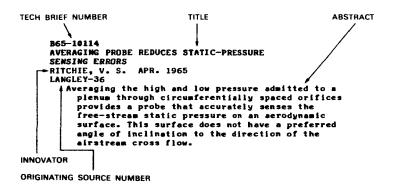
# Introduction

This Cumulative Index to NASA Tech Briefs lists the technological innovations published in this form during the period from 1963 through 1965. The main section is arranged in five categories: Electrical (including Electronic); Energy Sources; Materials (including Chemistry); Life Sciences; and Mechanical. A typical entry has these elements:



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



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

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

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# TECHNOLOGY UTILIZATION DIVISION NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Washington, D.C. 20546

This Cumulative Index replaces the previous issues of the Index to NASA Tech Briefs which were published in January and August 1965.

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#### **01** ELECTRICAL (ELECTRONIC)

B63-10006 SETTING OF ANGLES ON MACHINE TOOLS SPEEDED BY MAGNETIC PROTRACTOR VALE, L. B. MAY 1964 ARC-5

An adjustable protractor facilitates transference of angles to remote machine tools. It has a magnetic base incorporating a beam which can be adjusted until its shadow coincides with an image on the screen of a projector.

B63-10024 SOLENOID PERMITS REMOTE CONTROL OF STOP WATCH AND ASSURES RESTARTING KODAI, C. JUN. 1964 FRC-17

A 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.

INCREASED PERFORMANCE RELIABILITY OBTAINED WITH DUAL /REDUNDANT/ OSCILLATOR SYSTEM NOLIS, W. M. /IBM/ MAR. 1964 GSFC-36

Two crystal-controlled oscillators, each with an associated buffer stage, provide an output at a common point. The circuit design gives high reliability control of output frequency and amplitude.

TRANSISTOR HEAT DISSIPATION
HILLIARD, J. JOHN, J. E. A. APR. 1964 /SEE
NASA-TN-D-1753/ INDIUM FOIL WITH BERYLLIA WASHER IMPROVES

GSFC~42

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.

MODIFIED FILTER PREVENTS CONDUCTION OF MICRO-WAVE SIGNALS ALONG HIGH-VOLTAGE POWER SUPPLY LEADS MATHISON, R. P. MAY 1964

Very lossy powdered from material, in the lining of a polyester resin, replaces the dielectric material in the short coaxial transmission line of material in the short coastal transmission like of a simple filter. The lossy material absorbs microwave signals along high voltage power supply leads.

STEPPING SWITCH WITH SIMPLE ACTUATOR PROVIDES MANY CONTACTS IN SMALL SPACE MILLER, J. V. MAY 1964 JPL-122

To reduce the space required for a stepping switch with many contacts, a simple electromechanical actuator with a maximum number of wipers has been incorporated into a compact assembly. This small sized unit is inexpensive to fabricate.

B63-10174 MODULAR CHASSIS SIMPLIFIES PACKAGING AND INTERCONNECTING OF CIRCUIT BOARDS ARENS, W. E. BOLINE, K. G. MAY 1964 JP1.-236A

A system of modular chassis structures has simplified the design for mounting a number of printed circuit boards. This design is structurally adaptable to computer and industrial control system applications.

B63-10193 BOS-10193 REMOVABLE PREHEATER ELEMENTS IMPROVE OXIDE INDUCTION FURNACE LEIPOLD, M. H. JAN. 1964 JDI -288

Heat and corrosion resistant preheater elements are used in oxide induction furnaces to raise the temperature to the level for conducting electricity. These preheater elements are then removed and the induction coil energized.

B63-10227 ELECTROMECHANICALLY OPERATED CAMERA SHUTTER PROVIDES UNIFORM EXPOSURE FORD, A. G. MAR. 1964 JPI.-357

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

B63-10229 FLANGE ON MICROWAVE ANTENNA SUBREFLECTOR CUTS GROUND NOISE POTTER, P. D. MAY 1964 JPL-362

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

B63-10238 SHAPED SUPERCONDUCTOR CYLINDER RETAINS INTENSE MAGNETIC FIELD HILDEBRANDT, A. F. WAHLQUIST, H. MAY 1964 JPL-381

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.

B63-10250 LEVEL OF SUPER-COLD LIQUIDS AUTOMATICALLY MAINTAINED BY LEVELOMETER TENER, W. M. MAR. 1964 JPL-397

A levelometer system, in which the level of cryogenic liquid to be controlled affects the level of an electrolyte, automatically switches a pump on and off. A pressure- sensitive diaphragm can also throw a microswitch to start or stop the pump.

B63-10255 TRANSFLUXOR CIRCUIT AMPLIFIES SENSING CURRENT FOR COMPUTER MEMORIES MILLIGAN, G. C. MAR. 1964

To transfer data from the magnetic memory core to an independent core, a reliable sensing amplifier has been developed. Later the data in the independent core is transferred to the arithmetical section of the computer.

B63-10258 DOUBLE-THROW MICROWAVE DEVICE SWITCHES TWO LINES QUICKLY CLAUSS, R. STELZHIED, C. T. FEB. 1964 JPL-410

By combining a single-throw microwave switch with a microwave circulator in a circuit, two input lines can be switched quickly. There is only a brief transition time when both /or neither/ of the two lines are connected to an output line.

IGNITING SYSTEM FOR MERCURY VAPOR LAMPS PRO-TECTS TRANSISTORIZED SUSTAINING SUPPLY GUISINGER, J. E. JUL. 1964 JPL-421

A current from a sustaining power supply flows through the mercury vapor lamp and, as there are no resistors in series with this supply, the power is efficiently used. This high voltage igniting device protects the transistorized high current, low voltage power supply.

B63-10264 NOVEL HORN ANTENNA REDUCES SIDE LOBES, IMPROVES RADIATION PATTERN POTTER, P. D. 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-CONDUC-TIVITY FLUIDS
LOVE, E. G. MAY 1964
JPL-0021

An electromagnetic flowmeter has been adjusted to minimize the errors inherent in measuring the flow of low conductivity fluids. This is done through use of a direct-coupled, differential cathodefollower, 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. E. LAUE, E. G. MAY 1964
JPL-0029

A small digital recording head consists of closely spaced parallel wires, imbedded in a ferrite block to concentrate the magnetic flux.

Parallel-recorded information bits are converted into serial bits on moving magnetic tape and cross talk is suppressed.

B63-10321
IMPROVED VARIABLE-RELUCTANCE TRANSDUCER MEASURES TRANSIENT PRESSURES
MORTON, R. W. PATTERSON, J. L. MAY 1964
LANGLEY-10

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

B63-10338
OPTICS USED TO MEASURE TORQUE AT HIGH
ROTATIONAL SPEEDS
KRSEK, A., JR. TIEFERMAN, M. DEC. 1964
LEWIS-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 servomechanism. 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 VARY, A. MAY 1964
LEWIS-39

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

B63-10440 NEW APPARATUS INCREASES ION BEAM POWER DENSITY BALDWIN, L. V. SANDBORN, V. A. JUN. 1964 LEWIS-73

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.

B63-10443
IMPROVED SENSOR COUNTS MICROMETEOROID
PENETRATIONS
DAVISON, E. H. 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.

B63-10493
TWO-STAGE EMITTER FOLLOWER IS TEMPERATURE
STABILIZED
SCHMIDT, M. H. /MCDONNELL AIRCRAFT CORP./ 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.

B63-10508
CIRCUIT SWITCHES LATCHING RELAY IN RESPONSE TO SIGNALS OF DIFFERENT POLARITY
SMITH, L. S. /ELECTRO-OPTICAL SYSTEMS, INC./ MAY 1964
W00-055

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

B63-10511
FREQUENCY-SHIFT-KEYER CIRCUIT IMPROVES PCM
CONVERSION FOR RADIO TRANSMISSION
MIKSZAN, D. P. /WESTINGHOUSE ELEC. CORP./ 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. 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. JUN. 1964 JPL-513

A simplified computer logic circuit of two nand/nor 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, H. B. 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 OVERHEAT-ING OF ELECTRICAL COMPONENTS INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ FEB. 1964 6SFC-91

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

863-10537 SIMPLE CIRCUIT PROVIDES ADJUSTABLE VOLTAGE WITH LINEAR TEMPERATURE VARIATION MOEDE, L. W. /DATAMETRICS CORP./ MAR. 1964 JPL-WOO-029

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

B63-10551 UNMANNED SEISMOMETER LEVELS SELF, CORRECTS DRIFT ERRORS SUTTON, G. /COLUMBIA U./ MAY 1964 GSFC-100

An unmanned, self-leveling seismometer is developed which contains three subsystems— a mechanical, an electronic pickoff and feedback, + a leveling and vertical centering subsystem. Earth motions are detected by means of a seismic mass coupled to a coil-magnet assembly and a differential capacitor plate assembly.

B63-10553
TRANSISTORIZED TRIGGER CIRCUIT IS FREQUENCYCONTROLLABLE
MOORE, E. 7. /DUKE U./ JUN. 1964
GSFC-111

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

B63-10554
HIGHLY EFFICIENT SQUARE-WAVE OSCILLATOR OPERATOR AT HIGH POWER LEVELS
HALL, J. E., JR. /DUKE U./ JUN. 1964
GSFC-112

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

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

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

B63-10561
TINY SENSOR-TRANSMITTER CAN WITHSTAND EXTREME
ACCELERATION, GIVES DIGITAL DUTPUT
MOSSING, R. L. ROBINSON, G. NOV. 1964

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

B63-10567 SIMPLE CIRCUIT CONTINUOUSLY MONITORS THERMOCOUPLE SEMSOR GREENWOOD, T. L. AUG. 1964 M-FS-61

A series circuit was developed to check the continuity in thermocouple sensors. This method may be used in monitoring continuity in any do

voltage-operated control circuit.

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

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

B63-10579
SMALL FOAMED POLYSTYREME SHIELD PROTECTS LOW-FREQUENCY MICROPHONES FROM WIND NOISE TEDRICK, R. N. MAY 1964
M-FS-123

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

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

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

B63-10597
PRECISION GAGE MEASURES ULTRAHIGH VACUUM
LEVELS
HUDSON, J. B. SEARS, G. W. /GEN. DYN. CORP./
JUN. 1964
GSFC-114

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

B63-10599
LIQUID SWITCH IS REMOTELY OPERATED BY LOW DC VOLTAGE
MODRE, E. T. /DUKE U./ MAY 1964
GSFC-119

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

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

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

B63-10603 MONOSTABLE CIRCUIT WITH TUNNEL DIODE HAS FAST RECOVERY HEFFNER, P. MAY 1964 GSFC-132

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

B63-10606
NEW SINTERING PROCESS ADJUSTS MAGNETIC VALUE
OF FERRITE CORES
INNOVATOR NOT GIVEN /IBM/ MAY 1964
GSFC-129

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

B63-10609
TEMPERATURE-SENSITIVE NETWORK DRIVES ASTABLE
MULTIVIBRATOR
INNOVATOR NOT GIVEN /RCA/ OCT. 1964
GSFC-137

The 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 CRYDGENIC WAVEGUIDE WINDOW IS SEALED WITH PLASTIC FOAM CLAUSS, R. STELZRIED, C. T. JUN. 1964 JPL-559

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 PIERCE, W. B. 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 TRANSDUCER ADVANCES MICRO-MEASUREMENT RANGE ROGALLO, V. L. MAY 1964 ARC-26

An ultrasensitive 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. JUL. 1964 GSEC-46

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

B64-10010 MODIFIED RF COAXIAL CONNECTOR ENDS VACUUM CHAMBER WIRING PROBLEM WEINER, D. 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
RADECKE, T. F. 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
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
DEC. 1964
MSC-58

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, S. G. /RCA/ JUN. 1964
W00-062

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

B64-10024
EFFICIENT CIRCUIT TRIGGERS HIGH-CURRENT, HIGHVOLTAGE PULSES
GREEN, E. D. /WESTINGHOUSE ELEC. CORP./ JUN.
1964
MSC-14

A 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 OHMETER SENSES DEPLETION OF LUBRICANT IN JOURNAL BEARINGS ROSS, A. O. 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./ JUN. 1964
MSC-64

A D.C. 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. 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. SCHUSTER, D. JUN. 1964
JPL-358

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

B64-10109
ANALOG DEVICE SIMULATES PHYSIOLOGICAL
WAVEFORMS
HICKMAN, D. M. NOV. 1964
MSC-51

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
AUXILIARY SILVER ELECTRODE ELIMINATES TWO-STEP
VOLTAGE DISCHARGE CHARACTERISTIC OF SILVERZINC CELLS
CHREITZBERG, A. M. /ELEC. STORAGE BATTERY CO./
JUN. 1964
GSFC-169

In silver-zinc cells, an auxiliary silver electrode is electrically connected to the positive terminal only during discharge. This

eliminates the two-step discharge characteristic of such cells.

B64-10118
USE OF PHOTOGRAPHS SPEEDS INSPECTION OF PRINTED-CIRCUIT BOARDS
STARK, E. /IBM/ JUL. 1964
MSC-72

The projected images of a printed circuit board and the engineering drawing are superimposed on a screen for visual comparison. This technique speeds inspection, reduces the incidence of error.

B64-10122 SIMPLE TRANSDUCER MEASURES LOW HEAT-TRANSFER RATES LAUMANN, E. A. OCT. 1964 JPL-466

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 imbedded in a rod of low thermal conductivity.

B64-10143 FIELD-EFFECT TRANSISTOR IMPROVES ELECTROMETER AMPLIFIER MUNDZ, R. NDV. 1964 ARC-36

An electrometer amplifier uses a field effect transistor to measure currents of low amperage. The circuit, developed as an AC amplifier, is used with an external filter which limits bandwidth to achieve optimum noise performance.

B64-10144
RING COUNTER MAY BE ADVANCED OR RETARDED BY
COMMAND SIGNAL
LIBBY, J. N. MOORE, H. D. JUL. 1964
GSFC-101

A power logic circuit, with bidirectional capability, is used to drive small loads in planned sequence. This is designed in the form of a shift register, with a reversible ring counter.

B64-10150 NOVEL CIRCUIT COMBINES PULSE STRETCHER WITH NOR GATE CLIFF, R. A. OCT. 1964 GSFC-187

A pulse-stretching circuit added to a conventional NOR gate circuit detects a preselected state and produces a pulse that the pulse stretcher maintains for a long enough period to reset all counter stages.

EMISSION TESTER FOR HIGH-POWER VACUUM TUBES LUNDY, C. OCT. 1964 JPL-628

A simple emission-testing circuit for high power vacuum tubes to check their output stability is described. With modification it may be useful in testing mercury-arc rectifiers.

B64-10163 FIELD EFFECT TRANSISTORS USED AS VOLTAGE-CONTROLLED RESISTORS INNOVATOR NOT GIVEN /IBM/ NOV. 1964

M-FS-174

Two new methods of incorporating field effect transistors into circuit designs have resulted in linear response of this type transistor over a wide range of controlled voltage levels. This increases its usefulness as a voltage-controlled resistor.

B64-10171
SUBMINIATURE BIOTELEMETRY UNIT PERMITS REMOTE
PHYSIOLOGICAL INVESTIGATIONS
DEBOO, G. J. FRYEM, T. B. OCT. 1964
ARC-39

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.

B64-10173
HIGH-PASS RF CDAXIAL FILTER REJECTS DC AND LOW FREQUENCY SIGNALS
BAILEY, J. W. MC AFEE, D. F. OCT. 1964
GSFC-73

A low-loss RF filter element for coaxial transmission provides DC isolation and eliminates low frequency signals. The characteristic impedance of the transmission line is not affected, as the design permits direct connection of the filter to the line.

B64-10200 BINARY SYSTEM GENERATES SIDEREAL RATE FROM STANDARD SULAR RATE GRANATA, R. MC CAUL, P. OCT. 1964 GSFC-190

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

B64-10209
RASTER LINEARITY OF VIDEO CAMERAS CALIBRATED
WITH PRECISION TESTER
INNOVATOR NOT GIVEN /RCA/ DEC. 1964
GSFC-200

The time between transitions in a camera\*s video output is measured when registered at reticle marks on the vidicon faceplate. This device permits precision calibration of raster linearity of television camera tubes.

B64-10222
COMPACT CARTRIDGE DRIVES CODED TAPE AT
CONSTANT READOUT SPEED
AUSTIN, D. C. DCT. 1964
JPL-472

To facilitate storage and repetitive reading of short-program coded tape, a cartridge case, containing mechanical drive and readout assemblies, has been fabricated. The drive transports the tape past a conventional pickup device during the reading function.

B64-10226 TEMPERATURE-COMPENSATION CIRCUIT STABILIZES PERFORMANCE OF VIDICONS MALLING, L. R. NOV. 1964 JPL-486

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

B64-10237 APPARATUS MEASURES CONCENTRATION OF SUSPENDED DROPLETS IN GAS STREAMS BOOTH, F. W. DEC. 1964 LANGLEY-31

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

B64-10255
ELECTRONIC DEVICE SIMULATES RESPIRATION RATE
AND DEPTH
THOMAS, J. A. NOV. 1964
MSC-89

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.

B64-10258
DIGITAL CARDIOMETER COMPUTES AND DISPLAYS
HEARTBEAT RATE
MITCHELL, V. M. NOV. 1964
MSC-93

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

B64-10259
PNEUMOTACHOMETER COUNTS RESPIRATION RATE OF

HUMAN SUBJECT GRAHAM, 0. NOV. 1964 MSC-92

To monitor breaths per minute, two rate-to- analog converters are alternately used to read and count the respiratory rate from an impedance pneumograph over fixed intervals. The converter outputs are sequentially displayed numerically on electroluminescent matrices.

B64-10271

IMPROVED TECHNIQUE FOR LOCALIZING ELECTRO-POLISHING FEATURES NOVEL NOZZLES INNOVATOR NOT GIVEN /GEN. DYN./ASTRONAUTICS/ NOV. 1964 WOD-101

Impingement electropolishing is accomplished by use of an electrolyte flim, which is evenly distributed by an insulated nozzle designed to match the contour of the workpiece to be treated. The workpiece is connected to the positive terminal of a generator and the nozzle to the negative terminal.

B64-10280
SERVO SYSTEM FACILITATES PHOTOELASTIC STRAIN
MEASUREMENTS ON RESINS
OTTS, J. W. NOV. 1964
JPL-504

To facilitate photoelastic measurements of the strains developed by stresses applied to birefringent resins, a servomechanism is employed.

B64-10281 PTC THERMISTOR PROTECTS MULTILOADED POWER SUPPLIES LEVERONE, H. MANDELL, N. NOV. 1964 GSFC-236

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

B64-10283
MOUNTING FOR DIODES PROVIDES EFFICIENT HEAT SINK
SINK
INNOVATOR NOT GIVEN /RCA/ NOV. 1964
M-FS-197

Efficient heat sink is provided by soldering diodes to metal support bars which are brazed to a ceramic base. Electrical connections between diodes on adjacent bars are made flexible by metal strips which aid in heat dissipation.

B64-10299
RADIATION DETECTOR-OPTICAL HANGING DEVICE IS
OF SIMPLIFIED CONSTRUCTION
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
DEC. 1964
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 nonactivated side of the detector. Its form may be either a rectangular coordinate or a polar coordinate system.

B64-10305
TRANSISTORIZED CONVERTER PROVIDES NONDISSIPATIVE REGULATION
INNOVATOR NOT GIVEN /DUKE U./ 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
WELDING PROCEDURE IMPROVES QUALITY OF WELDS,
OFFERS OTHER ADVANTAGES
MC CAMPBELL, W. M. MC CAIG, J. C. DEC. 1964
M-FS-32

An improved procedure for arc spot welding uses the SIGMA /submerged inert gas metallic arc/

method. This has resulted in welds of higher quality than are obtainable by conventional means.

B64-10320
VOLTAGE GENERATOR SWEEPS OSCILLATOR FREQUENCY LINEARLY WITH TIME INNOVATOR NOT GIVEN /MELPAR, INC./ JAN. 1965
M-FS-219

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

B64-10330
ECONOMICAL FABRICATION PROCESS PRODUCES HIGH-QUALITY JUNCTION TRANSISTORS
INNOVATOR NOT GIVEN /IBM/ DEC. 1964
JPL-SC-065

A convenient, three-step fabrication process, with a p-type layer of gallium arsenide vapordeposited on a starting wafer of germanium, is used to produce heterojunction-homojunction p-n-p transistors. These are of high quality with good injection efficiency and low capacitance.

B64-10349
BANDWIDTH SWITCHING IS TRANSIENT-FREE, AVOIDS
LOSS OF LOOP LOCK
INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ DEC.
1964
W00-054

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 AM SIGNALS TO FM FOR MAGNETIC RECORDING INNOVATOR NOT GIVEN /RCA/ 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 BUSH, E. G. JAN. 1965 GSFC-241

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

B65-10005
COMPUTER MODIFICATION REDUCES TIME OF PERFORMING ITERATIVE DIVISION
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
M-FS-166

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
INNOVATOR NOT GIVEN /RCA/ JAN. 1965 SEE ALSO
B64-10283
M-FS-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, H. A. JAN. 1965 MSC-95

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

B65-10011
CIRCUIT IMPROVEMENT PRODUCES MONOSTABLE
MULTIVIBRATOR WITH LOAD-CARRYING CAPABILITY
GOLDMAN, N. E. SCHAFFERT, J. C. JAN. 1965
GSFC-34A

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

B65-10012
HELICAL COAXIAL-RESONATOR MAKES EXCELLENT
RF FILTER
INNOVATOR NOT GIVEN /RCA/ JAN. 1965 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
ZENER DIODE FUNCTION GENERATOR REQUIRES NO EXTERNAL REFERENCE VOLTAGE
BOLTE, G. BURNS, R. JAN. 1965
JPL-33

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
IMMOVATOR NOT GIVEN /RCA/ 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
SAN MIGUEL, A. SILVER, R. H. JAN. 1965
LPI-501

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
INNOVATOR NOT GIVEN /STANFORD RES. INST./ 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 DRAIN INNOVATOR NOT GIVEN /HARVARD COLL./ FEB. 1965 GSFC-198

High power drain is eliminated by a circuit consisting of a divide-by-two stage, two identical inputs, a wiggle amplifier, driver, and power output stages to drive the step motor.

