of 6,5 per cent Si-Fe sheet is chemically reduced
MSC-537 B66-10454 03
Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54 B66-10471 05
Combination spacer and gasket provides effective static seal
MFS-139 B66-10485 05
 Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal
ARG-22 B66-10527 03
Mulitlayer refractory nozzle produced by plasma-spray process
PFS-399 B66-10611 05
Study made of anodized aluminum circuit boards
MFS-13580 B67-10425 01

A method of determining combustion gas flow
MFS-13757 B67-10455 03
Improved relay optical element for spectroradiometer using cryogenically cooled detector
MSC-11688 B68-10245 02

Food products for space applications
MSC-11697 B68-10324 04
Detection of effect of deposits on optical windows of pyrometer measurements
LEWIS-10366 B66-10367 01

Direct indication of particle size in fluidized beds
ARG-10130 B69-10003 05
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XGS-1036 B69-10260 02

Study of high-speed angular-contact ball bearings under dynamic load
MFS-20562 B69-10367 05

Solder flux leaves corrosion-resistant coating on metal
JPL-611 B66-10206 03
Flexible curtain shields equipment from intense heat fluxes
H-FS-48 E65-10044 03

Improved method of edge coating flat ribbon wire
ARG-54 B66-10165 03
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LEWIS-273 B66-10187 02

Silicone polymers show promise for high-temperature application
MFS-466 B66-10194 03

Chromium oxide coatings improve thermal emissivity of aluminu
NUS-263 B68-10227 03

Standards for electron probe microanalysis of silicates prepared by convenient method
GSFC-465 B66-10234 03

Electrically conductive fibers thermally isolate temperature sensor
GSFC-456 B66-10349 01

Film coating permits low-force scribing
MSC-990 B66-10609 03

Improved method of edge coating flat ribbon wire
MFS-902 B66-10649 03

Process reduces secondary resonant emission in electronic components
JPL-934 B66-10685 01
Mechanism facilitates coating of inner surfaces of metal cylinders
GSPC-515 B66-10698 05

Abraded cadmium-plated cable connectors repaired by conversion coating
N-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
GSPC-540 B67-10072

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
N-PS-13569 B67-10534 01

Bacteriostatic conformal coating for electronic components
GSPC-10007 B67-10599 03

Application of the solid lubricant molybdenum disulfide by sputtering
LEWIS-10544 B68-10340

High-emittance coatings on metal substrates
LXAIS-10325 B68-10381

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
ANC-10015 B69-10176 03

Investigation of spacecraft coatings
N-PS-20458 B69-10181 06

High temperature coatings for gas bearings
LEWIS-10793 B69-10200 03

Remote balance weighs accurately amid high radiation
ARG-10387 B69-10242 05

Simple test indicates degree of cure of polysilane coatings
MSC-15487 B69-10330 03

Improved vacuum deposition apparatus
NPS-11009 B69-10365 02

Improved ferrous shielding for flat cables
N-PS-14524 B69-10401 01

Improved primer for bonding polyurethane adhesives to metals
N-PS-90591 B69-10540 03

Development of improved potting and conformal coating compounds
N-PS-20219 B69-10559 03

Investigation of the development of cracks in solder joints
N-PS-20444 B69-10807 01

COAXIAL CABLES

Modified filter prevents conduction of microwave signals along high-voltage power supply leads
JPL-63 B63-10091 01

Modified RF coaxial connector ends vacuum chamber wiring problem
GSPC-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
GSPC-73 B64-10173

Cutter and stripper reduces coaxial cable connection time
ANC-80 B65-10094 05

Lightweight coaxial cable connector reduces signal loss
JPL-720 B65-10244 01

Boron trifluoride nuclear detector preamplifier uses single-cable connection
LEWIS-178 B65-10255 01

Antenna configurations provide polarization diversity
GSPC-74 B66-10066

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
ANE-9 B66-10478 01

High frequency wide-band transformer uses coax to achieve high turn ratio and flat response
ANE-109 B66-10600 01

Connector acts as quick coupling in coaxial cable application
JPL-803 B66-10621 01

Process reduces secondary resonant emission in electronic components
JPL-934 B66-10685 01

Current pulse amplifier transmits detector signals with minimum distortion and attenuation
NUC-10055 B67-10347 01

Coaxial cable stripping device facilitates RF cabling fabrication
NPS-10315 B67-10419 05

Adhesives for laminating polysilane insulated flat conductor cable
N-PS-12066 B67-10429 03

Broadband choke suppresses spurious currents in antenna structure
MSC-10013 B67-10675 01

Cryogenic liquid level measuring probe
ANE-10138 B67-10291 01

Coaxial cable stripper for confined areas
KSC-10167 B68-10444 05

COAXIAL SEAL

Seal allows blind assembly and thermal expansion of components
NU-0005 B65-10053 05

COBALT

Vibration analysis utilizing Mössbauer effect
J-11974 B67-10339 01

Practical new method of measuring thermal-neutron fluence
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COBALT ALLOYS

Nickel-base superalloy*excellent properties promote its service to 2200 degrees P.

Spectrographic analysis of bismuth-tin eutectic alloys by spark-ignited low-voltage ac-arc excitation.

Tungsten thermal neutron dosimeter.

Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics.

Process yield Co-Pe alloys with superior high temperature magnetic properties.

Cobalt-tungsten, ferromagnetic high-temperature alloy.

High temperature alloy.

Inspection criteria ensure quality control of parallel gap soldering.

Relief recorder.

High-temperature, gas-filled ceramic rectifiers, thyristors, and voltage-reference tubes.

COBALT COMPOUNDS

New class of compounds have very low vapor pressures.

Separation technique provides rapid quantitative determination of cesium-137 in irradiated nuclear fuel.

COBALT OXIDES

Solid-film lubricant is effective at high temperatures in vacuum.

Cobalt improves nickel hydroxide electrodes for batteries.

COBALT 60

Irradiation improves properties of an aromatic polyester.

COBOL

Translator program converts computer printout into braille language.

DSN seven day/twelve week schedule program.

COCKS

Improved sample capsule for determination of oxygen in hemolyzed blood.

VERSATILE IMPACT HAND TOOL

CODERS

Transistor voltage comparator performs own sensing.

Variable word length encoder reduces TV bandwidth requirements.

Pneumatic binary encoder replaces multiple solenoid system.

Shaft encoder presents digital output.

Multiplexing control device enables handling of wide variations in sampling rates.

Accumulator for shaft encoder.

Color-television medical microscopy.

High-speed pulse casers.

Simultaneous message framing and error detection.

Ring laser angle encoder.

Encode/Decode facility for FORTRAN IV.

COBALT OXIDES

Pocket-size manual tape reader device aids computer tape checking.

Design for a rapid automatic sync acquisition system.

Data retrieval system provides unlimited hardware design information.

A conceptual, parallel operating data compression processor.

Run numbering system for use with data recorders.

Coded photographic proof paper could serve as convenient densitometer.

Improved digital TV encoding and decoding system.

Unique frequency-shift-keyed demodulation.
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system
GSPC-217 B67-10668 01
LABCON - Laboratory Job Control program
M-FS-18141 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
BFO-11733 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-1312 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
GSPC-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-10812 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
WOO-190 B66-10612 01
Glass formulation has high coefficient of thermal expansion
WOO-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-10554 B69-10707 02

COERCIVITY
New sintering process adjusts magnetic value of ferrite cores
GSPC-129 B63-10606 01
Process yield Co-Pe alloys with superior high temperature magnetic properties
LEWIS-333 B66-10535 03

COILS
Miniaturization of magnetic logic circuitry
LANGLEY-10037 B69-10148 06
Adding calcium improves lithium ferrite core
ERC-10036 B69-10686 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

COILS
Solenoid permits remote control of stop watch and assures restarting
PRC-17 B63-10024 01
Improved variable-reluctance transducer measures transient pressures
LANGLEY-10 B63-10321 01
Improved magnetometer uses toroidal gating coil
GSPC-249 B65-10103 01
Collar positions strip stock used to form coil on mandrel
JPL-198 B65-10130 05
Probe measures characteristics of hot gas stream
M-FS-240 B65-10133 02

COHESION
Instrumentation for nondestructive testing of composite honeycomb materials
M-FS-20405 B69-10366 03
Nondestructive determination of cohesive strength of adhesive-bonded composites
M-FS-20397 B69-10464 03

COILS
Screwed-permits remote control of stop watch and assures restarting
FRC-17 B63-10024 01
Improved variable-reluctance transducer measures transient pressures
LANGLEY-10 B63-10321 01
Improved magnetometer uses toroidal gating coil
GSPC-249 B65-10103 01
Collar positions strip stock used to form coil on mandrel
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LANGLEY-10 B63-10321 01
Improved magnetometer uses toroidal gating coil
GSPC-249 B65-10103 01
Collar positions strip stock used to form coil on mandrel
JPL-198 B65-10130 05

Simplified technique demonstrates magnetic domain switching
M-FS-13153 B67-10342 02
Series transistors isolate amplifier from flyback voltage
MSC-11023 B67-10468 01
Environmental control system for cryogenic testing of tensile specimens
NUC-10523 B67-10618 02
Bead current disk valve
LEWIS-10123 B67-10630 05
Quick-attach clasp
XPR-05421 B68-10250 05
Novel terminal strips for transformers
HPC-10042 B69-10246 01
Induction probe determines levels of liquid metals
ARG-10348 B69-10256 03
Design of printed circuit coils
HC-10431 B69-10665 01

COLD CATBODBS

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 B69-10670 01
COLD DRAWING

Copper-acrylic 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-FS-230 B65-10141 05
Porous mandrels provide uniform deformation in hydrostatic powder metallurgy
M-FS-1972 B67-10209 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
LEWIS-333 B66-10535 03
COLD TRAPS

Liquid trap seals thermocouple leads
M-FS-606 B66-10212 05
Cold trap increases sensitivity of gas chromatography
M-FS-1617 B66-10517 03
Electronic circuit provides automatic level control for liquid nitrogen traps
KSC-10127 B66-10061 01

COINCIDENCE CIRCuits

Improved sensor counts micrometeoroid penetrations
LEWIS-76 B63-10443 01
Pressure sensor responds only to shock wave
M-FS-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 WORKING

Upsetting butt edge increases weld-joint strength
M-FS-175 B66-10164 05
New weldable high strength aluminum alloy developed for cryogenic service
M-FS-737 B66-10613 05
Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures
NOC-10084 B67-10349 03
Extrusion of small-diameter, thin-wall tungsten tubing
LEWIS-90335 B67-10355 05
Stabilizing stainless steel components for cryogenic service
M-FS-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-FS-12069 B67-10375 03
Dynamics of moving bubbles in single and binary component systems
M-FS-14845 B68-10339 02

COLLECTION

Technique for highly efficient recovery of microbiological contaminants
ASC-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-076 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 superheterodyne receiver uses laser for local oscillator
M-FS-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-FS-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  
Energy-storage of a prescribed impedance
NPO-10303  
Oculometer for remote tracking of eye
movement
SRC-10114  
COLLIMATORS
Attachment converts microscope to point source
autocollimator
JPL-499  
Sensitive level sensor made with spirit
level, gives electrical output
LANGLEY-497  
Optical automatic gain channel
MSC-1550  
Star/horizon simulator used to test space
guidance system
MSC-607  
Vibration analysis utilizing Nonlaher
effect
MS-PS-11974  
Electron beam parallel X-ray generator
MSC-11022  
Method for X-ray study under extreme
temperature and pressure conditions
MSC-11232  
Improved electro-optical tracking system
MS-PS-14791  
Modified sine bar device measures small
angles with high accuracy
GSFC-438  
Training manual on optical alignment
instruments
NPS-20292  
Ring laser angle encoder
MSC-13099  
Method for copper staining of germanium
crystals
ARG-10403  
Precision mounting for instrument optical
elements provided by polyimide bonding
MS-PS-20293  
Method of directing a laser beam with very
high accuracy
NPS-11087  
Improved camera for better X-ray powder
photographs
HQ-10424  
COLLINEARITY
Proposed acousto-optic filter
HQ-10440  
COLLOIDS
Magnetic fluid readily controlled in zero
gravity environment
LEWIS-126  
Colloidal suspension simulates linear
dynamic pressure profile
WGO-266  
Standards for electron probe microanalysis of
silicates prepared by convenient method
GSFC-469  
C grant phthalocyanines show promise in the
treatment of brain tumors
ARG-100  
Corrosion reduction of aluminum alloys in
flowing high-temperature water
ARG-10245  
COLOR
Inorganic paint is durable, fireproof, easy
to apply
GSFC-366  
Multicolor stroboscope pinpoints resonances in
vibrating components
JPL-0033  
Legibility of electroluminescent instrument
panels investigated
MSC-494  
Device to color modulate a stationary light
beam gives high intensity
EQ-44  
Liquid crystals detect voids in fiber glass
laminates
LEWIS-10104  
New electron microscope employs new video
display technique
ARG-158  
Simplified technique demonstrates magnetic
domain switching
MS-PS-13153  
Thermodynamic properties of saturated liquid
parahydrogen charted for important
temperature range
MSC-10076  
Pocket-size manual tape reader device aids
computer tape checking
KSC-10058  
Use of color-coded sleeve shutters accelerates oscillograph channel selection
KSC-10092  
Fuel cell life improved by metallic sinter
activation after electrode assembly
welding
MSC-10965  
Luminescent screen composition for
cathode ray tubes
MSC-190  
Fluidic-thermochemical display device
MSC-10063  
Production of solvated electrons
ARG-10416  
Discrimination of fish oil and mineral
oil slicks on sea water
HQ-10412  
COLOR CENTERS
Some purification of potassium chloride
ARG-1377  
COLOR PHOTOGRAPHY
Shortened procedure for obtaining
reproducible copies of 35 mm color slides
ESC-09957  
Shortened processing time technique for
color industrial radiography
ARG-10235  
COLOR TELEVISION
Video signal processing system uses gated
current mode switches to perform high speed
COLOR VISION

multiplication and digital-to-analog conversion
M-58-786 E66-10429 01

Scan rate converter for tape recording and playback of TV pictures
NPO-10166 B67-10676 01

Color-television medical microscopy
M-13086 E68-10314 01

COLOR VISION

Slide rule-type color chart predicts reproduced photo tones
M-1227 B66-10680 01

COLORIMETRY

Test strips detect different CO2 concentrations in closed compartments
M-58-210 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 B67-10245 04

Simple colorimetric method determines uranium in tissue
ARG-10039 B67-10580 03

Optimistic system facilitates colorimetric and fluorometric measurements
M-10233 B68-10316 01

COLUMNS

Gas chromatographic column enables analysis of propellant hydrazines
M-1161 B66-10586 03

COLUMNS (PROCESS ENGINEERING)

Subminiatrized gas chromatograph gives fast, efficient analysis
JPL-735 B66-10182 01

Trace hydrazines in aqueous solutions accurately determined by gas chromatography
M-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
NPO-6046 B66-10097 01

Cone and column solar energy concentrator
LANGLEY-210 B67-10517 01

Deployable lattice column
NPO-10228 B68-10082 05

COMBINATORIAL ANALYSIS

Binary sequence detector uses minimum number of decision elements
JPL-673 B66-10264 01

CORBUSTION

Plastic bags in evacuated chamber make lightweight gas sampling system
PFC-31 B65-10264 01

Infrared television used to detect hydrogen fires
NPO-654 B66-10363 01

Computer program determines chemical equilibration in complex systems
LEWIS-281 B66-10671 01

vapor stack outlet
N-PS-2042 B67-10098 05

Temperature or pressure controller
LEWIS-10297 B68-10337 01

Analysis of annular combustors
LEWIS-10359 B68-10356 06

Technique for assessing potential fire hazards
Eq-10279 B69-10287 03

Improved fire resistant radio frequency anechoic materials
N-PS-16600 B69-10450 05

Life detection
NPO-10510 B69-10475 04

Burn-rate testing apparatus
M-10947 B69-10740 03

CORBUSTION CHAMBERS

Centrifugal device separates liquid from gas
M-58-282 B65-10394 05

Combustion chamber inlet manifold separates vapor from liquid
M-58-531 B66-10052 05

Microminiature thermocouple monitors own installation
M-PS-1111 B66-10463 05

Combustion chamber struts can be effectively transpiration cooled
M-PS-1830 B66-10643 03

Machining heavy plastic sections
M-12720 B67-10381 03

Analysis of annular combustors
LEWIS-10359 B68-10356 06

Improved combustion chamber optical probe concept
M-10951 B69-10280 05

Computer simulation of high-frequency combustion instability and its suppression
Eq-10391 B69-10368 06

Pneumatic flow comparator
M-PS-18373 B69-10400 05

Single-element coaxial injector for rocket fuel
NPO-11095 B69-10547 05

New type pressure transducer for severe thermal environments
M-PS-20208 B69-10562 01

CORBUSTION CONTROL

Development of detonation reaction engine
M-PS-14020 B67-10652 01

Fuel element concept for long life high power nuclear reactors
LEWIS-10309 B69-10154 03

CORBUSTION EFFICIENCY

Combustion method for assay of biological materials labeled with carbon-14 or tritium, or double-labeled
ARG-10331 B69-10208 04

CORBUSTION PRODUCTS

Improved system measures output energy of pyrotechnic devices
WGO-256 B66-10159 01

Hydrogen fire detection system features sharp discrimination
M-PS-643 B66-10368 01

X-104
SUBJECT INDEX

Development of detonation reaction engine  
N-PS-14020  B67-10652  01

Properties of air and combustion products  
of fuels with air  
LEWIS-11030  B69-10711  03

CORROSION STABILITY  
Automatic cryogenic liquid level controller  
is safe for use near combustible substances  
LEWIS-195  B66-10482  01

A method of determining combustion gas  
flow  
N-PS-13757  B67-10455  03

Computer simulation of high-frequency  
combustion instability and its suppression  
EQ-10391  B69-10368  06

Elimination of dissolved gases in  
hypergolic engine propellants  
N-PS-16179  B69-10692  03

EXPEXTS  
Experiments to investigate particulate  
materials in reduced gravity fields  
N-PS-13308  B67-10394  02

CONFORT  
One-piece transparent shell improves design of  
helmet assembly  
BSC-107  B66-10390  05

COMMAND AND CONTROL  
Remote control electrical switching system has  
1000-output capability  
N-PS-380  B65-10318  01

COMMAND GUIDANCE  
Polynomial manipulator AP-168  
BSC-1231  B67-10103  01

COMMAND MODULES  
Electronic circuit delivers pulse of high  
interval stability  
MSC-673  B66-10501  01

Land landing couch dynamics computer program  
BSC-1210  B67-10233  06

Analytical technique characterizes all  
trace contaminants in water  
MSC-11032  B67-10243  03

CONTRIBUTION  
Adding calcium improves lithium ferrite core  
MSC-10036  B69-10686  06

COMMUNICATING  
Interior servicing platform simplifies  
maintenance of storage tanks  
N-PS-1300  B66-10425  05

Optical superheterodyne receiver uses laser  
for local oscillator  
N-PS-1605  B66-10584  01

Wide-band doubler and sine wave quadrature  
generator  
NPO-11133  B69-10383  01

COMMUNICATION EQUIPMENT  
Simple circuit produces high-speed, fixed  
duration pulses  
GSPC-285  B65-10228  01

Circuit maintains digital decision threshold  
at preset level  
N-PS-331  B65-10261  01

Multicolor stroboscope pinpoints resonances in  
vibrating components  
JPL-0033  B66-10223  01

One-piece transparent shell improves design of  
helmet assembly  
BSC-187  B66-10390  05

Thin-film ferrites vapor deposited by one-step  
process in vacuum  
MSC-259  B66-10398  03

Astronaut space suit communication antennas  
MSC-12101  B68-10238  01

Improved traveling wave maser amplifier  
NPO-10548  B68-10244  01

Optically induced free carrier light  
modulator  
MSC-10216  B69-10114  01

Improved circularly polarized planar-array  
antennas  
NPO-10301  B69-10382  01

Improved fire resistant radio frequency  
anechoic materials  
N-PS-1660C  B69-10540  05

Folded stick module  
NPO-10854  B69-10498  01

Pocket-sized tone-modulated FM  
translator  
NPO-11180  B69-10725  01

COMMUNICATION SATELLITES  
Omnidirectional antennas transmit and  
receive over large bandwidth  
GSFC-436  B66-10133  01

Multi-feed cone for Cassegrainian antenna  
NPO-10539  B69-10269  01

Design for a rapid automatic sync  
acquisition system  
NPO-10244  B69-10530  01

Millimeter-wave atmospheric loss prediction  
method  
NPO-11054  B69-10584  01

CORROSION  
Magnetometer measures orthogonal components  
of magnetic fields  
GSFC-395  B65-10315  01

An electronic circuit for sensing  
malfunctions in test instrumentation  
KSC-10209  B69-10392  01

CORRECTOR  
Explosives actuate nonmagnetic indexing device  
GSFC-237  B65-10017  05

Rotor position sensor switches currents in  
brushless dc motors  
GSFC-315  B65-10151  01

Brushless dc motor uses electron beam  
switching tube as commutator  
GSFC-345  B65-10237  01

Brushless dc motor has high efficiency, long  
life  
GSFC-181  B66-10355  01

Solid-state switch increases switching speed  
NBO-298  B66-10430  01

Security warning system monitors up to  
fifteen remote areas simultaneously  
KSC-66-39  B66-10548  01

Thermocouples electrically checked while  
connected to data system  
LANGLIE-182  B66-10623  01

Current steering commutator offers  
versatility  
JPL-012  B67-10410  01

Computer memory access technique  
NPO-10201  B67-10585  01

Bootstrap unloader
COMPACTING

XNP-09768 E69-10120 01

Isostatic compression process converts polyaromatics into structural material JPL-892 B67-10168 03

Primary cell uses neither liquid nor fused electrolytes NPO-10001 B67-10275 01

COMPARATOR CIRCUITS

Electromechanical flowmeter accurately monitors fluid flow GSPC-357 E65-10273 01

Electronic frequency discriminator N-PS-2434 B67-10151 01

PM carrier deviation measured by differential probability method N-PS-2166 B67-10213 01

Solid state circuit averages multiple signals and rejects those varying significantly from the average NDC-10066 B67-10262 01

Highly linear, sensitive analog-to-digital converter MSC-13110 B69-10230 01

Simplified, reliable circuit sorts binary numbers in order of magnitude NFO-10112 B69-10503 01

COMPARATORS

Analog-to-digital converter has increased reliability and reduced power consumption GSFC-246 B65-10194 01

Nonlinear feedback reduces analog-to-digital converter error ABC-46 B65-10277 01

System proportions fluid-flow in response to demand signals GSFC-457 B66-10094 01

PFT comparator detects analog signal levels without loading analog device N-PS-503 B66-10224 01

System monitors discrete computer inputs N-PS-1021 B66-10369 01

Digital system provides superregulation of nanosecond amplifier-discriminator circuit ARG-61 B66-10500 01

Monitor assures availability and quality of communication channels XSC-66-38 B67-10028 01

Thermoelectric metal comparator determines composition of alloys and metals ABO-235 B67-10035 01

A conceptual, parallel operating data compression processor NFO-10068 B67-10204 01

PM carrier deviation measured by differential probability method N-PS-2166 B67-10213 01

Run numbering system for use with data recorders N-PS-2557 B67-10215 01

Tester automatically checks insulation of individual conductors in multiple-strand cables NBC-10068 B67-10260 01

SUBJECT INDEX

Stable ac phase and amplitude comparator M-PS-13086 B67-10459 01

Simple first order data compression processor concept NFO-10338 B67-10553 01

Optical system facilitates inspection of printed circuit boards GSFC-07971 B68-10021 02

Closed circuit TV system automatically guides welding arc M-PS-20084 B68-10357 01

Pulse-height analyzer with digital readout ARG-10503 B69-10640 01

COMPARISON

Comparative chromatography of chloroplast pigment ARG-10415 B69-10425 03

Simple quasi-exponential slope generator NFO-11130 B69-10839 01

COMPONENTS

Control system maintains compartment at constant temperature JPL-SC-145 B66-10188 05

Device removes hydrogen gas from enclosed spaces GSFC-495 B66-10340 03

Reparable, high-density microelectronic module provides effective heat sink M-PS-13075 B67-10356 01

COMPATIBILITY

Synthesis of various highly halogenated monomers and polymers M-PS-2163 B67-10100 03

Consolidation and fabrication techniques for vanadium-20 w/o titanium /TV-20/ ARG-10148 B68-10368 03

An overview of electromagnetic interference problems in spacecraft NFO-11170 B69-10362 01

COMPENSATORS

Servo system facilitates photoelastic strain measurements on resins JPL-504 B64-10280 01

Detector circuit compensates for vidicon beam current variations GSFC-310 B65-10212 01

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill M-PS-1084 B66-10411 05

Logarithmic current simulator generates electrical currents accurately between 10 to the minus 11 ampere to 10 to the minus 3 ampere ND-0087 B66-10706 01

Polarimeter provides transient response in nanosecond range JPL-890 B67-10021 02

Modified univibrator compensates for output timing errors ARG-65 B67-10130 01

Compensation circuit improves operation of inductive coupling transformers M-PS-13801 B68-10129 01

Improved compensation circuit for direct-coupled amplifiers MSC-11148 B68-10133 01

Technique developed for measuring transmittance of optical birefringent
networks
N-PS-14267

Synthesis of electro-optic modulators for amplitude modulation of light
N-PS-14268

Acceleration insensitive fluid expansion compensator
ERC-10152

Reducing quantizer deadband with a range switching digital filter
N-PS-20419

COMPONENTS
CINDA - Chrysler Improved Numerical Differencing Analyzer computer program
N-PS-2292

General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions
N-PS-13094

Saturn S-2 Automatic Software System
JPL-596

Compilation of detection sensitivities in thermal-neutron activation
ARG-10068

JFLFJ - JPL FORMATE language with interval pre-processor
HPO-10835

COGENT programming manual
ARC-10463

COMPLEX VARIABLES
Digital filter synthesis computer program
ARC-10130

COMPONENT RELIABILITY
Continuity tester screens out faulty socket connections
JPL-596

Improved insertion-loss tester
JPL-358

New nut and sleeve improve flared connections
N-PS-194

Analog-to-digital converter has increased reliability and reduced power consumption
GSFC-246

Control of component differential hardness increases bearing life
LEWIS-190

Interferometer construction assures parallelism of critical components
JPL-704

Apparatus presents visual display of semiconductor surface characteristics
JPL-655

Solar cell submodule design facilitates assembly of lightweight arrays
JPL-728

Magnetically operated limit switch has improved reliability, minimizes arcing
MSC-422

Selfautomatic device tests components with biaxial leads
MSC-516

Device serves as hinge and electrical connector for circuit boards
N-PS-743

Thermocouple-flexible cable connector

insulator is highly reliable
NU-0082

Fixture tests bellows reliability through repetitive pressure/temperature cycling
MSC-1176

Study indicates fluid digital computation systems are feasible
N-PS-520

Analytical technique permits comparison of reliability of alternate mechanical designs
NUC-10065

Stabilizing stainless steel components for cryogenic service
N-PS-13127

Study made of acoustical monitoring for mechanical checkout
N-PS-13372

Vibration damping composition has flush-away feature
N-PS-597

Composite solar cell matrix is reliable, lightweight and flexible
NPO-10821

Dynamic valve seal is reliable at cryogenic temperatures
N-PS-12987

Jet engine powers large, high-temperature wind tunnel
N-PS-13544

Development of dual solid refrigeration system
GSFC-10188

Development of reliability prediction technique for semiconductor diodes
GSFC-10231

Solenoid valve design minimizes vibration and sliding wear problem
N-PS-14079

New method for critical failure prediction of complex systems
N-PS-14133

Low energy chmmeter can be used to test sensitive circuits, other meters
SAM-10013

Electronic component reliability analysis by data reduction system
NPO-10243

Concept for a multifunctional oscilloscope probe
N-PS-16390

Exact signal-state system reliability analysis
N-PS-16551

Breakaway electrical connector
HPO-11140

System for computing operational probability equations
N-PS-16410

COMPONENTS
Chart system simplifies identification of coupler design assemblies
MSC-752

Computerized parts system coordinates engineering releases, parts control, and manufacturing planning
NUC-10073

Computer program analyzes generalized
environmental control and life support systems
MSC-1157 B67-10415 06

Analysis of transient thermal stress in heat-generating plate and hollow cylinders caused by sudden environmental temperature changes
ASC-10274 B67-10047 02

Reidentifying hardware after loss of serial number
N-FS-18133 B69-10059 05

Investigation of the development of cracks in solder joints
N-FS-20444 B69-10807 01

COMPOSITE MATERIALS

Boron carbide whiskers produced by vapor deposition
HQ-24 B65-10261 03

Aluminum/steel wire composite plates exhibit high tensile strength
N-FS-401 B66-10262 05

Composite gaskets are compatible with liquid oxygen, resist compression set
N-FS-485 B66-10395 03

Tungsten fiber-reinforced copper composites form high strength electrical conductors
LEWIS-338 B66-10572 03

Intergranular metal phase increases thermal shock resistance of ceramic coating
N-FS-1862 B66-10651 03

Composites of porous metal and solid lubricants increase bearing life
LEWIS-307 B67-10007 03

Composite weld rod corrects individual filler weaknesses
N-FS-1923 B67-10107 05

Aluminum-titanium hydride-boron carbide composite provides lightweight neutron shield material
NUC-10069 B67-10265 03

A ceramic composite thermal insulation
N-FS-13991 B67-10608 03

Study made of mechanics of deformation and fracture of fibrous composites
HQ-10035 B67-10560 03

Reinforced thermal-shock resistant ceramics
LEWIS-10376 B68-10085 03

Fiber glass reinforced structural materials for aerospace application
N-FS-14806 B68-10360 03

Tungsten fiber-reinforced nickel superalloy
LEWIS-10424 B68-10369 03

Self-lubricating gear
N-FS-14971 B69-10408 05

Improved method of producing oxide dispersion-strengthened alloys
HQ-10461 B69-10536 03

Controlled substrate cooling improves reproducibility of vapor deposited semiconductor composites
EBC-10161 B69-10732 01

Explosive bonding of metal-matrix composites
N-FS-20657 B69-10804 05

COMPOSITE STRUCTURES

Composite seal reduces alkaline battery leakage
GSFC-337 B65-10271 01

Flexible coiled spline securely joins mating cylinders
WGO-270 B66-10172 06

Composite bulkhead fabrication development
N-FS-1264 B66-10582 05

A modal combination computer program for dynamic analysis of structures
NCO-10129 B67-10217 06

Composite solar cell matrix is reliable, lightweight and flexible
WFO-10821 B67-10503 01

Nondestructive testing techniques used in analysis of honeycomb structure bond strength
N-FS-1214 B67-10574 01

Evaluation of superconducting magnets, a study
N-FS-14808 B68-10396 02

Adhesive for cryogenic temperature applications
LEWIS-10264 B69-10074 03

COMPRESSING

Submicron metal powders produced by ball milling with grinding aids
LEWIS-188 B66-10221 03

COMPRESSED AIR

Vacuum-type backup bar speed weld repairs
N-FS-12 B63-10384 05

Pneumatic power is transmitted through air bearing
MSC-8 B64-10141 05

Die and telescoping punch form convolutions in thin diaphragm
JPL-SC-135 B65-10393 05

Extendable mast used in one shot soil penetrometer
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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 E69-10202 02

An overview of electromagnetic interference problems in spacecraft
NPO-11170 B69-10267 06

Molecular radiation - Its application in physical measurements and analyses
J-PS-14816 B69-10562 02

Design reliability goal developed from small sample
I-FS-403 B66-10405 05

Integral ribs formed in metal panels by cold-press extrusion
I-PS-230 B66-10141 05

Imprinting of confining sites for cell cultures on thermoplastic substrates
I-PS-716 B66-10334 01

Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Tool samples subsurface soil free of surface contaminants
MSC-10588 B67-10473 05

Flow liner extends operating life of high-angulation bellows
K-PS-12023 B67-10512 05

Multi-feed cone for Cassegrainian antenna
NPO-10539 B69-10269 01

Flared-tube fittings with replaceable seat inserts
MSC-15372 B69-10310 05

Venturi meter with separable diffuser
LEWIS-10483 B68-10295 05

Asymmetric 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

Bell nozzle kernel analysis program
K-PS-18456 B69-10146 06

Strippable grid facilitates removal of grid-surfaced conical workpiece from die
K-PS-716 B66-10334 01