B65-10028
TRANSISTOR VOLTAGE COMPARATOR PERFORMS OWN
SENSING
CLIFF, R. A. FEB. 1965
GSFC-228

Detection of the highest voltage input among a group of varying voltage inputs is accomplished by a transistorized voltage comparison circuit. The collector circuits of the transistors perform the sensing function. Input voltage levels are

governed by the transistors.

B65-10030 LIBRARY OF DOCUMENTS COMPRESSED INTO LAP-HELD DISPLAY KIT INNOVATOR NOT GIVEN /NATL. CASH REGISTER CO./ FEB. 1965 MSC-125

A lightweight Apollo flight kit containing microfilmed data is packaged in a hinged box with a viewing screen cover, and a writing surface. It is secured to the users lap.

B65-10033
PHOTOELECTRIC SEMICONDUCTOR SWITCH OPERATES
WITH LOW LEVEL INPUTS
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
JPL-SC-068

Photoelectric semiconductor switch with a buried emitter region avoids high-leakage currents across the emitter. It exhibits high emitter-to-collector transport efficiency beta at low signal levels.

B65-10041
PULSE HEIGHT ANALYZER OPERATES AT HIGH
REPETITION RATES, LOW POWER
INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS., INC./
FEB. 1965
WOD-046

Simple multistage transistor gating circuit provides a pulse height analyzer that operates at high repetition rates and low power. the circuit compares the input pulse heights to discrete reference voltages.

B65-10045
THERMISTOR CONNECTOR ASSEMBLY INCREASES
ACCURACY OF MEASUREMENTS
INNOVATOR NOT GIVEN /ATLANTIC RES. CORP./ FEB.
1965
LANGLEY-62

Isolation of the thermistor from spurious heat transfer for accurately measuring ambient air temperatures is accomplished by a mounting consisting of a transparent plastic film bonded to a U-shaped phenolic board with depositions of aluminum on each face and upper edge, and a variable capacitor for fine tuning.

B65-10047
CIRCUIT DETECTS ERRORS IN ADDRESS CURRENTS FOR MAGNETIC CORE ARRAYS
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
H-F5-234

Address current error detector generates a signal whenever any error producing conditions arise in magnetic core arrays. Can be used with test equipment and memory storage units.

B65-10048
MICROPARTICLE IMPACT SENSOR MEASURES ENERGY
DIRECTLY
ALEXANDER, W. M. BERG, O. E. FEB. 1965
GSFC-252

Construction of a capacitor sensor consisting of a dielectric layer between two conductive surface layers and connected across a potential source through a sensing resistor permits measurement of energy of impinging particles without degradation of sensitivity. A measurable response is produced without penetration of the dielectric layer.

B65-10050 NULLING PYROMETER USES KERR CELL SHUTTER FOR FAST RESPONSE INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965 NU-0010

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

B65-10051 METAL SHEATH IMPROVES THERMOCOUPLE USING GRAPHITE IN ONE LEG INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965 NU-0011 Thermocouple using graphite in one leg is sealed in a moistureproof metal sheath which permits high EMF output and good mechanical strength.

B65-10052 ZENER DIODE IS STARTER FOR TRANSISTOR-REGULATED POWER SUPPLY INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965 NU-0015

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

B65-10054
PULSE GENERATOR PERMITS NONDESTRUCTIVE
TESTING OF COMPONENT BREAKDOWN VOLTAGE
INNOVATOR NOT GIVEN /HONEYWELL/ MAR. 1965
MSC-122

Nondestructive testing of the breakdown voltage of transistors and other electronic components is achieved by a simple relay circuit. The circuit operates by applying low-energy, high-voltage microsecond pulses to the components under test.

B65-10055 FM OSCILLATOR USES TETRODE TRANSISTOR BOENSEL, D. W. MAR. 1965 JPL-82

Tetrode-driven crystal oscillator achieves large frequency variations for a given input signal. Frequency control is obtained by variation of the second base current of the tetrode.

B65-10056
VIBRATING-MEMBRANE ELECTROMETER HAS HIGH
CONVERSION GAIN
COON, G. W. DIMEFF, J. APR. 1965
ARC-38

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.

B65-10057 FEED-THROUGH HAS POLYTERMINAL FEATURE SANDERS, L. H. MAR. 1965 M-FS-25

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

METAL DIAPHRAGM USED TO CALIBRATE MINIATURE TRANSDUCERS INNOVATOR NOT GIVEN /ASTRO-SPACE LABS./ MAR. 1965 M-FS-207

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

B65-10061 SIMPLE CONTROL DEVICE SENSES SOLAR POSITION LONBORG, J. O. RANDALL, J. C. MAR. 1965 JPL-638

The amount of solar radiation incident on a specially prepared bimetallic strip is simply and reliably controlled by a light valve. This device is valuable for systems requiring temperature regulation.

B65-10062
PULSED PLASMA ACCELERATOR OPERATES
REPETITIVELY WITHOUT COMPLEX CONTROLS
SABOL, A. P. MAR. 1965
LANGLEY-48

Self-repeating pulsed plasma accelerator operates with a wide variety of gases over a large range of pressures without complex control equipment. The accelerator combines a circular channel with a tangential channel at the entrance way of a high-velocity gas.

B65-10066 FUEL CELL SERVES AS OXYGEN LEVEL DETECTOR INNOVATOR NOT GIVEN /GE/ MAR. 1965 JPL-SC-072

Monitoring the oxygen level in the air is accomplished by a fuel cell detector whose voltage output is proportional to the partial pressure of oxygen in the sampled gas. The relationship between output voltage and partial pressure of oxygen can be calibrated.

B65-10067 SENSITIVE LEVEL SENSOR MADE WITH SPIRIT LEVEL, GIVES ELECTRICAL OUTPUT BRYANT, E. L. MAR. 1965 LANGLEY-49

Sensor incorporating a circular spirit level, electrical lamp and two pairs of photocells, provides an electrical indication of flat surface level deviation.

B65-10068
AUTOMATIC THERMAL SWITCH ACCELERATES
COOLING-DOWN OF CRYOGENIC SYSTEM
WIEBE, E. R. MAR. 1965
JPL-655

Automatic switch uses short stainless steel tube with copper heat sinks to accelerate helium gas cooling and provides good thermal conductivity and good thermal insulation.

B65-10069
FEEDBACK OSCILLATOR FUNCTIONS AS LOW-LEVEL
PULSE STRETCHER
INNOVATOR NOT GIVEN /SPERRY RAND CORP./ 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.

B65-10072 SYNCHRONIZED PULSE GENERATOR NEEDS NO EXTERNAL POWER CANCRO, C. A. JANNICHE, P. J., JR. MAR. 1965 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.

B65-10073 SYSTEM MEASURES ANGULAR DISPLACEMENT WITHOUT CONTACT DAVIS, W. T. MAR. 1965 LANGLEY-46

Optic system coupled to an electronic detection and measuring system converts angular movement of reflected light to a direct readout, without any direct contact with the object.

B65-10076
LIGHT-SENSITIVE POTENTIOMETER MEASURES
PRODUCT OF TWO VARIABLES
HAERTSCH, O. C. MAR. 1965
GSFC-240

The output voltage from a photoconductive potentiometer circuit using a galvanometer mirror reflecting the light beam is directly proportional to the product of the input voltage.

B65-10079
PHOTOELECTRIC SENSOR OUTPUT CONTROLLED BY EYEBALL MOVEMENTS
INNOVATOR NOT GIVEN /SPACO/ MAR. 1965
M-FS-274

The difference between the infrared absorption of the iris and infrared reflectivity of the eyeball controls the operation of a device consisting of an infrared source and amplifier, a cadmium selenide infrared sensor, and an infrared filter.

B65-10080
PHASE DETECTOR CIRCUIT SYNTHESIZES OWN
REFERENCE SIGNAL
INNOVATOR NOT GIVEN /FAIRCHILD STRATOS CORP./

MAR. 1965 M-FS-247

Circuit with isolation amplifier connected to a frequency multiplier and synchronous phase detector synthesizes the phase reference signal from the phase modulated input signal.

B65-10085 TRANSDUCER SENSES DISPLACEMENTS OF PANELS SUBJECTED TO VIBRATION PEA, R. O. MAR. 1965

ARC-37

Inductive vibration sensor measures the surface displacement of nonferrous metal panels subjected to vibration or flutter. This transducer does not make any physical contact with the test panel when measuring.

B65-10086 SYSTEM SELECTS FRAMING RATE FOR SPECTROGRAPH CAMERA INNOVATOR NOT GIVEN /AM. OPT. CO./ MAR. 1965

ANGLEY-55

Circuit using zero-order light is reflected to a

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

B65-10087
APPARATUS MEASURES SWELLING OF MEMBRANES IN
ELECTROCHEMICAL CELLS
HENNIGAN, T. J. APR. 1965
GSFC-280

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

B65-10089
TRANSDUCER MEASURES TEMPERATURE DIFFERENTIALS
IN PRESENCE OF STRONG ELECTROMAGNETIC FIELDS
WALD, D. APR. 1965
ARC-27

Measurement of temperature rise of cooling water under pressure and in strong electromagnetic fields is accomplished by a transducer using a magnetically shielded thermocouple arrangement. The thermocouple junctions are immersed in oil to isolate them from electric currents in the water.

B65-10091 SIMULATOR PRODUCES PHYSIOLOGICAL WAVEFORMS EKEROOT, S. MAR. 1965 MSC-94

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

B65-10093 COMPUTER PROGRAMS SIMPLIFY OPTICAL SYSTEM ANALYSIS INNOVATOR NOT GIVEN /HONEYWELL/ 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. 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. LAVIGNE, R. C. 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
BILLINGSLEY, J. APR. 1965
GSFC-267

Simple circuit monitors the frequency of PFM /pulse 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

INNOVATOR NOT GIVEN /CORNELL UNIV./ 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, H. C., JR. SULLIVAN, R. M. APR. 1965
GSFC-291

Continuously variable load automatically tests do power supplies over an extended current range. External meters moniter 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
INNOVATOR NOT GIVEN /RCA/ APR. 1965

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
UNIJUNCTION FREQUENCY DIVIDER IS FREE OF BACKWARD LOADING
FAIRBANKS, A. F. APR. 1965
JPL-WOO-010

Simple frequency divider composed of relaxation oscillators uses unijunction transistors to reduce backward loading to a minimum. This circuit design is applicable in timing devices and sync generators for television systems.

B65-10118
TRANSISTORIZED CIRCUIT CLAMPS VOLTAGE WITH
0.1 PERCENT ERROR
INNOVATOR NOT GIVEN /RCA/ APR. 1965
GSFC-196

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 TRANSISTER INVERTERS USE
MULTIPLE CORE TRANSFORMERS
INNOVATOR NOT GIVEN /DUKE UNIV./ APR. 1965
GSFC-183

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

B65-10120 Multiple test tubes stirred mechanically LEON, H. J. STRONG, I. J. 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 BUSCH, A. H. APR. 1965

GSFC-289
Light, thin-film heating element is formed by vacuum deposition of metal onto a nonconductive surface to be heated. This small-sized heater has a very fast response time.

B65-10124 VARIABLE FREQUENCY MAGNETIC MULTIVIBRATOR GENERATES STABLE SQUARE-WAVE OUTPUT PAULL, S. MAY 1965 GSFC-AE-21

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

B65-10125 SIMPLIFIED ELECTROMETER HAS EXCELLENT OPERATING CHARACTERISTICS BRANTNER, R. E. MAY 1965 JPL-413

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

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

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

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

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

B65-10137
INSTRUMENT CALIBRATES LOW GAS-RATE FLOWMETERS
COPELAND, A. C. FULTON, W. C. SMITHER, M. A.
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.

B65-10138 HIGH-GAIN AMPLIFIER HAS EXCELLENT STABILITY AND LOW POWER CONSUMPTION KLEINBERG, L. L. MAY 1965 GSFC-272

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

B65-10139
SPHERICAL ELECTRODE ELIMINATES HIGH-VOLTAGE
BREAKDOWN
FINKE, R. C. VETRONE, R. H. MAY 1965
LEWIS-155
Spherical electrodes surrounding electrode-

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

B65-10142
AUXILIARY CIRCUIT ENABLES AUTOMATIC MONITORING
OF EKG\*S
INNOVATOR NOT GIVEN /TEX. INST. FOR
REHABILITATION AND RES./ MAY 1965 SEE ALSO
B65-10143 AND B65-10010
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. MAY 1965 SEE ALSO B65-10010 AND B65-10142
MSC-133

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

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

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

B65-10146 FREQUENCY OFFSET IN LINEAR FM/CW TRANSPONDER ELIMINATES CLUTTER INNOVATOR NOT GIVEN /MELPAR/ MAY 1965 M-FS-249

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

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

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

B65-10152 CIRCUIT REDUCES DISTORTION OF FM MODULATOR INNOVATOR NOT GIVEN /RCA/ MAY 1965 GSFC-257

Correction circuit improves the linearity of a voltage-variable capacitor 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
INNOVATOR NOT GIVEN /RCA/ JUN. 1965
GSFC-293

Semiconductor laser beam supplies sustained level of electrical power to remote location not served by conventional conductors. This system would be useful where transmission of energy is critical, such as in nuclear reactors, or other hazardous environments.

B65-10159
SOLID-STATE SWITCHING USED TO SPEED UP CAPACITIVE INTEGRATOR NEWCOND, A. L., JR. JUN. 1965
LANGLEY-104

Capacitive integrator circuit using silicon controlled switches /SCS/ 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
INNOVATOR NOT GIVEN /MIT/ 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
INNOVATOR NOT GIVEN /RCA/ 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
INNOVATOR NOT GIVEN /SPACE TECH. LABS./ JUN.
1965
M-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 INNOVATOR NOT GIVEN /DUKE UNIV./ JUN. 1965 GSFC-130

Self-oscillating dc to ac converter with transistor switching to produce a square wave output is used for low and high voltage power sources. The converter has a high efficiency throughout a wide range of loads.

B65-10182 FORCE CONTROLLED SOLENOID DRIVES MICROWELD TESTER

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965

Solenoid-driven device tests the integrity of a microweld 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.

B65-10183
MODIFIED INTERELEMENT SPACING IMPROVES YAGI
ANTENNA ARRAY
BECK, F. B. JUN. 1965
LANGLEY-130

Symmetrical antenna array is designed by adjusting the Yagi disk interelement spacing so that the grating lobe of the array factor coincides with the first sidelobe of the element pattern.

B65-10184
PRESSURE SENSOR RESPONDS ONLY TO SHOCK WAVE INNOVATOR NOT GIVEN /BOEING CO./ JUN. 1965
M-FS-238

Pressure sensor responds only to high pressure crest of a shock wave, and will not respond to conditions of overpressure. The sensor uses plates of a battery to produce voltage output used to actuate an alarm signal or crew escape system.

B65-10187 CRYSTAL MEASURES-SHORT TERM, LARGE-MAGNITUDE FORCES PFEIFFER, C. G. JUN. 1965 JP1.-77

By using the magnitude of piezoelectric crystal response to distortion and compression, this device measures transient accelerations and their rate of change. The invention could be used in a servo control system by supplementing the accelerometer and taking over its function when its range was exceeded.

B65-10193 LOGIC CIRCUIT EXHIBITS OPTIMUM PERFORMANCE HUSSON, C. JUN. 1965 LANGLEY-129

Performance of circuits are compared to determine the optimum circuit configuration for implementation into microelectronic functions. Comparison is made in terms of power drain, propagation time, and component variations with temperature and load.

B65-10194
ANALOG-TO-DIGITAL CONVERTER HAS INCREASED
RELIABILITY AND REDUCED POWER CONSUMPTION
THORNWALL 1 0 1055

THORNWALL, J. C. JUN. 1965

Eight-bit analog-to-digital converter decreases average power consumption and increases component reliability. The converter uses solid-state components in pulse operation and magnetic core components for minimizing power consumption. The magnetic core components also increase reliability.

B65-10195
DEVICE MEASURES FLUID DRAG ON TEST VEHICLES
FREEMAN, R. JUDD, J. H. LEISS, A. JUN. 1965
LANGLEY-34

Electromechanical drag balance device measures the aerodynamic drag force acting on a vehicle as it moves through the atmosphere and telemeters the data to a remote receiving station. This device is also used for testing the hydrodynamic drag characteristics of undermater vehicles.

B65-10196
INEXPENSIVE ELECTRICAL CONNECTOR IS MOISTURE
AND CORROSTONPROOF
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
1965
MSC-164

Compression-sealed electrical connector made principally of plastic components is used in a corrosive atmosphere. This inexpensive and moistureproof connector can be modified to provide a multiple-pin connector.

B65-10197
IMPROVED SOLDERLESS CONNECTOR IS EASILY
DISCONNECTED
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ JUN.
1965
JPL-SC-060

Compression type solderless connector is easily disconnected and reassembled and resists vibration. The connector, which uses a tapered, split sleeve that is tightened by a nut into a mating bug, is used in place of standard solder lugs and to connect unsolderable wire.

B65-10199
MODULAR THERMOELECTRIC CELL IS EASILY PACKAGED
IN VARIOUS ARRAYS
EPSTEIN, J. JUN. 1965
GSFC-339

Modular thermoelectric cells are easily packaged in various arrays to form power supplies 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 TRACE MADE WITH COMPUTER PRINTOUT WILSON, M. JUN. 1965 GSFC-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 SAFE TRANSFER OF
HAZARDOUS FLUIDS
DEWITT, R. L. SCHMIDT, H. W. JUN. 1965
LEWIS-125

Quick-disconnect coupling is used for uncoupling 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 DEBOO, G. J. JUL. 1965 ARC-41

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

B65-10204
VOLTAGE VARIABLE OSCILLATOR HAS HIGH PHASE STABILITY
HEARN, C. P. 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 ELECTROMETER FEATURES DIGITAL OUTPUT DOONG, H. JUL. 1965 GSFC-288

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

B65-10208 HYBRID COMPUTER TECHNIQUE YIELDS RANDOM SIGNAL PROBABILITY DISTRIBUTIONS CAMERON, W. D. JUL. 1965 ARC-34

Hybrid computer determines the probability distributions of instantaneous and 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
INNOVATOR NOT GIVEN /IBM/ 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
INNOVATOR NOT GIVEN /RCA/ JUL. 1965
GSFC-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
LIND, D. L. OGILVIE, K. W. WILKERSON, T. D.
JUL. 1965
GSFC-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
INNOVATOR NOT GIVEN /IBM/ 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
INNOVATOR NOT GIVEN JUL. 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
INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/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 SYDNOR, R. L. AUG. 1965 JPL-510

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

B65-10225 SIMPLE BCD CIRCUIT ACCURATELY COUNTS TO 24 SPAFFORD, M. L. AUG. 1965 GSFC-317

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

B65-10226
MAGNETIC-SHIFT-REGISTER CIRCUIT CONTROLS STEP
MOTOR OPERATIONS
VEILLETTE, L. J. AUG. 1965
GSFC-340

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

B65-10228 SIMPLE CIRCUIT PRODUCES HIGH-SPEED, FIXED DURATION PULSES GARRAHAN, N. M. AUG. 1965 GSFC-285

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

B65-10232 FIELD EFFECT TRANSISTOR PRESENTS HIGH INPUT IMPEDANCE IN AC AMPLIFIER MARSHALL, J. H. 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

INNOVATOR NOT GIVEN /LABKO SCI./ AUG. 1965 JPL-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.

SIMPLE CIRCUIT REDUCES TRANSISTOR SWITCHING TIME INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ AUG. 1965 GSFC-314

Silicon-controlled rectifier /SCR/, gated by a ilicon-controlled rectifier /SUN/, gated by a woltage 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 COMMUTATOR STUDER, P. AUG. 1965 GSFC-345

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

SOLID-STATE LASER TRANSMITTER IS AMPLITUDE MODULATED

BILDERBACK, R. AUG. 1965

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.

ELECTROMETER HAS AUTOMATIC ZERO BIAS CONTROL INNOVATOR NOT GIVEN /APPLIED PHYSICS CORP./ AUG. 1965 GSFC-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. enables the electrometer to read zero output

potential in the absence of an input current.

NOVEL PROBE SIMPLIFIES ELECTRONIC COMPONENT TESTING

SYNER, W. F. GSFC-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

BREJCHA, A. G., JR. AUG. 1965 JPL-720

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

B65-10247 SERVO CALORIMETER MEASURES MATERIAL HEATING RATE

GILMOUR, G. WILSON, J. H. /WESTINGHOUSE ELEC. CORP./ AUG. 1965 NU-0024

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

MANUAL-FEED ADAPTER PERMITS MICROFILMING OF CONTINUOUS OSCILLOGRAPH OUTPUT BENNETT, J. /WESTINGHOUSE ELEC. CORP./ AUG. 1965 NU-0029

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

B65-10255

BORON TRIFLUORIDE NUCLEAR DETECTOR PREAMPLIFIER USES SINGLE-CABLE CONNECTION HECKELMAN, J. D. SHUMAKER, R. E. 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 SMITH, G. D. AUG. 1965 GSEC-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 ROBINSON, G. B. AUG. 1965 GSFC-370

Gapped toroid magnetically coupled to a delay line apped 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.

INCREASED JUNCTION LEAD INDUCTANCE BALLASTS HIGH-FREQUENCY TRANSISTORS GILBERT, G. J. /RCA/ SEP. 1965 GSFC-387

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

SIMPLE PULSE COUNTING CIRCUIT COMPUTES SUM OF SOUARES SCHAEFER, D. H. SEP. 1965 GSFC-391

Pulse counting circuit with an extra chain of flip-flops, delay lines, and 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.

R65-10263

INDEXING DEVICE ENSURES PROPER MATING OF **ELECTRICAL CONNECTORS** JENKINS, L. M. JENKINS, S. M. SIMMONS, W. H. 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 SHAFFERNOCKER, W. M. /GE/ SEP. 1965
FRC-31

Portable, lightweight system collects the exhaust gas of an aircraft during flight for use in analyzing combustion efficiency. The system uses an evacuated chamber and plastic bags.

B65-10265
WELD LEAKS RAPIDLY AND SAFELY DETECTED
INNOVATOR NOT GIVEN /BOEING CO./ SEP. 1965
M-FS-362

Test method detects leaks that occur during hydrostatic pressure testing of welded joints in metal tanks. A strip of aluminum foil and a strip of water-soluble paper are placed over the weld. A voltage applied between the tank wall and the foil strip is monitored to detect a decrease in ohmic resistance caused by water leakage into the paper layer.

B65-10267
ELECTROMETER PREAMPLIFIER HAS DRIFT CORRECTION FEEDBACK
LABARTHE, L. C. /LABKO SCI./ SEP. 1965
JPL-SC-074

Negative feedback circuit corrects output drift in an electrometer. The negative feedback is used in the no signal state to maintain the output level at zero reference. Drift voltage storage in the signal on state is also used to provide a drift-free readout.

B65-10268
MULTIPLE TEST CHAMBER EXPOSES MATERIALS TO VARIOUS ENVIRONMENTS
JOHNSTON, R. L. SEP. 1965

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
SIMPLE DEVICE PRODUCES ACCELEROMETER
CALIBRATION PULSE
INNOVATOR NOT GIVEN /LOCKHEED MISSILES AND SPACE
CO./ SEP. 1965
M-FS-363

Shock-impulse exciter produces a remote checkout of the amplitude calibration and frequency response of a piezoelectric vibration accelerometer. The exciter employs a bimetal spring to apply a mechanical acceleration pulse of a known amplitude and frequency to the accelerometer.

B65-10271
COMPOSITE SEAL REDUCES ALKALINE BATTERY
LEAKAGE
CLATTERBUCK, C. H. PLITT, K. F. SEP. 1965
GSFC-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. SEP. 1965
GSFC-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 OHMMETER PROVIDES DIRECT DIGITAL OUTPUT SEMYAN, J. SEP. 1965 GSFC-363

> Self-balancing wheatstone bridge acts as allelectronic digital readout ohmmeter

B65-10275
IMPROVED CIRCUIT MINIMIZES GENERATION OF PSEUDONOISE CHECK BITS
ANDERSON, T. O. LUSBAUGH, W. A. SEP. 1965
JP1-698

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 DIODES INCREASE OUTPUT OF BALANCED MIXER CIRCUIT
ROBINSON, G. B. SEP. 1965
GSFC-354

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 ERROR
MUNOZ, R. M. 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
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
SEP. 1965
GSFC-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
SMITH, N. J. /BOEING CO./ SEP. 1965
M-FS-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
AT PRESET LEVEL
INNOVATOR NOT GIVEN /AVCO CORP./ SEP. 1965
M-FS-331

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

B65-10282
CONSTANT-CURRENT REGULATOR IMPROVES TUNNEL
DIODE THRESHOLD-DETECTOR PERFORMANCE
CANCRO, C. A. SEP. 1965
GSFC-239

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

B65-10284
FIELD-EFFECT TRANSISTOR REPLACES BULKY
TRANSFORMER IN ANALOG-GATE CIRCUIT
INNOVATOR NOT GIVEN /RADIATION, INC./ SEP. 1965
GSFC-351

Metal-oxide semiconductor field-effect transistor /MOSFET/ analog-gate circuit adapts well to integrated circuits. It provides better system isolation than a transformer, while size and weight are appreciably reduced.

B65-10286

UPPERCASE AND LOWERCASE COMPUTER PRINTOUT
INCREASES READABILITY
HAND, W. W. JONSBERG, M. B. /DOC., INC./ SEP.
1965
HQ-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
PHOTORESISTANCE ANALOG MULTIPLIER HAS WIDE RANGE
HARTENSTEIN, R. G. SEP. 1965
GSFC-360

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

B65-10289
BORON NITRIDE HOUSING COOLS TRANSISTORS
INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS./ SEP.
1965 SEE ALSO B63-10033 AND B65-10186
WOO-079

Boron mitride ceramic heat sink cools transistors in rf transmitter and receiver circuits. Heat dissipated by the transistor is conducted by the boron mitride housing to the metal chassis on which it is mounted.

B65-10290 FM/CW SYSTEM MEASURES AIRCRAFT ATTITUDE INNOVATOR NOT GIVEN /MELPAR/ 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
LONBORG, J. O. OCT. 1965
JPL-771

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

B65-10298
TITANIUM DIAPHRAGN MAKES EXCELLENT AMPLITRON
CATHODE SUPPORT
TEICH, W. V. /RAYTHEON CO./ OCT. 1965
GSFC-394

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

B65-10299
ELECTROPNEUMATIC RHEOSTAT REGULATES HIGH
CURRENT
HAACKER, J. F. JEDLICKA, J. R. WAGONER, C. B.
OCT. 1965
ARC-44

Electropneumatic 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
SENICONDUCTORS IS FAST AND PRECISE
MC LOUSKI, R. M. SKOUSON, G. W. /WESTINGHOUSE
ELEC. CORP./ OCT. 1965
GSFC-397

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

865-10301 REMOTE RAPIDLY VARYING PRESSURES ACCURATELY MEASURED INNOVATOR NOT GIVEN /GE/ OCT. 1965

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. DUNBAR, W. R. DCT. 1965
LEWIS-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
THIM-FILM RESISTORS USED IN FUNCTIONAL
ELECTRONIC BLOCKS
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
OCT. 1965
GSFC-380

Vapor-deposited thin-film resistors replace diffused resistors in R-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 MASTHEAD PERMITS EASY
READING
LOVE, E. M. /DOC., INC./ OCT. 1965
HQ-7

White-pigmented backing applied to the reverse side of microfiche mastheads 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 SCHAEFER, D. OCT. 1965 GSFC-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 AMPERE-HOUR INTEGRATOR IS ACCURATE
TO ONE PERCENT
PAULKOVICH, J. OCT. 1965
GSFC-203

Electronic ampere-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 ampere-hour capacity of batteries and can be adapted for other functions.

B65-10309
THERMOELECTRIC ELEMENTS DIFFUSION-BONDED TO
TUNGSTEN ELECTRODES
INNOVATOR NOT GIVEN /TYCO LABS./ OCT. 1965 SEE
ALSO B65-10220

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.

THRESHOLD DETECTOR PRODUCES NARROW PULSES AT HIGH REPETITION RATES GARRAHAN, N. M. OCT. 1965 GSFC-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

PCM MAGNETIC TAPE SYSTEM EFFICIENTLY RECORDS AND REPRODUCES DATA

COLE, P. T. OCT. 1965 GSFC-375

Split-phase PCM technique consists of data and clock signal recording and reproduction systems.
This PCM 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 CHESTERTON, W. L. LEWIS, E. B. /DOC., INC./

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 CANCRO, C. A. OCT. 1965 GSFC-382

Hybrid tunnel diode-transistor circuit provides a sorid tunner 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.

MAGNETOMETER MEASURES ORTHOGONAL COMPONENTS OF MAGNETIC FIELDS

INNOVATOR NOT GIVEN /SPECTRA PHYS./ 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 TELEMETERED TURKEVICH, A. /CHICAGO UNIV./ DCT. 1965 JPL-SC-078

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.

REMOTE CONTROL ELECTRICAL SWITCHING SYSTEM HAS 1000-DUTPUT CAPABILITY INNOVATOR NOT GIVEN / IBM/ OCT. 1965 M-FS-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 RUGGED PRESSED DISK ELECTRODE HAS LOW CONTACT POTENTIAL DAY, J. L. MOSIER, B. /INST. OF RES. AND INSTRUMENTATION/ OCT. 1965 SEE ALSO 864-10025 MSC~158

Pressed-disk electrode with low contact potential monitors physiological processes. It consists of silver and silver chloride combined with bentonitic clay. The clay affords a surface that permits use over extended periods without contact deterioration.

CAM-OPERATED LIMIT SWITCH FEATURES SAFE FUSE REPLACEMENT WEBER, G. J. /MCDONNELL AIRCRAFT CORP./ OCT. MSC-218

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 SELENTUM BOND DECREASES ON RESISTANCE OF LIGHT-ACTIVATED SWITCH INNOVATOR NOT GIVEN /IBM/ 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** EIGE, J. J. /STANFORD RES. INST./ NEWGARD, P. M. PRESSMAN, G. L. 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 gauge which is deflected by pressure pulses in the artery. The deflection changes the resistance of the gauge and alters the voltage reading on the associated instrumentation.

B65-10328 FEED-THROUGH CONNECTOR WITHSTANDS HIGH TEMPERATURES IN VACUUM ENVIRONMENT KREISMAN, W. S. /GEOPHYS. CORP. OF AM./ NOV. 1965 GSEC-442

Feed-through connector with sealing action augmented by any temperature increase can be used through the wall of a vacuum device. It retains vacuum integrity through successive cycles of high temperature.

BAKING ENABLES MCLEOD GAUGE TO MEASURE IN ULTRAHIGH VACUUM RANGE KREISMAN, W. S. /GEOPHYS. CORP. OF AM./ NOV. 1965 GSFC-440

Accurate measurements in the ultrahigh vacuum ccurate measurements in the ultrahigh vacuum range by a conventional McLeod gauge requires degassing of the gauge\*s glass walls. A closed system, in which mercury is forced into the gauge by gravity alone, and in which the gauge components are baked out for long periods, is used to achieve this degassing.

B65-10333 COMMUNICATION SYSTEM USES MODULATED LASER BEAM MINOTT, P. O. NOV. 1965 GSEC-377

Electro-optical system is placed on a satellite to effect communications between two remote stations. The system employs an essentially passive retrodirective, laser beam modulator- reflector.

FREQUENCY DIVIDER IS FREE OF SPURIOUS OUTPUTS

MC DERMOND, D. NOV. 1965 GSFC-308

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.

B65-10340
MINIATURE SERVO ACCELEROMETER IS FORCEBALAMCED
JOHNSTON, A. R. /CALIF. INST. RES. FOUND./ NOV.
1965
JPL-155

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

B65-10343
DELAYED RIPPLE COUNTER SIMPLIFIES SQUARE-ROOT
COMPUTATION
CLIFF, R. NOV. 1965
GSFC-398

Ripple subtract technique simplifies the logic circuitry required in a binary computing device to derive 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
SIVERTSON, W. E., JR. 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 IGNITRON SWITCH OPERATES EFFICIENTLY FOSTER, L. E. NOV. 1965 M-FS-371

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

B65-10349
FREQUENCY DISCRIMINATOR WITH BINARY DUTPUT
ELIMINATES TUNED CIRCUITS
DE VELDE, E. /IBM/ NOV. 1965
N-FS-376

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

B65-10350

ZENER DIODE CONTROLS SWITCHING OF LARGE
DIRECT CURRENTS
INNOVATOR NOT GIVEN /IBM/ NOV. 1965
MSC-188

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

B65-10352
VIBRATING DIAPHRAGM MEASURES HIGH
ELECTROSTATIC FIELD STRENGTHS
INNOVATOR NOT GIVEN /ELECTRO-OPT. SYSTEMS/ NOV.
1965
MSC-189

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

B65-10353 MULTIPHASE CLOCK-PULSE GENERATOR USES SIMPLIFIED CIRCUITRY INNOVATOR NOT GIVEN /IBM/ NOV. 1965 M-F5-297

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

B65-10355
SIMPLE CIRCUIT PERFORMS BINARY ADDITION AND SUBTRACTION
CLIFF, R. A. SCHAEFER, D. H. NOV. 1965
GSFC-399

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

B65-10359
IMPROVED WIRE MEMORY MATRIX USES VERY LITTLE POWER
FEDDE, G. A. /SPERRY RAND CORP./ NOV. 1965
JPL-SC-167

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

B65-10361 HIGH-INTENSITY PLASHING BEACON POWERED BY MERCURY CELLS INNOVATOR NOT GIVEN NOV. 1965 LANGLEY-80

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

B65-10362
TEMPERATURE TRANSDUCER HAS HIGH OUTPUT, IS
TIME STABLE
FOLLETT, W. H. /BALL BROTHERS RES. CORP./ NOV.
1965
GSFC-446

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
DOYLE, H. FRANK, H. STEPHENS, C. W.
/ELECTRO-OPT. SYSTEMS/ DEC. 1965
W00-090

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

B65-10365 BLOOD-PRESSURE MEASURING SYSTEM GIVES ACCURATE GRAPHIC OUTPUT INNOVATOR NOT GIVEN /GARRETT CORP./ DEC. 1965 MSC-191

Electronic blood-pressure system provides an external measurement of arterial blood pressure in the form of an easily interpreted graphic trace. The system employs a standard occluding cuff, a gas-pressure valve, and an electronic timer and cycle-control circuit.

02 FNERGY SOURCES B65-10369 RESPIRATORY TRANSFER VALUE HAS FAIL-SAFE FEATURE PUCCINELLI, A. A. SMITH, J. R., JR. DEC. 1965 ARC-1 Quick-acting, remote controlled valve connects either one of two oxygen or air supplies to breathing tube. The valve, which is fail-safe, incorporates a cammed 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/ DEC. 1965 MSC-261 Three-position rocker switch actuator provides rree-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. BINARY COUNTER USES FLUID LOGIC ELEMENTS INNOVATOR NOT GIVEN /RAND CORP./ DEC. 1965 M-FS-323 Binary counter with two fluid flip-flops in each stage has an output taken from the output of the second flip-flop. The flip-flops each contain three fluid logic elements. THREE-DIMENSIONAL WIRE-MESH CAPACITOR SYSTEM MEASURES FLUID DENSITY INNOVATOR NOT GIVEN /GARRETT CORP./ DEC. 1965 W00-194 Gaging system automatically measures the bulk density of a stored, electrically nonconductive fluid containing varying portions of liquid and vapor. The system employs a three-dimensional

wire-mesh capacitor whose capacitance varies with the bulk density of the fluid dielectric medium between the capacitor plates.

B65-10380
DEVICE DETECTS UNBONDED AREAS IN PLASTIC LAMINATES
INNOVATOR NOT GIVEN / DOUGLAS AIRCRAFT CQ./ DEC.

1965
WOD-206
Device generates an acoustic signal whose frequency changes disclose the presence of delaminated or unbonded areas in plastic laminates. A microphone makes the frequency

change audible.

865-10381
KEYED PLUGS AND SOCKETS PREVENT IMPROPER
CONNECTIONS
BUCKEY, D. L. LANKFORD, H. /MCDONNELL AIRCRAFT
CORP-/ 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
INNOVATOR NOT GIVEN /BDEING CO./ DEC. 1965
M-FS-417

Immersion 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
INNOVATOR NOT GIVEN /GEN. DYN./CONVAIR/ DEC. 1965
WOO-207
RF shielding gap between an RF cable and a

F 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
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
DEC. 1965
MSC-214

Molded insulating spacer with one or more cavities is use 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 FLAGGE, B. DEC. 1965 LANGLEY-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 positions 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
INNOVATOR NOT GIVEN /N. AM. AVIATION/ 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 ACCUMULATES TIME BY
COMPLEMENTARY PRESET
MARRINER, G. E. /N. AM. AVIATION/ 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
MATHEWSON, R. C. /N. AM. AVIATION/ 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.

#### **02** ENERGY SOURCES

B63-10260
SOLAR-ANGLE SENSOR HAS NO MOVING PARTS
EXNER, D. W., JR. MEISENHOLDER, G. W. SCHMIDT,
L. F. MAY 1964

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 TRANSDUCER BALDWIN, L. V. SANDBORN, V. A. JUN. 1964 LEWIS-41

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
BACHR, E. F. MAR. 1964
LEWIS-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 LIMES
INNOVATOR NOT GIVEN /JPL/ MAY 1964
WOD-5

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.

B65-10036
IONIZATION VACUUM GAGE STARTS QUICKLY, IS UNAFFECTED BY SPURIOUS CURRENTS GARWOOD, D. C. FEB. 1965
JPL-304

Ionization vacuum gauge with a switch-operated starting device and a microammeter begins functioning quickly in a high vacuum. The microammeter is also protected by its circuit design from spurious currents.

B65-10046
WIDE-APERTURE SOLAR EMERGY COLLECTOR IS LIGHT
IN WEIGHT
INNOVATOR NOT GIVEN /BECKMAN INSTRUMENTS/ FEB.
1965
JPL-SC-055

By mounting the Fresnel lens in eight steps above three paraboloidal reflector rings of epoxy resin with aluminized surfaces, a light weight, wide-aperture solar energy collector is devised.

B65-10071 SIMPLE OPTICAL SYSTEM USED TO ALIGN SPECTROGRAPH EXTON, R. J. MAR. 1965 LANGLEY-92

Optically fast, portable spectrograph incorporates auxiliary optics in a boresight technique to use the zero order of the grating for visual alignment. This device obtains moderately resolved spectra of a multitude of light sources.

B65-10081
MAGNETIC FIELD TEST COILS ARE TEMPERATURE
COMPENSATED
INNOVATOR NOT GIVEN /SPECTRA PHYS./ APR. 1965

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
NULTIPLE ELEMENT SOFT X-RAY SOURCE PRODUCES
WIDE RANGE OF RADIATION
CARUSO, A. J. NEUPERT, W. M. 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 CONTOUR PROJECTOR MAKES EXCELLENT
CONTOUR DENSITOMETER
EXTON, R. J. 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 PYRONETRY EXTON, R. J. SIVITER, J. H., JR. STRASS, H. K. APR. 1965 LANGLEY-33

Gear-driven dual filter disks of graduated density wary 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 LEUNARD, W. F. APR. 1965 LANGLEY-134

Plasma electron density and temperature distribution is 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 FLEXURE TESTING OF SPECIMENS AT CRYOGENIC TEMPERATURES
DENABURG, C. R. REECE, O. Y. MAY 1965
M-FS-257

Cryostat with support structure for test specimen allows flexure 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. MAY 1965 JPL-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
PROBE MEASURES CHARACTERISTICS OF HOT GAS
STREAM
INNOVATOR NOT GIVEN /PLASMADYNE CORP./ MAY 1965
M-F5-240

Shielded, tubular flow calorimeter operated by 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 IMMERSION-TYPE TEMPERATURE PROBE LANZO, C. D. JUN. 1965 LEVIS-171

Temperature probe used in a high temperature, high velocity gas stream consists of cooled outer shell and a cooled platinum sensing tube with iron constantan thermocouples.

B65-10171
FRESNEL ZONE PLATE FORMS IMAGES AT WAVELENGTHS
BELOW 1000 ANGSTROMS
INNOVATOR NOT GIVEN /SMITHSONIAN INST./ JUN. 1965
GSFC-231

Fresnal zone plate with openings replacing the usual transparent rings produces images in a vacuum ultraviolet. The plate is made by etching and electrodeposition.

B65-10186
ELECTRONIC MODULES EASILY SEPARATED FROM HEAT
SINK
ANNOVATOR NOT GIVEN CHESTINGHOUSE FIEL CORP.

INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ JUN. 1965 SEE ALSO B63-10033

MSC-142

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.

B65-10188
REFRACTORY METAL SHIELDING /INSULATION/
INCREASES OPERATING RANGE OF INDUCTION FURNACE
EBIHARA, B. T. JUN. 1965
LEWIS-202

Thermal radiation shield contains escaping heat from an induction furnace. The shield consists of a sheet of refractory metal foil and a loosely packed mat of refractory metal fibers in a concentric pattern. This shielding technique can be used for high temperature ovens, high temperature fluid lines, and chemical reaction vessels.

B65-10211 LIGHT RAY MODULATION CONTROLS OPTICAL SYSTEM ALIGNMENT INNOVATOR NOT GIVEN /KOLLSMAN INSTR. CORP./ JUL. 1965 GSFC-171

Light ray modulator maintains focus in optical system subject to severe thermal gradients, vibration and shock. The modulated signals drive a servo system that aligns the system optics.

B65-10224
HEATER DECOMPOSES OIL BACKSTREAMING FROM HIGH-VACUUM PUMPS
SHAPIRO, H. AUG. 1965
GSFC-356

Heater placed between an oil diffusion pump and a vacuum chamber prevents backstreaming of oil molecules into the work area of the chamber. It breaks the oil molecules into basic constituents that can be pumped away.

B65-10239
ION PUMP PROVIDES INCREASED VACUUM PUMPING
SPEED
INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ AUG.
1965
NEO-13

Multiple-cell ion pumps with increased vacuum pumping speed are used for producing ultrahigh vacuums in vacuum tubes and mass spectrometers. The pump has eight cathode-anode magnetron cells arranged in a cylinder which increase the surface area of the cathode.

B65-10240
INSULATION ACCELERATES RATE OF COOLING WITH CRYOGENIC FLUID
ALLEN, L. D. AUG. 1965
MSC-161

Thermal insulating material increases the rate of heat transfer from the interior of a chamber to a liquid nitrogen-filled metal jacket. A thin film of the material is bonded to the surface of the metal wall facing the liquid nitrogen.

B65-10252
DISTANT OBJECTS DETECTED VISUALLY WITH OPTICAL FILTERS
INNOVATOR NOT GIVEN AUG. 1965
LANGLEY-166

Fluorescent coating aids visual daylight detection and identification of distant objects. An object appears as a blinking light when the area is alternately scanned with transmitting and obscuring filters. This method can be effective in search and rescue operations.