Advanced mission analysis programs
GSPC-10575 B69-10171 06

Connector for vacuum-jacketed lines cats tubing system cost
LEWIS-66 B63-10367 05

Portable display paneling has wide use, easy take down and assembly
ARC-17 B63-10435 05

Modified RF coaxial connector ends vacuum chamber wiring problem
GSPC-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
GSPC-73 B64-10173 01

Connector seals fluid lines at cryogenic temperatures and high vacuums
GSPC-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
K-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
K-PS-194 B65-10180 05

Improved solderless connector is easily disconnected
JPL-SC-060 B65-10197 01

Electrical probe ensures reliable contact in socket
K-PS-315 B65-10215 01

Lightweight coaxial cable connector reduces signal loss
JPL-720 B65-10246 01

Thermocouple-to-instrumentation connector features quick assembly
ND-0022 B65-10246 05

Feed-through connector withstands high temperatures in vacuum environment
GSPC-442 B65-10328 01

Keyed plugs and sockets prevent improper connections
MSC-231 B65-10381 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
K-PS-611 B66-10208 05

Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
K-PS-640 B66-10247 05

Diffusion bonding makes strong seal at flanged connector
MSC-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

X-120
Union would facilitate joining of tubing, minimize braze contamination

Adapter assembly prevents damage to tubing during high pressure tests

Modified pliers facilitate coupling of bayonet-type connectors

Electrical continuity scanner facilitates identification of wires for soldering to connectors

Connect-disconnect coupling for preadjusted adapter assembly prevents damage to tubing rigid shafts during high pressure tests

Connect-disconnect coupling for coaxial cable application

Leads integral with the internal modified pliers facilitate coupling of interconnection that penetrate the bayonet-type connectors molded wall of a package

Electrical continuity scanner facilitates identification of wires for soldering to connectors

Connector acts as quick coupling in coaxial cable application

Abraided cadmium-plated cable connectors repaired by conversion coating

Orbital tube flaring system produces tubing connectors with zero leakage

Feed-through connector couples RF power into vacuum chamber

Clamp provides efficient connection for high-density currents

Line adapter provides quick disconnect under moderate side loading

Spherical joint connects axially misaligned flanges

Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules

Large volume continuous countercflow dialyzer has high efficiency

Improved sample capsule for determination of oxygen in hemolyzed blood

Coaxial cable stripping device facilitates RF cabling fabrication

Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board

Protected, high-temperature connecting cable

Flat cable insulation stripping machine

Reconnect mechanism

Remotely operated gripper provides vertical control rod movement

Refractory oxide insulated thermocouple designed and analyzed for high temperature applications

Leakage tester for flat conductor cable connector

A mechanically extendible boom

Connect-disconnect coupling for preadjusted rigid shafts

Leads integral with the internal interconnection that penetrate the molded wall of a package

Air-cushion lift pad

Rotary antenna attenuator

Two-functional seal for hose connection

A sterillizable high-impact antenna

Automated tester permits precise calibration of pressure transducers from 0 to 1050 psi

Compact monitoring and control console for pressurized gas bottles

Improved perceptual-motor performance measurement system

Multipurpose instrumentation cable provides integral thermocouple circuit

Dewpoint temperature inversions analyzed

Improved sample capsule for determination of oxygen in hemolyzed blood

Lightweight hinged bellows restraint has high load capacity

Universal bellows joint restraint permits angular and offset movement

Torque wrench designed for restricted areas

Pipe cutting tool is useful in limited space

Body-fitted harness provides safe and easy component handling

Torque wrench allows readings from inaccessible locations

Portable sandblaster cleans small areas

Ultrasonic hand tool allows convenient scanning of spot welds
CONSTRUCTIONS

- Pneumatic separator gives quick release to heavy loads
  KSC-66-10  B66-10289  02
- Latching mechanism operates in limited access area
  MSC-230  B66-10330  05
- Design concept for pressure switch calibrator
  B66-10598  01
- Integrated mobility measurement and notation system
  MSC-726  B67-10114  04
- Single wrench separates nuts from free-floating bolts
  B67-10158  05
- Self-sealing closure enables access to several fluid containers
  B67-10123  B67-10207  04
- Cable clamp bolt fixture facilitates assembly in close quarters
  B67-10248  05
- Precision metal molding
  M-FS-13305  B67-10423  05
- Optically exciting a magnetic memory - A feasibility study
  M-FS-14654  B69-10060  02
- Sidescrout maneuver operations program
  B69-10105  06

CONSTRUCTION TECHNICALS

- Electrochemical cell has internal resistive heater element
  GSFC-10358  B68-10325  01
- Magnetostrictive forming for precision sizing and joining of large-diameter tubes
  M-FS-20461  B69-10422  05

CONSTRUCTION MATERIALS

- Swiveling lathe jaw concept for holding irregular pieces
  M-FS-783  B66-10321  05
- Isostatic compression process converts polycrystalline into structural material
  JPL-892  B67-10168  03
- Study made of procedures for externally loading and corrosion testing stress corrosion specimens
  M-FS-12064  B67-10451  03
- Fiber glass reinforced structural materials for aerospace application
  M-FS-14666  B68-10360  03
- Study of fluoride corrosion of nickel alloys
  ARG-10224  B69-10448  03

CONTACT LENSES

- Thin transparent films formed from powdered glass
  GSFC-352  B65-10217  03

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- Electrode has automatic zero bias control
  GSFC-350  B65-10242  01
- Rugged pressed disk electrode has low contact potential
  GSFC-158  B65-10320  01

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- Diffusion technique stabilizes resistor values
  MSC-205  B66-10182  01
- Reducing contact resistance at semiconductor to metal or aluminum to metal interfaces
  ERG-10254  B69-10689  01

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- Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle
  JPL-545  B65-10517  05
- New inflatable life craft is nontippable
  MSC-4A  B66-10001  05
- Viscous-pendulum damper suppresses structural vibrations
  LANGLEY-45  B64-10272  05
- Compact assembly generates plastic foam, inflatable flotation bag
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- Electrically heated diaphragm eliminates use of pyrotechnics
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- Large diameter metal ring seal prevents gas leakage at 5000 psi
  M-FS-1064  B66-10422  05
- Seal-off assembly permits rapid evacuation of air from containers
  GSFC-513  B66-10446  05
- Irradiated gases transferred without contamination or dilution
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- Method prevents secondary radiation in radiographic inspection
  M-FS-13383  B67-10391  02
- Graphite cloth facilitates vacuum evaporation of silicon monoxide
  M-FS-14764  B66-10256  03
- Contact spring forming machine for flat conductor cable receptacles
  M-FS-20126  B66-10550  05
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- Use of steel and tantalum apparatus for molten Cd-Hg-Zn alloys
  ARG-199  B66-10594  03
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- Brazing process using Al-Si filler alloy reliably bonds aluminum parts
  MSC-448  B66-10241  05
- Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment
  LEWIS-359  B66-10678  05
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Steel test panel helps control additives in pyrophosphate copper plating

Tool samples subsurface soil free of surface contaminants

Indium adhesion provides quantitative measure of surface cleanliness

Preparation of high purity copper fluoride by fluorinating copper hydroxide fluoride

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

Vented piston seal prevents fluid leakage between two chambers

Quick-acting clutch disengages idle drive motor

Magnetic field controls carbon arc tail flame

Double gloves reduce contamination of dry box atmosphere

Multiple test tubes stirred mechanically

Radioactive tracer system detects oil contaminants in fluid lines

Tool provides constant purge during tube welding

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Insert sleeve prevents tube soldering contamination

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A new method for the determination of particulate contamination levels for surface cleanliness of fluid systems
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Journal gas bearing for curved surfaces
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- Device enables measurement of moments of inertia about three axes
- Simple scale interpolator facilitates reading of graphs
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- Ionomer membrane battery separator
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- Improved molybdenum disulfide-silver motor brushes have extended life
- Gate valve with ceramic-coated base operates at high temperatures
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- 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
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I-FS-1258 B66-10505 01

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Opposed arcs permit deep weld penetration with only one pass  
M-FS-1696 B66-10513 05

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M-FS-1160 B66-10542 01

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ARC-61 B66-10547 02

Monitoring circuit accurately measures movement of solenoid valve  
M-FS-1829 B66-10568 01

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NB-0009 B66-10591 01

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JPL-890 B67-10021 02

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M-FS-1895 B67-10022 01

Heater control circuit provides both fast and proportional control  
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M-FS-1240 B67-10156 01

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ARG-163 B67-10311 01

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M-FS-13227 B67-10390 01

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M-FS-13598 B67-10558 01

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XRS-06467  B69-10369  01

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GSFC-10127  B69-10437  05

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MSC-13288  B69-10452  05

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Isolated, multiple-output voltage dc-to-dc converter
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Hydraulic drive system prevents backlash
JPL-371  B69-10351  05

Antenna configurations provide polarization diversity
GSFC-74  B66-10066  01

Low-speed, long-term tracking electric drive system has zero backlash
NPO-10173  B67-10220  01

Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates
NPO-10316  B67-10418  05

Single degree of freedom antenna pointing program
MSC-10756  B66-10489  06

Survey of man-made antenna pointing affecting radio broadcasting
NPO-10290  B69-10308  01

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N-PS-20435  B69-10390  01

An interferometer tracking radar system
MSC-10556  B69-10523  01

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Ring counter may be advanced or retarded by command signal
GSFC-101  B68-10164  01

System measures unidirectional forces, excludes extraneous forces
LEWIS-170  B65-10154  05

Magnetic-shift-register circuit controls step motor operation
GSFC-340  B65-10226  01

Ring counter circuit switches multiphase motor direction of rotation
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Solid state circuit controls direction, speed, and braking of dc motor
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LEWIS-294  B66-10593  05

Device measures reaction engine thrust vector deviations
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Measuring coplanarity of surfaces

DIRECTORS (ANTENNA ELEMENTS)

Antenna configurations provide polarization diversity
GSFC-74  B66-10066  01

Low-loss C-band parasitic probe
KSC-09348  B69-10251  01

DISCHARGE

Auxiliary silver electrode eliminates two-step voltage discharge characteristic of silver-zinc cells
GSFC-169  B64-10114  01

Segmented electrode increases operating pressure of NBB accelerator
LANGBT-95  B65-10356  02

High voltage pulse generator
KSC-12178  B69-10548  01

DISCHARGE COEFFICIENT

Analysis of annular combustors
LEWIS-10399  B68-10356  06

DISCOLORATION

Silver-base tertiary alloy proves superior for slip ring lead wires
N-PS-1540  B66-10540  03

Inhibition of browning in foodstuffs
KSC-10177  B69-10493  04

DISCONNECT DEVICES

Sleeve and cutter simplify disconnecting welded joint in tubing
JPL-380  B63-10240  05

Special pliers connect hose containing liquid under pressure
JPL-IT-1003  B63-10291  05

Circuit reliability boosted by soldering pins of disconnect plugs to sockets
JPL-447  B64-10002  01

Device disconnects several couplings simultaneously
JPL-226  B65-10163  05

Improved tool easily removes brazed tube connectors
MSC-263  B66-10003  05

Remotely controlled system couples and decouples large diameter pipes
HU-0962  B66-10276  05

Pneumatic separator gives quick release to heavy loads
KSC-66-10  B69-10294  05

Lock-disconnect mechanism gives positive release to joined bodies
N-PS-2147  B67-10123  05

Line adapter provides quick disconnect under moderate side loading
N-PS-2159  B67-10256  05

Deconnect mechanism
N-PS-12966  B67-10670  05

Remotely operated grip provides vertical control rod movement
ARG-10160  B66-10359  05

Pyrotechnic-actuated cable release
WNP-10849  B66-10535  05

Connect-disconnect coupling for preadjusted rigid shafts
MSC-15470  B69-10375  05

DIRECTIVITY

Measuring coplanarity of surfaces

SUBJECT INDEX

BSC-12044  B67-10371  02

Measurement technique for the determination of antenna directivity
N-PS-12799  B69-10677  01

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MSC-93  B64-10258  01
Pneumotachometer counts respiration rate of human subject
MSC-92  B64-10259  01
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MSC-108  B65-10003  05
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MSC-125  B65-10030  01
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EQ-57
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H-PS-1819
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B67-10041 01

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MSC-647
B67-10120 02

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GSPC-551
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image sensor transfer characteristic
HPO-10164
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NUC-10044
B67-10222 06

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KSC-10073
B67-10240 06

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MSC-1045
B67-10248 01

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B67-10249 01

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of pressure transducers from 0 to 1050 psi
NUC-10067
B67-10263 01

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ARG-158
B67-10312 03

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KSC-10058
B67-10361 01

System automatically provides dynamic
launch decision criteria
H-PS-13063
B67-10363 01

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H-PS-13866
B67-10492 06

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B67-10568 06

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failure in servo system testing
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B69-10247 01

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KSC-10209
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DISPOSAL

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electrocardiography in expendable
MSC-299
B66-10118 04

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GSPC-356
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Uranium isotopes quantitatively determined
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Transplutonium elements processed from
rock debris of underground detonations
ARG-10222
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ARG-10424
B69-10412 03

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ARG-10347
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Device separates hydrogen from solution in
water at ambient temperatures
MSC-13335
B69-10635 03

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of graphs
LNVIS-92
B66-10302 05

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ARG-216
B67-10477 02

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precise tolerances
H-PS-553
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| Modified power tool rapidly drives series torque bolts | B66-10054 05 |
| Instrument quickly transposes ground reference target to eye level | B66-10061 05 |
| FORTRAN program flow chart is automatically produced | B66-10062 01 |
| Modified soldering iron speeds cutting of synthetic materials | B66-10246 05 |
| Vibrator improves spark erosion cutting process | B66-10333 01 |
| Brushless dc motor has high efficiency, long life | |
| **ELASTIC DEFORMATION** | |
| Supervisor, plate eliminates undesired arcing during electron beam welding | B66-10357 05 |
| Special tool kit aids heavily garmented workers | B66-10403 05 |
| Chemical regeneration of emitter surface increases thermionic diode life | B66-10435 02 |
| Aspirator increases relief valve poppet stroke | B67-10154 05 |
| Wideband, high efficiency optical modulator requires less than 10 watts drive power | B67-10289 01 |
| Large volume continuous counterflow dialyzer has high efficiency | B67-10395 04 |
| Computer program for antenna feed system design and analysis | B67-10504 06 |
| Full wave ac-to-dc converter using energy storage transformers | B69-10140 01 |
| A positive taper traveling-wave tube | B69-10407 01 |
| Fluid sample collection and storage device | B69-10816 05 |
| **EIGENVALUES** | |
| Controllability of distributed-parameter systems | B68-10346 02 |
| Buckling of Shells of Revolution /BOSOR/ with various wall constructions | B67-10300 06 |
| **EIGENVECTORS** | |
| Controllability of distributed-parameter systems | B68-10346 02 |
| Structure of the isotropic transport operators in three independent space variables | B69-10448 06 |
| **EJECTION** | |
| Lathe chuck key incorporates safety feature | B66-10243 05 |
| **EJECTORS** | |
| Air sampler collects and protects minute particles | B67-10661 01 |
| **ELASTIC BENDING** | |
| Tool forms right angles in component leads | B66-10346 05 |
| **ELASTIC BODIES** | |
| Elastic guides reduce hysteresis effect in Belleville spring package | B67-10011 05 |
| **ELASTIC CYLINDERS** | |
| Damping of thermoelastic structures | B69-10467 02 |
| **ELASTIC DEFORMATION** | |
| Testing device subjects elastic materials to biaxial deformations | B65-10189 03 |
| Study of dynamic response of elastic space stations | B67-10169 06 |

**I-187**
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

Pressure transducer 3/8-inch in size can be faired into surface
WGO-005 B64-10621 05

Valve designed with elastic seat
JPL-902 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 B66-10021 05

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
HG-10039 B69-10147 03

Optimum structural design based on reliability and proof-load testing
WFO-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-10141 B67-10572 03

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-1096 B66-10681 03

ELASTIC SYSTEMS

Rigid-body motion extracted from total motion of a flexible body
ARC-63 B67-10081 05

ELASTIC WAVES

Unmanned seismometer levels self, corrects drift errors
GSFC-100 B63-10553 01

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers
NUC-10024 B67-10664 05

SUBJECT INDEX

ELASTOSTRUCTUREMECHANICS

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 flow
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-904 B64-10084 05

Elastomers bonded to metal surfaces seal high-temperature chemical 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
WFO-10123 B67-10207 04

Compressible sleeve provides automatic centering for grinding or turning of cylinders
SAN-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
MSC-15372 B69-10519 05

Development of improved potting and conformal coating compounds
M-FS-20215 B69-10559 03
Silphenylene elastomers have high thermal stability and tensile strength
M-PS-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-PS-14962 B69-10636 03

ELCETRIC ARCS

Electropneumatic rheostat regulates high current
ARC-44 865-10299

Ring counter circuit switches multiphase motor direction of rotation
JPL-SC-166 B66-10101 01

Electric arc heater is self starting
LANGLEY-208 866-10184

Magnetically operated limit switch has improved reliability, minimizes arcing
MSC-422 B66-10270 01

Suppressor plate eliminates undesired arcing during electron beam welding
M-PS-1126 B66-10357 05

Cryogenic cooling reduces high voltage arcing between electrodes operating in a vacuum
ANG-102 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 nonarcng electrical connector
M-PS-14937 B68-10404 01

Testing the flammability of materials exposed to arcs
MSC-15225 B69-10531 03

ELCETRIC BATTERIES

Pressure sensor responds only to shock wave
M-PS-238 B65-10184 01

Electronic ampere-hour integrator is accurate to one percent
GSPC-203 B65-10308 01

New energy storage concept uses tapes
LEWIS-239 B66-10098 02

Modular Porous Plate Sublimator (MPS) requires only water supply for coolant
M-PS-1374 B66-10409 01

Circuit prevents overcharging of secondary cell batteries
GSPC-458 B66-10492 01

Thermocouples electrically checked while connected to data system
LANGLEY-182 B66-10623 01

Low input voltage converter/regulator minimizes external disturbances
GSPC-527 B66-10689 01

Converter provides constant electrical power at various output voltages
GSPC-519 B67-10481 01

Improved calorimeter provides accurate thermal measurements of space batteries
GSPC-100018 B67-10615 01

Zinc-oxygen primary cell yields high energy density

ELECTRIC BRIDGES

Recharge unit provides for optimum recharging of battery cells
GSPC-10688 B68-10273 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-activated 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-10759 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

Iosone membrane battery separator
NFO-11091 B69-10501 03

Load current sensor for a pulse width modulator power regulator
GSPC-10656 B69-10578 01

Flexible high-voltage supply for experimental electron microscope
ANG-10482 B69-10603 01

Pocket-sized tone-modulated PM transmitter
NFO-11180 B69-10725 01

A simple electrometer for measuring small photoelectric currents
GSPC-10603 B69-10734 01

ELECTRIC BRIDGES

Simple circuit provides adjustable voltage with linear temperature variation
JPL-W00-029 B63-10537 01

Electronic modules easily separated from heat sink
MSC-142 B65-10186 02

Thermocouple-to-instrumentation connector features quick assembly
M-PS-0022 B65-10246 05

Coaxial capacitor used to determine fluid density
LEWIS-232 B65-10296 02

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSPC-422 B66-10051 01

Strain gage network distinguishes between thermal and mechanical deformations
GSPC-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-PS-848 B66-10397 01

High voltage potential divider calibrated by simple device
ANG-83 B66-10497 01

Magnetoresistor monitors relay performance
M-PS-1754 B66-10650 01
Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Double emitter suppressed carrier modulator uses commercially available components
M-FS-2494 B67-10101 01

Sensitive bridge circuit measures conductance of low-conductivity electrolyte solutions
ARC-147 B67-10294 01

Ultraminiature manometer-tipped cardiac catheter
ARC-10054 B66-10669 01

Precision bolometer bridge
NSC-11473 B66-10156 01

Ratio matching of half-bridge weldable strain gages, computer program
FRC-10032 B69-10040 06

Exploding bridgewire detonator simulator
M-FS-02191 B66-10782 01

ELECTRIC CHARGE

Efficient circuit triggers high-current, high-voltage pulses
MSC-14 B64-10024 01

Large capacitor performs as a distributed parameter pulse line
LEWIS-176 B66-10291 01

Hermetically sealed cells protected from internal gas pressure
GSFC-555 B66-10692 01

Recharge unit provides for optimum recharging of battery cells
GSFC-10668 B66-10273 01

Charge control of nickel-cadmium batteries by coilometer and third electrode method
GSFC-10487 B66-10431 01

Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
KMP-09802 B69-10028 02

Electrochemical sintering process for producing electrodes from cadmium felt and a nickel or silver grid
GSFC-10764 B69-10227 05

Cobalt improves nickel hydroxide electrodes for batteries
LEWIS-10760 B69-10228 01

Improved anode design for metal-oxygen cells
LEWIS-10871 B69-10318 01

Battery charge-discharge controller
MSC-11836 B66-10747 01

ELECTRIC CROPPERS

Improved chopper circuit uses parallel transistors
M-FS-468 B66-10113 01

Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Double emitter suppressed carrier modulator uses commercially available components
M-FS-2494 B67-10101 01

Modified univibrator compensates for output timing errors
ARG-85 B67-10130 01

Improved television signal processing system
NFO-10140 B67-10246 01

Vibrator elapsed time is automatically controlled
M-FS-2573 B67-10284 01

Thermonic diode switching has high temperature application
NFO-10404 B67-10672 01

Improved relay optical element for spectroradiometer using cryogenically cooled detector
MSC-11688 B68-10245 02

High-efficiency step-up regulator
M-FS-20049 B68-10432 01

ELECTRIC COILS

Device measures fluid drag on test vehicles
LANGLET-34 B65-10195 01

Improved tool easily removes brazed tube connectors
MSC-263 B66-10003 05

Noncontacting transducer measures shaft torque
NFO-474 B66-10048 01

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSFC-622 B66-10051 01

Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055 05

Auxiliary coil controls temperature of RF induction heater
GSFC-928 B66-10067 01

Thermal motor positions magnetometer sensors
ARC-51 B66-10078 05

Soldering tool heats workpieces and applies solder in one operation
LEWIS-247 B66-10115 05

Gas-injection valve operates at high speed
E-99 B66-10381 05

Inductive system detects level of conducting fluids
LEWIS-322 B66-10392 01

RF inductor has high Q, is stable at higher temperatures
JPL-1019 B67-10106 01

High-energy-rate magnetohydraulic metal forming system
M-FS-2142 B67-10126 02

Solenoid valve design has one moving part
NFO-10039 B67-10219 05

Low speed, long term tracking electric drive system has zero backlash
NFO-10173 B67-10220 01

An improved nuclear magnetic resonance spectrometer
JPL-762 B67-10234 01

Systen precisely controls oscillation of vibrating mass
M-FS-1875 B67-10276 01

Electron beam deflected to determine focal point location
M-FS-14107 B67-10649 01

Nonreciprocal gain control for ring laser
M-FS-14041 B67-10653 02

ELECTRIC CONDUCTORS

Removable preheater elements improve oxide induction furnace
JPL-288 B63-10193 01

Cooling method prolongs life of hot-wire
transducer  LEWIS-41  B63-10344  02

Metals plated on fluorocarbon polymers  JPL-544  B63-10612  03

Improved electrode gives high-quality biological recordings  MSC-17  B64-10025  04

Mounting for diodes provides efficient heat sink  N-PS-197  B64-10283  01

Coating method enables low-temperature brazing of stainless steel  NB-0030  B65-10250  03

Direct force-measuring transducer used in blood pressure research  ABC-53  B65-10325  01

Vacuum chamber provides improved insulation and support for cryostat  N-PS-415  B65-10368  02

Three-dimensional wire-mesh capacitor system measures fluid density  WOO-194  B65-10379  01

Special tool seals conductors with combination of plastic sleeves  M-PS-579  B66-10209  05

Electrically conductive fibers thermally isolate temperature sensor  GSFC-856  B66-10349  01

Electrical cabling withstands severe environmental conditions  M-PS-1955  B66-10827  01

Tungsten fiber-reinforced copper composites form high strength electrical conductors  LEWIS-338  B66-10572  03

Logic circuitry used to automatically test shielded cables  HQ-60  B66-10659  01

Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables  MU-0083  B66-10704  05

Substituting gold for silver improves electrical connections  M-PS-2390  B67-10228  03

Tester automatically checks insulation of individual conductors in multiple-strand cables  WCC-10668  B67-10260  01

Precision capacitor has improved temperature and operational stability  ARQ-169  B67-10313  01

Protected, high-temperature connecting cable  LEWIS-10449  B67-10461  01

Composite solar cell matrix is reliable, lightweight and flexible  MFO-10821  B67-10503  01

Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area  NUC-10007  B67-10538  01

Areas of irregular, discontinuous patterns rapidly and accurately measured  GSFC-10184  B67-10674  01

Multichannel wireway adapter box  MSC-90645  B68-10052  05

Inspection criteria ensure quality control of parallel gap soldering  N-PS-18530  B68-10257  05

Möbius resistor is noninductive and nonreactive  SAR-10020  B68-10267  01

Concept to convert electrical power  GSFC-10222  B68-10321  01

Rater of electrical wires in vacuum environments  MSC-15508  B68-10362  01

Contact-spring forming machine for flat conductor cable receptacles  N-PS-20126  B68-10550  05

Simple switch actuated by force applied over wide solid angle  INF-09808  B69-10032  01

Corrosion protection of aluminum alloys in contact with other metals  N-PS-18526  B69-10098  03

ELECTRIC CONNECTORS

Modular chassis simplifies packaging and interconnecting of circuit boards  JPL-236A  B63-10174  01

Connector for thermocouple leads saves costly wire, makes reliable connectors  LANGley-26  B63-10529  01

Plastic molds reduce cost of encapsulating electric cable connectors  M-PS-69  B63-10568  05

Circuit reliability boosted by soldering pins of disconnection plugs to sockets  JPL-447  B64-10002  01

Continuity tester screens out faulty socket connections  JPL-596  B64-10065  01

Improved technique for localizing electropolishing features novel nozzles  WOO-101  B64-10271  01

Photoelectric semiconductor switch operates with low level inputs  JPL-SC-066  B65-10033  01

Piezoresistive gage tests pin-connector sockets  JPL-675  B65-10128  01

Inexpensive electrical connector is moisture and corrosion-proof  MSC-164  B65-10196  01

Electrical cable connector-clamp has smooth exterior surface  MSC-154  B65-10201  05

Indexing device ensures proper mating of electrical connectors  MSC-155  B65-10263  01

Feed-through connector withstands high temperatures in vacuum environment  GSFC-842  B65-10328  01

Floating device aligns blind connections  MSC-256  B66-10007  05

Single connector provides safety fuses for multiple lines  MSC-199  B66-10050  01

High-pressure, low temperature electrical connector makes no-leak seal  MSC-276  B66-10079  02

Soldering tool heats workpieces and applies solder in one operation.

I-191
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

Plug-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

ELECTRIC CONTACTS

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

ELECTRIC CONTACTS

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

I-192
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-W210 05

Continuous wave detector has wide frequency range
M-PS-1849 B67-10386 01

Technique eliminates high voltage arcing at electrode-insulator contact area
LEWIS-10133 B67-10470 01

Capacitance-coupled wiper increases potentiometer life
ARC-10060 B68-10175 01

Vibration testing and dynamic studies of relays
M-PS-14542 B68-10268 01

System measures arc energy dissipated in relay contact cycling
M-PS-14541 B68-10312 01

Contact-spring forming machine for flat conductor cable receptacles
M-PS-20126 B68-10550 05

Gage provides audible signal to facilitate check of connector pins
ESC-10335 B69-10173 01

Masking of aluminum surface against anodizing
M-PS-12964 B69-10335 05

Temperature-controlled resistor
MFO-10713 B69-10440 01

An electrical connector pin protector
MSC-15660 B69-10742 01

ELECTRIC CONTROL

Binary counter accumulates time by complementary preset
MSC-242 B65-10399 01

Thermal motor positions magnetometer sensors
ARC-51 B66-10078 05

Electrostatically controlled optical latch and switch requires less current
JPL-SC-111 B66-10414 01

Nonreciprocal gain control for ring laser
E-PS-14041 B67-10653 02

Low-cost, fast-response drive circuit for electromagnetic torque motors
LEWIS-10143 B68-10386 01

ELECTRIC CORONA

Toroidal ring prevents gas ignition at vent stack outlet
M-PS-2042 B67-10098 05

ELECTRIC CURRENT

Liquid switch is remotely operated by low dc voltage
GSFC-119 B63-10599 01

Field-effect transistor improves electrometer amplifier
ARC-36 B64-10143 01

Pickup device reads pressures from ports in rotating mechanisms
LEWIS-158 B65-10021 05

Laser beam transmits electric power
GSFC-293 B65-10158 01

Sensitive electrometer features digital output
GSFC-288 B65-10206 01

Detector circuit compensates for vidicon beam current variations
GSFC-310 B65-10212 01

Multispectral analyzer detects low-energy electrons
GSFC-329 B65-10213 01

Electrical probe ensures reliable contact in socket
M-PS-315 B65-10215 01

One-shot valve may be remotely actuated
WOO-195 B65-10266 05

Circuit exhibits power efficiency greater than 75 percent
MSC-254 B66-10046 01

Lamp automatically switches to new filament on burnout
I-FS-498 B66-10046 01

System measures arc energy dissipated in relay contact cycling
I-PS-14541 B68-10312 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 B66-10168 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
E-SC-781 B66-10429 01

Triphase spark gap actsuates overvoltage relay
ARC-68 B66-10557 01

Electronic circuit provides accurate sensing and control of dc voltage
ND-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
E-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
ND-0087 B66-10706 01

Resistance heating releases structural
adhesive  
N-FS-1607  B67-10045  05

Clamp provides efficient connection for high-density currents 
N-FS-2477  B67-10140  01

Solenoid valve design has one moving part  
NP-10239  B67-10219  05

Primary cell uses neither liquid nor fused electrolytes  
WPO-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  
ARG-163  B67-10311  01

Electronic test instrument generates extremely small current signals  
ARG-276  B67-10318  01

General purpose computer programs for numerically analyzing linear ac electrical and electronic circuits for steady-state conditions  
N-FS-13094  B67-10331  06

Braze joint quality tested electromagnetically  
N-FS-12795  B67-10333  01

Field effect transistors improve buffer amplifier  
N-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 K/ 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  
ARC-10031  B68-10350  01

Nondestructive test determines overload destruction characteristics of current limiter fuses  
EGS-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  
N-FS-05766  B69-10120  01

Integrated circuit with multiple collector current source  
N-FS-20177  B65-10126  01

Technical report on galvanic cells with fused-salt electrolytes  
ARG-10297  B65-10155  01

Magnetohydrodynamic generators using two-phase liquid-metal flows  
ARG-10168  B65-10162  01

Nondestructive evaluation of printed wiring boards by microhm resistance measurements  
SAN-10034  B65-10272  01

Preparation of superconducting thin films of transition-metal interstitial compounds  
HG-10445  B65-10470  01

Analysis of cell performance and thermal regeneration of a lithium-tin cell having an immobilized fused-salt electrolyte  
ARG-10453  B65-10627  03

Self-discharge in bimetallic cells containing alkali metal  
ARG-10347  B65-10631  01

Battery charge-discharge controller  
MSC-11636  B65-10747  01

ELECTRIC DISCHARGES

Reference black body is compact, convenient to use  
ARC-3  B63-10004  03

Regenerative fuel cell combines high efficiency with low cost  
WCO-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  
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JPL-757

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NPO-10142

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- Nondestructive testing of welds on thin-walled tubing
- Use of medical and dental X-ray equipment for nondestructive testing

ELECTRICAL IMPEDANCE

- Double-throw microwave device switches two lines quickly
- Circuit switches latching relay in response to signals of different polarity
- Unijunction frequency divider is free of backward loading

ELECTRICAL INSULATION

- Radiant heater for vacuum furnaces offers high structural rigidity, low heat loss
- New apparatus increases ion beam power density
- Connector for thermocouple leads saves costly wire, makes reliable connections