B65-10253 OIL-DAMPED MERCURY POOL MAKES PRECISE OPTICAL ALIGNMENT TOOL THEKAEKARA, M. P. AUG. 1965 GSFC-353

Mercury pool with a cover layer of high viscosity oil provides a reference reflector for precise alignment of optical instruments. The cover layer effectively damps any ripples in the mercury from support structure vibrations.

B65-10272
INFRARED SHIELD FACILITATES OPTICAL PYROMETER
MEASUREMENTS
EICHENBRENNER, F. F. ILLG, W. SEP. 1965
LANGLEY-133

Water-cooled shield facilitates optical pyrometer high temperature measurements of small sheet metal specimens subjected to tensile stress in fatigue tests. The shield excludes direct or reflected radiation from one face of the specimen and permits viewing of the infrared radiation only.

B65-10280
ELECTRON BOMBARDMENT IMPROVES VACUUM CHAMBER
EFFICIENCY
PRZYBYSZEWSKI, J. SWIKER, M. A. WATSON, J. SEP.
1965
LEWIS-160

Bombardment of vacuum chamber walls by an electron gun within the chamber achieves greater efficiency with less cost. The ultimate vacuum reached using the gun is greater than the system design level.

B65-10283
ELECTRON-BEAM DEFLECTION CONTROLLED BY DIGITAL SIGNALS
CRESSEY, J. R. SEP. 1965
GSFC-385

Electron-beam deflection in electronic image converters in controlled by a tapped magnetic deflection yoke and a series of current generators. The generators supply equal current to each tap through digitally controlled switches, thereby increasing the inherent accuracy of the system.

B65-10291
SPIRALED CHANNELS IMPROVE HEAT TRANSFER BETWEEN
FLUIDS
HIGA, W. WIEBE, E. R. OCT. 1965
JPL-694

Spiral flow channels increase heat transfer between two fluids in a countercurrent heat exchanger of given volume. The heat exchanger is constructed by connecting a spiraled bellows-shaped ducting between two concentric cylindrical tubes.

B65-10292
INTERPEROMETER CONSTRUCTION ASSURES
PARALLELISM OF CRITICAL COMPONENTS
CONNES, P. OCT. 1965
JPL-704

Interferometer with rigidly mounted components assures parallelism of critical components. The interferometer is constructed for effective operation even if the total instrument is subjected to mechanical stress.

B65-10295
UNIQUE CONSTRUCTION MAKES INTERFEROMETER
INSENSITIVE TO MECHANICAL STRESSES
BEER, R. OCT. 1965
JPL-725

Michelson-type interferometer with a cat-eye reflector operates effectively even in the presence of randow mechanical stresses. A cubical beansplitter with dichroic surfaces permits operation in infrared or visible light.

B65-10296
COAXIAL CAPACITOR USED TO DETERMINE FLUID
DENSITY
ATKISSON, E. A. OCT. 1965
LEWIS-232

Sensing device measures directly the density of compressible fluid existing simultaneously in both liquid and gaseous phases. The device is comprised of a capacitor connected as one leg of a bridge circuit, a power source, and an indicator calibrated to indicate density as a direct

measurement.

B65-10297
SUPERCONDUCTOR SHIELDS TEST CHAMBER FROM AMBIENT MAGNETIC FIELDS
HILDEBRANDI, A. F. OCT. 1965
JPL-627

Shielding a test chamber for magnetic components enables it to maintain a constant, low magnetic field. The chamber is shielded from ambient magnetic fields by a lead foil cylinder maintained in a superconducting state by liquid helium.

B65-10330
WEDGE IMMERSED THERMISTOR BOLOMETER MEASURES
INFRARED RADIATION

DREYFUS, M. G. /BARNES ENG. CO/. NOV. 1965 GSFC-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.

B65-10331 CLOSED FLUID SYSTEM WITHOUT MOVING PARTS CONTROLS TEMPERATURE STENGER, F. J. NOV. 1965 LEWIS-222

VIS-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 thermodynamic cycling of two-phase heat transfer fluid and a hydraulic fluid is entirely supplied by the heat generated in the thermally insulated region.

B65-10356
SEGMENTED ELECTRODE INCREASES OPERATING
PRESSURE OF MHD ACCELERATOR
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
NOV. 1965
LANGLEY-95

Circumferentially segmented-ring electrode replaces the solid-ring electrode in a basic magnetohydrodynamic /MHD/ accelerator. This produces diffuse discharges at pressures as high as 100 atmospheres.

B65-10368
VACUUM CHAMBER PROVIDES IMPROVED INSULATION
AND SUPPORT FOR CRYOSTAT
INNOVATOR NOT GIVEN /GE/ DEC. 1965
M-FS-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.

B65-10373
MODIFIED PROCEDURE SPEEDS CAMERA COPY LAYOUT
FOR OFFSET PRINTING
SMITH, L. F. DEC. 1965
GSFC-424

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.

B65-10395
OPTICAL OUTPUT ENHANCES FLOWMETER ACCURACY
WOLPIN, E. G. /N. AM. AVIATION/ DEC. 1965
M-FS-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.

#### 03 MATERIALS (CHEMISTRY)

B63-10004 Reference black body is compact, convenient to USE DIMEFF, J. NEEL, C. B. APR. 1964

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.

B63-10207
THERMALLY CONDUCTIVE METAL WOOL-SILICONE
RUBBER MATERIAL CAN BE USED AS SHOCK AND
VIBRATION DAMPER
HOUGH, W. W. APR. 1964
JPI-321

Bronze wool pads, impregnated with silicon rubber, meet the requirement for a thermally conductive, shock and vibration absorbing material. They serve as spacers in equipment mounting and are resistant to high temperatures.

B63-10234 FILTER FOR HIGH-PRESSURE GASES HAS EASY TAKE-DOWN, ASSEMBLY MAC GLASHAN, W. F. FEB. 1964 JPL-373

A small metal filter body, for use in tubing supplying sterilization gases, has an inlet end that can be unscrewed. Inside, the high pressure filter is supported on both sides and sealed by an O-ring. Design facilitates easy assembly and disassembly of parts.

B63-10235 CRYOGENIC FILTER METHOD PRODUCES SUPER-PURE HELIUM AND HELIUM ISOTOPES HILDEBRANDT, A. F. MAR. 1964

To purify helium, it is 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.

B63-10263 FRESNEL CUP REFLECTOR DIRECTS MAXIMUM ENERGY FROM LIGHT SOURCE LAUE, E. G. YOUNGBERG, C. L. MAY 1964 JPL-424

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 concentric spherical surfaces.

B63-10311
OIL-SMEARED MODELS AID WIND TUNNEL
MEASUREMENTS
KATZOFF, S. LOVING, D. K. 1 APR. 1964 /SEE
NASA-MEMO-3-17-59L/
LANGLEY-4

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.

B63-10318
QUICK-HARDENING PROBLEMS ARE ELIMINATED WITH
SPRAY GUN MODIFICATION WHICH MIXES RESIN AND
ACCELERATOR LIQUIDS DURING APPLICATION
JOHNSON, O. W. MAR. 1964 /SEE U.S. PATENT NO.
2,930,532/
LANGLEY-6A

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.

B63-10337
GALLIUM USEFUL BEARING LUBRICANT IN HIGHVACUUM ENVIRONMENT
BUCKLEY, D. H. MAY 1964 /SEE U.S. PATENT NO.
3,072,574/
LEVIS-12

Solid gallium is used as a lubricant on bearings

made of compatible materials. Such lubricants perform well in a high vacuum and under low temperature.

B63-10345
APPARATUS FACILITATES HIGH-TEMPERATURE TENSILE
TESTING IN VACUUM
SIKORA, P. F. JUN. 1964
LEWIS-42

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.

B63-10351
NEW COBALT ALLOYS HAVE HIGH-TEMPERATURE
STRENGTH AND LONG LIFE IN VACUUM ENVIRONMENTS
ASHBROOK, R. L. FRECHE, J. C. KLIMA, S. J. MAR.
1964
LFHIS-47

Cobalt refractory metal alloys combine sheet formability with high temperature strength and low material loss in vacuum.

B63-10365 LOW-COST INSULATION SYSTEM FOR CRYOSTATS ELIMINATES NEED FOR A VACUUM CALVERT, H. F. MAY 1964 LEWIS-64

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
ESCUE, W. T. /BENDIX CORP./ JUN. 1964
M-FS-3

An electro-optical system, without moving parts, reliably indicates liquid levels at cryogenic temperatures. Glass prisms, which act as liquid level probes inside the tank, extend from optically aligned photoelectric assemblies mounted on the outside.

B63-10389 LIGHTWEIGHT MAGNESIUM-LITHIUM ALLOYS SHOW PROMISE ADAMS, W. T. CATALDO, C. E. JUN. 1964 M-FS-17

Evaluation tests show that magnesium-lithium alloys are lighter and more ductile than other magnesium alloys. They are being used for packaging, housings, containers, etc., where light weight is more important than strength.

B63-10424
VARIABLE LIGHT SOURCE WITH A MILLION-TO-ONE
INTENSITY RATIO
SNOW, W. B. /SPACE TECHNOL. LAB./ MAY 1964
JPL-W00-008

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 1/8TH-INCH IN DIAMETER
COON, G. W. MAR. 1964 /SEE U.S. PATENT NO. 3,027,769/
ARC-11

A special spot welding technique is used to make miniature capacitance transducers for placing in a wind tunnel model. Rugged and relatively low in cost, they have a flat response up to one-third of the resonant frequency.

B63-10453
MOLYBDENUM DISULFIDE MIXTURES MAKE EFFECTIVE
HIGH-VACUUM LUBRICANTS
INNOVATOR NOT GIVEN /MIDWEST RES. INST./ NOV.

1964 M-FS-54

Five different mixtures of molybdenum disulfide are found to be effective bearing lubricants when tested at very low pressures and high temperatures.

B63-10476
CESIUM IODIDE CRYSTALS FUSED TO VACUUM TUBE
FACEPLATES
FLECK, H. G. /ELECTRO-MECHANICAL RES. INC./ 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
IMPROVED MOLYBDENUM DISULFIDE-SILVER MOTOR
BRUSHES HAVE EXTENDED LIFE
HORTON, J. C. KING, H. M. MAY 1964
M-FS-64

Motor brushes of proper quantities of molybdenum disulfide and copper or silver are manufactured by sintering techniques. Graphite molds are used. These brushes operate satisfactorily for long periods in normal atmosphere or in a high-vacuum environment.

B63-10481
REFRACTORY CERAMIC HAS WIDE USAGE, LOW
FABRICATION COST
INNOVATOR NOT GIVEN /GEORGIA INST. OF TECH./ APR.
1964
M-FS-67

Particulate, fused amorphous silica is formed into complex shapes by casting in plaster molds. high temperature firing is not required. 6this ceramic is resistant to thermal shock and exhibits good strength properties.

B63-10528
VARIABLE-TRANSPARENCY WALL REGULATES TEMPERATURES OF STRUCTURES
OSULLIVAN, W. J. Jun. 1964

An effective temperature regulating wall consists of one layer /e.g., one of the paraffins/ relatively opaque to thermal radiation in the solid state and transparent to it in the molten state and placed between two transparent layers. A mirror coating is applied to back layer.

B63-10546
TEST DEVICE PREVENTS MOLECULAR BOUNCE-BACK
HARDGROVE, W. F. SHAPIRO, H. JULY 1964
GSFC-82

A test device, which consists of six pyramidal reflectors joined together, acts as a baffle to impede the free path of the molecule to the test item by interposing a slanted surface which imparts an angular vector to the molecule and bounces it back to the chamber wall.

B63-10557
RAPID HELIUM-AIR ANALYZER CAN MEASURE OTHER
BINARY GAS MIXTURES
MELFI, L. T. WOOD, G. M. YEAGER, P. R. FEB.
1964
LANGLEY-16

An instrument comprised of an ionization pressure gauge + a diaphragm pressure gauge consisting of strain gauges to make a four-arm bridge, and a ratio meter is constructed for analyzing gas mixtures. The ratio of the outputs of the two gauges is proportional to the mixture composition.

B63-10562 GATE VALVE WITH CERAMIC-COATED BASE OPERATES AT HIGH TEMPERATURES BRASS, A. JUL. 1964 ARC-23

A copper base insert coated with a layer of aluminum oxide ceramic prevents frictional binding between the gate and base surfaces of a gate valve which are subject to rapid sliding action and high temperatures.

B63-10612
METALS PLATED ON FLUOROCARBON POLYMERS
FORD, H. KRASINSKY, J. B. VANGO, S. P. OCT.
1964
JPL-544

Electroplating lead on fluorocarbon polymer parts is accomplished by etching the parts to be plated with sodium, followed by successive depositions of silver and lead from ultrasonically agitated plating solutions. Metals other than lead may be electroplated on the silvered parts.

B64-10068
MECHANICAL PROPERTIES OF PLASTICS PREDETERMIN-ED BY EMPIRICAL METHOD LOHR, J. J. PARKER, J. A. JUL. 1964 ARC-28

To predetermine the mechanical properties of rigid plastics as a function of plasticizer content and composition, a set of equations has been empirically derived. These relate strain rate, yield stress, temperature, and weight fraction of the plasticizer.

B64-10099
REFRACTORY THERMAL INSULATION FOR SMOOTH
METAL SURFACES
INNOVATOR NOT GIVEN /GOODYEAR AEROSPACE CORP./
DCT. 1964
M-FS-160

To protect rocket metal surfaces from engineexhaust heat, a refractory thermal insulation mixture, which adheres to smooth metals, has been developed. Insulation protection over a wide temperature range can be controlled by thickness of the applied mixture.

B64-10113 ELASTOMERS BONDED TO METAL SURFACES SEAL ELECTROCHEMICAL CELLS SHERFEY, J. M. AUG. 1964 GSFC-168

A leakproof seal secondary cell containing alkaline electrolytes was developed by bonding an alkali-resistant elastomer, such as neoprene, to metal contact surfaces. Test results of several different elastomers strongly indicate the feasibility of this sealing method.

B64-10116
LEAD OXIDE CERANIC MAKES EXCELLENT HIGHTEMPERATURE LUBRICANT
JOHNSON, R. L. SLINEY, H. E. AUG. 1964
LFM18-144

A dry lubricant coating in ceramic form consisting of 95 percent lead monoxide and 5 percent silicon dioxide withstood a temperature of 1200 deg F, with a bearing operating at various atmospheric pressures. From this testing, there was no galling or metal transfer of the bearing.

B64-10138 NOVEL SHOCK ABSORBER FEATURES VARYING YIELD STRENGTHS GEIER, D. J. JUL. 1964 MSC-65A

A shock absorbent webbing of partially drawn synthetic strands is arranged in sections of varying density related to the varying mass of the human body. This is contoured to protect the body at points of contact, when subjected to large acceleration or deceleration forces.

B64-10142
STRINGENT CLEANING TECHNIQUE ASSURES RELIABLE
EPOXY BOND
INNOVATOR NOT GIVEN /RCA/ JUN. 1964
GSFC-161

for reliable aluminum bonding to withstand stress, the mating surfaces are carefully cleaned, etched, rinsed and dried. An epoxy and hardener designed for metal-to-metal bonding is then used for a rigid assembly. B64-10151
PLASTIC FILMS FOR REFLECTIVE SURFACES
REPRODUCED FROM MASTERS
INNOVATOR NOT GIVEN /MINNEAPOLIS HONEYWELL/ OCT.
1964

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. Plastics used for reflectors should be of the thermosetting or catalytically hardened type.

B64-10166
FILLER DEVICE FOR HANDLING HOT CORROSIVE
MATERIALS
INNOVATOR NOT GIVEN /PRATT AND WHITNEY AIRCRAFT/
OCT. 1964
MSC-85

A bellows-type bag with its own heating element is developed for safe handling and injection of hot corrosive liquids into modules.

B64-10206
SOLDER FLUX LEAVES CORROSION-RESISTANT
COATING ON METAL
BAUMAN, A. J. DCT. 1964
JPL-611

A soldering flux consisting of perfluoro-octanoic acid hydrazine provides a corrosion resistant film on metal surface, particularly copper. It is ineffective for soldering aluminum.

B64-10270
PRESSURE MOLDING OF POWDERED MATERIALS
IMPROVED BY RUBBER MOLD INSERT
INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS
CORP./ NOV. 1964
WOO-100

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.

B64-10282 FINE-MESH SCREEN HADE BY SIMPLIFIED METHOD INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ DEC. 1964 WOD-104

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.

B64-10319
GAS DIFFUSION CELL REMOVES CARBON DIOXIDE FROM OCCUPIED AIRTIGHT ENCLOSURES
INNOVATOR NOT GIVEN /IOWA U./ DEC. 1964
MSC-118

A small, lightweight permeable cell package separates and removes carbon dioxide from respiratory regenerative while chemically inert in the presence of carbon dioxide so that only adsorption takes place.

B65-10004
SCREENING TECHNIQUE MAKES RELIABLE BOND AT ROOM TEMPERATURE
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
M-FS-227

Stainless-steel screen used to lay room temperature curing epoxy adhesive permits reliable bonding of electronic circuits boards. This technique would be useful with thin-walled structures that warp during conventional bonding operations.

B65-10015
IMPROVED CONDUCTIVE PASTE SECURES BIOMEDICAL
ELECTRODES
INNOVATOR NOT GIVEN /BAYLOR UNIV./ JAN. 1965 SEE
ALSO B64-10025
MSC-107

Nontoxic paste consisting of a dispersion of graphite or silver granules in a mixture of

polyvinylpyrrolidone and 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.

B65-10016
ADHESIVE FOR VACUUM ENVIRONMENTS RESISTS SHOCK
AND VIBRATION
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
FEB. 1965
MSC-56

A mixture of a polyamide, an epoxy resin, and fine silica or glass microballoons provides an adhesive which is flexible, resistant to shock and vibration, and has improved heat-transfer characteristics.

B65-10024
FLUID PRESSURE USED TO TEST TURBOPUMP BEARINGS
INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./ FEB.
1965
NUMBER OF THE PROPERTY OF THE PROP

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 OXIDECOATED CATHODES
KERSLAKE, W. VARGO, D. FEB. 1965 SEE ALSO AIAA
PAPER-64-683
LEWIS-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 magneto-hydrodynamic systems and in electron tubes.

B65-10034
GAGE MEASURES ELECTRICAL CONNECTOR PIN
RETENTION FORCE
INNOVATOR NOT GIVEN /RCA/ FEB. 1965
JPL-SC-071

The retention force of a female connector pin is measured by observing the action of a calibrated spring in a gauge consisting of housing, a plunger terminating in a male subminiature connector pin and the tension spring.

B65-10043
MOUTHPIECE ADAPTER FOR PIPETTES PROTECTS MOUTH
FROM HARMFUL LIQUIDS
MC SMITH, D. G. FEB. 1965
LANGLEY-47

To prevent the laboratory technicians mouth from contacting harmful liquids, a device with a hermetically sealed elastic bellows is attached to a standard pipette.

B65-10044
FLEXIBLE CURTAIN SHIELDS EQUIPMENT FROM
INTENSE HEAT FLUXES
INNOVATOR NOT GIVEN /ARROWHEAD PROD./ MAR. 1965
M-FS-A8

flexible, high strength curtain made of fiberglass-silicone elastomer laminate provides thermal shielding for equipment.

B65-10065
SPHERICAL MODEL PROVIDES VISUAL AID FOR
CUBIC CRYSTAL STUDY
BACIGALUPI, R. J. SPAKOWSKI, A. E. MAR. 1965
LEWIS-108

Transparent sphere of polymethylmethacrylate with major zones and poles of cubic crystals is used to make crystallographic visualizations and to interpret Laue X-ray diffraction of single cubic crystals.

B65-10083
DIDYMIUM COMPOUND IMPROVES NICKEL-CADMIUM CELL
INNOVATOR NOT GIVEN /GE/ MAR. 1965
GSFC-295

Nickel electrodes impregnated with an additive solution of didymium hydrate and nitric acid mixed with nickel nitrate increases ampere-hour capacity

of cells and does not affect the voltage characteristics.

B65-10088
FIBERGLASS PARTS CURED DURING FILAMENT WINDING ELIMINATES OVEN, SAVES TIME CARMODY, R. J. APR. 1965
M-FS-14

Resistance wire layer is introduced during winding of the fiberglass filaments with simultaneous heating. Emission of heat from the wire layer cures second fiberglass layer.

B65-10092 LIGHTWEIGHT ALUMINUM CASTING ALLOY IS USEFUL AT CRYOGENIC TEMPERATURES INNOVATOR NOT GIVEN 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 SPLATTER INNOVATOR NOT GIVEN /RCA/ APR. 1965 1965 MSC-144

Carbon-arc rod holder with front end of beryllium oxide, a high electrical resistor and good thermal conductor, prevents nonuniform burning of the positive carbon rod and corrosion of the rod holder. Useful in optical instrument light sources.

B65-10106
MINIATURE BEARINGS LUBRICATED BY SONIC
DISPERSION METHOD
INNOVATOR NOT GIVEN /LITTON IND./ APR. 1965
M-FS-202

Evenly distributing a monomolecular film over the balls and tracks of miniature precision ball bearings by sonic dispersion results in precise lubrication which prevents lubricant bleed out to adjacent components. Varying the lubricant—to—solvent ratio of the mixture causes varying lubricant coating thicknesses.

B65-10107 CRACK DETECTION METHOD IS SAFE IN PRESENCE OF LIQUID OXYGEN INNOVATOR NOT GIVEN /BOEING CO./ 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
HERBELL, T. P. QUANTINETZ, M. REINHARDT, G.
APR. 1965
LEWIS-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
INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ MAY
1965
GSFC-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
GALVANIC CORROSION REDUCED IN ALUMINUM
FABRICATIONS
INNOVATOR NOT GIVEN MAY 1965
M-FS-272

Titanium alloy fasteners dipped in zinc chromate primer are installed while wet in protective coated aluminum panels to reduce galvanic corrosion. Moisturetight seals at fastener points are also provided.