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- New electrical plethysmograph monitors cardiac output
- Locating sneak paths in electrical circuitry
- One hundred MHz voltage-controlled oscillator
- Quality-weld parameters for microwelding techniques and equipment
- Field Effect Transistor (FET) circuit for variable gain amplifiers
- Energy-storage of a prescribed impedance
- Ionene membrane battery separator

- Simplified electrometer has excellent operating characteristics
- Field effect transistor presents high input impedance in ac amplifier
- Complementary monostable circuits achieve low power drain and high reliability
- FET comparator detects analog signal levels without loading analog device

- Simple circuit provides reliable multiple signal average and reject capability
- Large capacitor performs as a distributed parameter pulse line
- Simple, nondestructive test identifies metals
- Microphone multiplex system provides multiple outputs from single source
- Feedback loop compensates for rectifier nonlinearity
- Video signal processing system uses gated current mode switches to perform high speed multiplication and digital-to-analog conversion
- Amplifier provides dual outputs from a single source with complete isolation

- An efficient, temperature-compensated subcarrier oscillator
- Analog buffer isolates high impedance source from low impedance load
- Multipulse current source offers low power losses and high reliability
- Bilateral, zero-impedance static semiconductor switch

- Efficient thin film heating element takes up minimum space
- Simple device produces accelerometer calibration pulse
- Ceramic materials purified by experimental method
- Boron nitride housing cools transistors
- Reflective insulator layers separated by bonded silica beads
- Mounting improves heat-sink contact with beryllia washer

- Special tool seals conductors with combination of plastic sleeves
- Electric arc heater in self starting
- Rugged microelectronic module package supports circuitry on heat sink
- Multiple temperatures sampled using only one reference junction

- Electrical cabling withstands severe
environmental conditions

Rubber and alumina gaskets retain vacuum seal in high temperature EMF cell

Non-electrolytic tantalum capacitors developed

Thermocouple-flexible cable connector insulator is highly reliable

Feed-through connector couples RF power into vacuum chamber

RF inductor has high Q, is stable at higher temperatures

Evaluation of high temperature stranded hookup wire

Cracks in glass electrical connector headers removed by dry blasting with fine abrasive

X-ray source uses interchangeable target anodes to vary X-ray wavelength

Testers automatically checks insulation of individual conductors in multiple-strand cables

Protected, high-temperature connecting cable

Composite solar cell matrix is reliable, lightweight and flexible

Flame sprayed dielectric coatings improve heat dissipation in electronic packaging

Eutectic fuse provides current and thermal protection under high vibration

Vapor deposition process provides new method for fabricating high temperature thermocouples

Conceptual apparatus for detecting leaks of non-conductive liquids

Temperature or pressure controller

Gage measures total radiation, including vacuum UV, from ionized high-temperature gases

Refractory oxide insulated thermocouple designed and analyzed for high temperature applications

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Improved insertion-loss tester

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Recharge unit provides for optimum recharging of battery cells

Nondestructive test determines overload destruction characteristics of current limiters

Electro motive series established for metals used in aerospace technology

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Electrical Resistance

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PTC thermistor protects multiloade power supplies

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Portable lightweight cell provides controlled environment

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**FUNCTION GENERATORS**

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Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735

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- Submicroaritized gas chromatograph gives fast, efficient analysis
- Sniffer used as portable hydrogen leak detector
- Portable detector set discloses helium leak rates
- Portable fixture facilitates pressure testing of instrumentation fittings
- Quartz crystals detect gas contaminants during vacuum chamber evacuation
- New shield for gamma-ray spectroscopy

GAS DISCHARGE TUBES

- Neon isotopes cancel errors in gas laser
- Design concepts using ring lasers for frequency stabilization
- Uranium isotopes quantitatively determined by modified method of atomic absorption spectrophotometry

GAS DISCHARGES

- Concept for cryogenic liquid reclamation system
- Two-fluid, impinging-sheet injector
- Axiallymetric two-phase perfect gas performance program
- Rapid-response, light-exposure control system

GAS DYNAMICS

- Advances in light-gas gun technology
- Computer simulation of high-frequency combustion instability and its suppression

GAS EVOLUTION

- Plated nickel wire mesh makes superior catalyst bed
- A method for observing gas evolution during plastic laminate cure

GAS EXPANSION

- Splice plate design assures structural separation by mild explosive
- Volume-ratio calibration system for vacuum gages

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SUBJECT INDEX

- Thermodynamic properties related to expansion of two-component gas
- Development of detonation reaction engine
- Axiallymetric two-phase perfect gas performance program
- One-dimensional two-phase reacting gas nonequilibrium performance program
- Liquid-metal-piston NED generator

GAS EXPLOSIONS

- Test instrumentation evaluates electrostatic hazards in fluid system

GAS FLOW

- Elastic orifice automatically regulates gas bearings
- High-pressure regulating system prevents pressure surges
- Low-cost insulation system for cryostats eliminates need for a vacuum container
- Connector for vacuum-jacketed lines cuts tubing system cost
- Fine-particle filter prevents damage to vacuum pumps
- Miniature oxygen-hydrogen cutting torch constructed from hypodermic needle

GAS SOURCES

- Modified gas bearing is adjustable to optimum stiffness ratio
- Blade valve isolates compartment in pipe, opens to allow free flow
- Apparatus measures concentration of suspended droplets in gas streams
- Slit feeds reduce unbalanced torques in gas-lubricated bearings

GAS DETECTORS

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Lamp enables measurement of oxygen concentration in presence of water vapor

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Thermodynamic properties related to expansion of two-component gas

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Hydrogen laser as a highly stable frequency reference

An improved atomic hydrogen frequency and time standard

A radiometer-pyrometer

A radiometer-pyrolyzer

Rapid helium-air analyzer can measure other binary gas mixtures

Submicron holes in thin films increase sampling range of mass spectrometers

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GAS LIQUID INTERACTIONS

GAS LIQUEFIED GAS BEARINGS

GAS METERS

GAS MIXERS

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Fluiddic-thermochromic display device

Circuitry selectively limits data storage in general purpose computer

Multichannel analyzers at high rates of input

Linear voltage-to-frequency converter

An electronic circuit for sensing malfunctions in test instrumentation

Automatic tuning of hydrogen masers

Simplified, reliable circuit sorts binary numbers in order of magnitude

Pulse-code-modulation baseline correction for low signal-to-noise ratio

GATEs (OPENINGS)

Gate value with ceramic-coated base operates at high temperatures

Low-power transistorized circuit provides staircase waveform

GAUSS EQUATION

Computer program VARI QUIR 3 provides solution of steady-state, multigroup, two-dimensional neutron diffusion equations

Conditioning of pulses from aerosol-particle detectors

GEAR

Chain friction system gives positive, reversible drive

Self-lubricating gear

GEAR TEETH

Device measures curved surface finish on gear teeth

Rotating filters permit wide range of optical pyrometry

Unique gear design provides self-lubrication

Gear drive automatically indexes rotary table

GEARS

Shock absorber protects motive components against overloads

Bidirectional torque filter eliminates backlash

Hydraulic drive system prevents backlash

Unique gear design provides self-lubrication

SUBJECT INDEX

Torque wrench designed for restricted areas

Modified power tool rapidly drives series torque bolts

Sun-in with chemical additive protects gear surface

Intermediate rotating ring improves reliability of dynamic shaft seal

Compact actuator converts rotary to linear motion

Gear drive automatically indexes rotary table

Concept of planetary gear system to control fluid mixture ratio

Positive displacement cylinder measures corrosive liquid volume

Fluid logic control circuit operates nutator actuator sotor

Holc saw drill attachment has zero force reaction

Welding torch and wire feed manipulator

Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates

Improved control system power unit for large parachutes

Electromechanical rotary actuator operates over wide temperature range

Magnetron tuner has locking feature

Diffusion bond method of jointing steel and a TFS-bronze composite

Precise gimbaling mechanism

Automatic leveling and equalizing hoist device

Improved camera for better X-ray powder photographs

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Automatic bird watcher

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GELATINS

Gelatin coated electrodes allow prolonged bioelectronic measurements

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Wedge immersed thermistor bolometer measures infrared radiation
GSPC-440 B65-10350 02

Mount makes liquid nitrogen-cooled gamma-ray detector portable
LEWIS-259 B66-10130 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
M-JS-13373 B67-10422 01

Feasibility study of wireless power transmission systems
M-JS-14691 B68-10309 01

Hydrogen peroxide etching proves useful for germanium
ARG-10770 B68-10458 03

Electron beam recrystallization of amorphous semiconductor materials
LEWIS-10446 B68-10556 02

Calibration of a resistance thermometer down to 0.01 degrees K
ARG-10318 B69-10149 01

Multichannel analyzers at high rates of input
ARG-10355 B69-10214 02

Method for copper staining of germanium crystals
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M-FS-856 B66-10327 03

Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel

MDC-10008 B67-10539 05

One-piece transparent shell improves design of helmet assembly

MSC-187 B66-10390 05

Panels illuminated by edge-lighted lens technique

MSC-671 B66-10507 02

Antiglare improvement for optical imaging systems

NPO-10337 B68-10090 02

Multiple test tubes stirred mechanically

ARC-42 B65-10120 01

In-transmission glasses formed from oxides of bismuth and tellurium

M-PS-279 B65-10190 03

Thin transparent films formed from powdered glass

GSFC-352 B65-10217 03

Angular glass tubing drawn from round tubing

BG-20 B65-10235 05

Porous glass makes effective substrate for ozone-sensing 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-PS-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

HGO-169 B66-10196 03

Improved thermal insulation materials made of foamed refractory oxides

M-PS-735 B66-10288 03

Special treatment reduces helium permeation of glass in vacuum systems

BG-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 B67-10148 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 microscopy chamber and microsyringe designs allow more efficient micro manipulations

ARG-251 B67-10305 04

Heat-shrink plastic tubing seals joints in glass tubing

LEWIS-10329 B68-10040 05

Glassy materials investigated for nuclear reactor applications

ARC-10075 B66-10101 03

Multichip packaging with thermal insulation

M-PS-14576 B66-10119 02

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SAN-10012 B68-10204 03

Inspection criteria ensure quality control of parallel gap soldering

M-PS-14536 B66-10257 05

Thermal protective visor for entering high temperature areas

MSC-10285 B68-10277 05

Optimetric system facilitates colorimetric and fluorometric measurements

NPO-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

M-PS-14836 B68-10351 03

High dielectric thick films for screened circuit capacitors

LANGLEY-10298 B68-10542 01

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NPO-11155 B68-10218 01

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NPO-10682 B68-10332 02

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LEWIS-10106 B68-10215 03

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Flexible curtain shields equipment from intense heat fluxes

Fiber glass parts cured during filament winding eliminates oven, saves time

Fiber glass dies speed forming of large metal sheets

Adhesive-backed terminal board eliminates mounting screws

Aluminized fiberglass insulation conforms to curved surfaces

Spray-on technique simplifies fabrication of complex thermal insulation blanket

Hydrogen-atmosphere induction furnace has increased temperature range

Reflective insulator layers separated by bonded silica beads

Polytetrafluoroethylene lubricates ball bearings in vacuum environment

Nylon bit removes cork insulation without damage to substrate

Insulation for cryogenic tanks has reduced thickness and weight

Fiberglass container shells form contamination-free storage units

Stripppable grid facilitates removal of grid-surfaced conical workpiece from die

Inexpensive insulation is effective for cryogenic transfer lines

Composite gaskets are compatible with liquid oxygen, resist compression set

Electrical cabling withstands severe environmental conditions

Study made to control depth of potting compound for honeycomb sandwich fasteners

Nonwoven glass fiber mat reinforces polyurethane adhesive

Inexpensive cryogenic insulation replaces vacuum jacketed line

Liquid crystals detect voids in fiber glass laminates

Improved compression molding process

Jacketed cryogenic piping is stress relieved

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Improved compression molding process LANGLEY-10027

Jacketed cryogenic piping is stress relieved

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Thermocompression bonding produces efficient
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JPL-SC-066 B65-10007 05
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JPL-SC-117 B66-10366 05
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N-FS-14656 B68-10263 01
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NPO-10233 B68-10316 01
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GSFC-394 B65-10298 01
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MSC-216 B65-10321 03
Heat flux sensor design reduces extraneous
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MSC-800 B66-10531 01
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N-FS-2519 B67-10211 05
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Computer program reduces and provides profile plot of surface plate calibration data  
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I-FS-486 B66-10211 05

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I-301
HEAT TRANSFER COEFFICIENTS

- Cooling of 2 kW H fuel cells
- Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
- Instabilities encountered during heat transfer to a supercritical fluid
- Propagation of density disturbances in air-water flow
- Abrasion and resistant discharge valve developed
- Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes
- Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated
- Experimental prediction of performance by superconducting cables
- Effect of interparticle forces on the fluidization of fine particles
- Ultra-high-flux heat exchanger
- Improved liquid-level sensor for cryogenics
- Thermophysical properties of sodium
- Method for predicting pump cavitation performance
- A comparison of two methods of measuring particle size of Al2O3 produced by a small rocket motor
- Design of multilayer insulation systems
- New type pressure transducer for severe thermal environments
- Engineering thermal analyzer /BETA 2/

HEAT TRANSFER COEFFICIENTS

- Thin-film gage measures low heat-transfer rates
- Wide-range instrument monitors flow rates of chemically active fluids
- Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures
- Computer program calculates steady-state temperature distribution within plane or axisymmetric solids

CINDA - Chrysler Improved Numerical

SUBJECT INDEX

- Differencing Analyzer computer program
- Evaluation of superconducting magnets, a study
- Heat transfer coefficients for liquid hydrogen turbopumps
- Monte Carlo direct view factor and generalized radiative heat transfer programs
- Instabilities encountered during heat transfer to a supercritical fluid
- Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated
- A method for predicting interfacial freezing of a liquid flowing over a cold surface
- Technique for predicting temperature distribution in gases
- Surface-renewal models for heat-transfer between walls and fluidized beds
- New computer program solves wide variety of heat flow problems
- Experiments to investigate particulate materials in reduced gravity fields
- Solution of differential equations by application of transformation groups
- Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction
- Solving nonlinear heat transfer constant area fin problems
- Fiber glass parts cured during filament winding eliminates oven, saves time

HEAT TRANSMISSION

- Electronic device simulates respiration rate and depth
- Servo calorimeter measures material heating rate
- Apparatus measures thermal conductivity of honeycomb-core panels
- New computer program solves wide variety of heat flow problems
- Experiments to investigate particulate materials in reduced gravity fields
- Solution of differential equations by application of transformation groups
- Dynamics of moving bubbles in single and binary component systems
- Computer program TRACK performs transient and/or steady state thermal analysis with coupled fluid flow and heat conduction
- Solving nonlinear heat transfer constant area fin problems
- Fiber glass parts cured during filament winding eliminates oven, saves time

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High permeability semiconductors permit close-tolerance soldering
GSPC-319 B65-10134 05

Coiled sheet metal strip opens into tubular configuration
GSPC-425 B66-10009 03

Assembly jig assures reliable solar cell modules
GSPC-455 B66-10040 05

Refactory coating protects intricate graphite elements from high-temperature hydrogen
M-PS-12141 B67-10341 05

Aluminum/steel wire composite plates exhibit high tensile strength
M-PS-401 B66-10262 05

High-speed furnace uses infrared radiation for controlled brazing
NO-0047 B66-10268 03

Aluminum core structures brazed without use of flux
GSPC-533 B66-10458 03

Special treatment reduces helium permeation of glass in vacuum systems
M-PS-1840 B66-10595 05

Heat-treatment of metal parts facilitated by sand embedment
M-PS-1543 B66-10613 05

Electroless nickel plating on stainless steels and aluminum
GSPC-533 B66-10479 03

Tensile and fatigue properties of Inconel 718 at cryogenic temperatures
M-PS-1831 B66-10689 03

Development of technology for hot-drape forming of large torus sections
M-PS-12141 B67-10341 05

Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures
NCC-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 B68-10029 03

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Weld microfinishing in Inconel 718 minimized by minor elements
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Pre-weld heat treatment improves welds in base 41
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Improved thermal treatment of aluminum alloy 7075
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SPAN C - Terminal sterilization process analysis program
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M-PS-20364 B68-10372 03

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MSC-15556 B69-10484 01

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ARG-10497 B69-10616 03

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Effects of high-pressure hydrogen on storage vessel materials
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Wire winding increases lifetime of oxide coated cathodes
LEWIS-154 B65-10032 03

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Self-actuating grapple automatically engages and releases loads from overhead cranes

**HELIUM**

Supercold technique duplicates magnetic field in second superconductor

Low-cost insulation system for cryostats eliminates need for a vacuum jacket

Rapid helium-air analyzer can measure other binary gas mixtures

Sensitive low-pressure relief valve has positive seating against leakage

Automatic thermal switch accelerates cooling-down of cryogenic system

Transmission system isolates pressure transducer from severe environment

Thin-film gage measures low heat-transfer rates

Insulation for cryogenic tanks has reduced thickness and weight

Expandable rubber plug seals openings for pressure testing

Brazing process using Al-Si filler alloy reliably bonds aluminum parts

Sniffer used as portable hydrogen leak detector

Special treatment reduces helium permeation of glass in vacuum systems

Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket

Large diameter metal ring seal prevents gas leakage at 5000 psig

Cold trap increases sensitivity of gas chromatograph

A continuously operating source of vacuum ultraviolet below 500 Angstrom

Resistor monitors transfer of liquid helium

Neon isotopes cancel errors in gas laser

Laser Doppler flowmeter measures gas velocity

Portable detector set discloses helium leak rates

Effects of helium and nitrogen as pressurants in nitrogen tetroxide transfer

Fixture facilitates helium leak testing of...
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**HEXAGONAL CELLS**

- Bearing alloys with hexagonal crystal structures provide improved friction and wear characteristics LEWIS-320 | B66-10373 03

**HIGH ACCELERATION**

- Improved holder protects crystal during high acceleration and impact JPL-463 | B65-10037 05
- Acceleration-compensated pressure transducer has fast response LANGLY-113 | B66-10353 01

**HIGH ALTITUDE BALLOONS**

- An improved magnetic tape recorder GSFC-08259 | B67-10646 01

**HIGH ALTITUDE TESTS**

- An improved magnetic tape recorder GSFC-08259 | B67-10646 01

**HIGH ASPECT RATIO**

- Wire material reduces compressor blade vibration LWIS-357 | B66-10666 03

**HIGH CURRENT**

- Superconductor magnets used for stagger-tuning traveling-wave maser GSFC-292 | B65-10165 01
- Electropneumatic rheostat regulates high current ARC-84 | B65-10299 01
- Niobium thin films are superconductive in strong magnetic fields at low temperatures JPL-SC-174 | B66-10122 02
- Mechanism facilitates coating of inner surfaces of metal cylinders GSFC-515 | B66-10698 05
- High-energy-rate magnetohydraulic metal forming system M-FS-2162 | B67-10126 02
- Clasp provides efficient connection for high-density currents M-FS-2417 | B67-10140 01
- Hybrid solid state switch replaces motor-driven power switch JPL-931 | B67-10165 01
- Eutectic fuse provides current and thermal protection under high vibration M-FS-13664 | B68-10535 01
- Thermionic diode switching has high temperature application BW-10404 | B67-10672 01
- Separation simulator ESC-67-15 | B69-10315 01
- Synchronous charge-constrained electroquasistatic generator SQ-10231 | B69-10861 01

**HIGH ENERGY ELECTRONS**

- Radiation used to temperature compensate semiconductor strain gages LANGLY-207 | B66-10186 02

**HIGH FREQUENCIES**

- Microwave technique measures plasma characteristics LANGLY-134 | B65-10122 02
- Increased junction lead inductance ballasts high-frequency transistors GSFC-387 | B65-10259 01
- Electrodeless discharge lamp is easily started, has high stability WOO-030 | B66-10015 01
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.
HSC-10055 B67-10347 01

Ultrasonic wrench produces leak tight 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-1010 B67-10399 01

Noahus resistor is noninductive and nonreactive.
SAM-1020 B68-10256 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-1034 B69-10256 03

Survey of man-made electrical noise affecting radio broadcasting.
HQ-1029 B69-10308 01

Self-shielding printed circuit boards for high frequency amplifiers and transmitters.
HQ-10433 B69-10314 01

Computer simulation of high-frequency combustion instability and its suppression.
HQ-10391 B69-10360 06

Improved ferrous shielding for flat cables.
M-PS-14524 B69-10401 01

Cryogenic flux-concentrator.
ARC-10494 B69-10654 02

HIGH GRAVITY ENVIRONMENTS

Modified algesimeter provides accurate depth measurements.
MSC-616 B66-10467 04

HIGH PASS FILTERS

High-pass RF coaxial filter rejects dc and low frequency signals.
GSC-197 B64-10173 03

Compensate microwave mixer has high conversion efficiency.
GSC-197 B66-10625 01

Study of optimum discrete estimators in measurement analysis.
MSC-1015 B66-10348 02

Design of dissipative linear phase filters.
MSC-14698 B67-10572 01

HIGH POLYMERS

Study of high-speed angular-contact ball bearings under dynamic load.
M-PS-20562 B67-10367 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 B65-10279 05

High-pressure, low temperature electrical connector makes no-leak seal.
MSC-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.
MSC-521 B66-10190 02

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.
MU-0062 B66-10276 05
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Special tool kit aids heavily garmented workers

A phonocardiogram simulator

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New nut and sleeve improve flared connections

Device disconnects several couplings simultaneously

New class of compounds have very low vapor pressures

Primary radical yields in pulse irradiated electromagnetic torque motors

Bodied hydraulic braking system limits angular deceleration to safe values
Quick-response servo amplifies small hydraulic pressure differences

Hydraulic fluid serves as mandrel for small diameter refractory tube drawing

Combination double door high-vacuum valve provides access to vacuum chamber

Orbital tube flaring system produces tubing connectors with zero leakage

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Single-source mechanical loading system produces biaxial stresses in cylinders

Metal tube reducer is inexpensive and simple to operate

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Improved solenoid valve design

Closed fluid system without moving parts controls temperature

Hydraulic fluid serves as mandrel for small diameter refractory tube drawing

Valve effectively controls amount of contaminant in flow stream

Hydraulic fluids Device disconnects several couplings simultaneously

Hydraulic fluids Closed fluid system without moving parts controls temperature

Hydraulic fluids Valve effectively controls amount of contaminant in flow stream

Hydraulic fluids Dual fluid system without moving parts controls temperature

Hydraulic fluids Single-source mechanical loading system produces biaxial stresses in cylinders

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Hydraulics Pressure molding of powdered materials improved by rubber mold insert

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Hydrazines Magnetic fluid readily controlled in zero gravity environment

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Addition of solid oxidizer increases liquid fuel specific impulse

Trace hydrazines in aqueous solutions accurately determined by gas chromatography

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Hydrocarbon fuels Test instrumentation evaluates electrostatic
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  - BIDBOCABBOBS SUBJECT
  - I-FS-2277

- Variable-temperature wall regulates temperatures of structures
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- 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
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- New class of thermosetting plastic has improved strength, thermal and chemical stability
  - LEWIS-10108

- Improved isocratic ion exchange membranes
  - LEWIS-10737

- Improved primer for bonding polyurethane adhesives to metals
  - B-P-90591

- Chromatographic detection and analysis of traces of hydrocarbons
  - KSC-10388

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- Solder flux leaves corrosion-resistant coating on metal
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- Modification increases light output of injection-luminescent diodes
  - B-P-192

- Gage of 6.5 per cent Si-Fe sheet is chemically reduced
  - KSC-537

- Zone purification of potassium chloride
  - NIE-10377

- Improved performance of Inconel X-750
  - N-P-18600

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- Spiral-grooved shaft seals substantially reduce leakage and wear
  - LEWIS-10397

- Hydrodynamics of a new concept of primary containment by energy absorption
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  - B-P-10461

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- Xenon fluoride solutions effective as fluorinating agents
  - NIE-217

- Copper and nickel adherently electroplated on titanium alloy
  - B-P-13952

- Transplutonium elements processed from rock debris of underground detonations
  - NIE-10222

- Improved nickel plating of Inconel X-750
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- Cryopumping of hydrogens in vacuum chambers is aided by catalytic oxidation of hydrogens
  - LEWIS-15

- Fuel cell serves as oxygen level detector
  - JPL-SC-072

- Impurity diffusion process for silicon semiconductors is fast and precise
  - GSFC-397

- Brazing method produces solid-solution bond between refractory metals
  - LEWIS-212

- Process reduces pore diameters to produce superior filters
  - WOO-093

- Oxygen-hydrogen torch is a small-scale steam generator
  - B-P-0042

- Dual regulator controls two gases from a single reference
  - MSC-227

- Liquid trap seals thermocouple leads
  - B-P-680

- Chromia oxide coatings improve thermal emissivity of alumina
  - WOO-263

- Boron-deoxidized copper withstands brazing temperatures
  - B-P-762

- Device removes hydrogen gas from enclosures
  - SFC-495

- Sniffer used as portable hydrogen leak detector
  - B-P-846

- Infrared television used to detect hydrogen fires
  - B-P-654

- Hydrogen fire detection system features sharp discrimination
  - B-P-643

- Auxiliary titanium sublimation pump produces ultrahigh pressure in vacuum chambers
  - LNGLY-212

- Large diameter metal ring seal prevents gas leakage at 5000 psi
  - B-P-1064

- Selective tube roughening increases heat transfer capability
  - B-P-599

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  - GSFC-555

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  - B-P-1913

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  - B-P-2417

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HYDROGEN PEROXIDE

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HYDROGEN PEROXIDE

Mineral oil impregnation of insulating material
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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
LANGLBY-10222  B69-10479  01

LASER MODES
Neon isotopes cancel errors in gas laser
M-FS-1476  B66-10583  02

Absolute frequency stabilization of laser oscillator against laser amplifier
M-FS-2559  B67-10255  01

LASER OUTPUTS
Design concepts using ring lasers for frequency stabilization
M-FS-2048  B67-10143  01

Absolute frequency stabilization of laser oscillator against laser amplifier
M-FS-2559  B67-10255  01

Laser system generates single-frequency light
M-FS-2556  B67-10288  02

Wideband, high efficiency optical modulator requires less than 10 watts drive power
M-FS-12733  B67-10653  02

Monopolar gain control for ring laser
M-FS-14041  B67-10653  02

Feasibility study of wireless power transmission systems
M-FS-14691  B68-10309  01

X-357
**LASERS**

Laser-Doppler gas-velocity instrument

M-PS-20039 B68-10349 02

Digital laser-beam deflection sensor

M-PS-14785 B68-10525 01

Optical frequency waveguide and ion transmission system

Hq-10541 B69-10746 01

Laser measuring system accurately locates point coordinates on photograph

ARG-74 B66-10560 02

Electrothermal linear actuator

130-10637 B69-10296 Laser communication system is insensitive to atmospherically induced noise

GSFC-10396 B67-10587 01

Flow tube used to cool solar-pumped laser

MSC-11026 B68-10010 02

Feasibility study of wireless power transmission systems

M-PS-14651 B68-10309 01

Improved electro-optical tracking system

M-PS-14791 B68-10311 01

Laser communication system is insensitive to atmospherically induced noise

GSFC-10396 B67-10587 01

Development of curie point switching for thin film, random access, memory device

NSO-10402 B67-10633 02

Electronic gating circuit and ultraviolet laser excitation permit improved dosimeter sensitivity

ARG-10109 B68-10077 02

Submicron holes in thin films increase sampling range of mass spectrometers

JPL-SC-097 B66-10380 03

Lateral ring metal elastic wheel absorbs shock loading

H-PS-1312 B66-10663 05

**SUBJECT INDEX**

Electrolytic separation of crystals of transition-metal oxides

ARG-10506 B69-10642 03

Fine-line sensitivity for holographic interferograms

EQ-10348 B69-10663 02

Long range holographic contour mapping concept

Hq-10350 B69-10700 02

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

Combined actuator and latch for cartridge powered actuator

MSC-11242 B67-10488 05

Optical superheterodyne receiver uses laser for local oscillator

M-FS-1605 B66-10584 01

Proposed method of rotary dynamic balancing by laser

H-PS-12422 B67-10452 02

Optical induced free carrier light modulator

GSFC-10216 B69-10114 01

Welding, brazing, and soldering handbook

M-PS-20504 B69-10264 05

Laser action from a terbium beta-ketoenolate at room temperature

GSFC-10593 B69-10324 02

Laser interferometer micrometer system

M-PS-14747 B69-10633 02
LEAD ALLOYS

Spiral heater coils hand-formed with fixture
LEWIS-208 B65-10192 05

Self-aligning fixture used in lathe chuck jaw refacing
FRC-21 B65-10198 05

Lathe chuck key incorporates safety feature
MSC-506 B66-10243 05

Device facilitates centering of workpieces in lathe chuck
HPS-685 B66-10277 05

Swiveling lathe jaw concept for holding irregular pieces
HPS-783 B66-10321 05

Cold machining of high density tungsten and other materials
ARG-10289 B69-10110 05

LATITUDE
Theory of a refined earth model
M-PS-14679 B66-10228 02

LATITUDE PARAMETERS
Crystal structure analysis of intermetallic compounds
ARG-10092 B66-10198 03

LATITUDE VIBRATIONS
Study of lattice defect vibration
ARG-10224 B69-10078 02

LATITICS
Measurements of thermolectric power in annealed and quenched gold-platinum alloys
ARG-10303 B69-10110 05

LATITICS (MATHEMATICS)
Computer program calculates wing aerodynamic characteristics for fixed wings with dihedral and variable-sweep wings at subsonic speeds
LANGLY-10191 B67-10666 06

LAU MIC METHOD
Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 03

LAUNCH DATES
Advanced mission analysis program
GSFC-10575 B69-10171 06

LAUNCH VEHICLE CONFIGURATIONS
Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
LANGLY-10093 B67-10531 06

LAUNCH VEHICLES
Method for predicting frictional loss in metal bellows and flexible hose
M-PS-883 B66-10662 05

System automatically provides dynamic launch decision criteria
M-PS-13063 B67-10363 01

Earth orbit rendezvous evaluation program
M-PS-13016 B67-10407 06

Fortran 4 program for two-impulse rendezvous analysis
M-PS-13071 B67-10479 06

Concept to standardize space vehicle piggyback experiment modules
HPS-1697 B68-10038 05

Assembly, checkout, and operation optimization analysis technique for complex systems
M-PS-14105 B68-10222 05

Weight Control System
LEAD COMPOUNDS

Lead oxide ceramic makes excellent high-temperature lubricant

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons

Segmented SiGe-PbTe couples

Quality-weld parameters for microwelding techniques and equipment

Lead oxide ceramic makes excellent high-temperature lubricant

Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neutrons

Segmented SiGe-PbTe couples

Quality-weld parameters for microwelding techniques and equipment

LEAD ISOTOPES

Direct determination of lead-210 by liquid-scintillation counting

LEAD SULFIDES

Advances in aluminum anodizing

LEAD TELLURIDES

Thermoelectric elements diffusion-bonded to tungsten electrodes

LEAD TITANATES

Phonocardiograph microphone is rugged and moistureproof

Ultrasonic wrench produces leaktight connections

LEAKAGE

Vented piston seal prevents fluid leakage between two chambers

Device transmits rotary motion through hermetically sealed wall

Self sealing disconnect for tubing forms metal seal after breakaway

Fluid-pressure meter can be calibrated without removal from flow line

Sensitive low-pressure relief valve has positive seating against leakage

Valve designed with elastic seat

Fuel cell serves as oxygen level detector

Low-cost seal compensates for surface irregularities

Superconductor magnets used for stagger-tuning traveling-wave maser

Diaphragm eliminates leakage in cryogenic fluid duct coupling

Weld leaks rapidly and safely detected

Composite seal reduces alkaline battery leakage

O-ring tube fittings form leakproof seal in hydraulic systems

SUBJECT INDEX

Resilient clamp holds fuel cell stack through thermal cycle

Control system maintains selected liquid level

High-pressure, low temperature electrical connector makes no-leak seal

Capacitive system detects and locates fluid leaks

Dispenser leak-tests and sterilizes rubber gloves

Wide-range instrument monitors flow rates of chemically active fluids

Special tool seals conductors with combination of plastic sleeves

Soft-seal valve holds hazardous fluids safely

Expandable rubber plug seals openings for pressure testing

Brazing process using Al-Si filler alloy reliably bonds aluminum parts

Pressure-welded flange assembly provides leaktight seal at reduced bolt loads

Flow ring valve is simple, quick-acting

Vacuum test fixture improves leakage rate measurements

Flexible fastener effects airtight material closure

Union would facilitate joining of tubing, minimize braze contamination

Valve seat pores sealed with thermosetting monomer

Sniffer used as portable hydrogen leak detector

Diaphragm valve for corrosive and high temperature fluid flow control has unique features

Minimum permissible leakage resistance established for instrumentation systems

Leak locator for vacuum jacketed pipelines eliminates need for removal of outer jacket

Electroplating eliminates gas leakage in brazed areas

Large diameter metal ring seal prevents gas leakage at 5000 psi

Gas leak detector is simple and...
inexpensive
Silver plating technique seals leaks in thin wall tubing joints
Orbital tube flaring system produces tubing connectors with zero leakage
Visco seal design offers zero-leakage and wear-free characteristics
Portable detector set discloses helium leak rates
Portable fixture facilitates pressure testing of instrumentation fittings
Cryogenic seal remains leak tight during thermal displacement
Cracks in glass electrical connector headers removed by dry blasting with fine abrasive
Fixture facilitates helium leak testing of pipe welds
Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination
Segmented, arch-bound carbon seal is pressure loaded
Ultrasound welds produce leak tight connections
Stabilizing stainless steel components for cryogenic service
Aluminum and stainless steel tubes joined by simple ring and welding process
Dynamic valve seal is reliable at cryogenic temperature
Flourocarbon seal replaces metal piston ring in low density gas environment
Dynamic captive plastic seal
Cryogenic seal concept for static and dynamic conditions
Vent and relief valve maintains low leakage rate over broad temperature range
Locating and sealing air leaks in multistoried buildings
Device provides controlled gas leaks
Tube swaging device uses explosive force
Spiral-grooved shaft seals substantially reduce leakage and wear
Between-bearing shaft seal, a concept
Conceptual apparatus for detecting leaks of nonconductive liquids
Determining gas leakage from bubble formations
Nondestructive testing of brazed rocket engine components
Tube joint leak repair coupling
Reliable method for testing gross leaks in semiconductor component packages
Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control
Diffusion of trace gases for leak detection - a study
Leakage tester for flat conductor cable connector
Sealing a rubber bladder between two sections of an accumulator
Leakage measuring method
Piezoelectric linear actuator
Placed-tube fittings with replaceable seat inserts
Burst diaphragm leak detector
Integral valve provides automatic relief and remote venting
Two-functional seal for hose connection

LEAST SQUARES METHOD
Method accurately measures mean particle diameters of monodisperse polystyrene latexes
Solubility data are compiled for metals in liquid zinc
Computer program for network synthesis by frequency response fit
Numerical least-square method for resolving complex pulse height spectra
Automatic design of optical systems by digital computer
Computer graphics data conditioning
Frequency domain analysis and synthesis of lumped parameter systems using nonlinear least squares techniques
LEATHER
M-PS-15033  B69-10577  02

LEATHER
Protective clothing for workers with 5-kW
and 20-kW short-arc lamps
NPO-11155  B69-10218  01

LEAVES
Comparative chromatography of chloroplast
pigment
ARG-10415  B69-10425  03

LECTURES
Study of lattice defect vibration
ARG-10221  B66-10768  02

LEG (ANATOMY)
Adjustable hinge permits movement of knee
in plaster cast
M-PS-1756  B67-10056  04

LEGENDRE FUNCTIONS
Computer program ETC improves computation
of elastic transfer matrices of Legendre
polynomials E/0/ and E/1/
NRC-10070  B67-10566  06

LEGIBILITY
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

LENGTH
Pressure probe compensates for dimensional
tolerance variations
LEWIS-302  B66-10599  01

System enables dimensional inspection of
very large structures
M-PS-2477  B67-10214  05

LENS DESIGN
Optimistic system facilitates colorimetric
and fluorometric measurements
NPO-10233  B68-10316  01

Improved method of optical design
GSFC-10743  B69-10405  02

LENSES
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 global
JPL-658  B65-10205  05

Communication system uses modulated laser beam
GSFC-377  B65-10333  01

Optical output enhances flowmeter accuracy
M-PS-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-PS-273  B66-10086  02

New television camera eliminates vidicon tube

SUBJECT INDEX

M-PS-472  B66-10112  01

Optical gyro pickoff operates at cryogenic
temperatures
M-PS-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
M-PS-1747  B66-10693  02

Electronic filter discriminates between
tree and false reflections
HQ-55  B67-10071  02

Star/horizon simulator used to test space
guidance system
JPL-718  B67-10157  01

Aerial-image enables diagrams and animation
to be inserted in motion pictures
ARG-165  B67-10396  02

Camera lens adapter magnifies image
M-PS-11955  B67-10431  02

Ballpoint probe gives optimum results in
ultrasonic testing
M-PS-13590  B67-10620  01

Electron beam deflected to determine focal
point location
M-PS-14107  B67-10649  01

Feasibility study of wireless power
transmission systems
M-PS-14691  B68-10309  01

Color-television medical microscopy
MSC-13086  B68-10314  07

Improvement in recording and reading
holograms
NRC-10151  B68-10347  02

FORTAN optical lens design program
NPO-10603  B68-10354  06

UV detector monitors organic contamination
of optical surfaces
M-PS-20246  B68-10813  01

Digital laser-beam deflection sensor
M-PS-14765  B68-10525  01

Improved combustion chamber optical probe
MSC-10553  B66-10142  02

Ion-retarding lens improves the abundance
sensitivity of tandem mass spectrometers
ARG-10365  B69-10166  02

Spherical ion source
NPO-08989  B69-10186  01

Flexible high-voltage supply for
experimental electron microscope
ARG-10482  B69-10603  01

Two-color holography
ARG-10349  B69-10662  02

Fine-line sensitivity for holographic
interferograms
ARG-10348  B69-10663  02
Effect of preparation procedures on intensity of radioautographic labeling is studied

Instrument quickly transposes ground reference target to eye level

Alignment tool facilitates pin placement on irregular horizontal surfaces

Level of super-cold liquids automatically maintained by levelometer

Low-cost voltage-level detector

Sensitive level sensor made with spirit level, gives electrical output

Rotary valve controls multiple hydraulic leveling cylinders

Heavy duty precision leveling jacks expedite setup time on horizontal boring mill

Steel test panel helps control additives in pyrophosphate copper plating

Automatic Gaussian random-noise limiter

Automatic leveling and equalizing hoist device

Solenoid permits remote control of stop watch and assures restarting

Fatigue tester achieves true axial motion through flex plates and bars

Tool facilitates installation of Marxism clamps

Single-source mechanical loading system produces biaxial stresses in cylinders

Technique for measuring magnetic tape interlayer adhesion

Battery case shear

Detachable caster adapter

Levitation-sediment technique for metals and alloys

Electrolytic separation of crystals of transition-metal oxides

LIBRARY

JPKWIC – General key word in context and subject index report generator
LIFT DEVICES

- Miniature oxygen resuscitator
  KSC-10398 B69-10319 04
- Rate of heat extraction controller for environmental control
  HQ-10316 B69-10516 01

LIFT DEVICES

- Buckle joins web straps quickly, adjusts easily
  LANGLEY-21 B64-10111 05
- Mechanism isolates load weighing cell during lifting of load
  MSC-257 B66-10071 05
- Self-actuating grapple automatically engages and releases loads from overhead cranes
  ARG-81 B66-10522 05

LIFTS

- Hoist is automatically stopped at low deceleration rate
  M-FS-1639 B66-10545 05
- Conceptual dead weight device to provide pressure calibration
  M-FS-14672 B68-10264 01
- Fifth-wheel fork truck adapter
  M-FS-14460 B69-10021 05
- Detachable caster adapter
  MSC-91215 B69-10164 05
- Automatic leveling and equalizing hoist device
  M-FS-16549 B69-10514 05

LIGANDS

- Aggregation of metallochlorophylls - Examination by spectroscopy
  ARG-10273 B69-10163 04

LIGHT (VISIBLE RADIATION)

- Instrument accurately measures extremely low air densities
  M-FS-193 B65-10221 01
- Unique construction makes interferometer insensitive to mechanical stresses
  JPL-725 B65-10295 02
- Inexpensive infrared source improvised from flashlight
  M-FS-894 B66-10096 02
- Plastic scintillator converts standard photomultiplier to ultraviolet range
  ERC-9 B66-10108 02
- Optical device enables small detector to see large field of view
  W00-253 B66-10263 02
- Sensors measure surface ablation rate of reentry vehicle heat shield
  LANGLEY-287 B66-10592 01
- Optical automatic gain channel
  M-FS-1550 B66-10596 02
- Exposure Value /EV/ system expanded to include filter factors and transmittance
  LANGLEY-190 B66-10602 02

PHOTOGRAPHIC METHOD MEASURES PARTICLE SIZE

- and velocity in fluid stream
  M-FS-1536 B66-10668 01
- Laser Doppler flowmeter measures gas velocity
  M-FS-1747 B66-10693 02
- Design concept for improved photo-scan tube
  JPL-816 B67-10157 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 B69-10126 02
- Improved gas ring laser
  MSC-11584 B68-10304 02
- System converts optical phase changes to RF phase changes
  M-FS-20091 B68-10430 01
- Occluding-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
- Synthesis of electro-optic modulators for amplitude modulation of light
  M-FS-14268 B68-10275 02
- Servo system facilitates photoelastic strain measurements on resins
  JPL-504 B69-10280 01
- System measures angular displacement without contact
  LANGLEY-46 B66-10073 02
- Light-sensitive potentiometer measures product of two variables
  GSFC-240 B65-10076 01
- Photoelectric system continuously monitors liquid level
  M-FS-817 B65-10382 02
- 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-830 B66-10322 02
- Improvement in recording and reading holograms
  ERC-10151 B68-10347 02
- Ring laser angle encoder
  MSC-13099 B69-10115 01
- Laser interferometer micrometer system
  M-FS-14747 B69-10633 02
- Fine-line sensitivity for holographic interferograms
  HQ-10348 B69-10663 02
- Optical frequency waveguide and ion...
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**LIGHT EMISSION**

Optical arrangement increases useful light output of semiconductor diodes

JPL-SC-064 B65-10020 05

Practical new method of measuring thermal-neutron fluence

NUC-10086 B67-10352 02

Fluidic-thermochromic display device

ERC-10031 B68-10350 01

Improved radiographic image amplifier panel

N-FS-14522 B68-10363 02

Silicon carbide diode for increased light output

N-FS-20063 B69-10096 01

Optical frequency waveguide and ion transmission system

BQ-10541 B69-10746 01

**LIGHT SOURCES**

LEDISIOB

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N-FS-20063 B69-10096 01

Optical frequency waveguide and ion transmission system

BQ-10541 B69-10746 01

**LIGHT GAS GUNS**

Advances in light-gas gun technology

N-FS-14270 B68-10288 05

**LIGHT MODULATION**

Light ray modulation controls optical system alignment

GSPC-171 B65-10211 02

Communication system uses modulated laser beam

GSPC-377 B65-10333 01

Device to color modulate a stationary light beam gives high intensity

HQ-94 B66-10476 01

Improved design provides faster response time in photomultiplier

GSPC-451 B66-10526 01

Light-intensity modulator withstands high heat fluxes

MSC-246 B66-10532 02

Electronic filter discriminates between true and false reflections

HQ-55 B67-10071 02

Wideband, high efficiency optical modulator requires less than 10 watts drive power

N-FS-12733 B67-10289 01

Optically induced free carrier light modulator

GSPC-10216 B69-10114 01

**LIGHT SCATTERING**

Thin carbon film serves as UV bandpass filter

ERC-8 B66-10060 02

Solvent residue content measured by light scattering technique

N-FS-850 B66-10330 01

Laser Doppler flowmeter measures gas velocity

N-FS-1747 B66-10693 02

Special purpose reflectometer uses modified ulbricht sphere

MSC-1135 B67-10109 02

Improved atmospheric particle analyzer

ERC-33 B67-10231 01

Electronic shutter gates image orthicon on and off

HQ-96 B67-10270 01

Liquid crystals detect voids in fiber glass

**LIGHT SOURCES**

laminates

LEWIS-10104 B67-10286 03

Laser-Doppler gas-velocity instrument

N-FS-20039 B68-10389 02

Detection of effect of deposits on optical windows of pyrometer measurements

LEWIS-10366 B68-10367 01

Fresnel cup reflector directs maximum energy from light source

JPL-424 B63-10263 03

Liquid-level meter has no moving parts

N-FS-3 B63-10378 03

Mirror device aligns machine surface perpendicular to sight lines

WG0-5 B63-10421 02

Variable light source with a million-to-one intensity ratio

JPL-WGO-D08 B63-10424 03

Low-cost tape system measures velocity of acceleration

MSC-85 B63-10512 01

Camera shutter is actuated by electric signal

ARC-20 B63-10560 05

Analog device simulates physiological waveforms

MSC-51 B64-10109 01

Attachment converts microscope to point source autocollimator

JPL-499 B64-10124 05

Compact cartridge drives coded tape at constant readout speed

JPL-472 B64-10222 01

Modification increases light output of injection-luminescent diodes

N-FS-192 B65-10006 01

Sensitive level sensor made with spirit level, gives electrical output

LANGLEY-89 B65-10067 01

Simple optical system used to align spectograph

LANGLEY-92 B65-10071 02

Instrument calibrates low gas-rate flowmeters

MSC-134 B65-10137 01

Interferometer combines laser light source and digital counting system

MSC-151 B65-10161 01

Brushless dc motor uses electron beam switching tube as commutator

GSPC-345 B65-10237 01

Photore sistance analog multiplier has wide range

GSPC-360 B65-10287 01

Photoelectric system continuously monitors liquid level

N-FS-417 B65-10382 01

Optical output enhances flowmeter accuracy

N-FS-482 B65-10395 02

Photodetectors used to maintain welding electrode-to-joint alignment

MSC-243 B65-10401 05

Small, high-intensity flasher permits continuous close-in photography

NU-0043 B66-10119 03

Optical gyro pickoff operates at cryogenic temperatures

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**LIGHT SPEED**

| Frequency offset in linear FS/CW transponder eliminates clutter | N-PS-249 | B65-10146 01 |
| Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples | N-SC-11918 | 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 | N-PS-12144 | B67-10326 02 |
| Computer program for optical systems ray tracing | FBC-10017 | B67-10549 06 |

**SUBJECT INDEX**

- Technique developed for measuring transmittance of optical birefringent networks | N-PS-14267 | B66-10260 02 |
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- Four-bar linkage for thermal compensation in test mounts for structures
- Direct measurement of carbon-14 in carbon dioxide by liquid scintillation counting
- Thermal calibration target
- Cryogenic fluid flow instabilities in heat exchangers
- Burst diaphragm leak detector
- Control for maintaining constant level of a cryogenic liquid
Ultraviolet photographic pyrometer used in rocket exhaust analysis

Surfactant for dye-penetrant inspection is insensitive to liquid oxygen

Freon provides heat transfer for solid CO2 calibration standard

Composite gaskets are compatible with liquid oxygen, resist compression set

In-tank shutoff valve is provided with maximum blast protection

Synthesis of various highly halogenated monomers and polymers

Inexpensive cryogenic insulation replaces vacuum jacketed line

Liquid oxygen dictating cleaned by falling film method

Flow liner extends operating life of high-angulation bellows

Copper and nickel adherently electroplated on titanium alloy

Development of detonation reaction engine

Device damps fluid pressure oscillations in vent valve

Burst diaphragm leak detector

Liquid oxygen-compatible insulation system

Coaxial capacitor used to determine fluid density

Combustion chamber inlet manifold separates vapor from liquid

Thermodynamic properties related to expansion of two-component gas

Gas chromatograph injection port protective device

Spiral-grooved shaft seals substantially reduce leakage and wear

Spiral-grooved shaft seals substantially reduce leakage and wear

Computer program NCAP-TOS calculates steady-state fluid dynamics of coolant in parallel channels and temperature distribution in surrounding heat-generating solid

Closed fluid system without moving parts controls temperature

Real fluid properties of normal and parahydrogen

Improved liquid-level sensor for cryogens

Design concept for pressure switch calibrator

Large-amplitude inviscid fluid motion in an accelerating container
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High resolution Ge/Li/ Ge-diode detector combined with crystal-diffraction spectrometer permits high-resolution gamma ray spectroscopy  B68-10190  02
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Integrated circuit with multiple collector current source

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- Fluid sample collection and storage device MSC-10962 B69-10816 05

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- Cryogenic filter method produces super-pure helium and helium isotopes JPL-376 B63-10123 02
- Sensitiv low-pressure relief valve has positive seating against leakage WO-104 B66-10258 03
- Transducer measures force in vacuum environment LEWIS-218 B66-10161 01
- Magnetic latches provide positive overpressure control WO-11003 B66-10639 01
- Low rate flow switch can be used for gas or liquid JPL-067 B66-10696 01

### LOW SPEED

- Dry film lubricant is effective at extreme loads N-P5-628 B66-10256 03

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- High-pressure, low temperature electrical connector makes no-leak seal MSC-276 B66-10079 02
- Cryostat modified to aid rotating beam fatigue test N-P5-435 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
- Niobium thin films are superconductive in strong magnetic fields at low temperatures JPL-SC-174 B66-10122 02
- Optical gyro pickoff operates at cryogenic temperatures N-P5-407 B66-10128 01
- Cryogenic liquid transfer system reduces residual bollo f LEWIS-274 B66-10157 02
- Improved adhesive for cryogenic applications cures at room temperature WO-132 B66-10185 03
- Freon provides heat transfer for solid CO2 calibration standard N-P5-644 B66-10257 02
- O-rings with mylar back-up provide high-pressure cryogenic seal N-P5-603 B66-10270 05
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- Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures
  - M-FS-800 B66-10325
- Composite gaskets are compatible with liquid oxygen, resist compression set
  - M-FS-455 B66-10395
- Metal boot permits fabrication of hermetically sealed splices in metal sheathed instrumentation cables
  - NO-0083 B66-10704
- Improved cryogenic refrigeration system
  - JPL-731 B67-10128
- Study of yttrium iron garnet rods reveals new magnetostatic echo mode
  - NEC-37 B67-10153
- Heat treatment study of aluminum casting alloy 6061
  - M-FS-2397 B67-10159
- Study made of Raney nickel technology
  - M-FS-2654 B67-10208
- High-strength tungsten alloy with improved ductility
  - LEWIS-10257 B67-10340
- Soft metal plating enables hard metal seal to operate successfully in low temperature, high pressure environment
  - BDC-10083 B67-10350
- Magnesium-lithium alloys developed for low temperature use
  - M-FS-1541 B67-10365
- Study made of dielectric properties of promising materials for cryogenic capacitors
  - M-FS-13620 B67-10366
- Lamp enables measurement of oxygen concentration in presence of water vapor
  - MSC-10043 B67-10387
- Dynamic valve seal is reliable at cryogenic temperatures
  - M-FS-12967 B67-10526
- Lead plated aluminum ring provides static high pressure seal for large diameter pressure vessel
  - NUC-10008 B67-10539
- Development of dual solid cryogens for high reliability refrigeration system
  - GSFC-10168 B67-10644
- Cryogenic seal concept for static and dynamic conditions
  - M-FS-12986 B67-10673
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  - ARC-10098 B68-10350
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  - M-FS-20058 B68-10406
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  - M-FS-20361 B69-10065
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  - M-FS-18331 B69-10179
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  - WOO-190 B68-10612
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  - M-FS-737 B66-10613
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  - JPL-836 B67-10613
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  - LEWIS-10326 B67-10546
- Synthesis of pure aromatic glycidyl esters for use as adhesives
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  - M-FS-702 B67-10049
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  - NPO-10467 B68-10506
- Tensile and fatigue properties of Inconel 718 at cryogenic temperatures
  - M-FS-18192 B67-10613
- Self-lubricating gear
  - M-FS-14971 B68-10408
- Circuit protects regulated power supply against overload current
  - GSFC-453 B69-10229
- Wideband, high efficiency optical modulator requires less than 10 watts drive power
  - M-FS-12733 B67-10289

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Thermionic diode switching has high temperature application
NPO-10404 B67-10672 01

Solid state high-voltage pulser operates with low supply voltage
N-FS-14034 B68-10308 01

Millivolt signal limiter
LEWIS-90297 B69-10015 01

LUBRICANT TESTS

Polydene disulfide mixtures make effective high-vacuum lubricants
N-FS-54 B63-10453 03

Electron bombardment improves vacuum chamber efficiency
LEWIS-160 B65-10280 02

Machine tests slow-speed sliding friction in high vacuum
M-FS-12341 B67-10379 05

High-temperature bearing lubricants
LEWIS-10408 B68-10249 05

LUBRICANTS

Gallium useful bearing lubricant in high-vacuum environment
LEWIS-12 B63-10337 03

Polydene disulfide mixtures make effective high-vacuum lubricants
N-FS-54 B63-10453 03

Burnishing technique improves lubrication of threaded fasteners
LEWIS-217 B65-10302 03

Run-in with chemical additive protects gear surface
M-FS-548 B66-10069 05

Gallium alloy films investigated for use as boundary lubricants
LEWIS-245 B66-10165 03

Copper-acrylic enamel serves as lubricant for cold drawing of refractory metals
ARG-54 B66-10471 05

Film coating permits low-force scribing
MSC-990 B66-10609 03

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment
LEWIS-359 B66-10678 05

Valve effectively controls amount of contaminant in flow stream
M-FS-1771 B66-10683 05

Development of technology for hot-drape forming of large torus sections
M-FS-12141 B67-10341 05

Improved sample capsule for determination of oxygen in hemolyzed blood
MSC-11017 B67-10408 04

Electromechanical rotary actuator operates over wide temperature range
M-FS-18402 B69-10100 05

Tools made of ice facilitate forming of soft, sticky materials
KSC-10262 B69-10199 05

Diffusion bond method of joining steel and a TPE-bronze composite
N-FS-20482 B69-10237 03

Remote balance weighs accurately and high radiation
ARG-10387 B69-10242 05

A new solid lubricant

LUBRICATING OILS

Gallon meter senses depletion of lubricant in journal bearings
LEWIS-37 B66-10042 01

Unique gear design provides self-lubrication
JPL-SC-079 B65-10366 03

Radioactive tracer system detects oil contaminants in fluid lines
M-FS-512 B66-10090 03

Air bearing provides friction-free support for shaker system slip table
WJ-0086 B66-10708 05

Design concept to decrease relative speed of ball bearings
M-FS-2003 B67-10212 05

High-temperature bearing lubricants
LEWIS-10408 B68-10249 05

Dynamic-reservoir lubricating device
M-FS-16652 B68-10261 05

Discrimination of fish oil and mineral oil slicks on sea water
BO-10412 B69-10673 01

LUBRICATION SYSTEMS

Miniature bearings lubricated by sonic dispersion method
M-FS-202 B65-10106 03

Squeeze-film gas bearing technology
M-FS-14621 B66-10180 05

Dynamic-reservoir lubricating device
M-FS-16652 B68-10261 05

Nozzles for size reclassification of microfog particles
LEWIS-10705 B69-10076 05

Self-lubricating gear
M-FS-14971 B69-10408 05

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Improved solderless connector is easily disconnected
JPL-SC-060 B65-10197 01

T-handle wrench has torque-limiting action
MSC-280 B66-10065 05

Calibrated water tank facilitates proof-
Loading of cranes and derricks

Adjustable wrench for electronic connectors

An improved method for electrical cable terminations

Simple circuit continuously monitors thermocouple sensor

Attachment converts microscope to point source autocollimator

Electronic device simulates respiration rate and depth

Electrodeless discharge lamp is easily started, has high stability

Lamp automatically switches to new filament on burnout

Thin carbon film serves as UV bandpass filter

Circular, explosion-proof lamp provides uniform illumination

Two-light circuit continuously monitors ac ground, phase, and neutral wires

Multicolor stroboscope pinpoints resonances in vibrating components

High-speed furnace uses infrared radiation for controlled brazing

A radiometer-pyrometer

Self-balancing line-reversal pyrometer automatically measures gas temperatures

Lamp enables measurement of oxygen concentration in presence of water vapor

Proposed method of rotary dynamic balancing by laser

Low cost SCR lamp driver indicates contents of digital computer registers

Superconductive thin film makes convenient liquid helium level sensor

Flow angle sensor and readout system

Automatic frequency control of voltage-controlled oscillators

Modification increases light output of injection-luminescent diodes

Luminescent screen composition for cathode ray tubes

Preparation of silver-activated zinc sulfide thin films

Rocketsonde measurements of ozone in the upper atmosphere

Mass culture of photobacteria to obtain luciferase

Modification increases light output of injection-luminescent diodes

Rapid-response, light-exposure control system

Occulting-filter method for obtaining flashing-light visibility data

Solar-angle sensor has no moving parts

Variable light source with a million-to-one intensity ratio

System selects framing rate for spectrograph camera

High-intensity flashing beacon powered by mercury cells

Optical output enhances flowmeter accuracy

Small, high-intensity flasher permits continuous close-in photography

Apparatus presents visual display of semiconductor surface characteristics

Point-source light sensor circuit is insensitive to background light

Light-intensity modulator withstands high heat fluxes

Photocell shadowing technique improves light source detector

Cleanroom air sampler counts, categorizes, and records particle data

Self-balancing line-reversal pyrometer automatically measures gas temperatures

Nonreciprocal gain control for ring laser

Improvement in recording and reading holograms

Laser-Doppler gas-velocity instrument

Automatic solar lamp intensity control system

Fluorescent photography of spray droplets using a laser light source

Improved method of fabricating planar gallium arsenide diodes
**LUMPING**

- Fine-line sensitivity for holographic interferograms
  - HQ-10348  B69-10663  02
- Quantitative determination of flavin nucleotide using the bacterial bioluminescence reaction
  - GSFC-10565  B69-10715  08

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- Shock and vibration response of multistage structure
  - N-PS-14972  B68-10353  05

**Lunar Atmospheres**

- Ion mass spectrometer for special uses
  - HQ-10418  B69-10510  02

**Lunar Communication**

- Method of directing a laser beam with very high accuracy
  - NPO-11087  B69-10508  02

**Lunar Composition**

- Study made of far infrared spectra of silicate minerals
  - N-PS-1811  B67-10075  02
- Development of lunar drill to take core samples to 100-foot depths
  - N-PS-13015  B67-10529  05

**Lunar Environment**

- Method for X-ray study under extreme temperature and pressure conditions
  - MSC-11232  B67-10474  02
- Development of lunar drill to take core samples to 100-foot depths
  - N-PS-13015  B67-10529  05

**Lunar Exploration**

- Technique simulates effect of reduced gravity
  - LANGLAY-44  B64-10146  04

**Lunar Geology**

- Nondispersive X-ray emission analysis for geochemical exploration
  - GSFC-10568  B69-10011  02

**Lunar Gravitational Effects**

- Technique simulates effect of reduced gravity
  - LANGLAY-44  B64-10146  04

**Lunar Launch**

- Computer program for mass optional solutions of some endpoint trajectory problems
  - N-PS-12976  B67-10310  06

**Lunar Module**

- Diffusion technique stabilizes resistor values
  - MSC-205  B66-10142  01
- Antisnout space suit communication antenna
  - MSC-12101  B68-10238  01
- LH lookangle program
  - MSC-13179  B69-10370  06

**Lunar Orbiter**

- An overview of electromagnetic interference problems in spacecraft
  - NPO-11170  B69-10362  01

**Lunar Photography**

- Subminiature deflection circuit operates integrated sweep circuits in TV camera
  - MSC-1263  B67-10155  01

**Lunar Seismographs**

- Unmanned seismometer levels self, corrects drift errors
  - GSFC-100  B63-10551  01

**Lunar Soil**

- Thermal conductivity and dielectric constant of silicate materials
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- **Lunar Spacecraft**
  - Three-axis attitude and direction reference instrument has only one moving part
    - H-PS-1819  B66-10564  01
  - Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
    - N-PS-12916  B67-10307  06
  - Earth orbit rendezvous evaluation program
    - N-PS-13016  B67-10407  06

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    - MSC-50  B64-10108  04
  - Study of radiation effects on mammalian cells in vitro
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  - Microorganisms detected by enzyme-catalyzed reaction
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- **Venturi meter with separable diffuser**
  - LEWIS-10483  B68-10295  05
- **Flow direction measurement with fixed probes**
  - LEWIS-11044  B69-10714  02

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  - N-PS-369  B66-10062  01
  - Automated drafting system uses computer techniques
    - N-PS-786  B66-10362  01
  - Transient Analysis Generator /TAG/ simulates behavior of large class of electrical networks
    - NPO-10031  B67-10319  06
  - Assembly processor program converts symbolic programming language to machine language
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  - HICUV - Newton-Raphson calculus of variation with automatic transversalities
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    - NPO-10835  B69-10187  06

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  - GSFC-115  B63-10556  05
  - Metal bellows custom-fabricated from tubing
    - LEWIS-192  B65-10150  05
  - Modified power tool rapidly drives series torque bolts
    - MSC-221  B66-10054  05

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| Computer program utilizes FORTRAN 4 subrouitnes for contour plotting | B67-10323 06 |
| One hundred angstrom niobium wire | B68-10279 03 |
Improved method of producing oxide-dispersion-strengthened alloys
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Transistorized circuit clamped voltage with 0.1 percent error
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Improved wire memory matrix uses very little power
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Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules
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JPL-812 B67-10410 01

Heavy-gage bonded honeycomb sandwich as primary load-bearing structure
R-P-12060 B67-10427 05

Composite solar cell matrix is reliable, lightweight and flexible
BPO-10821 B67-10503 01

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R-P-12590 B68-10301 01

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UNC-10054 B67-10281 01

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N-PS-586

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ABC-69

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JPL-784

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Bigh-torque power wrench, a concept
I-FS-18194 B68-10299 05

Tritiated alumina serves as reagent for self-labeling analysis
ARG-209 B67-10315 03

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I-FS-30133 B67-10363 01

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Battery-package design provides for cell cooling and constraint
MSC-11839 B68-10398 05

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SAN-10028 B68-10445 06

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System for measuring spatial distribution of ejected droplets, a concept
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M-FS-12726 B67-10411 06

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GSFC-10563 B69-10294 04

Low friction servo valve
LEWIS-10574 B68-10440 05

Surface irregularities detected by flare inspection instrument
M-FS-20157 B69-10152 01

Depletable lattice column
MPO-10228 B68-10018 01

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GSFC-10360 B67-10566 03

Review of biological mechanisms for application to instrument design
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Digital data averager improves conventional measurement system performance
MSC-12078 B68-10018 01

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Review of biological mechanisms for application to instrument design
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ARG-10158 B69-10191 01

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LANGLET-10496 B69-10212 01

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GSFC-10056 B69-10213 01

Induction probe determines levels of liquid metals
ARG-10348 B69-10256 03

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SAN-10034 B69-10272 01

Low energy ohmmeter can be used to test sensitive circuits, other meters
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N-PS-14722 | B69-10438 01
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MSC-15556 | B69-10484 01
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Automatic cryogenic liquid level controller is safe for use near combustible substances

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Rolanite - A new mechanical design concept

SAN-10001 | B67-10611 05
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M-PS-18064 | B69-10396 05
Technique for ultrasonic cleaning with volatile solvents eliminates need for hoods or condensers

MSC-15611 | B69-10552 03

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Chain friction system gives positive, reversible drive

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Device transmits rotary motion through hermetically sealed wall

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Speed-sensing device aids crane operators