B65-10156
INDRGANIC PAINT IS DURABLE, FIREPROOF, EASY
TO APPLY
SCHUTT, J. B. JUN. 1965
GSFC-366

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 ALKALIETCHING OF ALUMINUM
INNOVATOR NOT GIVEN /G. T. SCHJELDAHL CO./ JUN.
1965
6SFC-284

Electroless nickel resist is unaffected by caustic soda applied as a milling or etching agent on aluminum.

B65-10164
IRRADIATION IMPROVES PROPERTIES OF AN AROMATIC POLYESTER
BELL, V. L., JR. 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 INNOVATOR NOT GIVEN JUN. 1965
LANGLEY-121

Partially calcia-stablized zirconia used for insulation and heat-storage in high temperature /3000 deg to 4000 deg F/ cyclically operated pebble bed air heater.

B65-10172
ALUHINUM ALLOYS PROTECTED AGAINST STRESSCORROSION CRACKING
INNOVATOR NOT GIVEN /ALCOA RES. LABS./ JUN. 1965
M-FS-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
INNOVATOR NOT GIVEN /RCA/ JUN. 1965 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
INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/
JUN. 1965
JUL-W00-021

Tantalum cathode is used in assembly for electron beam evaporation of tantalum onto a substrate. The cathode and anode are made of pure tantalum rather than tungsten to prevent contamination of the tantalum film deposited on the substrate.

B65-10179
REUSABLE NEOPRENE JACKET PROTECTS PARTS FOR
CHEMICAL MILLING
INNOVATOR NOT GIVEN /RYAN AERONAUTICAL CO./ JUN.
1965
WOO-071

Reusable neoprene jacket is used to prepare metal part or panel for chemical milling. Jacket covers back and upper rim of part and is sealed before the masking solution is applied to surface to be milled. This reduces amount of masking material required for milling identical parts and increases

production.

B65-10189
TESTING DEVICE SUBJECTS ELASTIC MATERIALS TO BIAXIAL DEFORMATIONS
BECKER, G. W. JUN. 1965
JPL-616

Testing device stretches elastic materials biaxially over large deformation ranges and varies strain ratios in two per pendicular 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 BISHUTH AND TELLURIUM ULRICH, D. R. JUN. 1965
M-FS-279

Bismuth trioxide-tellurium dioxide glasses have improved infrared transmission characteristics.

B65-10214 EMERGENCY SOLAR STILL DESALTS SEAWATER INNOVATOR NOT GIVEN /MELPAR/ 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
INNOVATOR NOT GIVEN /HOFFMAN ELECTRON./ 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
THORIATED NICKEL BONDED BY SOLID-STATE
DIFFUSION METHOD
BALES, T. T. MANNING, R. C., JR. 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
SEAMAN, F. D. /WESTINGHOUSE ELEC. CO./ AUG. 1965
NU-0030

Gold coated stainless steel tubes containing insulated electrical conductors are brazed at a low temperature to a copper coated stainless steal 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 INNOVATOR NOT GIVEN /GE/ SEP. 1965 HO-24

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
INNOVATOR NOT GIVEN /IIT RES. INST./ SEP. 1965
LEWIS-225

Crystalline ceramic materials are purified for use as high-temperature electrical insulators. Any impurities migrate to the cathode when a dc voltage is applied across the material while it is heated in an inert gas atmosphere.

B65-10288 ORGANIC REACTANTS RAPIDLY PRODUCE PLASTIC FOAM LOOK, G. F. SEP. 1965 SEE ALSO B65-10090 LANGLEY-37

Adding trichlorofluoromethane to polyether 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 packages dropped into the sea from spacecraft.

B65-10294
ADHERENT PROTECTIVE COATINGS PLATED ON MAGNESIUM-LITHTUM ALLOY
INNOVATOR NOT GIVEN / IBM/ OCT. 1965 SEE ALSO B63-10389
M-FS-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
BURNISHING TECHNIQUE IMPROVES LUBRICATION OF
THREADED FASTENERS
GRUPER, J. L. /LOCKHEED MISSILES AND SPACE CO./
OCT. 1965
LEWIS-217

Burnishing a molydisulfide 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 INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/ OCT. 1965 WOD-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
NEVILLE, E. D. FELLER, D. D. OCT. 1965
ARC-47

Removable plastic well with a flange that seats on the rim of an Erlenmeyer screwcap flask aids quantitative collection of carbon dioxide liberated in the flask. The well can be removed without danger of cross-contamination. It can collect other gases using appropriate absorbents.

B65-10321
PLATED NICKEL WIRE MESH MAKES SUPERIOR
CATALYST BED
SILL, M. /BELL AEROSYSTEMS CO./ OCT. 1965
MSC-216

Porous nickel 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 rugose form with a sliver-gold coating.

B65-10335
MAGNETIC FLUID READILY CONTROLLED IN ZERO
GRAVITY ENVIRONMENT
PAPELL, S. S. NOV. 1965
LEWIS-126

AIS-126
Colloid composed of finely ground iron oxide in a fluid such as heptane, is controlled and directed magnetically in a zero gravity environ-ment. 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 INNOVATOR NOT GIVEN /LOCKHEED MISSILES AND SPACE CO./ NOV. 1965 M-FS-348

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, M. M. MAYER, R. W. /BALL BROTHERS RES. CORP./ 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 IMUS, E. E. /N. AM. AVIATION/ NOV. 1965 WOD-151

High angular stresses in fluid-handling ducts are accommodated by a lightweight hinged bellows restraint. This device transmits angular stress to points close to the axis center and spreads it over a rigid configuration.

B65-10344
SOLUBLE UNDERCOATING FACILITATES REMOVAL OF FOAMED-IN-PLACE INSULATION
DUNCAN, A. C. HILL, C. L., JR. NOV. 1965
LEWIS-193

Foamed-in-place insulation can be removed and reused by coating the surface with a soluble peel coat before applying the foam mixture. Removal of the insulation is effected by slitting it and pouring a solvent in the slit to dissolve the peel coat. The insulation can then be stripped off intact.

B65-10354
PIGHENTED COATING RESISTS THERMAL SHOCK
HARADA, Y. RECHTER, H. L. /IIT RES. INST./ 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
SEITZINGER, V. F. NOV. 1965
M-FS-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 DZONE-SENSING REAGENT INNOVATOR NOT GIVEN /PARAMETRICS/ 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
WINIARSKI, F. J. /SPACE TECHNOL. LAB./ 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 surfaces.

B65-10372
WIRE BUNDLE FORMED INTO GRIDS WITH MINUTE
INTERSTICES
TODD, H. H. /ELECTRO-OPT. SYSTEMS/ DEC. 1965
WOO-089

Deforming 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.

B65-10374

M-FS-485

PLASTIC PLUS STAINLESS-STEEL FIBERS MAKE RESILIENT, IMPERMEABLE MATERIAL SMIRRA, J. R. /THOMPSON RAMO WOOLDRIDGE/ DEC. 1965 WOO-246

Plastic material combined with stainless-steel fibers and molded under heat and pressure into a desired configuration is both soft enough to deform under a load and resilient enough to return to its original shape when the load is removed.

B65-10384
PROBE SAMPLES COMPONENTS OF ROCKET ENGINE
EXHAUST
SCHUMACHER, P. E. /N. AM. AVIATION/ DEC. 1965

Water-cooled, cantilevered probe samples the exhaust plume of rocket engines to recover particles for examination. The probe withstands the stresses of a rocket exhaust plume environment for a sufficient period to obtain a useful sample of the exhaust components.

B65-10390
TEST STRIPS DETECT DIFFERENT CO2
CONCENTRATIONS IN CLOSED COMPARTMENTS
INNOVATOR NOT GIVEN /MELPAR/ DEC. 1965
MSC-210

Four different test strips, using crystal violet for one pair of strips and basic fuchsin as a dye for the second pair, give unambiguous colorimetric indications of four different concentrations of carbon dioxide in the atmosphere of a closed compartment. Tetraethylene pentamine is used as a dye decoloring agent.

B65-10397
NEW BRAZING ALLOY ELIMINATES METAL-STRESS
CRACKING
HUSCHLER, E., JR. ROEDER, E. R. /N. AM.
AVIATION/ DEC. 1965
WOO-249

Silver 15 zinc brazing alloy avoics the liquidmetal stress cracking of base metals when applied to 347, 316, and 410 stainless steels and certain other alloys.

B65-10398
NICKEL/TIN COATING PROTECTS THREADED
FASTENERS IN CORROSIVE ENVIRONMENT
CHARLES, J. VEEDER, L. /N. AM. AVIATION/ DEC.
1965
NSC-253

Threaded fasteners used in corrosive environments are plated with electroless nickel and electroplated, over the nickel, with tin. This provides a corrosion-resistant coating for the fasteners.

#### **04** LIFE SCIENCES

B63-10003
NEW LOW-LEVEL A-C AMPLIFIER PROVIDES ADJUSTABLE NOISE CANCELLATION AND AUTOMATIC TEMPERATURE COMPENSATION
SMITH, J. R., JR. MAR. 1964
ARC-2

A 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.

B64-10025
IMPROVED ELECTRODE GIVES HIGH-QUALITY
BIOLOGICAL RECORDINGS
DAY, J. L. LIPPITT, M. W. MAY 1964
MSC-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.

B64-10108
DEVICE INDUCES LUNGS TO MAINTAIN KNOWN
CONSTANT PRESSURE
LIPPITT, M. W. REED, J. H. JUL. 1964
MSC-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.

B64-10146
TECHNIQUE SIMULATES EFFECT OF REDUCED GRAVITY
HEVES, D. E. SPADY, A. A. JR. JUN. 1964
LANCI EV-44

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.

B65-10332 TEST MONKEYS ANESTHETIZED BY ROUTINE PROCEDURE INNOVATOR NOT GIVEN /SPACE/DEFENSE CORP./ NOV. 1965 HQ-18

Test monkeys are safely anesthetized for five minutes by confining them 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.

#### 05 BIOTECHNOLOGY

B63-10007 HIGH PURITY ELECTROFORMING YIELDS SUPERIOR METAL MODELS HAEFELI, R. M. HOUSTON, J. P. JAN. 1964 ARC-6

Ultrasonic electroforming has proven successful in making high purity metal models for heat transfer studies. This process provides smooth, pit-free models.

B63-10008 VACUUM FORMING OF THERMOPLASTIC SHEET RESULTS IN LOW-COST INVESTMENT CASTING PATTERNS CLARKE, A. E., JR. MAR. 1964 ARC-7

Vacuum forming of a sheet of thermoplastic material around a mandrel conforming to the shape of the finished object provides a pattern for an investment mold. The thickness of the metal part is determined by the thickness of the plastic pattern.

B63-10009 CHAIN FRICTION SYSTEM GIVES POSITIVE, REVERS-IBLE DRIVE DAVIDSEN, J. S. APR. 1964 ARC-8

By cementing a strip of an elastomer to the smooth metal rim of the pulley and neoprene covered

idlers providing suitable tension to the chain around the pulley, a positive reversible drive is accomplished more quietly and with less vibration.

B63-10023 V-SLOTTED SCREW HEAD AND MATCHING DRIVING TOOL FACILITATE INSERTION AND REMOVAL OF SCREW FASTENERS HANDLEY, M. G. JAN. 1964 FRC-16

A V-slotted designed screw and a screwdriver with a V-shaped tang facilitate driving the screw into difficult locations and minimize axial forces thus avoiding damage to the screw.

B63-10123 ELASTIC ORIFICE AUTOMATICALLY REGULATES GAS BEARINGS BATSCH, F. LAUB, J. L. JUN. 1964 JPL-135

An elastic, pressure-sensitive orifice is used to automatically regulate the rate of gas flow into bearings under varying loads. Formed of a molded elastomer, tests show these orifices increase the stability of gas bearings.

B63-10139
METHOD OF WELDING JOINT IN CLOSED VESSEL
IMPROVES QUALITY OF SEAM
FREEMAN, R. LEVOE, C. 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. MORRISON, R. DEC. 1964
JPI-179

L-1/9

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, S. DEC. 1964
JPL-182

To cut the lag-lead in motor-driven timing devices, the timing circuit has been extended to include a second switch. This is actuated in time with the first but driven directly at a speed x times faster than the first.

B63-10170
HIGH-PRESSURE REGULATING SYSTEM PREVENTS
PRESSURE SURGES
KELLER, O. F. MAC GLASHAN, W. F. JUN. 1964 /SEE
U.S. PATENT NO. 3,105,515/
JPL-231

Gas flow is controlled by means of a pressure regulating system which prevents pressure surges. A high-pressure fluid source, a spring-loaded fluid-damped regulator valve, an accumulator, a conventional normally closed command valve, and a control valve are the main components.

B63-10198
DEVICE TRANSMITS ROTARY MOTION THROUGH HERMET-ICALLY SEALED WALL
PORTER, R. N. APR. 1964
JPL-303

A wobble plate, metal bellows, and two shafts, assembled in a four-section housing, make it possible to transmit rotary motion through a hermetically sealed wall. In operation a rotational torque is developed by the wobble plate.

B63-10200 APPARATUS OF SMALL SIZE CAN BE EXTENDED INTO LONG, RIGID BOOM MILLER, J. V. MAY 1964 JPL-305

.-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 trianglar boom of considerable length.

B63-10226
SELF SEALING DISCONNECT FOR TUBING FORMS METAL
SEAL AFTER BREAKAWAY
GERNANDT, H. H. JAN. 1964
JPL-354

--304
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. Ω-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 GLASHAN, W. F. MAR. 1964
JPL-361

A durable line valve utilizes stacked metal disks to seal off an inlet port. No packing or shaft sealing in needed, and the valve operates satisfactory over a wide temperature and pressure range.

B63-10236 LIGHTWEIGHT UNIVERSAL JOINT TRANSMITS BOTH TORQUE AND THRUST BAMFORD, R. M. JAN. 1964 JPL-375

A lightweight universal joint uses a thin steel flexure plate to transmit torque and a steel rod to transmit thrust. Both the plate and rod are independently mounted and can act individually.

B63-10237
SUPERCOLD TECHNIQUE DUPLICATES MAGNETIC FIELD
IN SECOND SUPERCONDUCTOR
HILDEBRANDT, A. F. 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. 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 PLOTTER SIMPLIFIES BOOLEAN FUNCTIONS RUBIN, D. K. APR. 1964 JPL-385

This device for simplifying the plotting of a veitch diagram consists of several overlays for blocking out the unwanted squares. This method of plotting the various input combinations to a computer is used in conjunction with the boolean functions.

B63-10247
NEW PACKAGE FOR BELLEVILLE SPRING PERMITS RATE
CHANGE, EASY DISASSEMBLY
MAC GLASHAN, W. F. 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.

R63~10251 HELICAL TUBE SEPARATES NITROGEN GAS FROM LIQUID NITROGEN STEPHENS, J. B. JUN. 1964 JPI.-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.

FRICTIONAL WEDGE SHOCK MOUNT IS INEXPENSIVE, HAS GOOD DAMPING CHARACTERISTICS TENER, W. M. 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 MAR. 1964

BLAYDES, R. A. JPL-TT-1003

For 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.

R63-10292 HEAVY-DUTY STAPLE REMOVER OPERATED BY HAND MORRISON, T. RENNER, R. MAR. 1964 JPL-IT-1004

To remove staples from thick reports, a rooter, bending hook and post are incorporated into a heavy duty hand tool. This makes possible one-step extraction of long staples.

B63-10304 BREAK-UP OF METAL TUBE MAKES ONG-TIME SHOCK PREAR-UP OF METAL TUBE MAKES ONE-TIME SHOCK ABSORBER, BARS REBOUND HATHAWAY, M. MC GEHEE, J. R. ZAVADA, E. FEB. 1964 /SEE NASA-TN-D-1477/ LANGLEY-1A

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.

CRYOPUMPING OF HYDROGEN IN VACUUM CHAMBERS IS AIDED BY CATALYTIC OXIDATION OF HYDROGEN CHILDS, J. H. GROBMAN, J. RAYLE, W. JUN. 1964 /SEE NASA-TN-D-863/ LEWIS-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.

DESIGN OF VALVE PERMITS SEALING EVEN IF THE STEM IS MISALIGNED SCHMIDT, H. W. JAN. 1964 LEWIS-38

A conical-walled 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 REFRAC-TORY METALS DOLINSHEK, A. F. HERMAN, L. E. APR. 1964 LEWIS-50

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 simple slide-delivery device. CONNECTOR FOR VACUUM-JACKETED LINES CUTS TUBING SYSTEM COST CALVERT, H. F. MAY 1964 LEWIS-66

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 CRYOGENIC SYSTEMS
CALVERT, H. F. JUN. 1964
LEWIS-67

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. MARTIN, N. C. JAN. 1964

Welding clamps, placed inside and outside a rocket case, hold 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. AUG. 1964 M-FS-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.

FLEXIBLE HONEYCOMB STRUCTURE CAN BEND TO FIT COMPOUND CURVES CARMODY, R. J. APR. 1964 M-FS-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 formed 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. MAR. 1964 M-FS-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.

R63-10420 SIMPLE MECHANISM COMBINES POSITIVE LOCKING AND QUICK-RELEASE FEATURES CLAYTON, L. B. /HUGHES AIRCRAFT CO./ FEB. 1964 ₩00-4

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.

HIGH-TEMPERATURE, HIGH-PRESSURE SPHERICAL SEGMENT VALVE PROVIDES QUICK OPENING GIOVANNETTI, A. HIMMELRIGHT, R. MEYER, K. NITTA, H. APR. 1964
ARC-13

A hollow spherical segment valve with an eccentric permits specified a segment valve 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
DEVOTO, H. J., JR. 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 FRICTIONAL FORCE BETWEEN MATING CYLINDERS CONRAD, E. W. MAY 1964 LEWIS-75

A kinetic energy absorbing device uses a series of coaxial, mating cylindrical surfaces. These surfaces have high frictional resistance to relative motion when axial impact forces are applied. The device is designed for safe deceleration of vehicles impacting on landing surfaces.

B63-10489
FINE-PARTICLE FILTER PREVENTS DAMAGE TO VACUUM
PUMPS
HARLAMERT, P., JR. APR. 1964
LEWIS-106

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 SIMPLY MADE BY MELT-OUT METHOD
ESCHER, W. J. D. JUN. 1964
M-FS-91

A melt-out method of constructing strong, pressure-tight fluid coolant channels for chambers is accomplished by cementing pins to the surface and by depositing a melt-out material on the surface followed by two layers of epoxy-resin impregnated glass fibers. The structure is heated to melt out the low-melting alloy.

B63-10502 FLUID-PRESSURE METER CAN BE CALIBRATED WITHOUT REMOVAL FROM FLOW LINE MELTON, D. E. MAR. 1964 M-FS-98

The construction of a fluid pressure meter with two inlet ports, flexible diaphragms and a pressure-responsive transducer is described. One port can be connected to the line and the other to a source of standard pressures for calibration.

B63-10517
MINIATURE OXYGEN-HYDROGEN CUTTING TORCH
CONSTRUCTED FROM HYPODERMIC NEEDLE
SHLICHTA, P. APR. 1964
JPL-545

1-343

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, H. H., JR. /UNITED AIRCRAFT CORP./ 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
INNOVATOR NOT GIVEN FEB. 1964
LANGLEY-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, J. W. REED, W. H., III OCT. 1964 LANGLEY-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
HUNGERFORD, W. J. LARMER, J. W. LEVINSOHN, M.
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 watt bath for electroforming of nickel reflectors.

B63-10556
LATHE CONVERTED FOR GRINDING ASPHERIC SURFACES
LARMER, J. W. LEVINSOHN, M. MC CRAW, D.
PESSAGNO, E. H. TAUB, F. J. JUL. 1964
GSFC-115

A standard overarm 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. OCT. 1964
LANGLEY-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. NOV. 1964 ARC-20

A 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 + closed in one continuous, rapid operation when the solenoid is actuated.

B63-10564 A TECHNIQUE FOR MAKING ANIMAL RESTRAINTS CLARKE, A. E., JR. REITMAN, J. SEP. 1964 ARC-25

A contoured shell for restraining animals is made by thermoforming plastic over the anesthetized, frozen specimen. It may be vented, or pieces may be cut out to facilitate working in localized

B63-10568
PLASTIC MOLDS REDUCE COST OF ENCAPSULATING ELECTRIC CABLE CONNECTORS
KNOTT, D. NOV. 1964
M-FS-69

Resin casting of the aluminum master pattern forms a plastic mold for encapsulating a cable connector. An elastomer is injected into the mold and cured. The mold is disassembled leaving an elastomeric encapsulation around the connector.

B63-10571 SELF-BALANCING BEAM PERMITS SAFE, EASY LOAD HANDLING UNDER OVERHANG EDWARDS, D. H. MAR. 1964 M-FS-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.

STAINLESS-STEEL ELBOWS FORMED BY SPIN FORGING INNOVATOR NOT GIVEN /CHANCE-VOUGHT CORP./ DEC. 1964

M-FS-122

Large seamless austenitic stainless steel elbows are fabricated by spin forging /rotary shear forming/. A specially designed spin forging tool for mounting on a hydrospin machine has been built for this purpose.

NEW INFLATABLE LIFERAFT IS NONTIPPABLE RADNOFSKY, M. I. SHEWMAKE, G. A. MAR. 1964 /SEE NASA-TN-D-1083/ MSC-AA

A one-seamed lightweight life raft has three underwater ballast buckets as stabilizers. Non-tippable, it can be compactly packaged and inflated with carbon dioxide.