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- Hydraulic system provides smooth control of large tracking and antenna drive systems at very low tracking rates
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  - B67-10418
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- An improved magnetic tape recorder
  - GSFC-08259
  - B67-10646
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- Improved control system power unit for large parachutes
  - MSC-12052
  - B67-10677
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- Remotely operated gripper provides vertical control rod movement
  - ARG-10160
  - B68-10359
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  - M-PS-14772
  - B68-10549
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- Electromechanical rotary actuator operates over wide temperature range
  - 8-FS-18402
  - B69-10100
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- Magnetron tuner has locking feature
  - XNP-09771
  - B69-10119
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- Liquid gallium rotary electric contact
  - LEWIS-10828
  - B69-10138
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- Analytical technique permits comparison of reliability of alternate mechanical designs
  - NUC-10065
  - B67-10261
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- Seismic transducer measures small horizontal displacements
  - H-PS-81
  - B65-10029
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- Torque wrench allows readings from inaccessible locations
  - H-PS-598
  - B66-10204
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- Mechanical device accurately measures RF phase differences in VHF or UHF ranges
  - H-PS-1738
  - B66-10694
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- Integrated mobility measurement and notation system
  - MSC-726
  - B67-10114
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- Microdetermination of urea in urine using p-dimethylaminobenzaldehyde \(/PDAB/\)
  - NPO-10715
  - B69-10317
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- A conceptual design for squeeze film bearings
  - H-PS-573
  - B66-10226
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- Vibrator elapsed time is automatically controlled
  - H-PS-2573
  - B67-10284
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- Mechanical properties of plastics predeterminded by empirical method
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  - B64-10068
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- Lightweight aluminum casting alloy is useful at cryogenic temperatures
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- Multiple test chamber exposes materials to various environments
  - MSC-779
  - B65-10268
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- Design reliability goal developed from small sample
  - H-PS-403
  - B66-10405
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- Weldable aluminum alloy has improved mechanical properties
  - H-PS-295
  - B66-10445
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- Thermal stress-relief treatments for 2219 aluminum alloy are evaluated
  - H-PS-1213
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- Heat treatment stabilizes welded aluminum jigs and tool structures
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  - B66-10458
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- Lower-cost tungsten-chromium alloys
  - LEWIS-332
  - B66-10528
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- Tests show that aluminum welds are improved by bead removal
  - H-PS-1817
  - B67-10023
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- Materials data handbooks prepared for aluminum alloys 2014, 2219, and 5456, and stainless steel alloy 301
  - H-PS-1959
  - B67-10089
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- Pipe joints reinforced in place with fitted aluminum sleeves
  - MSC-11109
  - B67-10271
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- Materials data handbook, Inconel alloy 718
  - H-PS-2348
  - B67-10282
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- Study made of dielectric properties of promising materials for cryogenic capacitors
  - H-PS-13620
  - B67-10366
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- Mechanical properties of wire insulation automatically determined
  - MSC-10963
  - B67-10370
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- Single-source mechanical loading system produces biaxial stresses in cylinders
  - H-PS-12530
  - B67-10380
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- Experiments to investigate particulate materials in reduced gravity fields
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  - B67-10394
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  - H-PS-13663
  - B67-10426
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- Study made of acoustical monitoring for mechanical checkout
  - H-PS-13372
  - B67-10430
  - 02

- Study made of pneumatic high pressure piping materials \(/10,000\ psi/\)
  - MSC-10133
  - B67-10437
  - 03

- Study made of procedures for externally loading and corrosion testing stress corrosion specimens
  - H-PS-12064
  - B67-10451
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- Technique eliminates high voltage arcing at electrode-insulator contact area
  - LEWIS-10133
  - B67-10470
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- Study of stress corrosion in aluminum alloys
  - H-PS-13906
  - B67-10533
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  - NUC-10143
  - B67-10565
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  - ABC-10074
  - B68-10197
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- Ignition of binary alloys of uranium
  - ABC-10057
  - B68-10280
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- Fiber glass reinforced structural materials for aerospace application
  - H-PS-14806
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  - LEWIS-10428
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Lightweight universal joint transmits both torque and thrust JPL-375  B63-10236  05
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High-pass RF coaxial filter rejects dc and low frequency signals GSFC-73  B64-10173  01
Miniature stress transducer has directional capability JPL-591  B65-10023  01
Computer program simplifies selection of structural steel columns NU-0046  B66-10097  01
Aluminum oxide filler prevents obstructions in tubing during welding MNC-222  B66-10125  05
Pressure- welded flange assembly provides leak tight seal at reduced bolt loads M-PS-640  B66-10247  05
Aluminum/steel wire composite plates exhibit high tensile strength M-PS-401  B66-10262  05
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Fixed vacuum plate clamps styrofoam for machining M-PS-683  B66-10283  05
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Clasp provides efficient connections for high-density currents
RF inductor has high Q, is stable at higher temperatures
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Electron beam selectively seals porous metal filters
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Grain growth inhibitor for porous tungsten materials
LEWIS-10535  B68-10527  03

Method for controlling density and permeability of sintered powdered metals
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Improved high-temperature silicide coatings
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Health hazards of ultrasmall metal and metal oxide powders
LEWIS-10878  B69-10268  04

Improved retort for cleaning metal powders with hydrogen
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Apparatus of small size can be extended into long, rigid boom
JPL-305  B63-10200  05

Built-in templates speed up process for making accurate models
LANGLEY-23  B63-10526  05

Collar positions strip stock used to form coil on mandrel
JPL-198  B65-10130  05

Integral ribs formed in metal panels by cold-extrusion
M-FS-230  B66-10141  05

Metal bellows custom-fabricated from tubing
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Infrared shield facilitates optical pyrometer measurements
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Electromagnetic hammer removes weld distortions from aluminum tanks
M-FS-287  B65-10342  05

Explosive force of primacord grid forms large sheet metal parts
M-FS-316  B66-10014  05

Sheet metal strip unrolls to form circular boom
GSFC-423  B66-10032  05

Reflective insulator layers separated by bonded silica beads
MSC-215  B66-10070  03

Mechanism continuously measures static and dynamic cable loads
MSC-217  B66-10107  05

Bellows design features low spring rate and long life
MSC-521  B66-10190  05

Electrical upsetting of metal sheet forms weld edge
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Intergranular metal phase increases thermal shock resistance of ceramic coating

Radioactive method enables determination of surface areas rapidly and accurately

Intergranular metal phase increases thermal shock resistance of ceramic coating

Radioactive method enables determination of surface areas rapidly and accurately

Surface-crack detection by microwave methods

Ronchi test applied to measurement of surface roughness

Effects of surface preparation on quality of aluminum alloy weldments

Detecting hydrogen-containing contaminants on metal surfaces

Masking of aluminum surface against anodizing

Magnetic forming of resistive materials

Improved primer for bonding polyurethane adhesives to metals

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Die and telescoping punch form convolutions in thin diaphragm

Metal doctor facilitates tungsten forming

Bench vise adapter grips tubing securely and safely

Telescoping of instrumentation tubing eliminates swaging

Coil sheet metal strip opens into tubular configuration

Explosive force of primacord grid forms large sheet metal parts

Device spot-laps spheres to very close tolerances

Pressure vessels fabricated with high-strength wire and electroformed nickel

Hand tool permits shrink sizing of assembled tubing

Electrical upsetting of metal sheet forms weld edge

Radial coolant channels fabricated by simplified method

High-speed furnace uses infrared radiation for controlled brazing

Large diameter metal ring seal prevents gas leakage at 5000 psi

Metal tube can be folded for compact stowage, is self-erecting

High-energy-rate magnetohydraulic metal forming system

Degreasing of titanium to minimize stress corrosion

Coating protects magnesium-lithium alloys against corrosion

Porous mandrels provide uniform deformation in hydrostatic powder metallurgy

Magnesium-lithium alloys developed for low temperature use

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A method accurately measures mean particle diameters of monodisperse polystyrene latexes

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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
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Estimation of signal-to-noise ratios LNP-05254 B69-10557 01
Pocket-sized tone-modulated single-sideband modulator accurately improves communication system uses modulated laser beam HPO-11180 B69-10725 01
Modulators

- Frequency-shift-keyer circuit improves FSK conversion for radio transmission
- High-gain amplifier has excellent stability and low power consumption
- Phase shift frequency synthesizer is efficient, small in size
- Added diodes increase output of balanced mixer circuit
- Communication system uses modulated laser beam

Linear signal noise summer accurately determines and controls S/N ratio JPL-SC-152 B66-10433 01
Single-sideband modulator accurately reproduces phase information in 2 Mc signals H-PS-664 B66-10437 01
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Electro-optic modulator for infrared laser using gallium arsenide crystal GSPC-10686 B66-10255 02
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Optically induced free carrier light

Modulators

- Simple BCD circuit accurately counts to 24
- Modular Forbes Plate Sublimator /N6917 requires only water supply for coolant
- Gage accurately controls force for placing chips on substrates
- Accuracy of laser measurements improved by pulse autocorrelator electronic system

- Current pulse amplifier transmits detector signals with minimum distortion and attenuation
- Reparable, high-density microelectronic module provides effective heat sink
- Aluminum heat sink enables power transistors to be mounted integrally with printed circuit board

- Flat pack interconnection structure simplifies modular electronic assemblies

Modules of Elasticity

- Contact stresses calculated for miniature slip rings H-PS-280 B65-10098 01
- Computer program simplifies selection of structural steel columns NUC-0044 B66-10097 01
- Study made of mechanics of deformation and fracture of fibrous composites
- An ultrasonic method for studying elastic moduli as a function of temperature

Noise Effects

- Checking flat conductor cable spacing by means of a noise pattern

Moisture

- Metal sheath improves thermocouple using graphite in one leg
- Impact and puncture resistant material protects parts from damage
- Minimum permissible leakage resistance established for instrumentation systems
- Double copper sheath multiconductor instrumentation cable is durable and easily installed in high thermal or nuclear radiation area

Instrumentation monitors transported material through variety of parameters

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MOISTURE Meters

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WOO-305    B66-10407  01

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<td>Special purpose computer provides programmable digital filter for sampled-data control systems</td>
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<td>Highly stable high-rate discriminator for nuclear counting</td>
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<td>Adjustable thermal tree</td>
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**OVERRANGE**

- Pressure sensor responds only to shock wave | M-P-238 |
- Magnetic latches provide positive overpressure control | NU-0057 |
- Hermetically sealed cells protected from internal gas pressure | GSPC-555 |
- Integral valve provides automatic relief and remote venting | M-P-12134 |

**OVERVOLTAGE**

- Circuit protects regulated power supply against overload current | GSPC-453 |
- Trisphere spark gap actuates overvoltage relay | ARG-68 |
- Low energy chager can be used to test sensitive circuits, other meters | SAR-10013 |
- Current-limiting voltage regulator | MSC-11824 |
- Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time | ARG-10110 |
- Nondestructive test determines overload destruction characteristics of current limiter fuses | XGS-08566 |
- Low-cost voltage-level detector | LEWIS-10885 |
- Fuse protects circuit from voltage and current overloads | MSC-12135 |

**OXIDATION**

- Cryopumping of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogen | LEWIS-15 |
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<td>Protective coating withstands high temperatures in oxidizing atmosphere</td>
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<td>Tool provides constant purge during tube welding</td>
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<td>High temperature thermocouple operates in reduction atmosphere</td>
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<td>Device removes hydrogen gas from enclosed spaces</td>
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<td>Ion exchange determines iodine-131 concentration in aqueous samples</td>
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<td>Improved method of producing oxide-dispersion-strengthened alloys</td>
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<td>Precise doping of metals by small gas flows</td>
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<td>Study of actinide chemistry in saturated potassium fluoride solution</td>
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<td>Technical report on galvanic cells with fused-salt electrolytes</td>
<td>Improved method of producing oxide-dispersion-strengthened alloys</td>
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**Referenced Black Body**: Reference loose body is compact, convenient to use.
OXYFUEL

Single solenoid actuator
MSC-1046

Spherical pipe joint delivers loads equally to mating flange
N-FS-807

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
KPD-05698

Two-step rocket engine bipropellant valve concept
MSC-10951

Saran film is fire-retardant in oxygen atmosphere
ISC-11604

Zinc-oxygen primary cell yields high energy density
N-FS-19865

Improved fuel-cell-type hydrogen sensor
MSC-10951

Rating 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

Axysymmetric 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

Flame-heating by induction
LEWIS-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
QJ-10318

Adding calcium improves lithium ferrite core
ERC-10036

Chromatographic detection and analysis of traces of hydrocarbons
KSC-10388

Burn-rate testing apparatus
MSC-11047

NEW ELECTROLYTES MAY INCREASE LIFE OF POLAROGRAPHIC OXYGEN SENSORS

MSC-10849

BLOOD OXYGEN SATURATION DETERMINED BY TRANSMISSION SPECTROPHOTOMETRY OF HEMOLYZED BLOOD SAMPLES

MSC-11018

LEAP ENABLES MEASUREMENT OF OXYGEN CONCENTRATION IN PRESENCE OF WATER VAPOR

MSC-11043

IMPROVED SAMPLE CAPSULE FOR DETERMINATION OF OXYGEN IN HEMOLYZED BLOOD

MSC-11017

EVALUATION OF IGNITION MECHANISMS IN SELECTED NONMETALLIC MATERIALS

MSC-11645
OXIGEN BENEFITIG
Respiratory transfer value has fail-safe feature ARC-1 B65-10369 01

OXIGEN 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

OXIGEN CONSUMPTION
Plant respirometer enables high resolution of oxygen consumption rates HQ-47 B66-10406 04

OXIGEN FLOURIDES
Single-element coaxial injector for rocket fuel WO-11095 B69-10587 05

OXIGEN MASSES
Miniature oxygen resuscitator KSC-10398 B69-10319 04

OXIGEN REGULATORS
Plant respirometer enables high resolution of oxygen consumption rates HQ-47 B66-10406 04

OXIGEN SUPPLI 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

OXIGENIZATION
Process reduces pore diameters to produce superior filters WCO-093 B66-10037 03
Blood oxygen saturation determined by transmission spectrophotometry of hemolyzed blood samples MSC-11018 B67-10252 04

OXIMEMOLOGY
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 GSFC-388 B65-10364 03
Reaction rates of graphite with ozone measured by etch decoration ARG-10086 B68-10101 03
Rocket sond e measurements of ozone in the upper atmosphere GSFC-10580 B69-10077 02

P

P-N JUNCTIONS
Laser beam transmits electric power GSFC-293 B65-10158 01
Preregulator feedback circuit utilizes Light Actuated Switch N-PS-1180 B66-10542 01

P-TYPE SEMICONDUCTORS
Simplified method introduces drift fields into cells GSFC-572 B67-10102 03
Process facilitates photoresist mask alignment on SiC crystals MSC-320 B66-10252 04

High efficient square-wave oscillator operator at high power levels GSFC-112 B69-10554 01
Novel circuit combines pulse stretcher with NOR gate GSFC-187 B64-10150 01
Economical fabrication process produces high quality junction transistors JPL-SC-065 B66-10330 01
Transistor voltage comparator performs own sensing GSFC-228 B65-10028 01
Synchronized pulse generator needs no external power GSFC-274 B65-10072 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 N-PS-1163 B66-10447 01
Equivalent circuit for a field effect transistor established for computer simulation N-PS-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-TE SEMICONDUCTORS
Miniature stress transducer has directional capability JPL-591 B65-10023 01
Radiation used to temperature compensate semiconductor strain gauges LANGLEY-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 GSFC-572 B67-10102 03
Process facilitates photoresist mask alignment on SiC crystals
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 not tippable
Molded elastomer provides compact ferrite-core holder, simplifies assembly
Use of tear ring permits repair of sealed module circuitry
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
Reparable, 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
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PACKAGING
The response of nonoenergetic gamma rays in finite media are investigated
ARG-10295 869-10080 02

PALLADIUM
Cryopumping of hydrogen in vacuum chambers is aided by catalytic oxidation of hydrogen
LEWIS-15 B63-10340 05
New alloy brazes titanium to stainless steel
MSC-102 B65-10060 05
Device removes hydrogen gas from enclosed spaces
GSPC-495 B66-10340 03
Sniffer used as portable hydrogen leak detector
N-FS-846 B66-10356 01
Purification train produces ultrapure hydrogen gas
N-FS-1913 B67-10078 03
Vibration analysis utilizing Mossbauer effect
N-FS-11974 B67-10339 01

PALLADIUM ALLOYS
Braze alloy holds bonding strength over wide temperature range
LEWIS-337 B66-10519 03
Silver-palladium braze alloy recovered from masking materials
N-FS-1845 B66-10631 03
Thermodynamic properties of solid palladium-silver alloys and other alloys are investigated by topsoil-effusion technique
ARG-277 B67-10324 03
High-temperature, gas-filled ceramic rectifiers, thyatrons, and voltage-reference tubes
LEWIS-90271 B69-10635 03
Device separates hydrogen from solution in water at ambient temperatures
MSC-13335 B69-10635 03

PALLADIUM COMPOUNDS
Trace levels of metallic corrosion in water determined by emission spectrography
MSC-1193 B66-10701 03
Quantitative determination of flavin nucleotide using the bacterial bioluminescent reaction
GSPC-10565 B69-10715 04

PANEL FLUTTER
Laser doppler flowmeter measures gas velocity
N-FS-1747 B66-10693 02
Aerodynamic forces of fluttering cylindrical and/or planar structures
N-FS-20497 B69-10781 02

PANELS
Portable display paneling has wide use, easy take down and assembly
ARC-17 B63-10435 05
Electronic assembly rack panels snap on and off
GSPC-59 B64-10121 05
Intrument adjustment knob locks to prevent accidental maladjustment
N-FS-190 B64-10249 05
Illuminated display panel is easily changed
MSC-108 B65-10003 05
Screening technique makes reliable bond at room temperature
N-FS-227 B65-10004 03

Flexible curtain shields equipment from intense heat fluxes
N-FS-48 865-10044 03
Transducer senses displacements of panels subjected to vibration
ARC-37 865-10085 01
Galvanic corrosion reduced in aluminum fabrications
N-FS-272 865-10140 03
Integral ribs formed in metal panels by cold-press extrusion
N-FS-230 865-10141 05
Expandable insert serves as screw anchor
MSC-301 866-10132 05
Concealed hinge permits flush mounting of doors and hatches
MSC-623 866-10336 03
Ultrasonic emission method enables testing of adhesive bonds
N-FS-799 866-10341 01

Verifiable machine mills, saws light materials
N-FS-627 866-10364 05
Impact and puncture resistant material protects parts from damage
MSC-747 866-10375 05
Nylon fila eliminates silk screening of equipment panels
MSC-798 864-10455 05
Optical monitor panel provides flexible test panel configurations
KSC-66-18 866-10494 01

Preformed stiffeners used to fabricate structural components for pressurized tanks
N-FS-1796 866-10688 05
Application of distorted models in developing scaled structural models
N-FS-2540 867-10321 05
Roll diffusion bonding of titanium alloy panels
N-FS-17473 868-10161 05
Simulated hailstone fabrication and use in testing weatherability of structures
NRO-10783 868-10552 03
Compound taper milling machine
KSC-15174 869-10018 05
Pressure-control purge panel for automatic butt welding
N-FS-18465 869-10403 05

PAPER CHROMATOGRAPHY
Electronic circuitry used to automate paper chromatography
JPL-840 867-10201 01

Mechanism continuously measures static and dynamic cable loads
MSC-217 866-10107 05
Expandable takeup reel facilitates paper tape removal
NGO-271 866-10399 05
Coded photographic proof paper could serve
One-dimensional Coulomb-damped wave motion in prismatic bars
(R-FS-14415) B68-10548 02

PARTIAL PRESSURE
Fuel cell serves as oxygen level detector
JPL-SC-072 B65-10066 01

New electrolyte may increase life of
polarographic oxygen sensors
MSC-1049 B67-10003 03

PARTICLE ACCELERATION
High-speed camera synchronization
R-FS-14062 B68-10282 02

PARTICLE ACCELERATOR TARGETS
Electron interaction in matter
R-FS-14086 B69-10674 02

PARTICLE ACCELERATORS
Cold cathode ionization gage has rigid metal
housing GSPC-445 B66-10041 01

Dust particle injector for hypervelocity
accelerators provides high charge-to-mass
ratio GSPC-509 B66-10347 01

Reducing bubbles in glass coatings improves
electrical breakdown strength
LEWIS-10278 B60-10214 03

Glass coated single grid for charged particle acceleration
LEWIS-10106 B68-10215 03

Advances in light-gas gun technology
R-FS-14270 B68-10288 05

On-line computer system for use with low-energy nuclear physics experiments is
reported ARG-10257 B69-10094 01

Spherical ion source
TRG-08098 B69-10186 01

PARTICLE BEAMS
Cooling method prolongs life of hot-wire
transducer LEWIS-41 B63-10344 02

PARTICLE DENSITY (CONCENTRATION)
Microparticle impact sensor measures energy
directly GSPC-252 B65-10048 01

Improved atmospheric particle analyzer
ERC-33 B67-10231 01

Mathematical relation predicts achievable
densities of compacted particles
ARG-10062 B67-10592 03

Beam profiles measured with
thermoluminescent dosimeters
ARG-10259 B69-10024 02

PARTICLE DIFFUSION
Computer program VARI-QUIR 3 provides
solution of steady-state, multigroup,
two-dimensional neutron diffusion equations
NUC-10052 B67-10345 06

PARTICLE EMISSION
Quantum mechanical calculations of reactive
scattering cross sections in bimolecular
encounters R-FS-13394 B67-10527 03

Graphite cloth facilitates vacuum
evaporation of silicon monoxide
R-FS-14764 B68-10256 03

PARTICLE ENERGY
Microparticle impact sensor measures energy
directly GSPC-252 B65-10048 01

PARTICLE INTERACTIONS
Electron interaction in matter
R-FS-14086 B69-10674 02

PARTICLE MASS
Microparticle impact sensor measures energy
directly GSPC-252 B65-10048 01

Dust particle injector for hypervelocity
accelerators provides high charge-to-mass
ratio GSPC-509 B66-10347 01

PARTICLE MOTION
Photographic method measures particle size
and velocity in fluid stream
R-FS-1536 B66-10668 01

An investigation of particle mixing in a
gas-fluidized bed
ARG-10782 B68-10407 05

Fluorescent photography of spray droplets
using a laser light source
LEWIS-10777 B69-10122 02

PARTICLE SIZE DISTRIBUTION
Protective coating withstands high temperature
in oxidizing atmosphere
R-FS-529 B66-10044 03

Submicron metal powders produced by ball
milling with grinding aids
LEWIS-188 B66-10221 03

Photographic method measures particle size
and velocity in fluid stream
R-FS-1536 B66-10668 01

Method accurately measures mean particle
diameters of monodisperse polystyrene
latexes ARG-207 B67-10054 02

Improved atmospheric particle analyzer
ERC-33 B67-10231 01

Characteristics of fluidized-packed beds
ARG-10049 B68-10270 03

Preparing rock powder specimens of
controlled size distribution
NPS-10007 B68-10297 05

Beam profiles measured with
thermoluminescent dosimeters
ARG-10259 B69-10024 02

Direct indication of particle size in
fluidized beds ARG-10130 B69-10083 05

Health hazards of ultrafine metal and metal
oxide powders LEWIS-10878 B69-10268 04

A new method for the determination of particulate contamination levels for
surface cleanliness of fluid systems
KSC-10267 B69-10520 02

Flow properties of suspensions rich in
colloids ARG-10481 B69-10622 02

Surface-renewal models for heat-transfer
between walls and fluidized beds
ARG-10372 B69-10772 02

PARTICLE THEORY
Experiments to investigate particulate
materials in reduced gravity fields
R-FS-13308 B67-10394 02

PARTICLE TRAJECTORIES
An investigation of particle mixing in a
PARTICLES

Probe samples components of rocket engine exhaust
ARS-10182
B68-10407 05

Cleanroom air sampler counts, categorizes, and records particle data
MS-PS-485
B65-10384 03

A piezo-bar pressure probe
LEWIS-393
B67-10259 01

Air sampler collects and protects minute particles
HQ-10037
B67-10661 01

Microprobe investigation of brittle segregation in aluminum HIC and TIG welds
MS-PS-14720
B68-10334 03

Effect of interparticle forces on the fluidization of fine particles
ARG-10264
B69-10195 03

Technique for pinpointing submicron particles in the electron microprobe
HQ-10043
B69-10465 01

A comparison of two methods of measuring particle size of Al2O3 produced by a small rocket motor
NPO-11198
B69-10572 03

PARTITIONS (MATHEMATICS)

Root-cubing and general root-powering methods for finding the zeros of polynomials
ARG-10444
B69-10424 02

PASIVNESS

Concept for passive system to control gas flow independently of temperature
MS-PS-982
B66-10343 05

Abraded cadmium-plated cable connectors repaired by conversion coating
MS-PS-1424
B67-10014 03

Radiation tolerant silicon nitride insulated gate field effect transistors
GSFC-10581
B69-10253 01

Storage of electric and magnetic energy in passive nonreciprocal networks
ARG-10360
B69-10630 01

PASTE

Improved electrode gives high-quality biological recordings
MSC-17
B64-10025 04

Improved conductive paste secures biomedical electrodes
MSC-107
B65-10015 03

Wire winding increases lifetime of oxide coated cathodes
LEWIS-154
B65-10032 03

Composite solar cell matrix is reliable, lightweight and flexible
NPO-10821
B67-10503 01

Improved fuel-cell-type hydrogen sensor
MS-PS-14656
B68-10263 01

Quick don-doff electrode pastes
NPO-13249
B69-10598 04

Analysis of secondary cells with lithium anodes and immobilized fused-salt electrolytes
ARG-10452
B69-10613 01

PATHOGENS

Development and test of flexible fill coupon strips for use as a sampling technique
MS-PS-20448
B69-10339 03

PATHOLOGY

Color-television medical microscopy
MSC-13086
B66-10318 01

PATIENTS

Buoyant stokes litter assembly used for sea rescue operations
MSC-131
B66-10019 05

Simulator effects partial gravity conditions
MSC-152
B66-10339 05

Automated patient monitoring system
NFS-14552
B69-10131 01

New electrical plethysmograph monitors cardiac output
MSC-11447
B68-10220 01

Electrocardiograph transmitted by RF and telephone lines in emergency situations
FRC-10031
B69-10233 01

Automatic patient respiration failure detection system with wireless transmission
ARC-10174
B68-10365 01

PATTERNS

Measuring coplanarity of surfaces
MSC-12044
B67-10371 02

Checking flat conductor cable spacing by means of a noise pattern
MS-PS-20426
B69-10456 05

Measurement technique for the determination of antenna directivity
MSC-12799
B69-10677 01

PAYLOADS

Speed-sensing device aids crane operators
WS-4
B64-10006 05

Computer program determines thermal environment and temperature history of lunar orbiting space vehicles
MSC-12916
B67-10307 06

System automatically provides dynamic launch decision criteria
MSC-13063
B67-10363 01

Earth orbit rendezvous evaluation program
MSC-13016
B67-10407 06

PEAKS

Monitoring system determines amplitude and time of vibration channel peaks
JPL-879
B66-10699 01

PEELBIB

Liquid-metal heat transfer in a cocurrent-flow, double-pipe heat exchanger is investigated
ARG-10261
B65-10091 02

PEDALS

Fingertip current control facilitates use of arc welding gun
MSC-289
B66-10092 05

PEELING

Peel resistance of adhesive bonds accurately measured
GSFC-320
B65-10173 03

Soluble undercoating facilitates removal of foamed-in-place insulation
LEWIS-193
B65-10344 03

Rotary-knife stripper facilitates removal
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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
GSFC-439  B66-10016  02

FORTRAN program flow chart is automatically produced
M-PS-269  B66-10052  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
KSC-6786  B66-10327  03

Mylar film eliminates silk screening of equipment panels
MSC-798  B66-10455  05
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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 B67-10008 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
K-PS-12731 B67-10297 02

Areas of irregular, discontinuous patterns rapidly and accurately measured
GSPC-10184 B67-10674 01

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MSC-11594 B68-10155 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
K-PS-18437 B68-10509 05

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ARG-10235 B69-10001

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K-PS-1536 B66-10668 01

Slide rule-type color chart predicts reproduced photo tones
MSC-1227 B66-10680 01

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KSC-67-111 B67-10485 02

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GSPC-551 B67-10175 01

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MSC-12044 B67-10371 02

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K-PS-18062 B68-10282 02

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ARG-10256 B69-10088 04

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Indicator system provides complete data of engine cylinder pressure variation
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Stereo TV enhancement study
K-PS-14685 B69-10497 01

Discrimination of fish oil and mineral oil slicks on sea water
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GSPC-93 B65-10596 01

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K-PS-253 B65-10110 05

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K-PS-501 B66-10072 02

Commercial film produces positive X-ray photo in ten seconds
K-PS-521 B66-10307 02

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K-PS-856 B66-10327 03

Dot patterns provide reproducible flaw areas for study of adhesive bonds
K-PS-862 B66-10367 05

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LANGLEY-190 B66-10602 02

Rocket engine vibration accurately measured by photography
K-PS-1916 B66-10652 02

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NPO-10140 B67-10246 01

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K-PS-18583 B68-10259 02

X-ray film holder permits single continuous picture of tubing joint
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An investigation of particle mixing in a gas-fluidized bed
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I-FS-193
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Plastic scintillator converts standard photomultiplier to ultraviolet range
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PHOTOSensitivity
Modified developer increases line resolution in photosensitive resist
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B67-10428

PHOTOTRANSISTORS
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M-PS-193
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PHOTOTUBES
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PHOTOVOLTAGES
New method used to fabricate gallium arsenide

**PHOTOVOLTAIC CELLS**

- Photovoltaic device
  - WO-062

- Cuprous selenide and sulfide form improved photovoltaic barriers
  - WO-212

**PHOTOVOLTAIC CELLS**

- Optics used to measure torque at high rotational speeds
  - LEWIS-13

- Laser beam transmits electric power
  - GSFC-293

- Cuprous selenide and sulfide form improved photovoltaic barriers
  - WO-212

- Solar cell submodule design facilitates assembly of lightweight arrays
  - JPL-728

- Feasibility study of wireless power transmission systems
  - N-PS-14691

**PHOTOVOLTAIC EFFECT**

- Photovoltaic effect in organic polymer-iodine complex
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- Method for copper staining of germanium crystals
  - ARG-10403

- Optimizing solar-cell grid geometry
  - HQ-10417

**PHYSICAL CHEMISTRY**

- Apparatus presents visual display of semiconductor surface characteristics
  - JPL-665

- Production of solvated electrons
  - ARG-10416

**PHYSICAL EXERCISE**

- Improved electrode gives high-quality biological recordings
  - MSC-17

- Spray-on electrodes enable EKG monitoring of physically active subjects
  - FBC-36

**PHYSICAL FACTORS**

- Special tool kit aids heavily garmented workers
  - MSC-763

- Study of hydrogen slush-hydrogen gel utilization
  - N-PS-13068

- Photocarotinology
  - N-PS-14556

**PHYSICAL FITNESS**

- Simulator effects partial gravity conditions
  - MSC-152

**PHYSICAL PROPERTIES**

- Substituted silane-diol polymers have improved thermal stability
  - N-PS-469

- Silazane elastomer remains resilient at 400 deg C
  - N-PS-1144

- Materials data handbooks prepared for aluminum alloys 2014, 2219, and 5456, and stainless steel alloy 301

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- N-PS-1959
  - B67-10089

- Analytical technique characterizes all trace contaminants in water
  - MSC-11032
  - B67-10243

- Fluid properties handbook
  - N-PS-13462
  - B67-10040

- Hastelloy X properties, data, and metallurgical characteristics
  - NMC-10302
  - B68-10023

- Materials data handbook, aluminum alloy 6061
  - N-PS-20381
  - B69-10065

**PHYSICS**

- Review of physics, instrumentation and dosimetry of radioactive isotopes
  - ARG-10037

- Structure of the isotopic transport operators in three independent space variables
  - ARG-10448

- Subsalisate biotelemetry unit permits remote physiological investigations
  - ARC-39

- Electronic device simulates respiration rate and depth
  - MSC-89

- Hand-held instrument should relieve hemostasis pressure
  - MSC-599

- Study of radiation effects on mammalian cells in vitro
  - ARG-10191

- Rate of heat extraction controller for environmental control
  - HQ-10318

- Simulator effects partial gravity conditions
  - ISC-152

- Computer circuit calculates cardiac output
  - HQ-10123

- Improved perceptual-motor performance measurement system
  - HQ-10385

- Epoxy-coated containers easily opened by wire band

**PHYSIOLOGICAL EFFECTS**

- Subsalisate biotelemetry unit permits remote physiological investigations
  - ARC-39

- Electronic device simulates respiration rate and depth
  - MSC-89

- Hand-held instrument should relieve hemostasis pressure
  - MSC-599

- Study of radiation effects on mammalian cells in vitro
  - ARG-10191

- Rate of heat extraction controller for environmental control
  - HQ-10318

**PHYSIOLOGICAL FACTORS**

- A phonocardiogram simulator
  - KSC-67-94

**PHYSIOLOGICAL RESPONSES**

- Infrared viewing permits human iris response studies
  - FBC-36

**PHYSIOLOGICAL TESTS**

- Cardiographometer with linear beat-to-beat frequency response
  - ARG-10033

- Improved perceptual-motor performance measurement system
  - HQ-10123

- Biomedical bulk data processing program
  - FBC-10015

**PHYSIOLOGY**

- Test monkeys anesthetized by routine procedure
  - HQ-18

- Computer circuit calculates cardiac output
  - MSC-274

- Automated patient monitoring system
  - N-PS-14552

- New passive telemetry system
  - HQ-1021a

**PIERCING**

- Extendable mast used in one shot soil penetrometer
  - JPL-685

- Epoxy-coated containers easily opened by wire band
PIEZOELASTIC CRYSTALS
Improved holder protects crystal during high acceleration and impact
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Piezoresistive gage tests pin-connector sockets
JPL-675 B65-10128 01
Crystal 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

PIEZOELECTRIC GAGES
A piezo-bar pressure probe
LMIS-393 B67-10259 01
Fluidic-thermochromic display device
ERC-10031 B68-10350 01
Gage measures total radiation, including vacuum UV, from ionized high-temperature gases
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MSC-13194 B69-10469 02

PIEZOELECTRIC TRANSDUCERS
A piezo-bar pressure probe
LMIS-393 B67-10259 01
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K-PS-86 B63-10572 01
Ultra-sensitive transducer advances micro-measurement range
ARC-26 B64-10004 01
Damping technique gives accelerometer flat frequency response
K-PS-471 B66-10293 01
Phonocardiograph microphone is rugged and moistureproof
MSC-212 B66-10314 04
Ultrasonic emission method enables testing of adhesive bonds
K-PS-799 B66-10341 01
Method permits mechanical and electrical checkout of piezoelectric transducers while installed in a system
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High-energy-rate magneto-hydraulic metal forming system
K-PS-2142 B67-10126 02
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K-PS-2648 B67-10143 01
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LANGLEY-10091 B68-10379 01

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Simple device produces accelerometer calibration pulse
K-PS-363 B65-10269 01
A conceptual design for squeeze film bearings
K-PS-573 B66-10226 05
Miniature piezoelectric triaxial accelerometer measures cranial accelerations
ARC-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 B67-10551 04
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ARC-10052 B69-10295 05

PIEZORESISTIVES
Piezoresistive gage tests pin-connector sockets
JPL-675 B65-10128 01

PIEZORESISTIVE TRANSDUCERS
Pressure transducer 3/8-inch in size can be faired into surface
WO-0065 B64-10021 05
Miniature stress transducer has directional capability
JPL-591 B65-10203 01
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GSFC-10004 B67-10551 03
Pressure-sensitive bonded junction transducers
ERC-10087 B68-10563 01

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Concept to standardize space vehicle piggyback experiment modules
K-PS-1697 B68-10038 05

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Pigmented coating resists thermal shock
JPL-3C-083 B65-10354 03
White primer permits a corrosion-resistant coating of minimum weight
K-PS-304 B66-10207 03
Film coating permits low-force scrib ing
MSC-990 B66-10609 03
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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
BB-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
N-FS-466 B66-10194 03

Special tool seals conductors with combination of plastic sleeves
N-FS-579 B66-10209 05

Flow ring valve is simple, quick-acting
N-FS-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
N-FS-743 B66-10359 01

Alignment tool facilitates pin placement on irregular horizontal surfaces
LANGLEY-219 B66-10410 05

Plastic tubing protects flexible copper hose
N-FS-772 B66-10588 05

Thin plastic sheet eliminates need for expensive plating
N-FS-1896 B66-10681 03

Thermocouple-flexible cable connector insulator is highly reliable
NU-0082 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
WFO-10062 B67-10132 03

Cryogenic seal remains leaktight during thermal displacement
ABG-96 B67-10134 02

Improved compression molding process
LANGLEY-10027 B67-10302 03

Pocket-size manual tape reader device aids computer tape checking
KSC-10058 B67-10361 01

Machining heavy plastic sections
N-FS-12720 B67-10381 03

Polarized light reveals stress in machined laminated plastics
LEWIS-10018 B67-10383 03

Dielectric prisms would improve performance of quasi-optical microwave components
BEC-10011 B67-10416 01

Adhesives for laminating polyside insulated flat conductor cable
N-FS-12066 B67-10429 03

Warpage eliminated in copper-clad microwave circuit laminates
N-FS-13892 B67-10454 03

Plastic shoe facilitates ultrasonic inspection of thin wall metal tubing
NUS-10010 B67-10542 02

Epoxy resins produce improved plastic scintillators
ABG-241 B67-10596 03

Dynamic captive plastic seal
N-FS-12988 B67-10600 03

Connector shorting cap provides pin alignment, inspection, and stray voltage protection
N-FS-13111 B67-10635 01

Heat-shrink plastic tubing seals joints in glass tubing
LEWIS-10329 B68-10040 05

Plastic preforms facilitate fabrication of welded cordwood electronic modules
LEWIS-90339 B66-10588 05

Improved molding process ensures plastic shrinkage
SUBJECT INDEX

parts of higher tensile strength
LANGLEY-10033 B68-10132 05
X-ray film holder permits single continuous picture of tubing joint
LEWIS-10352 B68-10343 05
Evaluation of a fluorocarbon plastic used in cryogenic valve seals
M-FS-10180 B68-10523 03
Microwave interferometer controls cutting depth of plastics
M-FS-14673 B69-10012 01
Refractory-metal compound impregnation of polytetrafluoroethylene
LEWIS-10733 B69-10072 03
Finite element analysis of compressible solids with nonlinear material properties
MSC-10342 B69-10238 06
Hermetically sealed pump
LEWIS-10837 B69-10320 05
Pressure transducer
NE-10853 B69-10364 01
Generation of sonic power during welding
M-FS-20339 B69-10404 05
Freon, R-81 cutting fluid
MSC-11468 B69-10485 05
Heat-shrinkable jacket holds fluid in contact with tensile test specimens
MSC-13195 B69-10495 05
Flared-tube fittings with replaceable seat inserts
MSC-15372 B69-10519 05
Two-functional seal for hose connection
M-FS-14062 B69-10568 05
Photomicrometrology
M-FS-14556 B69-10736 01
PLASTISOLS
Electronic dummy for acoustical testing
MSC-206 B67-10298 01
Compressible sleeve provides automatic centering for grinding or turning of cylinders
SAN-10021 B68-10318 05
PLATES
Gas pressure feeds film into camera at high speed
ARG-97 B66-10474 02
A method for observing gas evolution during plastic laminate cure
MSC-15592 B69-10530 03
PLATES
Forming blocks speed production of strain gage guide
LEWIS-182 B65-10009 05
Fastener provides cooling and compensates for thermal expansion
NU-0003 B65-10038 05
Splice plate design assures structural separation by mild explosive
MSC-137 B65-10166 05
PLATES (STRUCTURAL MEMBERS)
Device transmits rotary motion through hermetically sealed wall
JPL-303 B63-10198 05
Improved sensor counts micrometer-scale penetrations
LEWIS-76 B63-10443 01
Fine-mesh screen made by simplified method
WOO-104 B69-10282 03
Splice plate design assures structural separation by mild explosive
MSC-137 B65-10166 05
Nodal thermoelectric cell is easily packaged in various arrays
BSPC-339 B65-10199 01
Fatigue tester achieves true axial motion through flex plates and bars
NU-0021 B69-10164 01
Teflon sheet permits valve and valve operator to move as a single unit in a cryogenic pipe line
M-FS-12341 B67-10379 05
Improved sample capsule for determination of oxygen in hemolyzed blood
M-FS-12341 B67-10408 04
Infrared radiometer
M-FS-13373 B67-10422 01
Weld joint strength and mechanical properties in 2219-T81 aluminum alloy
LEWIS-10479 B68-10561 03
Detecting hydrogen-containing contaminants on metal surfaces
M-FS-20456 B69-10192 05
Technique for anchoring fasteners to honeycomb panels
LEWIS-10868 B69-10265 05
Modified cryogenic storage tank subsystem
KSC-10380 B69-10556 02
PLATINSOL
Electronic dummy for acoustical testing
MSC-206 B67-10298 01
Compressible sleeve provides automatic centering for grinding or turning of cylinders
SAN-10021 B68-10318 05
PLATES
Gas pressure feeds film into camera at high speed
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A method for observing gas evolution during plastic laminate cure
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Forming blocks speed production of strain gage guide
LEWIS-182 B65-10009 05
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Splice plate design assures structural separation by mild explosive
MSC-137 B65-10166 05
PLATES (STRUCTURAL MEMBERS)
Device transmits rotary motion through hermetically sealed wall
JPL-303 B63-10198 05
Improved sensor counts micrometer-scale penetrations
LEWIS-76 B63-10443 01
Plated nickel wire mesh makes superior catalyst bed
MSC-216 B65-10321 03
Plated nickel wire mesh makes superior catalyst bed
MSC-216 B65-10321 03
Differential expansion provides pressure for diffusion bonding of large diameter rings
M-FS-588 B66-10269 05
Improved memory word line configuration allows high storage density
GSPC-559 B66-10617 01
Thin plastic sheet eliminates need for expensive plating
M-FS-1096 B66-10681 03
Complex surfaces plated by thin-film deposition in one operation
LEWIS-292 B67-10006 05
Undercoat prevents blistering of silver plating at elevated temperatures
M-FS-2049 B67-10096 05

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PLATINUM

Environmental study of miniature slip rings
M-FS-2443 B67-10210 05
High-strength braze joints between copper and steel
M-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
ARG-10403 B69-10228 03
Improved vacuum deposition apparatus
NPO-11009 B69-10365 02
Pulsed high-voltage dc RF sputtering
LEWIS-10920 B69-10699 01

PLATINUM ALLOYS
Measurements of thermoelectric power in annealed and quenched gold-platinum alloys
ARG-10303 B69-10206 03

PLATINUM BLACK
Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01
Improved inorganic ion exchange membranes
LEWIS-10737 B68-10451 03

PLATINUM ISOtopes
Sensing disks for slug-type calorimeters have higher temperature stability
M-FS-1067 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
GSPC-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
M-FS-37 B64-10408 05
Simple scale interpolator facilitates reading of graphs
LEWIS-92 B66-10302 05
Intrument calculates moments of inertia of complex plane figures
MSC-628 B66-10306 01
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
EPO-10164 B67-10206 01

Subroutines GEORGE and DEASTC simplify operation of automatic digital plotter
MSC-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-311 B67-10269 01

Computer program utilizes FORTRAN 4 subroutines for contour plotting
NUC-10044 B67-10222 06

X-Y plotter adapter developed for SDS-930 computer
NP0-10220 B67-10654 06

FORTRAN optical lens design program
NPO-10603 B68-10354 06

Calibration standard for dynamic evaluation of a profile-plotter
F-PS-16476 B69-10458 05

PLOTTING
Contact stresses calculated for miniature slip rings
M-PS-280 B65-10698 05

Variable load automatically tests dc power supplies
GSFC-197 B66-10105 01

Computer routine adds plotting capabilities to existing programs
GSFC-490 B66-10511 01

Computer program performs statistical analysis for random processes
M-PS-723 B66-10525 01

Alpha particle backscattering measurements used for chemical analysis of surfaces
ARG-116 B67-10186 03

Subroutines GEORGE and DEASTC simplify operation of automatic digital plotter
MSC-10084 B67-10222 06

Computer program calculates steady-state temperature distribution within plane or axisymmetric solids
MSC-10045 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
EPO-10359 B67-10504 06

SOC-DS computer code provides tool for design evaluation of homogeneous two-material nuclear shield
MSC-10142 B67-10537 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 B67-10641 03

Phase plane displays detect incipient failure in servo system testing

SUBJECT INDEX

Recording and time expansion technique for high-speed, single-shot transient video signal
ARC-10003 B67-10139 01

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NUC-10049 B67-10224 06

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F-PS-16476 B69-10458 05

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Compilation of detection sensitivities in thermal-neutron activation
ARG-116 B67-10641 03

Phase plane displays detect incipient failure in servo system testing

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In the field of predicting surface heating rates and pressures resulting from hot exhaust gases, a computer program was used to calculate characteristics for free-jet investigation. This program is known as LABGLBZ-10117. The prediction of thermal radiation from a rocket's exhaust plume is another area of interest. A life detection system, denoted as KFO-10510, was mentioned as well.

Regarding pneumatics, a one-shot valve may be remotely actuated. A high-speed pulse camera, marked as MSC-11353, was noted. An improved retort for cleaning metal powders with hydrogen was described. A neutron irradiation of Am-241 effectively produces curium, as indicated by ARG-10030. Magnesium-zinc reduction is effective in the preparation of metals, as per ARG-10050. Daughter growth in freshly separated Ra-226, Ac-227 and U-232 was discussed. Thick transducers used for generating short-duration stress pulses in thin specimens are mentioned, with ARG-10232.

Gamma radiation characteristics of plutonium dioxide fuel were analyzed. In the realm of pneumatic equipment, pneumatic power is transmitted through an air bearing. Electropneumatic rheostat regulates high current. ECONOMIC AND MAINTENANCE-FREE GAS SYSTEM OPERATES RAILROAD SWITCHES was noted. Critical parts are stored and shipped in environmentally controlled reusable containers. Pneumatic separator gives quick release to heavy loads. An automatic protective vent has a fail-safe feature. Fluid logic control circuit operates nutator actuator motor. Pneumatic wrench retains or discharges nuts or bolts as desired. Orbital tube flaring system produces tubing connectors with zero leakage. A pneumatic high pressure piping system was described. A pneumatic high pressure piping system produces biaxial stresses in cylinders. A study made of pneumatic high pressure piping materials at 10,000 psi was detailed. Analysis of dynamic systems with DAPAN computer program was discussed. Air sampler collects and protects minute particles. Reconnect mechanism was mentioned. Pneumatic raft automatically reforms after rupture of buoyant member. High- and low-pressure pneumotachometers were also listed.
measure respiration rates accurately in adverse environments

Portable, high intensity isotopic neutron source provides increased experimental accuracy

Indium adhesion provides quantitative measure of surface cleanliness

Fluidic-thermochromic display device

Two-axis winch installer for heavy ducts in confined space

Pneumatic analog-to-pulse frequency converter

Two-step rocket engine bipropellant valve concept

Stress-testing of the throat of a rocket nozzle

Quick-acting backup tool for welding ducts

Pneumatic flow comparator

Improved solenoid valve design

Pneumatic pressure wave generator provides economical, simple testing of pressure transducers

Diffusion of trace gases for leak detection - A study

Automatic filter-blowback systems used with sintered-metal filters

Hydraulic calipers

Electronic device simulates respiration rate and depth

Pneumotachometer counts respiration rate of human subject

Gelatin coated electrodes allow prolonged bioelectronic measurements

Program computes zero lift wave drag of entire aircraft

Investigation of temperature dependence of development and aging

Resistivity measurements of neutron-irradiated pure metals and Al-Zn alloys

Point-source detection system rejects spatially extended radiation sources
POLARIZATION (CHARGE SEPARATION)
p-218

preparled from magnesium-24 oxide
ABO-10154 B68-10293 02

POLARIZATION (CHARGE SEPARATION)
p-218

Polarizing keys prevent mismatch of connector plugs and receptacles
MSC-443 B66-10251 01

Electrochemical study of aluminum corrosion in boiling high purity water
ARB-10306 B69-10033 03

High-power microwave power divider concept
NPO-10131 B69-10290 01

Storage of electric and magnetic energy in passive nonreciprocal networks
ARB-10360 B69-10630 01

POLARIZATION (WAVES)
p-218

Wideband, high efficiency optical modulator
requires less than 10 watts drive power
E-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-10666 B68-10255 02

Energy-storage of a prescribed impedance
NPO-10303 B69-10930 01

Instrumentation for potentiostatic corrosion studies with distilled water
ARB-10409 B69-10143 03

Proposed acousto-optic filter
H-PS-10440 B69-10466 02

Rotary antenna attenuator
NPO-10648 B69-10502 01

POLARIZATION CHARACTERISTICS
p-218

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
p-218

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
ARB-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
LEWIS-10018 B67-10381 03

POLARIZATION (BRANCH)
p-218

New electrolyte may increase life of polarographic oxygen sensors
MSC-1049 B67-10003 03

Coordination chemistry in fused-salt solutions
ABO-10469 B69-10423 03

Rate of heat extraction controller for environmental control
H-PS-10319 B69-10516 01

POLISHING
p-218

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
W-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-351 B66-10676 05

Process sequence produces strong, lightweight reflectors of excellent quality
LEWIS-351 B67-10010 05

Chemical milling solution reveals stress corrosion cracks in titanium alloy
LANGLET-10077 B67-10322 03

Machining heavy plastic sections
M-PS-12270 B67-10381 03

Silicon carbide diode for increased light output
M-PS-20063 B69-10096 01

Basal-plane metallography of deformed pyrolytic carbon
HPO-11196 B69-10988 03

Automatic sample rotator for metallographic polishing
HPO-11015 B69-10596 03

POLUTION
p-218

New method for critical failure prediction of complex systems
M-PS-14133 B68-10252 02

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<td>Adhesive for vacuum environments resists shock and vibration</td>
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<td>Aluminum alloys protected against stress-corrosion cracking</td>
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<td>Improved poppet valve provides positive damage-proof seal</td>
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<td>Buoyant Stokes litter assembly used for sea rescue operations</td>
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<td>Nylon shock absorber prevents injury to parachutists</td>
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<td>Nylon bit removes cork insulation without damage to substrate</td>
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<td>Self-inflating lifevest stores in small package</td>
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<td>Phonocardiograph microphone is rugged and moistureproof</td>
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<td>Impact and puncture resistant material protects parts from damage</td>
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<td>Adhesive for polyester films cures at room temperature, has high initial tack</td>
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<td>Synthesis of various highly halogenated monomers and polymers</td>
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<td>Primary cell uses neither liquid nor fused electrolytes</td>
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<td>POLYBUTADIENE</td>
<td>Polymer film exhibits thermal and radiation stability</td>
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<td>POLYBUTADIENE</td>
<td>New class of thermosetting plastics has improved strength, thermal and chemical stability</td>
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<td>POLYCARBONATES</td>
<td>One-piece transparent shell improves design of helmet assembly</td>
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<td>Thermocouple-flexible cable connector is highly reliable</td>
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<td>Synthesis of various highly halogenated monomers and polymers</td>
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**POLYCRYSTALS**
- Copper selenide and sulfide form improved photovoltaic barriers | WO-212 | B66-10025 |
- Grain-boundary migration in KC1 bicrystals | ARG-10181 | B66-10455 |
- Analyses of silicon dioxide, magnesium oxide, lead fluoride, bismuth as low-pass velocity filters for neurons | ARG-10220 | B69-10211 |
- Preferred-orientation analysis of polycrystalline materials | FPC-10504 | B69-10336 |

**POLYESTERS**
- Modified filter prevents conduction of microwave signals along high-voltage power supply leads | JPL-63 | B63-10091 |
- Improved variable-reluctance transducer measures transient pressures | LANGLEY-10 | B63-10321 |
- Adhesive for polyester films cures at room temperature, has high initial tack | B66-10487 |
- Dispersion of borax in plastic is excellent fire-retardant heat insulator | ARG-5 | B67-10116 |
- Multi-feed cone for Cassegrainian antenna | ARG-10025 | B67-10484 |
- Thermal protective visor for entering high temperature areas | B66-10285 |
- Improved primer for bonding polyurethane adhesives to metals | B-PS-90591 | B69-10560 |

**POLYETHERS**
- Irradiation improves properties of aromatic polyester | LANGLEY-115 | B65-10164 |
- High-temperature bearing lubricants | LEWIS-10408 | B66-10246 |
- A concept for magazine Bimat processor | KSC-06786 | B69-10275 |
- Quick-release hook-and-loop fastener | BSC-10950 | B69-10388 |

**POLYETHER RESINS**
- Organic reactants rapidly produce plastic foam | LANGLEY-37 | B65-10288 |
- Synthesis of polyethers of hexafluorobenzene and hexafluoropentanediol | B-PS-14962 | B69-10636 |

**POLYETHYLENE Terephthalate**
- Modified filter prevents conduction of microwave signals along high-voltage power supply leads | JPL-63 | B63-10091 |

**POLYETHYLENES**
- Inert-gas welding and brazing enclosure fabricated from sheet plastic | LEWIS-220 | B65-10338 |
- Primary cell utilizes halogen-organic charge transfer complex | JPL-926 | B66-10682 |
- Trace hydrazines in aqueous solutions accurately determined by gas chromatography | BSC-11222 | B67-10290 |
- Vibration damping composition has flush-away feature | 

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## POLYIMIDE RESINS

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**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
- **N-FS-20293**
- **B69-10310**
- **05**

- Simple test indicates degree of cure of polyimide coatings
- **MSC-15592**
- **B69-10530**
- **03**

- High-pressure seals for rotary shafts
- **N-FS-18548**
- **B69-10649**
- **05**

**New class of thermosetting plastics with improved strength, thermal and chemical stability**

- **LEWIS-10108**
- **B69-10197**
- **03**

**Polymers films for reflective surfaces reproduced from masters**

- **GSFC-188**
- **B64-10151**
- **03**

- Efficient thin film heating element takes minimum space
- **GSFC-289**
- **B65-10123**
- **01**

- Electronic modules easily separated from heat sink
- **MSC-142**
- **B65-10186**
- **02**

- Polyimide film exhibits thermal and radiation stability
- **LANGLEY-100**
- **B66-10043**
- **03**

- Silane polymers show promise for high-temperature application
- **N-FS-466**
- **B66-10194**
- **03**

- Composite gaskets are compatible with liquid oxygen, resist compression set
- **N-FS-455**
- **B66-10395**
- **03**

- Process produces accurate registry between circuit board prints
- **LANGLEY-288**
- **B66-10660**
- **02**

- Static electricity of polymers reduced by treatment with iodine
- **NPO-10062**
- **B67-10132**
- **03**

- Scribable coating for plastic films
- **MSC-11194**
- **B67-10409**
- **03**

## SUBJECT INDEX

- Cone and column solar energy concentrator
  - **LANGLEY-210**
  - **B67-10517**
  - **01**

- Thermal protective visor for entering high temperature areas
  - **MSC-10285**
  - **B68-10277**
  - **05**

- Balloon batteries, charged and heated by solar energy
  - **GSFC-10765**
  - **B69-10585**
  - **01**

**New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability**

- **LEWIS-10576**
- **B69-10118**
- **03**

**Low-cost seal compensates for surface irregularities**

- **N-0016**
- **B65-10160**
- **05**

**Storage-stable foamy polyurethane is activated by heat**

- **LANGLEY-187**
- **B66-10111**
- **03**

**Substituted silane-diol polymers have improved thermal stability**

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- **B66-10259**
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**Primary cells utilize halogen-organic charge transfer complex**

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**Photosensitive filler minimizes internal stress in epoxy resins**

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**Heparin insolubilized with crosslinking agent**

- **NPO-10834**
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M-FS-478 B66-10099 01

Improved rolling element bearings provide low torque and small temperature rise in ultrahigh vacuum environment
LEWIS-359 B66-10676 05

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NO-0096 B67-10027 01

Improved sample capsule for determination of oxygen in hemolyzed blood
MSC-11677 B67-10408 04

Dynamic valve seal is reliable at cryogenic temperatures
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M-FS-20294 B69-10066 03

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LANGLEY-187 B66-10111 03

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M-FS-1658 B66-10646 03

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M-FS-2143 B67-10100 03

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MSC-10304 B68-10024 05

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M-FS-326 B66-10183 02

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M-FS-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-FS-716 B66-10334 01

Nonwoven glass fiber mat reinforces polyurethane adhesive
M-FS-2309 B67-10113 03

Vibration damping composition has flush-away feature
M-FS-597 B67-10432 03

Solvent permits solid curing agents to be used at room temperatures
M-FS-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-FS-90591 B69-10540 03

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M-FS-18962 B69-10636 03

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MSC-714 B66-10313 03

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Emergency solar still desalts seawater
MSC-135 B65-10214 03

Primary cells utilize halogen-organic charge transfer complex
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LANGLEY-10495 B66-10236 04

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HQ-10234 B66-10193 02

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M-FS-1517 B67-10108 01

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Apparatus facilitates pressure-testing of metal tubing
LEWIS-174 B65-10131 05

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LANGLEY-37 B65-10280 03

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LEWIS-187 B66-10281 03

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Improved high-temperature silicide coatings LEWIS-10817 B69-10266 03

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Unique gear design provides self-lubrication JPL-5C-079 B65-10366 03
Electron beam seals outer surfaces of porous bodies M-PS-962 B66-10033 03
Process reduces pore diameters to produce superior filters WO-0093 B66-10037 03
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Composites of porous metal and solid lubricants increase bearing life LEWIS-307 B67-10007 03
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Fuel cell life improved by metallic sinter activation after electrode assembly welding MSC-10965 B67-10436 03
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Hydrostatic testing of porous assemblies M-PS-18298 B68-10439 05

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Modular Porous Plate Sublimator /BEPS/ requires only water supply for coolant M-PS-1074 B66-10409 01

PORTABLE EQUIPMENT
Portable flooring protects finished surfaces, is easily moved M-PS-15 B63-10387 05
Portable display paneling has wide use, easy take down and assembly ARC-17 B63-10435 05
Device calibrates vibration transducer at amplitudes up to 20 g M-PS-86 B63-10572 01
Continuity tester screens out faulty socket connections JFL-596 B64-10065 01
Welding procedures improves quality of welds, offers other advantages M-PS-32 B64-10309 01
Portable tool removes burrs from pipe and tubing MSC-237 B65-10360 05
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Improved tool easily removes brazed tube connectors MSC-263 B66-10003 05
Portable self-powered device detects internal flaws in tubular structures WD-0019 B66-10028 01
Seismometer designed for remote operation in random orientation JFL-320 B66-10085 01
Pipe cutting tool is useful in limited space MSC-36 B66-10102 05
Mount makes liquid nitrogen-cooled gamma ray detector portable LEWIS-259 B66-10103 01
Chart case opens to form briefing easel MSC-349 B66-10135 05
Portable power tool machines weld joints in field M-PS-258 B66-10145 05
Extensible mast used in one shot soil penetrometer JFL-685 B66-10146 05
Dispenser leak-tests and sterilizes rubber gloves MSC-285 B66-10166 03
Ultrasonic recording scanner used for nondestructive weld inspection M-PS-284 B66-10220 01
Hand tool permits shrink sizing of assembled tubing MSC-504 B66-10239 05
Portable sandblaster cleans small areas MSC-523 B66-10242 05
Ultrasonic hand tool allows convenient scanning of spot welds M-PS-539 B66-10289 02

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PORTABLE LIFE SUPPORT SYSTEMS

Portable lightweight cell provides controlled environment
MSC-648 B66-10370 05

Analog solar system model relates celestial bodies spatially
JPL-195 B66-10413 01

Automatic cryogenic liquid level controller is safe for use near combustible substances
LWIS-195 B66-10482 01

Apparatus enables automatic microanalysis of body fluids
JPL-962 B66-10515 04

Gage tests tube flares quickly and accurately
KSC-66-19 B66-10537 05

Polaroid film helps locate objects in inaccessible areas quickly
ISC-960 B67-10008 02

Portable detector set discloses helium leak rates
N-PS-1733 B67-10065 01

Portable fixture facilitates pressure testing of instrumentation fittings
N-PS-2032 B67-10121 03

Tester automatically checks insulation of individual conductors in multiple-strand cables
NUC-10068 B67-10260 01

Automated tester permits precise calibration of pressure transducers from 0 to 7050 psi
NUC-10067 B67-10263 01

Portable machine welding head automatically controls arc
N-PS-12763 B67-10272 05

Variable-speed, portable routing skate
N-PS-13772 B67-10525 05

Radiant heat source, vacuum bag, provide portable bonding oven
MSC-11342 B67-10570 03

Surface irregularities detected by flare inspection instrument
N-PS-20157 B69-10152 01

A prototype high power portable lamp
N-PS-20229 B69-10189 02

J-beveling of pipe ends with a hand-held tool
KSC-10356 B69-10229 05

Magnetoactive forming for precision sizing and joining of large-diameter tubes
N-PS-20481 B69-10422 05

Ion mass spectrometer for special uses
HQ-10418 B69-10510 02

Seismographic recording of large rocket engine operation
N-PS-20545 B69-10756 01

PORTABLE LIFE SUPPORT SYSTEMS

Improved chlorate candle provides concentrated oxygen source
MSC-1137 B67-10095 03

PORTS (OPENINGS)

Multiple port pressure scanner valve features greater accuracy, quicker data
JPL-255 B64-10031 05

Threaded pilot insures cutting tool alignment
N-PS-527 B66-10074 05

Flow ring valve is simple, quick-acting

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Fluid logic control circuit operates nutator actuator motor
LWIS-294 B66-10593 05

Tool samples subsurface soil free of surface contaminants
MSC-10988 B67-10473 05

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System locates randomly placed remote objects
LANGLEY-209 B66-10315 01

Integrated mobility measurement and notation system
MSC-726 B67-10114 04

Electron beam deflected to determine focal point location
N-PS-14107 B67-10649 01

Electron beam stand-by absorber system
N-PS-14108 B67-10650 01

Locating and sealing air leaks in multiroomed buildings
NUC-10304 B68-10026 05

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N-PS-14790 B68-10183 01

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N-PS-14915 B68-10348 02

Reidentifying hardware after loss of serial number
N-PS-18133 B69-10059 05

APTEAJ on-site tracking prediction program
FPO-10836 B69-10103 06

Circuit board hole coordinate locator concept
N-PS-14737 B69-10539 01

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Image position sensor
N-PS-14101 B69-10783 02

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Solar-angle sensor has no moving parts
JPL-418 B63-10260 02

Direction indicator system does not require complicated optics
WOO-305 B66-10407 01

Analog solar system model relates celestial bodies spatially
JPL-195 B66-10413 01

Shaft encoder presents digital output
JPL-SC-191 B66-10436 01

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Screw locking cups quickly and neatly crimped
BD-0009 B65-10049 05

Magnets position X-ray film for weld inspection
N-PS-253 B65-10110 05

Simple circuit positions film frames in projector
JPL-508 B65-10132 02

Ball and socket joints provide accurate biaxial global
JPL-654 B65-10205 05

Three-position rocker switch actuator has positive centering
MSC-261 B65-10376 01

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Direct force-measuring transducer used in blood pressure research
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Special mount improves remote transducer accuracy
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Transmission system isolates pressure transducer from severe environment
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Bismuth alloy potting seals aluminum connector in cryogenic application
WOO-260

Improved system measures output energy of pyrotechnic devices
WOO-256

Acceleration-compensated pressure transducer has fast response
LANGLEY-113
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

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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

Cooled miniature pressure transducers effective at high temperatures

Preformed stiffeners used to fabricate structural components for pressurized tanks

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N-PS-531 B66-10052 05
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Investigation of the development of cracks in soldered joints

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Computer/PERT technique monitors actual versus allocated costs

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One-dimensional Coulomb-damped wave motion in prismatic bars

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Special purpose reflectometer uses modified Ulbricht sphere

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N-PS-105 B65-10216 01
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LEWIS-42 B63-10345 03
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MSC-346 B66-10123 05

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M-FS-531 B66-10149 05

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    - GSFC-306  B65-10093  01
  - Computer program for optical systems ray tracing
    - PRC-10017  B67-10549  06
  - Automatic design of optical systems by digital computer
    - NRO-10265  B67-10632  06
  - FORTRAN optical lens design program
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  - Selective vignetting of Type I X-ray telescopes
    - GSFC-10662  B69-10075  02
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  - Computer program provides improved longitudinal response analysis for axisymmetric launch vehicles
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  - Improvement in recording and reading holograms
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  - The response of monoenergetic gamma rays in finite media are investigated
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  - Reference black body is compact, convenient to use
    - ARC-3  B63-10004  03
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  - 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
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    - 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
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  - Subminiature deflection circuit operates integrated sweep circuits in TV camera
    - MSC-1253  B67-10155  01
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Pipe joints reinforced in place with fitted aluminum sleeves