SPEED-SENSING DEVICE AIDS CRANE OPERATORS MC FORD, E. L. OCT. 1964

So that crane operators can judge payload movements accurately, a friction-driven multilobed cam 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 1/8 inch.

B64-10611 METAL STRIP FORMS 21 FOOT BOOM, ROLLS UP FOR COMPACT STORAGE INNOVATOR NOT GIVEN /CANADIAN COMMERCIAL CORP./ **MAY 1964** 

GSFC-151 An extensible boom, carrying three separate electric conductor tapes, can be rolled into a compact storage drum. The tape is curved in cross section so that the boom automatically forms a tube as it is extended.

GUIDE FOR EXTRUSION DIES ELIMINATES STRAIGHTENING OPERATION GYORGAK, C. A. HOOVER, R. J. NOV. 1964 LEWIS-152

To prevent distortion of extruded metal, a guidance assembly is aligned with the die. As the metal emerges from the extrusion dies, it passes directly into the receiver and straightening tube system, and the completed extrusion is withdrawn.

COMFORTABLE, LIGHTWEIGHT SAFETY HELMET HOLDS RADIO TRANSMITTER, RECEIVER ATLAS, N. D. /N. AM. AVIATION, INC./ MAY 1964 MSC-53

For two-way radio communication where safety gear is required, a lightweight helmet with few protrusions has been designed. The electronics components and power supply are mounted between the inner and outer shells, and resilient padding is used for the lining.

PRESSURE TRANSDUCER 3/8-INCH IN SIZE CAN BE FAIRED INTO SURFACE SCHAFFER, R. J. /N. AM. AVIATION, INC./ MAY 1964 WD0-065

To measure fluid pressure with minimum disturbance to fluid flow, a miniature pressure transducer can be imbedded and faired into the test surface. Incorporated in the design are piezoresistive elements, mounted on a diaphragm, which transform pressure strains into an electrical signal.

B64-10028 QUICK-ACTING CLUTCH DISENGAGES IDLE DRIVE MOTOR STARK, K. W. AUG. 1964 GSFC-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.

MULTIPLE PORT PRESSURE SCANNER VALVE FEATURES GREATER ACCURACY, QUICKER DATA VINCENT, E. R. 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.

B64-10050 MODIFIED GAS BEARING IS ADJUSTABLE TO OPTIMUM STIFFNESS RATIO EVANS, J. L. AUG. 1964 M-FS-145

Inexpensive and rapid-adjustments of the radialto-axial stiffness ratio of a spherical gas bearing are achieved by a series of gas passages in the equatorial plane of the sphere which feed into orifices that can be readily changed in size.

B64-10058 INSULATED WELD TOOLING PERMITS UNIFORM, HIGH-QUALITY WELD INNOVATOR NOT GIVEN /N. AM. AVIATION/ 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.

B64-10066 ENCAPSULATION PROCESS STERILIZES AND PRESERVES SURGICAL INSTRUMENTS MONTGOMERY, L. C. MORELLI, F. A. JUL. 1964

Ethylene oxide is blended with an organic polymer to form a sterile material for encapsulating surgical instruments. The material does not bond to metal and can be easily removed when the instruments are needed.

B64-10069 METAL-BENDING BRAKE FACILITATES LIGHTWEIGHT, CLOSE-TOLERANCE FABRICATION ERCOLINE, A. L. WILTON, K. B. OCT. 1964 ARC-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.

B64-10084 MOLDED ELASTOMER PROVIDES COMPACT FERRITE-CORE HOLDER, SIMPLIFIES ASSEMBLY HAYDEN, R. R. NOV. 1964 JPL-584

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 core leads to be multiply threaded and soldered to terminals, without requiring intermediate terminals.

BUCKLE JOINS WEB STRAPS QUICKLY, ADJUSTS EASILY WILKINSON, J. E. /CHANCE VOUGHT CORP./ JUN. 1964 LANGLEY-21

To join web straps used to hoist heavy loads, a novel buckle permits two straps to be quickly joined and held by the combined forces of strap load tension and friction.

B64-10121 ELECTRONIC ASSEMBLY RACK PANELS SNAP ON AND OFF BAILEY, J. W. JUN. 1964 GSFC-59

Snap fasteners on each side of an electronic assembly rack blank panel give quick access to the interior. Guide pins extending from the inside face easily slip into standard screw holes on the frame and provide additional support.

B64-10124
ATTACHMENT CONVERTS MICROSCOPE TO POINT SOURCE AUTOCOLLIMATOR
SHLICHTA, P. J. JUL. 1964
JPL-499

A low-power microscope or telescope provides a simple means of autocollimation. This is done by fitting the instrument with a light source to permit alignment from a reflecting surface normal to the optic axis of the instrument.

B64-10130 BEARING TRANSMITS ROTARY AND AXIAL MOTION DOW, N. F. PETERS, R. W. 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.

B64-10141
PNEUMATIC POWER IS TRANSMITTED THROUGH AIR
BEARING
JOHNSON, H. I. WOBIG, O. A. JUL. 1964
MSC-8

A more efficient method for supplying high pressure air to an air bearing and pneumatic equipment mounted on it has been developed. The system uses a conventional air bearing and an air-supported sphere with a central passage. High pressure air is channeled through it into the pneumatic equipment on the sphere.

B64-10145 FLEXIBLE FASTENER ALLOWS THERMAL EXPANSION CRUMPLER, W. B. JUN. 1964 LANGLEY-40

A flexible fastener permits thermal expansion of model skin sections which are rigidly attached to supporting structures in wind tunnel tests. The device uses a modified ball joint contact between the fastener and a skin section.

B64-10164
UPSETTING BUTT EDGE INCREASES WELD-JOINT STRENGTH
VESCO, D. OCT. 1964
M-FS-175

Mechanical upsetting /a mode of cold forging/ of butt edges to be welded is accomplished by the use of hydraulic rams and pressure rollers. The mechanical upsetting increases the thickness of the material in the heat-affected zone and compensates for the lower specific strength per unit thickness common to this area.

B64-10170
BALL BEARING USED IN DESIGN OF RUGGED FLOW-METER
MINKIN, H. L. 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.

B64-10178
MACHINE TESTS CREASE DURABILITY OF SHEET
MATERIALS
JONES, L. K. STANFORD, H. B. 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.

B64-10185
THREADING HOOK FACILITATES SAFE RECOVERY OF HEAVY LOADS
ARTHUR, J. S. WILLIAMS, D. C. 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 massive loads afloat in the sea.

B64-10188
BLADE VALVE ISOLATES COMPARTMENT IN PIPE,
OPENS TO ALLOW FREE FLOW
IMUS, R. NOV. 1964
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 MICRON DIMENSIONS
WALCH, A. J. OCT. 1964
GSFC-206

A 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
MAC GLASHAN, W. F., JR. NOV. 1964
JPL-478

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
INNOVATOR NOT GIVEN /LEAR SIEGLER CORP./ NOV.
1964
M-FS-190

A device, incorporating a collar with a hexagonal opening which fits snugly over a hexagonal nut used to engage instrument panel components, keeps the adjustment knob locked. A quick release mechanism frees the knob for rotational adjustment.

B64-10272 VISCOUS-PENDULUM DAMPER SUPPRESSES STRUCTURAL VIBRATIONS REED, W. H., III NOV. 1964 LANGLEY-45

The viscous pendulum damper consists of a cylinder containing round trays on which round lead slugs rest. When assembled, the container is filled with a viscous liquid and attached, with axis vertical, to the structure. The device permits varying the damping of structural vibrations.

B64-10274
VEHICLE WALKS ON VARIED TERRAIN, CAN ASSIST
HANDICAPPED PERSONS
INNOVATOR NOT GIVEN NOV. 1964
WOO-005

A battery-powered motorized vehicle with three pairs of legs connected to push rods and a series of linkages is constructed for traversing varied terrains. Two cams connected to the drive mechanism control the motion of the legs. The basic design may be adapted for use with motorized wheelchairs.

B64-10277
APPARATUS ALTERS POSITION OF OBJECTS TO FACILITATE DEMAGNETIZATION RINARD, G. WATSON, J. D. NOV. 1964
GSFC-234

An apparatus consisting of pulleys, a drive shaft and an inner compartment, in which components to be demagnetized are mounted, is constructed. Due

to the speed ratio of the three frames, every point on a component in the inner compartment is cycled through an optimum locus in the demannetization field.

B64-10278
SENSITIVE LOW-PRESSURE RELIEF VALVE HAS
POSITIVE SEATING AGAINST LEAKAGE
INNOVATOR NOT GIVEN /N. AM. AVIATION INC./ NOV.
1964
W00-041

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 INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ NOV. 1964 WOD-048

Measurement of very small thrusts of an ion engine are made by mounting the engine on a platform supported by leaf springs which are loaded to have a zero spring constant. Measuring apparatus includes an inductive sensor, servo amplifier, and a counterthrust feedback system.

B64-10306 COMPRESSED GAS SYSTEM OPERATES SEMITRAILER BRAKES DURING WINCHING OPERATION TUPPER, W. E. DEC. 1964 JPL-0036

To move van-type semi-trailers into and out of confined spaces, an auxiliary braking system is mounted on a standard dolly converter. Compressed nitrogen is used to actuate the brakes which are used in conjunction with a power winch.

B64-10327
CONNECTOR SEALS FLUID LINES AT CRYOGENIC TEMPERATURES AND HIGH VACUUMS KITTS, W. T. PLATT, P. K. JAN. 1965
GSFC-253

A connector that will serve as a seal for fluids at cryogenic temperatures and in high vacuums was constructed by installing a metal disk between two sets of mating serrations to form two sealing surfaces. Compression on both sealing surfaces is ensured by spring action of the disk.

B64-10348
SAFETY RESTRAINER PREVENTS WHIPPING OF
RUPTURED HIGH-PRESSURE HOSE
THOMPSON, W. E. DEC. 1964
LEWIS-99

The braid at each end of a standard electric cable puller is modified to reinforce high pressure, flexible, fluid transfer hoses. This safety device acts as a restraint if the line ruptures.

B64-10406
POLYCHART CONTOUR ENABLES DATA EXTRAPOLATION
FROM MULTIPLE PLOTTING CHARTS
SWINDALL, P. M. WISE, T. E. JUL. 1964
M-FS-37

A polychart contour plotter is used to reduce the data from all 19 antenna pattern charts to a one-chart form.

B65-10003 ILLUMINATED DISPLAY PANEL IS EASILY CHANGED INNOVATOR NOT GIVEN /IBM/ JAN. 1965 MSC-108

Photographic negative placed between two plastic sheets and back-lighted in selected areas prepares illuminated multicolored display panels. The device is inexpensive, easily changed, and quickly fabricated.

B65-10007
THERMOCOMPRESSION BONDING PRODUCES EFFICIENT SURFACE-BARRIER DIODE
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
JPL-SC-066
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.

B65-10008
SHOCK ABSORBER PROTECTS MOTIVE COMPONENTS
AGAINST OVERLOADS
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ JAN.
1965
1960-092

Shock absorber with an output shaft, hollow gear, and a pair of springs forming a resilient driving connection between shaft and gear, operates when abnormally high torques are applied. This simple durable frictional device is valuable in rotating mechanisms subject to sudden overloads.

B65-10009
FORMING BLOCKS SPEED PRODUCTION OF STRAIN GAGE GRIDS
BONN, J. L. GARDNER, D. E. FEB. 1965
LEWIS-182

A tool is designed which facilitates the forming of wire grids used in manufacturing strain gauge 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
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
M-FS-210

Improved packaging technique for modulator electronic circuitry utilizes a tear ring which may be removed for repair and resealed. 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 BAUERNSCHUB, J. P., JR. JAN. 1965 GSFC-237

Nonmagnetic explosive—actuated indexing device creates magnetic field that can be tolerated by a sensor.

B65-10019
WIDE-ANGLE SENSOR MEASURES RADIANT HEAT ENERGY
IN CORROSIVE ATMOSPHERES
INNOVATOR NOT GIVEN /BUEING CO./ JAN. 1965 SEE
ALSO B63-10004
M-FS-22A

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
INNOVATOR NOT GIVEN /IBM/ JAN. 1965 SEE ALSO
B64-10297
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, B. JAN. 1965 SEE ALSO B64-10031
LEWIS-158

Indexing pickup monitors fluid pressures from ports at various angles on high or low speed rotating mechanisms in operation. By a simple axial movement of a takeoff connector, angle changing takes place. This device can be adapted for electric current monitoring.

B65-10022 KNOB LINKAGE PERMITS ONE-HAND CONTROL OF SEVERAL OPERATIONS CODDING, G. C. LAVENDER, C. E. JAN. 1965 MSC-30 Electromechanical device with single knob provides one-hand control of numerous electrical or mechanical functions. The principle of this design may have application to remote-control switching devices.

B65-10027
FLUID-PRESSURE MEASUREMENT APPARATUS USES SHORT-LENGTH MANOMETER TUBES
SATHER, B. I. MAR. 1965
LEWIS-28

System of short length U-tube manometers with a proportionally divided reference pressure measures high fluid pressures.

B65-10029
SEISMIC TRANSDUCER MEASURES SMALL HORIZONTAL
DISPLACEMENTS
GREENWOOD, T. L. 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
INNOVATOR NOT GIVEN /N. AM. AVIATION/ FEB. 1965
1965
WOO-108

An efficient wire puller consists of a steel probe with a hole in one end fastened to a steel cable 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 OCEANBORNE TRANSPONDER PLATFORM HAS GOOD STABILITY INNOVATOR NOT GIVEN /IBM/ FEB. 1965 M-FS-171

Determination of space vehicle range and orbit is aided by a stable subsurface oceanic transpounder. 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 HOLDER PROTECTS CRYSTAL DURING HIGH ACCELERATION AND IMPACT LE VAY, K. H. FEB. 1965 JPL-463

A plastic holder, which retains a crystal blank with standard silvered contacts sandwiched between two copper contacts, protects the crystal against vibration during high acceleration and impact.

B65-10038
FASTENER PROVIDES COOLING AND COMPENSATES FOR THERMAL EXPANSION
INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./ FEB. 1965
NU-0003

A fastener composed of a concentric bellows welded to two plates forming an annular cavity provides cooling and thermal expansion compensation in a high temperature environment.

B65-10039
NONRESONANT SUPPORT FACILITATES VIBRATION
TESTING OF STRUCTURES
INNOVATOR NOT GIVEN /BOEING CO./ FEB. 1965
M-FS-224

An essentially frictionless four-point support system which utilizes bearings and pistons and 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. F., JR. FEB. 1965 JPL-442

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.

B65-10042 FLEXURE SUPPORT SYSTEM PROTECTS THERMALLY AND DYNAMICALLY LOADED MODELS CRUMPLER, W. B. 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 length-wise axes of the supporting legs approximately normal to the line of absolute motion of the model supported.

B65-10049
SCREW LOCKING CUPS QUICKLY AND NEATLY CRIMPED INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./FEB. 1965
NU-0009

A tool consisting of a positioning pin which is engaged in the screw and depressed until the tool body contacts the locking cup permits quick and neat crimping.

B65-10053
SEAL ALLOWS BLIND ASSEMBLY AND THERMAL EXPANSION OF COMPONENTS
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
FEB. 1965
NU-0005

The design of a seal consisting of two concentric cylinders with outer and inner threaded elements attached to each side of the system interface withstands large temperature changes and allows for blind assembly.

B65-10060
NEW ALLOY BRAZES TITANIUM TO STAINLESS STEEL
INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAR. 1965
1965
MSC-102

Brazing alloy of palladium, silver and silicon is used in brazing titanium to stainless steel without embrittling metals at the brazed interfaces.

B65-10063 CERMIC-COATED BOAT IS CHEMICALLY INERT, PROVIDES GOOD HEAT TRANSFER SPITZER, C. R. 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
INNOVATOR NOT GIVEN /GE/ MAR. 1965
W00-112

Measurement of the curved surface finish on gear teeth is made by a device used in conjunction with a conventional profilometer.

B65-10070 SIMPLE SCALE INTERPOLATOR FACILITATES READING OF GRAPHS FETTERMAN, D. E., JR. MAR. 1965 LANGLEY-88

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. P. 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 INNOVATOR NOT GIVEN /AM. OPT. CO./ MAR. 1965 LANGLEY-54

Servocontrol device feeds film into a roller system. Two linear potentiometers connected to spring loaded tension rollers furnish servo input signal. Can be used in any continuus material transport system.

B65-10077
NEW COUPLING COMPENSATES FOR SHAFT
MISALIGNMENT
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
MAR. 1965
NU-0013
Coupling of splined shafts with slight

coupling or splined sharts with slight misalignment is accomplished by means of a crown spline and sleeve arrangement.

B65-10078
FABRICATION METHOD PRODUCES HIGH-GRADE ALUMINA CRUCIBLES
PALMOUR, H. MAR. 1965
M-FS-216

Alumina-binder mixture, which has been dry pressed in a die using a mating punch, forms crucibles of various configurations and after firing results in a ceramic structure for use in diffusion experiments.

B65-10090 COMPACT ASSEMBLY GENERATES PLASTIC FOAM, INFLATES FLOTATION BAG INNOVATOR NOT GIVEN APR. 1965 LANGLEY-96

Device for generating plastic foam consists of an elastomeric bag and two containers with liquid resin and a liquid catalyst. When the walls of the containers are ruptured the liquids come into contact producing foam which inflates the elastomeric bag.

B65-10094
CUTTER AND STRIPPER REDUCES COAXIAL CABLE
CONNECTION TIME
THOMPSON, F. E. 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.

CONTACT STRESSES CALCULATED FOR MINIATURE SLIP RINGS ALBRIGHT, F. G. DOMEREST, K. E. HORTON, J. C.

ALBRIGHT, F. G. DOMEREST, K. E. HORTON, J. C. APR. 1965 M-FS-280

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. F. LAUB, J. H. APR. 1965 SEE ALSO
B63-10123 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.

B65-10101 JIG AND FIXTURE AID FABRICATION OF TUNGSTEN RIVETS CHATTIN, J. H. APR. 1965 LEWIS-185

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.

B65-10104 LEAF-SPRING SUSPENSION PROVIDES ACCURATE PARALLEL DISPLACEMENTS MC CREARY, R. A. APR. 1965 JPL-480

Leaf-spring suspension device with the springs symmetrically mounted on suspension frames provides accurate parallel displacements of loads over short linear distances.

B65-10109
ROCK BIT REQUIRES NO FLUSHING MEDIUM TO
MAINTAIN DRILLING SPEED
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ APR.
1965
191-1910-031

Steel drill bit having terraces of teeth intersected by spiral grooves with teeth permits the boring of small holes through rock with low power. The cuttings are stored in a chamber behind the cutting head. Could be used as sampling device.

B65-10110
MAGNETS POSITION X-RAY FILM FOR WELD
INSPECTION
WAGNER, R. P. APR. 1965
M-FS-253

Film-positioning device uses magnets to hold X-ray film for weld inspection in nonferrous structures, such as tanks, where access to interior points is difficult.

B65-10111
PROBE TESTS MICROWELD STRENGTH
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ APR.
1965
W00-118

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
ROGERO, R. S., JR. APR. 1965
JPL-631

Pressure transducer is isolated from shock and vibration forces by a pressure-compensated shock mount. Silicone elastomer 0-rings within the shock mount serve as shock and vibration-damping pads.

B65-10114 AVERAGING PROBE REDUCES STATIC-PRESSURE SENSING ERRORS RITCHIE, V. S. APR. 1965 LANGLEY-36

Averaging the high and low pressure admitted to a plenum through circumferentially spaced orifices provides a probe that accurately senses the free-stream static pressure on an aerodynamic surface. This surface does not have a preferred angle of inclination to the direction of the airstream cross flow.

B65-10115
INERT GAS SPRAYING DEVICE AIDS IN REPAIR OF
HAZARDOUS SYSTEMS
TELEHA, S. APR. 1965
LEVIS-8B

Inert gas spraying device aids in safely making mechanical repairs to a cryogenic fluid system without prior emptying of the system. This method can be applied to any natural or bottled gas system and with modifications to gasoline transports.

B65-10116 LOW-COST TOOL MINIMIZES DAMAGE TO O-RINGS DURING INSTALLATION INNOVATOR NOT GIVEN /N. AM. AVIATION/ APR. 1965

Tapered cylindrical tool enables 0-ring installation over threaded fasteners without seal damage.

B65-10121 FLOW CONTROL VALVE IS INDEPENDENT OF PRESSURE DROP

INNOVATOR NOT GIVEN /THIOKOL CHEM. CORP./ APR. 1965

JPL-W00-039

Remote control of fluid flow in a low-power system is established by a flow control valve with a flapper and nozzle flow control. Constant rates are maintained despite fluctuating pressure across the valve.

B65-10126
COLLAPSIBLE TRUSS STRUCTURE IS AUTOMATICALLY
EXPANDABLE
INNOVATOR NOT GIVEN /GE/ MAY 1965
GSFC-265

Coil springs wound with maximum initial tension in a three-truss, closed loop structure form a collapsible truss structure. The truss automatically expands and provides excellent rigidity and close dimensional tolerance when expanded.

B65-10130
COLLAR POSITIONS STRIP STOCK USED TO FORM COIL
ON MANDREL
BLAZE, C. J. MAY 1965
JPL-198

Guide collar fastened to a mandrel helps form a coil of strip sheet metal stock. The collar maintains the strip stock in its proper position during winding of each turn of the coil.

B65-10131
APPARATUS FACILITATES PRESSURE-TESTING OF
METAL TUBING
GYORGAK, C. A. MAY 1965
LEWIS-174

Burst-testing of refractory metal tubing is conducted in an apparatus in which tubular specimans are firmly gripped and test pressures and temperatures are applied. Porosity, flaw, and fatigue-stress rupture are also tested.

B65-10134
HIGH PERMEABILITY SEMICONDUCTORS PERMIT
CLOSE-TOLERANCE SOLDERING
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ MAY
1965
GSFC-319

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.

COILED SPRING MAKES SELF-LOCKING DEVICE FOR THREADED FASTENERS INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAY 1965

MSC-149

Coiled spring device provides both easy selflocking and disassembly for screw-threaded fasteners. When the fastener turns in one direction the spring grips one of the fastener threads and releases when the fastener turns in the opposite direction.

B65-10141
INTEGRAL RIBS FORMED IN METAL PANELS BY COLD-PRESS EXTRUSION
BRADIE, P. R. SCHUERER, P. H. MAY 1965
M-FS-230

Metal panels with integral ribs are formed by the cold-press extrusion method without material loss. Integral ribs in aluminum-alloy panels are formed by this process.

B65-10144 LIGHTWEIGHT LOAD SUPPORT SERVES AS VIBRATION DAMPER LAYMAN, W. E. MAY 1965 JPL-661

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
MAC GLASHAN, W. F. MAY 1965
JPL-345

Wear resistance of flexible diaphragms in fluid control valves is increased by incorporating a soft rubber washer at the bottom of the piston, a flexible buffer between the diaphragm and the valve seat, and a fluid feedback arrangement. The stress and wear of components at the valve seat are minimized.

B65-10148
BIDIRECTIONAL TORQUE FILTER ELIMINATES
BACKLASH
BAKER, R. VEILETTE, L. WILLIAMS, S. MAY 1965
GSFC-335

Two elastic springs connecting a hub and two spur gears absorb bidirectional step torque differentials and provide antibacklash characteristics between input and output shafts. This device is used in precise control systems.

B65-10149
CANTILEVER SPRINGS MAINTAIN TENSION IN THERMALLY EXPANDED WIRES
TERSELIC, R. A. MAY 1965
LEWIS-136

Two deflected cantilever springs strung with wire provide force displacement compensation to maintain tension in the wires as they undergo thermal expansion. This method of maintaining tension in thermally expanded wires is used in electric space heaters and residential heat exchangers.

B65-10150 METAL BELLOWS CUSTOM-FABRICATED FROM TUBING INNOVATOR NOT GIVEN MAY. 1965 LEWIS-192

Mandrel assembly mounted in a lathe chuck is used with a forming wheel to roll-form bellows from standard sheet metal tubing. Spacers and mandrels of various sizes custom-fabricate bellows of any desired dimensions.

B65-10153 TITANIUM TREATMENT IMPROVES BRAZED JOINTS

INNOVATOR NOT GIVEN /MIT/ MAY 1965

Pretreating metal with a thin coating of pure titanium improves the wettability and flow of brazing alloys. This can be used in the manufacturing of aviation and aerospace components where high strength-to-weight ratio must be achieved.

B65-10154
SYSTEM MEASURES UNIDIRECTIONAL FORCES,
EXCLUDES EXTRANEOUS FORCES
BEHRENDT, D. R. HEGLAND, D. E. MAY 1965
LEWIS-170

System measures unidirectional force without interference from other directional forces. The measuring apparatus is mounted so that it only moves vertically and is constrained from horizontal and rotational movement. This system can be used to accurately measure small forces in one direction, or as an analytic balance.

B65-10160 LOW-COST SEAL COMPENSATES FOR SURFACE IRREGULARITIES INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./ JUN. 1965 NU-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 KORSTHE, A. K. JUN. 1965
JPL-226

Actuator assembly disconnects electric cable and fluid-line coupling from a rocket. The disconnector incorporates interconnected hydraulic cylinders which effect an equal and simultaneous displacement of pistons upon admission of compressed air through a solenoid control valve.

B65-10166
SPLICE PLATE DESIGN ASSURES STRUCTURAL
SEPARATION BY HILD EXPLOSIVE
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
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
LATHE ATTACHMENT USED TO MACHINE ELLIPTICAL
COMES
ALLEN. J. H., SR. WOBIG, O. A. JUN. 1965

MSC-100
Close-tolerance elliptical cones are fabricated by cutting-tool guide assembly used with conventional tracer cartridge on turret lathe accurately produced in two machine operations

B65-10170
METAL PARTS HYDROSIZED BY EXPLOSIVE FORCE
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
1965
M-FS-289

Large metal parts are sized by a charge exploded above a sealed container filled with evacuated die and water. Explosive hydrosizing achieves close dimensional tolerances, eliminates damage to the surface, and allows longer force application and more even pressure distribution.

B65-10174
PRESSURE TRANSDUCER SYSTEM IS FORCE-BALANCED,
HAS DIGITAL OUTPUT
INNOVATOR NOT GIVEN /GIANNINI CONTROLS CORP./
JUN. 1965
M-FS-154

Forced-balanced pressure transducer and associated circuitry controls pressure testing of space equipment systems under actual operating conditions. The transducer and circuitry automatically converts the sensed pressure to digital form.

B65-10176
DEVICE ENABLES MEASUREMENT OF MOMENTS OF INERTIA ABOUT THREE AXES
CONN, J. JUN. 1965
GSFC-49

Device measures moments of inertia of an irregularly shaped mass about three mutually perpendicular axes by the standard pendulum and torque methods. A fixture suspends the test mass at one point and can be adjusted to allow oscillation of the mass.

BOOJ-1917/ BPOXY-RESIN PATTERNS SPEED SHELL-MOLDING OF ALUMINUM PARTS INNOVATOR NOT GIVEN /ALABAMA UNIV./ JUN. 1965 M-FS-303

Half patterns cast from commercial epoxy resin containing aluminum powder are used for shell-molding of aluminum parts. The half patterns are cast in plastic molds of the original wooden pattern. Ten serviceable sand-resin molds are made from each epoxy pattern.

B65-10180 NEW NUT AND SLEEVE IMPROVE FLARED CONNECTIONS GARRARD, J. S. JUN. 1965 M-FS-194

Improved nut and sleeve of standard stainless steel flared tube connection allows forces on the

mating surfaces to be uniformly applied. This can be applied to pressurized fluid systems such as refrigeration, air conditioning, and hydraulic systems.

B65-10181 HAND TOOL BENDS COMPONENT LEADS ACCURATELY INNOVATOR NOT GIVEN /CHRYSLER CORP./ Jun. 1965 M-FS-308

Hand-operated die set bends, without damage, electrical component leads to perfectly match holes in printed circuit board. This tool speeds up printed circuit fabrication and reduces the number of component rejections.

B65-10185
DISPENSING SYSTEM ELIMINATES TORSION IN
DEPLOYED HOSES
INNOVATOR NOT GIVEN /IIT RES. INST./ JUN. 1965
MSC-80

Dispensing system uses a rotating drum, transfer arm, and stationary drum to deploy, reel in, and store an attached hose. This system which 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.

B65-10191 EXTENDIBLE COLUMN CAN BE STOWED ON DRUM HOLTZ, G. M. HOWARD, E. A. JUN. 1965 JPL-686

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.

B65-10192 SPIRAL HEATER COILS HAND-FORMED WITH FIXTURE CHATTIN, J. H. JUN. 1965 LEWIS-208

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.

B65-10198
SELF-ALIGNING FIXTURE USED IN LATHE CHUCK JAW
REFACING
LINN, C. C. JUN. 1965
FRC-21

Self-aligning tool positions and rigidly holds lathe chuck jaws for refacing and truing 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 checks.

B65-10201 ELECTRICAL CABLE CONNECTOR-CLAMP HAS SMOOTH EXTERIOR SURFACE INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965 1965 MSC-154

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.

B65-10205
BALL-AND SOCKET JOINTS PROVIDE ACCURATE BIAXIAL GIMBAL ROUZE, E. R. JUL. 1965
JPL-658

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.

B65-10207 FLUID CHECK VALVE HAS FAIL-SAFE FEATURE GAUL, L. C. JUL. 1965 JPL-0019

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.

B65-10210
FIBERGLASS DIES SPEED FORMING OF LARGE METAL SHEETS
BROWN, R. L. SCHUERER, P. JUL. 1965
M-FS-214

Fiberglass tooling dies accelerate forming of large metal sheets. The dies, fabricated to fit over and fasten to the die bases, are lightweight, quickly replaced and have nongalling surfaces.

B65-10216
WIRE MESH ISOLATOR PROTECTS SENSITIVE ELECTRONIC COMPONENTS
KERLEY, J., JR. JUL. 1965
GSFC-347

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.

B65-10219
FLEXIBLE MAGNETIC PLANNING BOARDS ARE EASILY
TRANSPORTED
INNOVATOR NOT GIVEN /GEN. DYN./ASTRONAUTICS/ AUG.
1965
M-FS-340

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.

B65-10222
INEXPENSIVE CHECK VALVE IS INSTALLED IN STANDARD AN FITTINGS
MARTINEZ, J. S. AUG. 1965
JPL-2A

Check valve with a cylindrical flanged tube body is used in standard AN fittings. The valve also has an easily removable spring-loaded piston.

B65-10227
DIAPHRAGM ELIMINATES LEAKAGE IN CRYOGENIC FLUID DUCT COUPLING
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ AUG. 1965
900-142

Duct coupling with nickel steel diaphragm of low thermal expansivity is leakproof when used with cryogenic fluids. The diaphragm, located between the two flanges of the coupling, reduces axial shrinkage at the coupling flanges to a minimum.

B65-10229 SCOOP ATTACHMENT MAKES HELICOPTER RECOVERIES EASIER AND SAFER KOONS, W. E. AUG. 1965 MSC-130

Helicopter with rigid boom and net attachment performs rescue or recovery operations easily and safely. The attachment in the front of the helicopter scoops objects from difficult and otherwise inaccessible areas and pivots to the side hatch of the aircraft so that no crew member need leave the craft.

B65-10230
HYDRAULIC DEVICE PROVIDES ACCURATE
DISPLACEMENTS TO MICROINCHES
TSUTSUMI, K. /MIT/ AUG. 1965
MSC-112

Hydraulic drive device translates microinch deviation measurements into precise corrective displacements. The unit is driven by a servomotor activated by the output of an attitude sensing device.

B65-10231 HANDTOOL FACILITATES EXTRACTION OF CIRCUIT MODULES LUSBY, T. K., JR. AUG. 1965 LANGLEY-38

Compact handtool extracts electronic modules from

circuit board socket. It is used on modules that have four small notches in the base of the plastic housing.

B65-10235 ANGULAR GLASS TUBING DRAWN FROM ROUND TUBING INNOVATOR NOT GIVEN / DEBELL AND RICHARDSON/ AUG. 1965 H0-20

Round glass tubing softened in a furnace is drawn over a shaped plug or mandel 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
HOTZ, G. M. HOWARD, E. A. AUG. 1965
JPL-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, W. K. JONES, J. C. AUG. 1965 MSC-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./ AUG. 1965
NU-0008

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
THERMOCOUPLE-TO-INSTRUMENTATION CONNECTOR
FEATURES QUICK ASSEMBLY
HENSHAW, E. /WESTINGHOUSE ELEC. CORP./ AUG. 1965
NU-0022

Rigid 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
ARMSTRONG, D. G. /WESTINGHOUSE ELEC. CO./ GAAL, A. E. 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. J. PARKER, R. J. ZARETSKY, E. V. 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
REMOTELY OPERATED CLAMPING TOOL HAS POSITIVE
GRIP
ADUCCI, S. A. SEWALD, A. W. /WESTINGHOUSE
ELEC. CORP./
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.

865-10256
HOUSE PROTECT THERMOCOUPLE
IN STORAGE AND HANDLING
OSMOND, L. H. /WESTINGHOUSE ELEC. CORP./ 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 PERHITS ACCURATE GRINDING OF METALLURGICAL MICROSAMPLES
CRAMER, D. L. 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

DME-SHOT VALVE MAY BE REMOTELY ACTUATED

KAMI, S. /HUGHES AIRCRAFT CO./ 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 vaive lowers fluid pressure in a container without losing the contained fluid.

B65-10285
DIFFERENTIAL PRESSURE GAUGE HAS FAST RESPONSE
WEBER, H. S. /ARMOUR RES. FOUND./ SEP. 1965
M-FS-358

Differential pressure gauge with semiconductortype strain gauge elements measures rapidly changing pressure. Output of the strain gauge elements is a dc woltage that is directly proportional to the pressure difference being measured.

B65-10312
AIR BRAKE-DYNAMOMETER ACCURATELY MEASURES
TORQUE
INNOVATOR NOT GIVEN OCT. 1965
LEWIS-163

Air brake-dynamometer assembly combines the principles of the air turbine and the air pump to apply braking torque. The assembly absorbs and measures power outputs of rotating machinery over a wide range of shaft speeds. It can also be used as an air turbine.

B65-10319
REFRACTORY METALS WELDED OR BRAZED WITH
TUNGSTEN INERT GAS EQUIPMENT
WISNER, J. P. OCT. 1965
LEWIS-219

Appropriate brazing metals and temperatures facilitate the welding or brazing of base metals with tungstem 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
INNOVATOR NOT GIVEN /N. AM. AVIATION/ 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. R. NOV. 1965
M-FS-320

Aerodynamic stability of balloons used for measuring the intensity and direction of atmospheric winds at various elevations is improved by incorporating a rough surface on the balloons. The rough-surfaced balloon is useful for collecting wind profiles and other meteorological data.

B65-10327
PRESSURE RESPONSIVE SEAL HANDLES STATIC AND DYNAMIC LOADS
MARSH, H. W. /N. AM. AVIATION/ 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.

B65-10338
INERT-GAS WELDING AND BRAZING ENCLOSURE
FABRICATED FROM SHEET PLASTIC
WISNER, J. P. NOV. 1965
LEWIS-220

Custom-fabricated plastic bag maintains an inertgas 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
HULTBERG, R. R. NOV. 1965
GSFC-409

Hand-operated disk calculator indicates the minimum size of letters and numbers in relation to the width and height of a working drawing, the lettering is legible when a slide of the drawing is projected.

B65-10342
ELECTROMAGNETIC HAMMER REMOVES WELD
DISTORTIONS FROM ALUMINUM TANKS
SCHWINGHAMER, R. J. NOV. 1965
M-FS-287

Distortions around weld areas on sheet-aluminum tanks and other structures are removed with a portable electromagnetic hammer. The hammer incorporates a coil that generates a controlled high-energy pulsed magnetic field over localized areas on the metal surface.

B65-10346
IMPROVED POPPET VALVE PROVIDES POSITIVE
DAMAGEPROOF SEAL
VALLACE, E. D. NOV. 1965
H-FS-293

Soft-seat poppet valve provides positive closure against fluid without damage to the seating surface on repeated cycling. It incorporates two compressible soft rings and a retaining ring of hard metal. Sealing is effected when the poppet seat is forced into intimate contact with a mating surface on one of the soft rings.

B65-10348
STANDOFF TOOL SPEEDS PLACEMENT OF FRICTION-FIT ELECTRICAL TERMINALS MOORE, D. J. SKIFSTROM, W. W. /SPACE TECHNOL. LABS./ NOV. 1965
W00-029

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 anvil.

B65-10351 HYDRAULIC DRIVE SYSTEM PREVENTS BACKLASH ACORD, J. D. NOV. 1965 JPL-371

Hydraulic drive system uses a second drive motor operating at reduced torque. This exerts a relative braking action which eliminates the normal gear train backlash that is intolerable when driving certain heavy loads.

B65-10358
FASTENER DISTRIBUTES STRESS EVENLY FROM SANDWICH-PANEL-HUNG ITEMS
SHAPIRO, J. /N. AM. AVIATION/ NOV. 1965
MSC-236

Items are attached externally to cellular-core sandwich panels 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. PADILLA, V. E. SCHOPPMAN, R. A. MCDONNELL AIRCRAFT CORP./ 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

FLEXIBLE PLASTIC RING ASSEMBLY MAKES DURABLE SHAFT SEAL INNOVATOR NOT GIVEN /N. AM. AVIATION/ DEC. 1965

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
INNOVATOR NOT GIVEN /AVCO CORP./ DEC. 1965
LFW15-212

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 HOVEMENT
KUHN, R. F., JR. /N. AM. AVIATION/ DEC. 1965
W00-102

J-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. HEADLEY, R. JONES, D. D.
/MCDONNELL AIRCRAFT CORP./ DEC. 1965
MSC-238

Portable tool cleans and polishes the external surfaces of tubes and pipes without contaminating the interior areas with loose particles. The tool is driven by an electric drill and is connected to a vacuum source that removes debris resulting from the cleaning and polishing action.

B65-10378
REINFORCEMENT CORE FACILITATES O-RING
INSTALLATION
INNOVATOR NOT GIVEN /N. AM. AVIATION/ DEC. 1965
WOD-228

Reinforcement core holds 0-ring in place within a structure while adjacent parts are being assembled. The core in the 0-ring adds circumferential rigidity to the 0-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
MAYO, J. W. 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 HAERTHER, L. W. ZIMMERMAN, P. A. /COLLINS RADIO CO./ DEC. 1965 MSC-244

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. N. /DOUGLAS AIRCRAFT CO./ 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, 0. J. 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
INNOVATOR NOT GIVEN /AUTO-CONTROLS LABS./ DEC.
1965
M-FS-394

Thin 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 THIN DIAPHRAGM
INNOVATOR NOT GIVEN /HONEYWELL/ DEC. 1965
JPL-SC-135

Die and punch set forms convolutions in thin 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.

B65-10394
CENTRIFUGAL DEVICE SEPARATES LIQUID FROM GAS
HANDLEWICH, R. M. STROUP, K. E. /UNITED
AIRCRAFT CORP./ DEC. 1965
MSC-282

Liquid-to-gas ratio is reduced from maximum efficiency of jet engine fuel by a centrifugal separator. The amount of liquid removed from the fuel is controlled by the separator-screen mesh size and its rotational speed.

B65-10401
PHOTOSENSORS USED TO MAINTAIN WELDING
ELECTRODE-TO-JOINT ALIGNMENT
BOWEN, J. B. /N. AM. AVIATION/ DEC. 1965

Photosensors 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 CONTAINER AGAINST DIAPHRAGM TYPE LOADING ENGLEHART, R. C., JR. /N. AM. AVIATION/ DEC. 1965 M-FS-476

FS-476
Lightweight, removable, sealed joint access door for a spherical or semispherical 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.

Issue 3

05

# 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., 865-10148, is located under and to the right of the title and is followed by a two-digit number, e.g., 05, which designated the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and is followed by a two-digit number, e.g., 05, which designates the state of the title and the nates the subject category in which the entire entry can be found.

| A   |               |    |
|---|---------------|----|
| ABSORBER  | ••            |    |
| Kinetic-energy absorber employs to force between mating cylinders | rictional     |    |
| LEWIS-75  | B63-10442     | 0  |
| ABSORPTION  |               |    |
| Bidirectional torque filter elim                                  | inates        |    |
| backlash  | 205 101/0     |    |
| GSFC-335  | B65-10148     | 0: |
| Removable well in reaction flask                                  | facilitates   |    |
| carbon dioxide collection   |               |    |
| ARC-47  | B65-10316     | 0: |
| ACCELERATION  |               |    |
| Low-cost tape system measures ve                                  | locity of     |    |
| acceleration  | - · · •       |    |
| GSFC-85   | B63-10512     | 0  |
| ACCELEROMETER   |               |    |
| Crystal measures short-term, lar                                  | no-magnitude  |    |
| forces  | ye mayniriade |    |
| JPL-77  | B65-10187     | 0  |
| ata da danta da da  |               |    |
| Simple device produces accelerome<br>calibration pulse            | eter          |    |
| M-FS-363  | B65-10269     | 0  |
|   |               |    |
| Miniature servo accelerometer is                                  | force-        |    |
| balanced  |               | _  |
| JPL-155   | B65-10340     | 0  |
| ACCUMULATOR   |               |    |
| High-pressure regulating system                                   | prevents      |    |
| pressure surges   |               |    |
| JPL-231   | B63-10170     | 0  |
| Nonresonant support facilitates                                   | vibration     |    |
| testing of structures   |               |    |
| M-FS-224  | B65-10039     | 0  |
| ACETYLENE   |               |    |
| Miniature oxygen-hydrogen cutting                                 | . tomah       |    |
| constructed from hypodermic ne                                    |               |    |
| JPL-545   | B63-10517     | 0  |
|   |               |    |
| ACOUSTIC GENERATOR  |               |    |
| Device detects unbonded areas in<br>laminates                     | plastic       |    |
| WDD-206   | B65-10380     | 0  |
|   |               |    |

| Stepping switch with simple actuator pr                   | ovides           |     |
|---|------------------|-----|
| many contacts in small space                              |                  |     |
| JPL-122 B63   | -10116 U         | 1   |
| Three-position rocker switch actuator h                   | as               |     |
| positive centering MSC-261 B65                            | -10376 0         | 1   |
|   |                  |     |
| ADDITIVE Quick-hardening problems are eliminated          | with             |     |
| spray gun modification which mixes re                     | sin and          |     |
| accelerator liquids during applicatio<br>LANGLEY-6A B63   |                  | 3   |
|   |                  |     |
| ADHESIVE Screening technique makes reliable bond          | at               |     |
| room temperature  |                  |     |
| M-FS-227 B65  | -10004 0         | 3   |
| Improved conductive paste secures biome                   | dical            |     |
| electrodes<br>MSC-107 B65                                 | -10015 0         | 3   |
| Adhesive for vacuum environments resist                   | a shash          |     |
| and vibration   | S SHOCK          |     |
| MSC-56 B65  | -10016 0         | 3   |
| Peel resistance of adhesive bonds accur                   | ately            |     |
| measured<br>GSFC-320 B65                                  | i-10173 0        | 3   |
|   |                  | _   |
| Electronic modules easily separated fro                   | m heat           |     |
|   | 5-10186 <b>0</b> | 2   |
| Fastener distributes stress evenly from                   | ,                |     |
| sandwich-panel-hung items                                 |                  | . = |
| MSC-236 B65   | 5-10358 <b>0</b> | 15  |
| Adhesive-backed terminal board eliminat                   | es               |     |
| mounting screws MSC-173 B65                               | 5-10396 <b>0</b> | 1   |
| AERODYNAMICS  |                  |     |
| Averaging probe reduces static-pressure                   | •                |     |
| sensing errors  |                  | ) 5 |
|   | )-10114 U        |     |
| AIR Rapid helium-air analyzer can measure o               | than             |     |
| binary gas mixtures                                       |                  |     |
| LANGLEY-16 B63  | 3-10557 0        | 3   |
| Device induces lungs to maintain known                    |                  |     |
| constant pressure<br>MSC-50 864                           | -10108 0         | 4   |
|   |                  | _   |
| Pneumatic power is transmitted through bearing            | air              |     |
|   | -10141 0         | )5  |
| Thermistor connector assembly increases                   |                  |     |
| accuracy of measurements                                  |                  |     |
| LANGLEY-62 B65  | 5-10045 0        | 1   |
| Averaging probe reduces static-pressure                   | :                |     |
| sensing errors LANGLEY-36 B65                             | 5-10114 0        | )5  |
|   |                  |     |
| AIR CONDITIONING  New nut and sleeve improve flared conne | ctions           |     |
|   |                  | 5   |