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Composite gaskets are compatible with liquid oxygen, resist compression set

Tungsten fiber-reinforced copper composites for high strength electrical conductors

Nonwoven glass fiber mat reinforces polyurethane adhesive

Tungsten fiber-reinforced nickel superalloy

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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

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Circuit exhibits power efficiency greater than 75 percent

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<td>Aspirator increases relief valve poppet stroke</td>
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<td>Dynamic valve seal is reliable at cryogenic temperatures</td>
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<td>Quick-disconnect coupling safe transfer of hazardous fluids</td>
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<td>Electromechanical flowmeter accurately monitors fluid flow</td>
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<td>Remotely operated high pressure valve protects test personnel</td>
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## RESISTORS

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- Inexpensive, stable circuit measures heart rate
- Zener diode function generator requires no external reference voltage
- Transistor voltage comparator performs own sensing
- Circuit detects errors in address currents for
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M-PS-371 B65-10347 01

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MSC-189 B65-10352 01

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GSFC-446 B65-10362 01

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NO-2069 B66-10228 01

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LEWIS-158

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MSC-80

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LEWIS-276

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- Spiral-grooved shaft seals substantially reduce leakage and wear
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LANGLEY-217 B67-10637 01
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N-P S-14672 B68-10264 01
Improved electromechanical master-slave manipulator
ARG-10027 B68-10372 05
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N-P S-20224 B68-10566 01
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N-P S-14673 B68-10012 01
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Material fatigue data obtained by
card-programmed hydraulic loading system
LANGLEY-10042  B67-10491  03

Digital servo readout system increases
recording accuracy of servo-balance scales
MSC-10125  B67-10496  01

Light-controlled resistors provide
quadrature signal rejection for high-gain
servo systems
M50-340  B67-10552  01

Phase plane displays detect incipient
failure in servo system testing
NH-10016  B67-10662  01

Alternating current electromagnetic servo
induction meter
XFR-03838  B67-10690  01

Low-cost, fast-response drive circuit for
electromagnetic torque motors
LEWIS-10143  B67-10503  01

Digital laser-beam deflection sensor
S-PS-14765  B68-10525  01

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Hydraulic device provides accurate
displacements to microinches
MSC-112  B65-10230  05

Electronic ohmmeter provides direct digital
output
GSFC-363  B65-10274  01

Noncontacting vibration transducer has
constant sensitivity
LANGLEY-99  B65-10392  01

Photosensors used to maintain welding
electrode-to-joint alignment
MSC-243  B65-10401  05

Rotary valve controls multiple hydraulic
leveling cylinders
N-PS-361  B66-10402  05

Light-intensity modulator withstands high
heat fluxes
MSC-246  B66-10532  02

Laser measuring system accurately locates
point coordinates on photograph
ARG-74  B66-10560  02

Simple motor drive system operates heavy
hinged door
NO-0093  B66-10712  05

Closed circuit TV system monitors welding
operations
MSC-11062  B67-10162  01

Concept for sleeve induction motor with
1-msec mechanical time constant
ARG-10124  B68-10185  01

Improved electromechanical master-slave
manipulator
ARG-10027  B68-10372  05

Remote balance weighs accurately axial high
radiation
ARG-10387  B69-10242  05

Precise gibballing mechanisms
WRO-11057  B69-10270  01

Automatic leveling and equalizing hoist
device
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ARG-10196  B68-10320  04

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gravitational reference
MSC-200  B66-10143  02

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guidance system
MSC-407  B67-10110  02

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system
MSC-11585  B69-10597  01

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Liquid laser cavities
GSFC-10592  B69-10324  02

SHADOWS
Circular, explosion-proof lamp provides
uniform illumination
MSC-382  B67-10156  02

SHAFTS (MACHINE ELEMENTS)
Stepping switch with simple actuator provides
many contacts in small space
JPL-122  B63-10118  01

Device transmits rotary motion through
hermetically sealed wall
JPL-303  B63-10198  05

New package for Belleville spring permits
rate change, easy disassembly
JPL-392  B63-10247  05

High-temperature, high-pressure spherical
segment valve provides quick opening
ARC-13  B63-10431  05

Speed-sensing device aids crane operators
WS-4  B64-10006  05

Quick-acting clutch disengages idle drive
motor
GSFC-143  B64-10028  05

Bearing transmits rotary and axial motion
LANGLEY-27  B64-10130  05

Shock absorber protects motive components
against loads
WOO-092  B65-10008  05

Knob linkage permits one-hand control of
several operations
MSC-30  B65-10022  05

Fluid pressure used to test turbopump bearings
WOO-0001  B65-10024  03

Device measures curved surface finish on
gear teeth
WOO-112  B65-10064  05

New coupling compensates for shaft
misalignment
WOO-0013  B65-10077  05

Bidirectional torque filter eliminates
backlash
GSFC-335  B65-10148  05

Air brake-dynamometer accurately measures
torque
LEWIS-163  B65-10312  05

Plugged hollow shaft makes fatigue-resistant
shear pin
LANGLEY-195  B66-10077  05

Intermediate rotating ring improves

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rigid shafts

rigid shafts

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**SHPL REGISTERS**

- Small digital recording head has parallel bit channels, minimizes cross talk
- Computer circuit will fit on single silicon chip
- Blocking oscillator uses low triggering voltage
- Ring counter may be advanced or retarded by command signal
- Magnetic-shift-register circuit controls stepper motor operation
- Queuing register uses fluid logic elements
- Binary sequence detector uses minimum number of decision elements
- Electronic frequency discriminator
- Improved television signal processing system
- Review of research and development in fluid logic elements
- Parallel-to-serial biphase-data converter
- Acquisition of pseudonoise signals by sequential estimation
- Simultaneous message framing and error detection

**SUBJECT INDEX**

- Fluidic-thermochromic display device
- Simple quasi-exponential slope generator
- Flexible rivet-set
- NPO-10315
- Explosive bonding of metal-matrix composites
- Simple device produces accelerometer calibration pulse
- Perforations in jet engine supersonic inlet increase shock stability
- Thersally conductive metal wool-silicone rubber material can be used as shock and vibration damper
- Frictional wedge shock mount is inexpensive, has good damping characteristics
- Break-up of metal tube makes one-time shock absorber, bars rebound
- Portable flooring protects finished surfaces, is easily moved
- NPF-8
- Novel shock absorber features varying yield strengths
- Shock absorber protects motive components against overloads
- Shock mount isolates pressure transducers from shock loading
- Improved television signal processing system
- Lateral ring metal elastic wheel absorbs shock loading
- Land landing couch dynamics computer program
- Sleeved damper limits spring surging
- Pressure variable orifice for hydraulic control valve
- Shock-absorbing caster wheel is simple and compact

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Current-limiting voltage regulator
HSC-11824 B68-10305 01

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BSC-504 B66-10239 05

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Electronic test instrument generates extremely small current signals

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Signal generator converts direct current to multiphase supplies

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Circuit automatically calibrates flowmeter against liquid-level gage reference

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Ultrasonics used to measure residual stress

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Digital voltage-controlled oscillator

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Hydraulic servo system increases accuracy in fatigue testing

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Reflectometer for receiver input system

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Technique increases storage capacity in camera tube target

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Harmonic distortion analyzer speeds setup of magnetic tape recorders

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Acquisition of pseudonormal signals by sequential estimation

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Dynamic linearity measurement technique

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A 35 GHz solid state transmitter/driver

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Technique for tuning antenna system producing negligible signal radiation

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Optima PM pre-emphasis

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Automatic frequency control of voltage-controlled oscillators

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Range recording technique enables four-way polarization measurements

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Linear signal noise summer accurately determines and controls S/N ratio

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Electronic frequency discriminator

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Voltage regulator/amplifier is self-regulated

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Solid state phase detector replaces bulky transformer circuit

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Interference effects eliminated in random oriented space station antenna system

Improved communication system for large operations center

Improved communication system for large operations center

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Long range holographic contour mapping concept
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JPL-63 B63-10091 01

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GSFC-287 B65-10096 01

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GSFC-356 B65-10276 01

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GSFC-268 B65-10307 01

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MSC-673 B65-10501 01

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KSC-66-38 B67-10028 01

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SRC-10011 B67-10416 01

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GSFC-10216 B69-10114 01

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NPO-10604 B69-10336 02

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WPO-11180 B69-10725 01

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Woo-055 B63-10508 01

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ARC-20 B63-10560 05

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GSFC-101 B64-10144 01

Phase shift frequency synthesizer is efficient, small in size.
H-FS-250 B65-10169 01

Solid state annunciator facilitates complex system troubleshooting.
H-FS-1258 B66-10505 01

High voltage pulse generator.
MSC-12178 B69-10548 01

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M-PS-1754 B66-10650 01

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Flexible protective coatings made from silicon-nitrogen materials.
M-PS-528 B66-10027 03

Silazane polymers show promise for high-temperature application.
M-PS-468 B66-10194 03

Standards for electron probe microanalysis of silicates prepared by convenient method.
GSFC-469 B66-10234 03

Trace levels of metallic corrosion in water determined by emission spectrography.
MSC-1193 B66-10701 03

Study made of far infrared spectra of silicate minerals.
M-PS-1011 B67-10075 02

Manganese-alumina-ceramic glass eliminates rigid controls necessary in bonding metals to ceramics.
SAM-10012 B68-10204 03

Thermal conductivity and dielectric constant of silicate materials.
M-PS-14856 B68-10351 03

Silphenylene elastomers have high thermal stability and tensile strength.
M-PS-20250 B69-10580 03

**SILICON**

Improved high-temperature silicide coatings.
LEWIS-10817 B69-10266 03

Computer circuit will fit on single silicon chip.
JPL-513 B63-10514 01

Miniature stress transducer has directional capability.
JPL-591 B65-10023 01

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GSFC-252 B65-10048 01

New alloy brazes titanium to stainless steel.
M-PO-102 B65-10050 05

Solid-state switching used to speed up capacitive integrator.
Langley-104 B65-10159 01

Selenium bond decreases ON resistance of light-activated switch.
JPL-SC-101 B65-10324 01

Aluminum doping improves silicon solar cells.
LEWIS-206 B66-10181 02

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

Circuit protects regulated power supply against overload current.
GSFC-453 B66-10292 01

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GSFC-474 B66-10295 01
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Blood pressure reprogramming adapter assists signal recording  
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Silicon strain sensors enable pressure measurement at cryogenic temperatures  
Temperature or pressure controller  
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Fusion process provides high-strength bond between aluminum and stainless steel  
Gage of 6.5 per cent Si-Cr sheet is chemically reduced  
Prefused stiffeners used to fabricate structural components for pressurized tanks  
Study made of ductility limitations of aluminum-silicon alloys  
Weld microfissuring in Inconel 718 minimized by minor elements  
SILICON CARBIDES  
Metal sheath improves thermocouple using graphite in one leg  
Thermoelectric elements diffusion-bonded to tungsten electrodes
SILICON DIOXIDE

Teleprinter uses thermal printing technique
MSC-11327 B67-10572 01

Ferromagnetic core valve gives rapid action on minimum energy
LHIS-10135 B67-10623 05

Low cost SCR ladder 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
N-FS-67 B63-10481 03

Refractory thermal insulation for smooth metal surfaces
N-FS-160 B64-10099 03

Lead oxide ceramic makes excellent high-temperature lubricant
LEHS-164 B64-10116 03

Adhesive for vacuum environments resists shock and vibration
N-SH-56 B65-10016 03

Flexible curtain shields equipment from intense heat fluxes
N-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
N-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-SC-107 B66-10141 01

Fibers of newly developed refractory ceramics produced by improved process
WOO-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
N-FS-735 B66-10288 03

Special treatment reduces helium permeation of glass in vacuum systems
EQ-25 B66-10372 02

Process facilitates photosensitive mask alignment on Si crystals
N-FS-2394 B67-10144 01

A ceramic composite thermal insulation
N-FS-13991 B67-10608 03

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AKH-10085 B68-10281 03

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AKH-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
N-FS-14634 B66-10171 01

SILICON JUNCTIONS

Impurity diffusion process for silicon semiconductors is fast and precise
GSFC-397 B65-10300 01

Semiconductor forms biomedical radiation probe
MSC-320 B66-10252 04

Simplified method introduces drift fields into cells
GSFC-572 B67-10102 03

Process facilitates photosensitive mask alignment on Si crystals
N-FS-2394 B67-10144 01

Thermal and bias cycling stabilizes planar silicon devices
MSC-48 B67-10176 01

Fused diode provides visual indication of free condition
KSC-67-16 B67-10230 01

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GSFC-10231 B67-10651 06

Remotely-actuated biomedical switch
ARC-1045 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
LEHS-76 B63-10483 01

Special coatings control temperature of structures
GSFC-484 B65-10337 03

Glass formulation has high coefficient of thermal expansion
MD-0084 B66-10705 03

Silicon oxide films grown in microwave discharge
N-FS-14634 B68-10171 01

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N-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
XNP-04235 B69-10271 01

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N-FS-20471 B69-10387 02

SILICON POLYMERS

Flexible protective coatings made from silicon-nitrogen materials
N-FS-528 B66-10027 03

Silazane polymers show promise for high-
Temperature application
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M-PS-469 B66-10259 03

SILICON RADIATION DETECTORS
Silicon surface barrier detectors used for liquid hydrogen density measurement
M-PS-14115 B68-10166 01

SILICON TETRACHLORIDE
Impurity diffusion process for silicon semiconductors is fast and precise
M-PS-13621 B68-10073 01

Transistor circuit increases range of logarithmic current amplifier
AB-0051 B66-10350 01

Metal Oxide Silicon /MOS/ transistors protected from destructive damage by wire
AB-65 B66-10419 01

Miniature electrometer preamplifier effectively compensates for input capacitance
ARC-65 B66-10549 01

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M-PS-13621 B68-10073 01

Failure rates for accelerated acceptance testing of silicon transistors
B-10198 B68-10541 01

Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor
AB-10158 B69-10191 01

Accurate nine-decade temperature-compensated logarithmic amplifier
AB-10480 B69-10429 01

Highly stable high-rate discriminator for nuclear counting
AB-10483 B69-10614 01

SILICON RESINS
Special coatings control temperature of structures
GSFC-444 B65-10337 03

SILICONE RUBBER
Thermally conductive metal wool-silicone rubber material can be used as shock and vibration damper
JPL-321 B63-10207 03

Pressure molding of powdered materials improved by rubber mold insert
W00-100 B64-10270 03

Shock mount isolates pressure transducers from vibration
JPL-631 B65-10113 05

High-intensity flashing beacon powered by mercury cells
LANGLEI-80 B65-10361 01

Copper foil provides uniform heat sink path
MSC-262 B66-10004 02

Capacitive system detects and locates fluid leaks
M-PS-478 B66-10099 01

Split glass tube assures quality in electron beam brazing
M-PS-564 B66-10151 05

Circular, explosion-proof lamp provides uniform illumination
MSC-382 B66-10156 02

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 B66-10187 02

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ARC-17 B66-10472 05

Encapsulation technique eliminates thermal stresses in welded electronic modules
M-PS-14581 B68-10307 01

Battery-package design provides for cell cooling and constraint
MSC-11639 B68-10398 05

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MSC-12662 B69-10199 05

Glass fabric fire barrier for silicone rubber parts
MSC-15555 B69-10629 03

Improved electrode gives high-quality biological recordings
M-PS-17 B64-10025 04

Gas diffusion cell removes carbon dioxide from occupied airtight enclosures
MSC-118 B68-10319 03

Flexible curtain shields equipment from intense heat fluxes
M-PS-48 B65-10044 03

Lightweight load support serves as vibration damper
JPL-661 B65-10144 05

Organic reactants rapidly produce plastic foam
LANGLEI-37 B65-10288 03

Coating permits use of strain gage in water and liquid hydrogen
M-PS-594 B66-10192 01

Damping technique gives accelerometer flat frequency response
M-PS-471 B66-10293 01

Electrical cabling withstands severe environmental conditions
M-PS-1585 B66-10427 01

Improved method of edge coating flat ribbon wire
M-PS-902 B66-10684 03

Self-sealing closure enables access to several fluid containers
KFO-10123 B67-10207 04

Process controls introduction of selected impurities into semiconductor wafers
GSFC-523 B67-10303 01

Study made of dielectric properties of promising materials for cryogenic capacitors
M-PS-13620 B67-10366 03

Composite solar cell matrix is reliable,
SILK

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- Polyethylene cryostat facilitates testing of tensile specimens under liquid nitrogen
- Effects of surface preparation on quality of aluminum alloy weldments
- Compressible sleeve provides automatic centering for grinding or turning of cylinders
- Evaluation of magnetic materials for static inverters and converters

SILK

- Scribable coating for plastic films
- Aerogel siloxane copolymers
- Advances in aluminum anodizing

SILVER

- Improved molybdenum disulfide-silver motor brushes have extended life
- Connector for thermocouple leads saves costly wire, makes reliable connections
- Metals plated on fluorocarbon polymers
- Improved conductive paste secures biomedical electrodes
- New alloy brazes titanium to stainless steel
- Carbon-arc rod holder has long life, reduces arc splatter
- Rugged pressed disk electrode has low contact potential
- Plated nickel wire mesh makes superior catalyst bed
- Regenerative fuel cell combines high efficiency with low cost

SILVER ALLOYS

- New brazing alloy eliminates metal-stress cracking
- Silver-base ternary alloy proves superior for slip ring lead wires
- Silver-palladium alloy recovered from masking materials
- Compound improves thermal interface between thermocouple and sensed surface
- Submicron metal powders produced by ball milling with grinding aids
- Brazing process using Al-Si filler alloy reliably bonds aluminum parts
- Differential expansion provides pressure for diffusion bonding of large diameter rings

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- Copper wire plated with nickel and silver resists corrosion
- Rotating magnetic poles used to pump mercury
- Helmet system broadcasts electroencephalograms of wearer
- Silver plating technique seals leaks in thin wall tubing joints
- Plasma jet electrode has longer operating life
- Undercoat prevents blistering of silver plating at elevated temperatures
- Evaluation of high temperature stranded hookup wire
- Silver plating ensures reliable diffusion bonding of dissimilar metals
- Technique eliminates high voltage arcing at electrode-insulator contact area
- Improved cavity-type absolute total-radiation radiometer
- High-voltage pulse generator developed for wide-gap spark chambers
- Electroactive series established for metals used in aerospace technology
- Electrolytic silver ion cell sterilizes water supply
- Metallic diffusion measured by a modified Knudsen technique

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- Plasma jet electrode has longer operating life
- Undercoat prevents blistering of silver plating at elevated temperatures
- Evaluation of high temperature stranded hookup wire
- Silver plating ensures reliable diffusion bonding of dissimilar metals
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- Improved cavity-type absolute total-radiation radiometer
- High-voltage pulse generator developed for wide-gap spark chambers
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SILVER ALLOYS

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Flow ring valve is simple, quick-acting

Modified hydraulic braking system limits angular deceleration to safe values

Automatic protective vent has fail-safe feature

Monitoring circuit accurately measures movement of solenoid valve

Cryogenic fluid sampling device permits testing under hazardous conditions

Variable-pulse switching circuit accurately controls solenoid-valve actuations

High speed blowdown system provides rapid pressure loss

Solenoid valve design has one moving part

Dual photochemical replenisher system reduces chemical losses

Automatic transducer switching provides accurate wide range measurement of pressure differential

Continuous microbial cultures maintained by electronically-controlled device

Test system accurately determines tensile properties of irradiated metals at cryogenic temperatures

Environmental control system for cryogenic testing of tensile specimens

Fire extinguisher control system provides reliable cold weather operation

Ferromagnetic core valve gives rapid action on minimum energy

Solenoid hammer valve developed for quick-opening requirements

Solenoid valve design minimizes vibration and sliding wear problem

Calibratable solid-state pressure switch

Solenoid permits remote control of stop watch and assures restarting

Stepping switch with simple actuator provides many contacts in small space

Electromechanically operated camera shutter provides uniform exposure

Camera shutter is actuated by electric signal

Improved magnetometer uses toroidal gating coil

System measures unidirectional forces, excludes extraneous forces

Device disconnects several couplings simultaneously

Force controlled solenoid drives microweld tester

Gapped toroid provides infinite resolution of delay-line pickup

Multiple test chamber exposes materials to various environments

Optical output enhances flowmeter accuracy

Pneumatic binary encoder replaces multiple solenoid system

Solenoid magnetic fields calculated from superposed semi-infinite solenoids

A continuously operating source of vacuum ultraviolet below 500 angstrom

Power arc welder touch-started with consumable electrode

Fuel and oxidizer valve assembly employs single solenoid actuator

Simple technique determines ac properties of hard superconductive materials

Logic circuitry used to automatically test shielded cables

Residual magnetism holds solenoid armature in desired position

Simple pump maintains liquid helium level in cryostat

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ARG-10669 B69-10423 03

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MSC-11466 B69-10465 05

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MSC-15611 B69-10552 03

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LANGLEY-209 B69-10315 01

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MSC-267A B66-10324 01

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NPO-10125 B67-10172 06

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MSC-30  B65-10022  05
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MSC-216  B65-10321  03
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Control jet placement on spacecraft  
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N-FS-12646  B69-10564  03

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Visual attitude orientation and alignment system  
NFS-647  B67-10120  02
Fuel transfer system permits rapid coupling  
N-FS-91326  B68-10039  05

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Modular Porous Plate Sublimator /NPP/ requires only water supply for coolant  
N-FS-1374  B66-10409  01

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NFO-11220  B69-10733  02
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Break-up of metal pipe makes one-time shock absorber, bars rebound  
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Land landing couch dynamics computer program  
MSC-1270  B67-10233  06
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NFO-10231  B69-10697  01

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SPACERAPTURE MODELS

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M-PS-14772 B68-10549 05

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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

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Improved electro-optical tracking system
M-PS-14791 B68-10311 01

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requires only water supply for coolant
M-PS-1374 B66-10409 01

Zinc-oxygen primary cell yields high
energy density
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reduce leakage and wear
LEWIS-10397 B68-10270 05

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pressure of HHD accelerator
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optimization of straight finned radiators
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heavy loads
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of complex systems
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SPAN - Terminal sterilization process
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Oceanborne transponder platform has good
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Frequency offset in linear FM/CW transponder
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M-PS-249 B65-10146 01

Hydrogen maser as a highly stable frequency
reference
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Low speed, long term tracking electric
drive system has zero backlash
NPO-10173 B67-10220 01

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Midcourse maneuver operations program
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NPO-10735 B69-10105 06

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NPO-11001 B69-10325 01

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M-PS-15062 B69-10434 06

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can be used as shock and vibration damper
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in various arrays
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Electropneumatic rheostat regulates high
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M-PS-1206  B66-10669  01

Square tube reduces cost of telescoping bridge crane hoist  
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Large volume continuous countercurrent dialyzer has high efficiency  
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M-PS-14998  E69-10099  02

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MPO-10042  B69-10246  01

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ARG-10338  B69-10343  05

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M-PS-20826  E69-10856  05

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MSC-12225  B69-10531  03

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M-PS-20856  B69-10192  03

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ARC-68  B66-10557  01

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B66-10051  01

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M-PS-12561  B67-10353  05

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ARG-10156  B66-10283  01

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MSC-10947  B69-10740  03

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M-PS-1256  B66-10120  03

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ARG-10288  B69-10081  03

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M-PS-10071  B66-10333  01

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MPO-10185  B68-10402  01

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Precision trimmer aids in preparing biomedical specimen blocks for ultrathin sectioning
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M-TS-1563 B66-10554 02

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LANGLEY-55 B65-10086 01

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EQ-96 B67-10270 01

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Modified blackbody device emits high-density radiation
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Preparation of high purity copper fluoride by fluorinating copper hydroxide fluoride
LEWIS-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
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
ARG-10221 B69-10232 06

Multilayer infrared beamsplitter film system
ISC-11036 B69-10260 02

New shield for gamma-ray spectrometry
ARG-10388 B69-10344 02

Separation of the rare earths by anion-exchange in the presence of lactic acid
ARG-10436 B69-10377 03

Miniaturized high-resolution mass/charge spectograph /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

Microachining produces optical apertures to micron dimensions
GSPC-206 B69-10211 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 B69-10254 03

Coordination chemistry in fused-salt solutions
ARG-10469 B69-10423 03

A comparison of two methods of measuring particle size of Al203 produced by a small rocket motor
ARG-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 B67-10421 03

Spectrophotometric technique quantitatively determines NaBDT 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 spectrograph uses inert-gas ion source
MSC-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
ARG-20456 B69-10192 03

SPECTROSCOPY

Beam splitter used in dual filming technique
MSC-11030 B66-10072 02

Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Hydrogen maser as a highly stable frequency reference
MSC-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-10090 B69-10005 02

I-617
### SPECTRUM ANALYSIS

The response of monoenergetic gamma rays in finite media are investigated

**ARG-10295**  
B69-10080  02

Conditioning of pulses from aerosol-particle detectors

**ERC-10250**  
B69-10691  01

### HIGHLY SENSITIVE SOLIDS MASS SPECTROMETER

Highly sensitive solids mass spectrometer uses inert-gas ion source

**ERC-11**  
B66-10144  02

Computer programs perform spectral analyses of up to seven time series

**M-PS-1133**  
B66-10539  01

### PARASMETRIC UP-CONVERTER INCREASES FLEXIBILITY

Parasmetric up-converter increases flexibility of laser

**M-SC-47-98**  
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

**M-PS-14022**  
B67-10602  02

Improved optical diffractometer

**MSC-12055**  
B68-10071  02

Procedure developed for reporting fast-neutron exposure

**ABG-10035**  
B68-10190  01

Improved relay optical element for spectroradiometer using cryogenically cooled detector

**M-SC-11688**  
B68-10245  02

Laser-Doppler gas-velocity instrument

**M-PS-20039**  
B68-10349  02

Non-dispersive 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**  
B69-10269  01

Fast Fourier Transform Spectral Analysis Program

**M-PS-15062**  
B69-10434  06

Nondestructive determination of cohesive strength of adhesive-bonded composites

**M-PS-20357**  
B69-10464  03

Data processing method for a weak, moving telemetry signal

**HPO-11003**  
B69-10639  01

### SPEED CONTROL

Speed-sensing device aids crane operators

**WS-4**  
B66-10006  05

Compact cartridge drives coded tape at constant readout speed

**JPL-472**  
B64-10222  01

Electronic phase-locked-loop speed control system is 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

**M-PS-2003**  
B67-10212  05

Conceptual servo technique for controlling tape drivers

**I-FS-14574**  
B68-10091  05

### SPHERICAL SHELLS

Modified gas bearing is adjustable to optimum stiffness ratio

**M-PS-145**  
B68-10050  05

Pneumatic power is transmitted through air bearing

**M-SC-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-187**  
B66-10390  05

Computer program for determination of natural frequencies of closed spherical sandwich shells

**ESC-1246**  
B67-10279  06

### SPIRE POTENTIALS

Inductor flyback characteristic gives voltage regulator fast response

**GSFC-361**  
B65-10257  01

### SPIN DYNAMICS

Study of dynamic response of elastic space stations

**HPO-10124**  
B67-10169  06

### SPIN STABILIZATION

Interference effects eliminated in randomly oriented space station antenna systems

**ESC-10004**  
B67-10435  01

### SPIRALS

Machining heavy plastic sections

**M-PS-12720**  
B67-10381  03

An improved magnetic tape recorder

**GSFC-08259**  
B67-10646  01

Insertion device for pressure testing
SPRATURED

Spiral heater coils hand-formed with fixture
LEWIS-208 B65-10192 05

SPLARES

High frequency wide-band transformers uses
coupled to achieve high turn ratio and flat
response
ARC-107 B66-10600 01

SPLICEING

Splice plate design assures structural
separation by mild explosive
MSC-137 B65-10166 05

Metal boot permits fabrication of
hermetically sealed splices in metal
sheathed instrumentation cables
NU-0083 B66-10704 05

SPLICE FUNCTIONS

Indexing device ensures proper mating of
electrical connectors
MSC-155 B65-10263 01

SPLINES

New coupling compensates for shaft
misalignment
NU-0013 B65-10777 05

Flexible coiled spline securely joins mating
cylinders
NO-270 B66-10172 05

SPONGES (MATERIALS)

Two systems developed for purifying inert
atmospheres
ARG-10234 B69-10026 03

SPONTANEOUS CORROSION

Evaluation of ignition mechanisms in
selected nonmetallic materials
MSC-11685 B68-10167 03

Saran film is fire-retardant in oxygen
atmosphere
MSC-11604 B68-10177 03

SPROOLS

Flow control valve is independent of pressure
drop
JPL-000-039 B65-10121 05

Pneumatic shutoff and time-delay valve
operates at controlled rate
M-PS-602 B66-10189 05

Rotary valve controls multiple hydraulic
levelling cylinders
M-PS-361 B66-10402 05

Reactively operated high pressure valve
protects test personnel
MSC-11010 B67-10291 05

Technique for measuring magnetic tape
interlayer adhesion
ARG-10011 B67-10417 03

Tape reading fixture
M-PS-14146 B69-10008 05

Geometry and design-point performance of
axial flow turbines
LEWIS-10471 B69-10111 06

A concept for magazine Bimat processor
KSC-06786 B69-10275 02

SPOT WELDS

Welded pressure transducer made as small as
1/8th-inch in diameter
ARC-11 B63-10429 03

Insulated weld tooling permits uniform,
high quality weld
MSC-82 B64-10058 05

Welding procedures improve quality of welds,
offers other advantages
M-PS-32 B64-10109 01

Insulator-holder protects transistors in dense
electronic assemblies
MSC-214 B65-10389 01

Spray-on technique simplifies fabrication of
copper thermal insulation blanket
K-PS-497 B66-10053 03

Shoulder adapter simplifies fabrication of
complex thermal blanket
K-PS-221 B66-10107 05

Ultrasonic hand tool allows convenient
scanning of spot welds
MSC-359 B66-10105 02

Quality control criteria for acceptance
testing of cross-wire welds
MSC-627 B66-10587 05

Power arc welder touch-started with
consumable electrode
K-PS-1485 B66-10611 05

Micro-manipulation tool is easily adapted to
many uses
JPL-100-039 B67-10004 05

Metal flame spray coating protects electrical
cables in extreme environment
MSC-10077 B67-10351 03

Miniature pressure sensor for stressed
member application
MSC-11869 B68-10246 01

Cooled miniature pressure transducers
effective at high temperatures
MSC-11869 B68-10246 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 B68-101387 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-PS-20361 B69-10150 05

Improved primer for bonding polyurethane
adhesive to metals
SPATTERS

Quick-hardening problems are eliminated with spray gun modification which mixes resin and accelerator liquids during application.

Lead oxide ceramic makes excellent high-temperature lubricant.

Inert gas spraying device aids in repair of hazardous systems.

Multilayer refractory nozzles produced by plasma-spray process.

Spray-on electrodes enable EKG monitoring of physically active subjects.

Scribable coating for plastic films.

System for measuring spatial distribution of ejected droplets, a concept.

Single-element coaxial injector for rocket fuel.

Modified cryogenic storage tank subsystem.

Spray-on technique simplifies fabrication of complex thermal insulation blanket.

Dispenser leak-tests and sterilizes rubber gloves.

Standards for electron probe microanalysis of silicates prepared by convenient method.

Sprayable birefringent coating enables mounting improves heat-sink contact with beryllia washer.

Liquid oxygen dicting cleaned by falling film method.

Acid spray technique mills aluminum alloy materials without immersion.

Fire retardant foams developed to suppress fuel fires.

High-emittance coatings on metal substrates.

SPREADING

Discrimination of fish oil and mineral oil slicks on sea water.

SPRINGS (ELASTIC)

Solenois 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.

SUBJECT INDEX

Coiled spring makes self-locking device for threaded fasteners.

Bidirectional torque filter eliminates backlash.

Extendible column can be stowed on drum.

Spiral heater coils hand-formed with fixture.

Fluid check valve has fail-safe feature.

Simple device produces accelerometer calibration pulse.

Coiled sheet metal strip opens into tubular configuration.

Lamp automatically switches to new filament on burnout.

Bench vise adapter grips tubing securely and safely.

Calibrated clamp facilitates pressure application.

T-handle wrench has torque-limiting action.

Fingertip current control facilitates use of arc welding gun.

Soldering tool heats workpieces and applies solder in one operation.

Mounting improves heat-sink contact with beryllia washer.

Portable power tool machines weld joints in field.

Fixture aids soldering of electronic components on circuit board.

Pneumatic shutoff and time-delay valve operates at controlled rate.

Bellow design features low spring rate and long life.

Torque wrench allows readings from inaccessible locations.

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.
Extensometer automatically measures elongation in elastomers

Diaphragm spring gives clutch over-center toggle effect

Tool pre-tensions covers prior to lacing

Modified hydraulic braking system limits angular deceleration to safe values

Bellows joint absorbs torsional deflections in duct system

Shock-operated valve would automatically protect fluid systems

Braking mechanism is self actuating and bidirectional

Spiral spring/strain gage combination accurately measures shock induced deflection

Hole saw drill attachment has zero force reaction

Friction brake cushions acceleration and vibration loads

Fuel and oxidizer valve assembly employs single solenoid actuator

Resonant frequency can be adjusted on vibration mount

Gage accurately controls force for placing chips on substrates

Actuator device schedules rate of valve closure

Combination double door high-vacuum valve provides access to vacuum chamber

Resilient guides reduce hysteresis effect in Belleville spring package

Aspirator increases relief valve poppet stroke

Solenoid valve design has one moving part

Line adapter provides quick disconnect under moderate side loading

Excellent spring properties developed in two nickel alloys for use at cryogenic temperatures

Test device prevents weld joint damage by eliminating axial pin forces on unpotted modules

Coaxial cable stripping device facilitates RF cabling fabrication

An improved magnetic tape recorder

GSFC-08259

Extensometer automatically measures elongation in elastomers

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An improved magnetic tape recorder

GSFC-08259
SQUARE WAVES

Pulsed high-voltage dc RF sputtering
LEWIS-10290  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
GSPC-112  B63-10554  01

TransistORIZED converter provides nondissipative 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
GSPC-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-AR-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
GSPC-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
GSPC-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
K-FS-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
K-FS-15038  B67-10513  01

Simple, accurate automatic frequency control circuit
MSC-10393  B69-10323  01

Phase-locked-loop phase modulator with high modulation index, low distortion
MSC-12287  B69-10887  01

Squares (Mathematics)
Root-cubing and general root-powering methods for finding the zeros of polynomials
ARG-10444  B69-10624  02

Squares
Quick-closing valve is actuated by explosive discharge
M-D-55  B66-10233  05

Stability
Computer determines high-frequency phase stability
GSPC-113  B63-10555  01

Irradiation improves properties of an aromatic polyester
LANGLEY-115  B65-10164  03

Refractory oxides evaluated for high-temperature use
LANGLEY-121  B65-10167  03

Electrometer has automatic zero bias control
GSPC-350  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
W00-212  B66-10432  01

Electronic circuit delivers pulse of high interval stability
MSC-673  B66-10501  01

Electron multiplier has improved performance and stability
GSPC-346  B67-10060  01

Computer program uses Monte Carlo techniques for statistical system performance analysis
K-FS-2234  B67-10306  06

Precision capacitor has improved temperature and operational stability
ARG-189  B67-10313  01

Field effect transistors improve buffer amplifier
K-FS-316  B67-10334  01

Analysis of stability-critical orthotropic cylinders subjected to axial compression
K-FS-12869  B67-10375  03

Stabilizing stainless steel components for cryogenic service
K-FS-13127  B67-10377  05

Real fluid properties of normal and parahydrogen
LEWIS-10456  B68-10361  06

Instabilities 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
ARC-10191  B69-10130  01

Mixing weld gases offers advantages
K-FS-10441  B69-10145  05

Substitution of stable isotopes in Chlorella
ARG-10258  B69-10197  04
SUBJECT INDEX

COMPENSATION OF PULSE-REBALANCED INERTIAL INSTRUMENTS
MSC-13098  B69-10216  01

METHOD FOR DETERMINING PROPERTIES OF MICROINSTABILITIES OF A MAGNETIZED PLASMA
EQ-10467  B69-10462  02

A NEW METHOD FOR PRODUCING OPTICAL MIRRORS
EQ-10227  B69-10529  02

CRYOGENIC FLUID FLOW INSTABILITIES IN HEAT EXCHANGERS
H-FS-20438  B69-10541  02

MINIATURE BACKWARD-DIODE PRESSURE SENSOR
FEATURES STABILITY AND LOW POWER CONSUMPTION
ZRC-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 planar silicon devices
ZRC-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
H-FS-1879  B67-10314  01

ELAS - A general purpose computer program for the equilibrium problems of linear structures
NPO-10598  B68-10226  06

Active frequency control system for argon FK laser
H-FS-14988  B69-10999  02

STABILIZERS (FLUID DYNAMICS)

Improved gyro-flotation /damping/ fluids
HSC-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

STACKS OF MATERIAL

NLC-327  B66-10210  05

TEMPERATURE-CONTROLLED RESISTOR

NPO-10713  B69-10440  01

STAGE SEPARATION

Self-sealing disconnect for tubing forms metal seal after breakaway
JPL-354  B63-10226  05

Computer program uses Monte Carlo techniques for statistical system performance analysis
H-FS-225A  B67-10306  06

Separation simulator
NKC-67-15  B69-10315  01

STAGING

Superconductor magnets used for stagger-tuning traveling-wave maser
GSFC-292  B65-10165  01

STAGNATION FLOW

Computer program determines gas flow rates in piping systems
H-FS-463  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
H-FS-463  B66-10300  01

STAINING

Method for copper staining of germanium crystals
ARG-10403  B69-10257  03

STAINLESS STEELS

Temperature-controlled resistor
NPO-10713  B69-10440  01

stacks of material
NLC-327  B66-10210  05

Vacuum-type backup bar speeds weld repairs
H-FS-12  B63-10384  05

Vacuum type backup bar speeds weld repairs
H-FS-12  B63-10384  05

Flexible honeycomb structure can bend to fit compound curves
H-FS-13  B63-10385  05

Ellipsoidal optical reflectors reproduced by electroforming
GSFC-92  B63-10547  01

Lathe converted for grinding aspheric surfaces
GSFC-92  B63-10547  01

Novel 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
STAINLESS STEELS CONT

M-PS-227  B65-10004  03

Oceanborne transponder platform has good
M-PS-171  B65-10035  05

New alloy brazes titanium to stainless steel
M-PS-102  B65-10060  05

Automatic thermal switch accelerates
M-PS-655  B65-10068  01
cooling-down of cryogenic system

Low-cost seal compensates for surface
NU-0016  B65-10160  05
irregularities

New nut and sleeve improve flared connections
M-PS-194  B65-10180  05

Coating method enables low-temperature
M-PS-225  B65-10250  03
brazing of stainless steel

Plated nickel wire mesh makes superior
catalyst bed
M-226  B65-10321  03

Plastic plus stainless-steel fibers make
remilient, impermeable material
WOO-246  B65-10374  03

New brazing alloy eliminates metal-stress
cracking
WOO-249  B65-10397  03

Flexible protective coatings made from
M-PS-228  B66-10027  03
silicon-nitrogen materials

Cold cathode ionization gage has rigid metal
housing
GSFC-445  B66-10041  01

Polytetrafluoroethylene lubricates ball
bearings in vacuum environment
M-PS-379  B66-10081  03

cryostat modified to aid rotating beam fatigue
test
M-PS-435  B66-10083  03

Soldering tool heats workpieces and applies
solder in one operation
LEWIS-247  B66-10115  05

Telescoping of instrumentation tubing
eliminates sagging
M-PS-546  B66-10116  05

Small, high-intensity flasher permits
continuous close-in photography
NU-0043  B66-10119  03

Oxygen-hydrogen torch in a small-scale
steam generator
NU-0042  B66-10120  03

Improved system measures output energy of
pyrotechnic devices
WOO-256  B66-10159  01

Gallium alloy films investigated for use
as boundary lubricants
LEWIS-245  B66-10165  03

Multilayer fixture permits easy grinding
of tool bit angles
M-PS-586  B66-10171  05

Wide-range instrument monitors flow rates
of chemically active fluids
NSC-166  B66-10205  01

Soft-seal valve holds hazardous fluids
safely
LEWIS-275  B66-10216  05

Submicron metal powders produced by ball

SUBJECT INDEX

Milling with grinding aids
LEWIS-188  B66-10221  03

Electric arc heater in self starting
LANGLET-208  B66-10230  03

Modified soldering iron speeds cutting of
synthetic materials
M-PS-725  B66-10246  05

Pressure-welded flange assembly provides
leaktight seal at reduced bolt loads
M-PS-640  B66-10247  05

Differential expansion provides pressure for
diffusion bonding of large diameter rings
M-PS-588  B66-10269  05

Electrolytic etching process provides
effective bonding surface on stainless steel
GSFC-484  B66-10299  03

System locates randomly placed remote objects
LANGLET-209  B66-10315  01

Fiber length and orientation prevent migration
of tool bit angles
M-PS-541  B66-10319  05

Bimetallic devices help maintain constant
sealing forces down to cryogenic temperatures
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MSC-747  B66-10375  05

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Intergranular metal phase increases thermal shock resistance of ceramic coating
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Newly developed foam ceramic body shows promise as thermal insulation material at 3000 deg F
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LEWIS-10168  B67-10197  03

An efficient, temperature-compensated subcarrier oscillator
JPL-SC-091  B67-10251  01

Adhesives for laminating polyimide insulated flat conductor cable
E-FS-12066  B67-10429  03

High-temperature bearing-cage materials
LEWIS-10403  B68-10176  05

High-temperature bearing lubricants
LEWIS-10408  B68-10249  05

New rapid-curing, stable polyimide polymers with high-temperature strength and thermal stability
LEWIS-10576  B69-10118  03

Purification and characterization of two fully deuterated enzymes
ABG-10314  B69-10207  04

Improved pulse shape discriminator for fast neutron-gamma ray detection system
HQ-10151  B69-10481  01

Silphenylene elastomers have high thermal stability and tensile strength
E-FS-20250  B69-10580  03

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Use of tear ring permits repair of sealed blade circuitry
E-FS-210  B65-10014  05

Lightweight door seals cryogenic container against diaphragm type loading
E-FS-476  B65-10402  05

Strain gage network distinguishes between thermal and mechanical deformations
GSPC-478  B66-10260  01

Thermal stress-relief treatments for 2219 aluminum alloy are evaluated
E-FS-1213  B66-10448  03

Plasma jet electrode has longer operating life
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NRC-10048 Weld procedure produces quality welds for thick sections of Hastelloy-X

M-PS-14561 Encapsulation technique eliminates thermal stresses in welded electronic modules

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B69-10844 Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes

B69-10823 Thereistor connector assembly increases accuracy of measurements

B69-10852 Omni-vacuum testing provides effective bonding surface on stainless steel

B69-10856 Collector/collector guard ring balancing circuit eliminates edge effects

B69-10840 Potassium plasma cell facilitates thermionic energy conversion process

B69-10851 Thermionic diode switching has high temperature application

B69-10872 Performance of low-pressure thermionic converters is evaluated

B69-10807 Bypass rod transfers heat developed in thermionic diode

B69-10850 Chemical regeneration of emitter surface increases thermionic diode life

B69-10844 Low input voltage converter/regulator minimizes external disturbances

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B69-10854 Feasibility study of wireless power transmission systems

B69-10872 Linear-log counting-rate meter uses transconductance characteristics of a silicon planar transistor

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Thermionic scanner pinpoints work function of emitter surfaces

JPL-SC-177 B66-10444 01

Study shows effect of surface preparations on improving thermionic emission

JPL-SC-186 B66-10493 01

High-temperature thermionic emission microscope

B69-10516 01

Preparation of thorium magnesium-zinc reduction

B69-10079 03

THERMISTORS

Tiny sensor-transmitter can withstand extreme acceleration, gives digital output

ARC-22 B63-10561 01

Temperature-compensation circuit stabilizes performance of vidicons

JPL-186 B64-10226 01

Electronic device simulates respiration rate and depth

B69-1055 03

PTC thermistor protects multiloade power supplies

B69-10281 01

Thermistor connector assembly increases accuracy of measurements

LANL-112 B65-10045 01

NPN oscillator uses tetrode transistor

JPL-82 B65-10055 01

Wedge immersed thermistor bolometer measures infrared radiation

B65-10330 02

Miniature bioelectric device accurately measures and telemeters temperature

ARC-52 B66-10057 01

Complementary monostable circuits achieve low power drain and high reliability

GSFC-433 B66-10179 01

Solid state thermostat has integral probe and circuitry

M-PS-434 B69-10193 01

Wide-range instrument monitors flow rates of chemically active fluids

B69-186 01

Braze alloys used as temperature indicators

NRC-1063 B66-10274 01

Electrically conductive fibers thermally isolate temperature sensor

GSFC-456 B66-10348 01

Apparatus enables automatic microanalysis of body fluids

JPL-962 B66-10515 04

Detector measures power in 50 to 30,000 Gs radiation band

ECC-26 B66-10581 01

Portable detector set discloses helium leak rates

N-PS-1733 B68-10065 01

Ku-wave power meter mount

NPO-10348 B68-10152 01

Automatic patient respiration failure detection system with wireless transmission

ARC-10174 B68-10365 01

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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
H-FS-61  B63-10567  01

Simple transducer measures low heat-transfer rates
JPL-666  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
H-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
H-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

Coat compound 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

Numerical temperature reference
MSC-13276  B69-10507  01

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GSFC-485  B66-10260  01

High-speed furnace uses infrared radiation for controlled brazing
NU-0047  B66-10266  02

Brazed 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 thermocouple monitors own installation
H-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-209  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
H-FS-1946  B66-10653  01

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H-FS-1659  B66-10661  01

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NU-0083  B66-10704  05

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NU-0082  B66-10709  01

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LEWIS-305  B67-10009  01

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NU-01108  B67-10046  01

Sensing disks for slug-type calorimeters have higher temperature stability
H-FS-18076  B67-10161  01

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H-FS-12141  B67-10341  05

Polar radioisotopes accessory improves measurements
H-FS-12148  B67-10484  01

High temperature thermocouple design provides gas cooling without increasing overall size of unit
NUC-10515  B67-10497  01

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LEWIS-10328  B67-10554  01

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JPL-807  B67-10557  01

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LANGLEY-10027  B67-10302  03

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I-PS-434  B66-10193  01

Improved compression molding process.

LANGLBP-10027  B67-10302  03

Solid state thermostat has integral probe and circuitry.

I-PS-434  B66-10193  01

Eighth conductance vapor thermal switch.

GSPC-10109  B68-10519  02

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BPO-11229  B69-10660  43

Wall-thickness changes predicted in hollow-dram tubing.

ABG-10425  B69-10428  02

Bimetallic devices help maintain constant sealing forces down to cryogenic temperatures.

I-PS-800  B66-10325  02

External linkage tie permits reduction in ducting system flange thickness.

I-PS-823  B66-10326  05

System for etching thick aluminum layers minimizes bridging and undercutting.

I-33-1366  B66-10400  03

Fluoride coatings make effective lubricants in molten sodium environment.

LEWIS-229  B66-10005  03

Single-crystal semiconductor films grown on foreign substrates.

WGO-076  B66-10225  01

Extensometer automatically measures elongation in elastomers.

FDS-517  B66-10513  05

Valve seat pores sealed with thermosetting monomer.

M-PS-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-PS-1366  B66-10400  03

Thin plastic sheet eliminates need for expensive plating.

M-PS-1896  B66-10681  03

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GSPC-515  B66-10698  05

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- Refractory oxides evaluated for high-temperature use  
  LANGLEY-121  B65-10167  03

- Magnesium-zinc reduction is effective in preparation of metals  
  ARG-10050  B67-10579  03

- 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

THORIUM COMPOUNDS

- Screening technique makes reliable bond at room temperature  
  R-PS-227  B66-10004  03

- Preparation of thorium magnesium-zinc reduction  
  ARG-10245  B69-10079  03

THORIUM OXIDES

- Thoriated nickel bonded by solid-state diffusion method  
  LANGLEY-116  B65-10220  03

- Crucible cast from beryllium oxide and refractory cement is impervious to flux and molten metal  
  ARG-22  B66-10527  03

- Thoriated tungsten tube provides improved high temperature thermocouple sheath  
  ARG-10143  B67-10627  03

- Tungsten fiber-reinforced nickel superalloy  
  LEWIS-10424  B68-10369  03

THREADS

- Low-cost tool minimizes damage to O-rings during installation  
  RSC-140  B65-10116  05

- Threaded pilot insures cutting tool alignment  
  R-PS-527  B66-10074  05

- Expandable insert serves as screw anchor  
  RSC-301  B66-10132  05

- Mounting facilitates removal and installation of flame-detector rods  
  R-PS-555  B66-10150  05

- Multisurface fixture permits easy grinding of tool bit angles  
  R-PS-566  B66-10171  05

- Seal surfaces protected during assembly  
  NO-0067  B66-10266  05

- High pressure tube coupling requires no threads or flares  
  RSC-600  B66-10285  05

- Tool pre-tensions covers prior to lacing  
  RSC-631  B66-10301  05

- Holding fixture facilitates pipe thread gage measurements  
  R-PS-2009  B67-10066  05

- Thread cutting with 3-axis N/C milling machine  
  LANGLEY-10017  B68-10055  06

- Tensile testing grips ensure uniform loading of bimetal tubing specimens  
  LEWIS-10267  B68-10248  05

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  R-PS-14841  B66-10393  05

- Study compares methods for the numerical solution of ordinary differential equations  
  R-PS-830  B66-10466  01

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  R-PS-20039  B68-10394  02

- Computer program determines vibration in three-dimensional space of hydraulic lines excited by forced displacements  
  R-PS-12226  B68-10159  06

- Modified univibrator compensates for output timing errors  
  ARG-85  B67-10130  01

- Thermal and bias cycling stabilizes planar silicon devices  
  RSC-48  B67-10176  01

- Stable ac phase and amplitude comparator  
  R-PS-13086  B67-10159  01

- PCM bit detection with correction for intersymbol interference  
  GSPC-10155  B69-10153  01

- Constant-current regulator improves tunnel diode threshold-detector performance  
  GSPC-239  B65-10282  01

- Threshold detector produces narrow pulses at high repetition rates  
  GSPC-383  B65-10310  01

- Digitally controlled pulse-level discriminator operates over wide voltage range  
  GSPC-324  B66-10129  01

- Transistor biased amplifier discriminator threshold attenuation  
  ARG-163  B67-10311  01

- Continuous wave detector has wide frequency range  
  R-PS-1943  B67-10386  01

- Radiographic threshold detection levels of aluminum weld defects  
  R-PS-20487  B69-10418  01

- Electronic circuit provides accurate sensing and control of dc voltage  
  MU-0089  B66-10591  01

- PR carrier deviation measured by differential probability method  
  R-PS-2166  B67-10213  01

- PCM bit detection with correction for intersymbol interference  
  GSPC-10155  B69-10153  01

- Circuit maintains digital decision threshold at preset level  
  R-PS-331  B66-10281  01

- Review of research and development in fluid logic elements  
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  ARG-10110  B66-10328  01
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- Computer program reduces calculation time of normal response functions
  M-FS-1517 B67-10108 01
- Oscillating-filter method for obtaining flashing-light visibility data
  MSC-13097 B69-10107 02

**THREATS**
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  M-FS-18456 B69-10146 06
- Stress-testing of the throat of a rocket nozzle
  M-FS-12976 B67-10310 06

**THROTTLING**
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  NPO-10547 B68-10338 05
- Semitoroidal-diaphragm cavitating valve designed for bipropellant flow control
  XNP-09704 B69-10016 05
- Multiple-orifice throttle valve
  XNP-09698 B69-10030 05

**THRODS**
- Lightweight universal joint transmits both torque and thrust
  JPL-375 B63-10236 05
- Elimination of rocket engine asymmetric loads during tests at sea level
  M-FS-1730 B66-10674 05
- Computer program for mass and optimal solutions of some endpoint trajectory problems
  M-FS-12976 B67-10310 06
- Earth orbit rendezvous evaluation program
  M-FS-13016 B67-10407 06
- Computer program provides steady state analysis for liquid propellant propulsion systems
  M-FS-13064 B67-10414 06
- Fortran 4 program for two-impulse rendezvous analysis
  M-FS-13971 B67-10479 06
- Electrothermal linear actuator
  NPO-10637 B69-10296 05
- Elimination of dissolved gases in hypersonic engine propellants
  M-FS-16176 B69-10692 03

**THRUST LOADS**

**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
  WCO-249 B65-10397 03
- Special mount improves remote transducer accuracy
  LEWIS-269 B66-10021 01
- Beam splitter used in dual filming technique
  M-FS-501 B66-10072 02
- Microminiature thermocouple monitors own installation

**THRUST LOADS**
- Flexible coiled spline securely joins mating cylinders
  WCO-270 B66-10172 05
- Electronic analog equalization for vibrational testing
  NPO-10544 B69-10472 01

**THRUST MEASUREMENT**
- Apparatus measures very small thrusts
  WCO-048 B64-10284 05

**THRUST VECTOR CONTROL**
- Study of vortex valve for medium temperature solid propellants
  WCO-321 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 Al203 produced by a small rocket motor
  B69-10572 03

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**THERMOCILLS**
- Effect of preparation procedures on intensity of radioautographic labeling is studied
  ARG-10032 B67-10500 04

**THERMALITY**

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- Commercial film produces positive X-ray photo in ten seconds
  M-FS-521 B66-10307 02
- Sea dye marker provides visibility for 20 hours
TIME CONSTANT

MSC-714 B66-10313 03

Visio-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-FS-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 B67-10001 02

An improved atomic hydrogen frequency and time standard
GSFC-10706 B69-10341 02

TIME CONSTANT

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GSFC-446 B65-10362 01

Solid state detectors monitor relay contacts
JPL-785 B66-10396 01

Blackbody cavity radiometer has rapid response
JPL-521 B66-10679 01

Foil radiometer accessory improves measurements
M-FS-12684 B67-10448 01

Concept for sleeve induction motor with 1-msec mechanical time constant
ARG-10124 B68-10185 01

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SAP-10020 B68-10267 01

Multichannel analyzers at high rates of input
ARG-10355 B69-10214 02

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NRC-10089 B67-10450 06

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M-FS-1871 B67-10150 01

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MSC-11595 B67-10576 01

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M-FS-1517 B67-10108 01

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M-FS-1516 B67-10136 01

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M-FS-13069 B67-10519 01

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M-FS-13999 B67-10523 06

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M-FS-14328 B66-10179 02

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Design techniques - Stochastic controllers
MSC-11554 B66-10234 02

Study of optimum discrete estimators in measurement analysis
M-FS-14915 B66-10348 02

Integrated sequence display device
KSC-10381 B69-10316 01

On the bound of first excursion probability
NFO-11158 B69-10334 06

TIME LAG

Frequency offset in linear FM/CW transponder eliminates clutter
M-FS-249 B65-10146 01

Gapped toroid provides infinite resolution of delay-line pickup
GSFC-370 B66-10258 01

Frequency discriminator with binary output eliminates tuned circuits
M-FS-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-FS-602 B66-10189 05

Means for improving apparent resolution of television
MEC-65 B67-10152 01

Study of yttrium iron garnet rods reveals new magnetostatic echo mode
MEC-37 B67-10153 01

Cytology 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-FS-14323 B66-10306 01

Transistorized Marx bank pulse circuit provides voltage multiplication with nanosecond rise-time
ARG-10110 B66-10326 01

Reducing quantizes deadband with a range switching digital filter
M-FS-20419 B69-10259 01

Combination ranging system and mapping radar
NFO-11001 B69-10325 01

A method for reducing sampling jitter in digital control systems
NFO-11068 B69-10338 01

Dynamic calibration of turbine flowmeters
LEWIS-11014 B69-10764 01

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WGO-130 B65-10323 05

Binary counter accumulates time by complementary preset
MSC-242 B65-10399 01

Single channel pulse-height analyzer operates
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| **TIIUG DEVICES** |
| **System** |

| **TIME SERIES ANALYSIS** |
| **Computer programs perform spectral analyses of up to seven time series** |
| **Technique for strip chart recorder time notation** |
| **Instrumentation monitors transported material through variety of parameters** |
| **Phase plane displays detect incipient failure in servo system testing** |
| **Hydrogen maser as a highly stable frequency reference** |
| **Hydrogen maser as a highly stable frequency reference** |
| **Algebraic Monte Carlo procedure reduces statistical analysis time and cost factors** |

| **TIME SHARING** |
| **New computer system simplifies programming of mathematical equations** |
| **Nixie tube display unit employs time-shared logic** |
| **Multiplexer uses insulated gate-field effect transistors** |
| **Time-shared Cathode Ray Tube** |

| **TIME SIGNALS** |
| **PK magnetic tape system efficiently records and reproduces data** |
| **Recording and time expansion technique for high-speed, single-shot transient video signal** |

<p>| <strong>TIME DEVICES</strong> |
| <strong>Solenoid permits remote control of stop watch and assures restarting</strong> |
| <strong>Coincident switch closing reduces error in motor-driven timer</strong> |
| <strong>Electromechanically operated camera shutter provides uniform exposure</strong> |
| <strong>Unijunction frequency divider is free of backward loading</strong> |
| <strong>High-intensity flashing beacon powered by</strong> |</p>
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MSC-13217 B69-10360 03

Novel multipurpose timer for laboratories
ARG-10147 B69-10410 01

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Improved gyro-flotation /damping/ fluids
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Novel multipurpose timer for laboratories
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N-PS-553 B66-10149 05

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JPL-SC-119 B66-10175 05

Hollow needle used to cut metal honeycomb structures
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Gear drive automatically indexes rotary table
N-PS-753 B66-10383 05

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N-PS-1654 B67-10285 05

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ARG-13 B67-10293 05

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LEWIS-10101 B67-10358 05

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N-PS-12720 B67-10381 03

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MSC-15611 B69-10552 03

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Fiber glass dies speed forming of large metal sheets
N-PS-214 B69-10210 05

Multisurface fixture permits easy grinding of tool bit angles
N-PS-306 B66-10171 05

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MSC-425 B66-10328 01

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N-PS-2477 B67-10214 05

TOOLS

V-slotted screw head and matching driving tool facilitate insertion and removal of screw fasteners
FRC-16 B63-10023 05

Special pliers connect home containing liquid under pressure
JPL-IT-1003 B63-10291 05

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JPL-IT-1004 B63-10292 05

Tool facilitates sealing of metal fill tubes
MSC-24 B63-10519 05

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MSC-42 B64-10058 05

Forming blocks speed production of strain gage grids
LEWIS-182 B65-10009 05

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ARC-40 B65-10094 05

Low-cost tool minimizes damage to O-rings during installation
MSC-140 B65-10116 05

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MSC-100 B65-10168 05

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LANGLEY-38 B65-10231 05

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NO-0020 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-238 B65-10375 05

Drill bit design assures clean holes in...
Alignment tool facilitates pin placement on irregular horizontal surfaces

Modified pliers facilitate coupling of bayonet-type connectors

Bearing puller facilitates removal and replacement of bearing assemblies

Heat treatment stabilizes welded aluminum fings and tool structures

Hole saw drill attachment has zero force reaction

Film coating permits low-force scribing

Mechanical gauge accurately checks tubing flares, roundness, and concentricity

Micromanipulation tool is easily adapted to many uses

Tool facilitates installation of Harxon clamps

Photocensitive filler minimizes internal stresses in epoxy resins

Concept for modifying drafting instruments to minimize smearing

Tool samples subsurface soil free of surface contaminants

Tool displays tool assures accurate dip-brased joints

Tool reconstructs data input points corresponding to first order output graph

Versatile impact hand tool

Coaxial cable stripper for confined areas

Weld preparation tool for pipes and tubing

Fixture facilitates soldering operations

Gun facilitates adhesive bonding of studs to surfaces

Tube welding and brazing

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KSC-10361 B69-10231 05

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ARG-10338 B69-10343 05

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MSC-15348 B69-10379 05

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**TRANSPORTATION**

Universal transloader moves delicate equipment without stress

Carriage system remotely moves drawer over extended distance

Swing-out rail system separates overhead crane rails

Hydrostatic force used to handle outsized, heavy objects

Instrumentation monitors transported material through variety of parameters

Packaging criteria for transportation and handling shock and vibration

Computer graphics data conditioning

Weight Control System

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Nitric acid-organic mixtures surveyed for use in separation by anion exchange methods

**TRANSVERSE WAVES**

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**TRAVELING WAVES**

Superconductor magnets used for stagger-tuning traveling-wave maser

Parametric up-converter increases flexibility of maser

Apparatus makes klystron operating frequency adjustable from remote point

Highly stable microwave delay line

Thermal short improves sensitivity of cryogenically cooled maser

Improved traveling wave maser amplifier

RF noise suppression using the photodielectric effect in semiconductors

**TRAVELING-WAVE TUBES**

Traveling-wave tube circuit simplifies microwave relay

**TRIGGER CIRCUITS**

A positive taper traveling-wave tube

Viscous-pendulum damper suppresses structural vibrations

Mass culture of photobacteria to obtain luciferase

Lateral ring metal elastic wheel absorbs shock loading

Apparatus of small size can be extended into long, rigid boom

Unmanned seismometer levels self, corrects drift errors

Instrumentation monitors transported material through variety of parameters

Packaging criteria for transportation and handling shock and vibration

Computer graphics data conditioning

Weight Control System

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Antenna configurations provide polarization diversity

**TRAPPING**

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**TRAVELING-WAVE MASERS**

Superconductor magnets used for staggering-tuning traveling-wave maser

**PARAMETRIC UP-CONVERTER**

Increases flexibility of maser

**APPARATUS MAKES KLYSTRON**

Operating frequency adjustable from remote point

**HIGHLY STABLE MICROWAVE DELAY LINE**

**THERMAL SHORT IMPROVES SENSITIVITY**

Cryogenically cooled maser

**IMPROVED TRAVELING WAVE MASER AMPLIFIER**

**RF NOISE SUPPRESSION USING THE PHOTODIELECTRIC EFFECT IN SEMICONDUCTORS**

**TRAVELING-WAVE TUBES**

Traveling-wave tube circuit simplifies microwave relay

**TRIGGER CIRCUITS**

Unmanned seismometer levels self, corrects drift errors

Transistorized trigger circuit is frequency-controllable

System selects framing rate for spectrograph camera

Compact SCR trigger circuit for ignitron switch operates efficiently

Security warning system monitors up to fifteen remote areas simultaneously

Circuit multiplies pulse width modulation, exhibits linear transfer function

TV synchronization system features stability and noise immunity

Modified univibrator compensates for output timing errors

Laboratory pulse modulator compensates for output timing errors

Multichannel pulse height analyzer is inexpensive, features low power requirements

SiC/Si diode trigger circuit provides automatic range switching for log amplifier

Logic circuit detects both present and missing negative pulses in superimposed wave trains

Temperature-stabilized, triggerable microelectronic astable multivibrator starts reliably

Unique frequency-shift-keyed demodulation system

High-speed camera synchronization

Transistorized Marx bank pulse circuit
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NUC-10308 B69-10034 06

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N-PS-10441 B69-10373 05

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LEWIS-10298 B69-10684 05

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M-PS-20031 B69-10604 02

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N-PS-20039 B66-10349 02

TURBULENT BOUNDARY LAYER

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SRC-15 B66-10177 01

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ARG-10049 B66-10278 03

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N-PS-525 B66-10570 05

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N-PS-1268 B67-10030 01

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N-PS-381 B66-10191 05

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Substitution of stable isotopes in structures caused by sudden environmental temperature changes.

Multidimensional Reaction - Self-aligning rod prevents eccentric loading of tensile specimens.

A general purpose computer program for the equilibrium problems of linear structures.

Metallic coatings protect threaded fasteners in corrosive environment.

A general management training concept.

Improved camera for better X-ray powder photographs.

Setting of angles on machine tools speeded by magnetic protractor.

Analysis of transient thermal stress in heat-generating plates and hollow cylinders caused by sudden environmental temperature changes.

Study shows effect of surface preparations on improving thermal emission.

Multidimensional Reaction Kinetic Ablation Program/BEARAP/MSC-183.

Intrument quickly transposes ground reference target to eye level.

Plug-in connector socket accepts coaxial cable end.

Apparatus for fabrication of americium-beryllium neutron sources prevents capsule contamination.

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