ACTUATOR

01

| AIR PURIFICATION  Gas diffusion cell removes carbon di                          | ovide from           |    | ture compensation<br>ARC−2   | B63-10003             | 04  |
|---|----------------------|----|--|-----------------------|-----|
| occupied airtight enclosures  | B64-10319            | 03 | ALTIMETER  |                       | - • |
| AIRBORNE EQUIPMENT<br>Frequency offset in linear FM/CW tra                      | nsponder             |    | Frequency offset in linear FM/CW tra<br>eliminates clutter<br>M-FS-249   | nsponder<br>B65-10146 | 01  |
| eliminates clutter  | B65-10146            | 01 | ALUMINUM   |                       |     |
| AIRCRAFT  |                      |    | Chain friction system gives positive ible drive                          | , revers-             |     |
| Device measures fluid drag on test v  | ehicles<br>B65-10195 | 01 | ARC-8  | B63-10009             | 05  |
| Drill bit design assures clean holes  | in                   |    | Helical tube separates nitrogen gas<br>liquid nitrogen                   | from                  |     |
| laminated materials   | B65-10386            | 05 | JPL-398  | B63-10251             | 05  |
|   |                      |    | Portable flooring protects finished                                      | surfaces,             |     |
| AIRCRAFT DETECTION  Frequency offset in linear FM/CW tra eliminates clutter     | nsponder             |    | is easily moved<br>M-FS-15   | 863-10387             | 05  |
|   | B65-10146            | 01 | Built-in templates speed up process accurate models                      | for making            |     |
| AIRCRAFT INSTRUMENT   |                      |    | LANGLEY-23   | B63-10526             | 05  |
| FM/CW system measures aircraft attit<br>M-FS-276                                | ude<br>B65-10290     | 01 | Stringent cleaning technique assures epoxy bond                          |                       |     |
| ALIGNMENT   |                      |    | GSFC-161   | B64-10142             | 03  |
| Design of valve permits sealing even<br>stem is misaligned<br>LEWIS-38          | B63-10341            | 05 | Magnetic field test coils are temper compensated                         | rature                |     |
|   |                      |    | GSFC-294   | B65-10081             | 02  |
| Novel clamps align large rocket case<br>eliminate back-up bars<br>M-FS-1        | B63-10376            | 05 | Galvanic corrosion reduced in aluming fabrications                       | num                   |     |
|   |                      |    | M-FS-272   | B65-10140             | 03  |
| Mirror device aligns machine surface<br>dicular to sight lines<br>WOO-5         | B63-10421            | 92 | Electroless nickel resist used in a etching of aluminum                  | lkali-                |     |
|   |                      |    | GSFC-284   | 865-10162             | 03  |
| Guide for extrusion dies eliminates<br>straightening operation<br>LEWIS-152     | B64-10014            | 05 | Epoxy-resin patterns speed shell-mo<br>aluminum parts                    | lding of              |     |
|   |                      |    | M-FS-303   | B65-10177             | 05  |
| Attachment converts microscope to po<br>autocollimator                          | oint source          |    | Anodization process produces opaque                                      |                       |     |
| JPL-499   | B64-10124            | 05 | reflective coatings on aluminum<br>M-FS-348                              | в65-10336             | 03  |
| Light ray modulation controls optication alignment                              | al system            |    | Electromagnetic hammer removes weld                                      |                       |     |
| GSFC-171  | B65-10211            | 02 | distortions from aluminum tanks<br>M-FS-287                              | B65-10342             | 05  |
| Titanium diaphragm makes excellent  | amplitron            |    | ALUMINUM ALLOY   |                       |     |
| cathode support<br>GSFC-394   | B65-10298            | 01 | Lightweight aluminum casting alloy at cryogenic temperatures             | is useful             |     |
| Photosensors used to maintain weldi<br>electrode-to-joint alignment             | ng                   |    | M-FS-267   | B65-10092             | 03  |
| MSC-243   | B65-10401            | 05 | Aluminum alloys protected against s<br>corroson cracking                 |                       | ۰   |
| ALKALI Composite seal reduces alkaline bat                                      | teru                 |    | M-FS-235   | B65-10172             | 03  |
| leakage   | -                    |    | ALUMINUM CHLORIDE  | _                     |     |
| GSFC-337  | B65-10271            | 01 | Crack detection method is safe in p<br>liquid oxygen<br>M-FS-236         | B65-10107             | 03  |
| Integral coolant channels simply ma   | de by melt-          |    |  | . == <b>=</b> -•      |     |
| out method<br>M-FS-91   | B63-10497            | 05 | ALUMINUM OXIDE  Gate valve with ceramic-coated base at high temperatures | operates              |     |
| Titanium treatment improves brazed MSC-127                                      | joints<br>B65-10153  | 05 | ARC-23   | B63-10562             | 03  |
|   |                      |    | Fabrication method produces high-gr                                      | ade                   |     |
| ALTERNATING CURRENT /AC/ DC to AC converter operates efficie low input voltages | ncy at               |    | alumina crucibles<br>M-FS-216  | B65-10078             | 05  |
| GSFC-130  | B65-10178            | 01 | AMPLIFICATION FACTOR Temperature transducer has high out                 | :put, is              |     |
| Field effect transistor presents hi<br>impedance in AC amplifier                | gh input             |    | time stable<br>GSFC-446  | B65-10362             | 01  |
| JPL-500   | B65-10232            | 01 |  |                       |     |
| High-speed square-wave current limi   | ter                  |    | AMPLIFIER Transfluxor circuit amplifies sensi for computer memories      | ng current            |     |
| operates efficiently<br>JPL-SC-073  | B65-10233            | 01 | JPL-406  | B63-10255             | 01  |
| ALTERNATING CURRENT GENERATOR   |                      |    | Improved variable-reluctance transd                                      | lucer meas-           |     |
| New low-level A-C amplifier provide<br>able noise cancellation and autom        |                      | a- | ures transient pressures LANGLEY-10                                      | B63-10321             | 01  |

| Digital logic elements provide addi-  | tional                |     | Multiaxial analyzer detects low-ene   | rgy                     |    |
|---|-----------------------|-----|---|-------------------------|----|
| functions from analog input<br>MSC-64   | B64-10064             | 01  | electrons<br>GSFC-329   | B65-10213               | 01 |
| Improved insertion-loss tester JPL-358  | B64-10080             | 01  | ANEMOMETER  New anemometer has fast response, m   | easures                 |    |
| Field-effect transistor improves ele  | ectrometer            |     | dynamic pressure directly<br>LANGLEY-28   | B63-10530               | 05 |
| amplifier<br>ARC-36   | B64-10143             | 01  | ANESTHESIOLOGY Test monkeys anesthetized by routin  | e procedure             |    |
| Stepping motor drive circuit designates power drain                                   |                       |     | HQ-18   | B65-10332               | 04 |
| GSFC-198  | B65-10026             | 01  | ANGULAR MOTION System measures angular displacemen  | t without               |    |
| Phase detector circuit synthesizes or reference signal                                |                       |     | contact<br>Langley-46   | B65-10073               | 01 |
| H-FS-247  | B65-10080             | 01  | Universal bellows joint restraint p   | ermits                  |    |
| Traveling-wave tube circuit simplif microwave relay GSFC-299                          | B65-1012 <b>7</b>     | 01  | WOO-102   | B65-10371               | 05 |
| Instrument calibrates low gas-rate  |                       | VI. | ANIMAL STUDY A technique for making animal restr  | a inta                  |    |
| MSC-134   | B65-10137             | 01  | ARC-25  | B63-10564               | 05 |
| Logarithmic amplifier uses field ef:<br>transistors                                   | fect                  |     | ANNULAR PLATE Fastener provides cooling and compe   | nsates for              |    |
| JPL-509   | B65-10145             | 01  | thermal expansion<br>NU-0003  | B65-10038               | 05 |
| AMPLITUDE Device calibrates vibration transduc  | cers at               |     | ANODE   |                         |    |
| amplitudes up to 20 G.<br>M-FS-86   | B63-10572             | 01  | Tantalum cathode improves electron-<br>evaporation of tantalum                                  |                         |    |
| AMPLITUDE MODULATION  |                       |     | JPL-W00-021   | B65-10175               | 03 |
| Solid-state laser transmitter is am modulated   | •                     |     | Titanium diaphragm makes excellent<br>cathode support   |                         |    |
| MSC-121   | B65-10238             | 01  | GSFC-394  | B65-10298               | 01 |
| ANALOG COMPUTER Hybrid computer technique yields rai signal probability distributions |                       |     | Anodization process produces opaque<br>reflective coatings on aluminum<br>M-FS-348              | B65-10336               | 03 |
| ARC-34  | B65-10208             | 01  | ANTENNA   |                         |    |
| ANALOG DATA Digital logic elements provide addit                                      | tional                |     | Polychart contour enables data extr<br>from multiple plotting charts                            | -                       |    |
| functions from analog input MSC-64  | B64-10064             | 01  | M-FS-37   | B64-10406               | 05 |
| Auxiliary circuit enables automatic   | monitoring            |     | Helical coaxial-resonator makes exc<br>RF filter  |                         |    |
| of EKG<br>MSC-106   | B65-10142             | 01  | GSFC-243  | B65-10012               | 01 |
| ANALOG SIMULATION Analog device simulates physiological                               | al                    |     | Oceanborne transponder platform has<br>stability<br>M-FS-171                                    | B65-10035               | 05 |
| waveforms<br>MSC-51   | B64-10109             | 01  | ANTENNA ARRAY  Modified interelement spacing impro  | was Vsai                |    |
| ANALOG-TO-DIGITAL CONVERTER Preumotachometer counts respiration                       | rate of               |     | antenna array<br>LANGLEY-130  | B65-10183               | 01 |
| human subject<br>MSC-92   | B64-10259             | 01  | APERTURE  |                         |    |
| Analog-to-digital converter has inc   |                       |     | Micromachining produces optical ape<br>micron dimensions  |                         |    |
| reliability and reduced power con-<br>GSFC-246  | sumption<br>B65-10194 | 01  | GSFC-206  | B64-10211               | 05 |
| Simple pulse counting circuit compu-<br>of squares                                    | tes sum               |     | ARC GENERATOR  Magnetic field controls carbon arc  MSC-139                                      | tail flame<br>B65-10108 | 01 |
| GSFC-391  | B65-10260             | 01  | ARC HEATING   |                         |    |
| Electronic ohmmeter provides direct output GSFC-363                                   | digital<br>B65-10274  | 01  | Carbon arc ignition improved by sim<br>auxiliary circuit<br>MSC-103                             | B65-10018               | 01 |
| Nonlinear feedback reduces analog-t   |                       | ••  | ARC WELDING   | 200 10010               |    |
| converter error<br>ARC-46   | B65-10277             | 01  | Photosensors used to maintain weldi<br>electrode-to-joint alignment                             | _                       |    |
| Variable word length encoder reduces  | s TV                  |     | MSC-243   | B65-10401               | 05 |
| bandwidth requirements<br>LANGLEY-87  | B65-10345             | 01  | ARITHMETIC AND LOGIC UNIT /ALU/<br>Transfluxor circuit amplifies sensi<br>for computer memories | ng current              |    |
| ANALYZER Pulse height analyzer operates at h  | igh                   |     | JPL-406   | B63-10255               | 01 |
| repetition rates, low power<br>WDD-046  | B65-10041             | 01  | AROMATIC COMPOUND  Irradiation improves properties of aromatic polyester                        | an                      |    |

| LANGLEY-115   | B65-10164             | 03  | Vacuum-type backup bar speeds weld repairs<br>M-FS-12 B63-10384                        | 4 05 |
|---|-----------------------|-----|--|------|
| ARTERY Blood-pressure measuring system giv                                      | es accurate           |     | Mounting for diodes provides efficient heat  |      |
| graphic output<br>MSC-191   | B65-10365             | 01  | sink<br>M-FS-197 864-10283   | 3 01 |
| ATMOSPHERIC PRESSURE Segmented electrode increases opera                        | ıting                 |     | BARIUM SULFIDE<br>Crack detection method is safe in presence of                        | r    |
| pressure of MHD accelerator<br>LANGLEY-95                                       | B65-10356             | 02  | hiquid oxygen<br>M-FS-236 B65-10107  | 7 03 |
| ATMOSPHERIC TURBULENCE Rough surface improves stability of                      | air-                  |     | BATTERY Pressure sensor responds only to shock wave                                    |      |
| sounding balloons<br>M-FS-320   | B65-10326             | 05  | M-FS-238 B65-10184   | 4 01 |
| ATTITUDE INDICATOR  |                       |     | Composite seal reduces alkaline battery<br>leakage                                     |      |
| Hydraulic device provides accurate displacements to microinches                 |                       |     | GSFC-337 B65-10271   | 1 01 |
| MSC-112   | B65-10230             | 05  | BEACON High-intensity flashing beacon powered by                                       |      |
| FM/CW system measures aircraft atti<br>M~FS-276                                 | itude<br>B65-10290    | 01  | mercury cells<br>LANGLEY-80 B65-10361  | 1 01 |
| AUDIO EQUIPMENT  High-gain amplifier has excellent s  and low power consumption | stability             |     | BEAM SWITCHING  Brushless DC motor uses electron beam switching tube as commutator     |      |
| GSFC-272  | B65-10138             | 01  | GSFC-345 B65-10237   | 7 01 |
| AUDIOFREQUENCY Circuit reduces distortion of FM mo                              | odulator<br>865-10152 | 01  | BEARING Device transmits rotary motion through hermet ically sealed wall               | t-   |
| AUTOMATIC CONTROL   | 500 10102             | 01  | JPL-303 B63~10198  | 8 05 |
| New low-level A-C amplifier provide   |                       |     | Gallium useful bearing lubricant in high-  |      |
| able noise cancellation and autor<br>ture compensation                          | _                     |     | vacuum envi.ronment<br>LEWIS-12 B63-1033   | 7 03 |
| ARC-2   | B63-10003             | 04  | Molybdenum disulfide mixtures make effective   |      |
| Level of super-cold liquids automat<br>maintained by levelometer                | · ·                   |     | high-vacuum lubricants<br>M-FS-54 B63-1045   | 3 03 |
| JPL-397   | B63~10250             | 01  | Lead oxide ceramic makes excellent high-   |      |
| Unmanned seismometer levels self, of drift errors                               |                       |     | temperature lubricant<br>LEWIS-144 B64-10116   | 6 03 |
| GSFC-100  | B63-10551             | 01  | Bearing transmits rotary and axial motion  |      |
| AXIAL STRESS  Bearing transmits rotary and axial  LANGLEY-27                    | motion<br>B64-10130   | 05  | LANGLEY-27 B64-10130 Pneumatic power is transmitted through air                        | 0 05 |
| Testing device subjects elastic ma  | terials to            |     | bearing<br>MSC-8 B64-1014:   | 1 05 |
| biaxial deformations<br>JPL-616   | B65-10189             | 03  | Fluid pressure used to test turbopump bearing  |      |
| В   |                       |     | NU-0001 B65-10024  | 4 03 |
| BALANCE   |                       |     | Nonresonant support facilitates vibration testing of structures                        |      |
| System measures unidirectional for<br>excludes extraneous forces                | ces,                  |     | M-FS-224 B65-1003  | 9 05 |
| LEWIS-170   | B65-10154             | 05  | BELLOWS  Device transmits rotary motion through herme                                  | t-   |
| BALL BEARING Ball bearing used in design of rugg                                | aed flow-             |     | ically sealed wall JPL-303 B63-1019  |      |
| meter<br>LEWIS-159  | B64-10170             | 05  | Composite, vacuum-jacketed tubing replaces   |      |
| Miniature bearings lubricated by s  |                       |     | bellows in cryogenic systems LEWIS-67 B63-1036   | 8 05 |
| dispersion method<br>M-FS-202   | B65-10106             | 03  | Filler device for handling hot corrosive   |      |
| Control of component differential   |                       | ••• | materials MSC-85  B64-1016   | 6 03 |
| increases bearing life LEWIS-190  |                       | 0.E |  |      |
| BANDWIDTH   | B65-10251             | 05  | Fastener provides cooling and compensates for<br>thermal expansion<br>NU-0003 B65-1003 |      |
| Bandwidth switching is transient-f<br>loss of loop lock                         |                       |     | Mouthpiece adapter for pipettes protects mou   | th   |
| ₩00-054   | B64-10349             | 01  | from harmful liquids<br>LANGLEY-47 B65-1004  | 3 03 |
| Variable word length encoder reduc<br>bandwidth requirements<br>LANGLEY-87      | es TV<br>B65-10345    | 01  | Metal bellows custom-fabricated from tubing<br>LEWIS-192 B65-1015                      | 0 05 |
| BAR   | 200 10040             | VI. |  |      |
| Novel clamps align large rocket ca<br>eliminate back-up bars                    |                       |     | Lightweight hinged bellows restraint has<br>high load capacity<br>WOO-151 B65-1034     | 1 03 |
| M-FS-1  | B63-10376             | 0.5 |  |      |

| Universal bellows joint restraint pagular and offset movement        | permits                  |     | from harmful liquids<br>LANGLEY-47  | B65-10043            | 03         |
|--|--------------------------|-----|---|----------------------|------------|
| WOC-102  | B65-10371                | 05  |   |                      | Ų3         |
| BENDING  |                          |     | Photoelectric sensor output control<br>eyeball movements                    | led by               |            |
| Handtool bends component leads accu<br>H-FS-308                      | urately<br>B65-10181     | 05  | M-FS-274  | B65-10079            | 01         |
| BENDING FATIGUE  Machine tests crease durability of                  |                          |     | Simulator produces physiological wa<br>MSC-94                               | veforms<br>B65-10091 | 01         |
| materials  |                          |     | Tiny biomedical amplifier combines  | high                 |            |
| JPL-604  | B64~10178                | 05  | performance, low power drain<br>ARC-41                                      | B65-10203            | 01         |
| BENDING MOMENT  Metal-bending brake facilitates lig                  | ghtweight.               |     | Rugged pressed disk electrode has l   | ow contact           |            |
| close-tolerance fabrication ARC-29                                   | B64~10069                | 05  | potential<br>MSC-158  | B65-10320            | 01         |
| BERYLLIUM OXIDE  |                          |     | Direct force-measuring transducer u   | sed in               |            |
| Indium foil with beryllia washer in<br>transistor heat dissipation   | mproves                  |     | blood pressure research<br>ARC-53   | B65-10325            | 01         |
| GSFC-42  | B63-10033                | 01  | BISMUTH OXIDE   | 200 10020            | V-         |
| Carbon-arc rod holder has long life                                  | e, reduces               |     | IR-transmission glasses formed from   | oxides of            |            |
| arc splatter<br>MSC-144  | B65~10095                | 03  | bismuth and tellurium<br>M-FS-279   | B65-10190            | 03         |
| BILLET Rapid billet loader aids extrusion                            | of refrac-               |     | BLACK BODY RADIATION Reference black body is compact, co                    | nvenient to          |            |
| tory metals<br>LEWIS-50  | B63-10354                | 05  | use<br>ARC-3  | B63-10004            | 03         |
| BINARY CODE  |                          |     | BLADDER   |                      |            |
| Frequency divider is free of spurio<br>GSFC-308                      | ous outputs<br>B65-10334 | 01  | Inflatable bladder provides accurat calibration of pressure switch M-FS-367 | e<br>#65-10279       | 01         |
| BINARY DATA  |                          |     |   | 505-10279            | 01         |
| Logic redundancy improves digital s<br>reliability                   |                          |     | BLADE Blade valve isolates compartment in                                   | pipe,                |            |
| JPL-SC-069   | B65-10025                | 01  | opens to allow free flow<br>JPL-585   | B64-10188            | 05         |
| Frequency discriminator with binary eliminates tuned circuits        | y output                 |     | BLOOD PRESSURE  |                      |            |
| H-FS-376   | B65-10349                | 01  | Direct force-measuring transducer u<br>blood pressure research              | sed in               |            |
| Binary counter accumulates time by                                   |                          |     | ARC-53  | B65-10325            | 01         |
| complementary preset<br>HSC-242                                      | B65-10399                | 01  | Blood-pressure measuring system giv   | es accurate          |            |
| BINARY MIXTURE   |                          |     | graphic output<br>MSC-191   | B65-10365            | 01         |
| Rapid helium-air analyzer can meas:<br>binary gas mixtures           | ure other                |     | BLOVER  |                      |            |
| LANGLEY-16   | B63-10557                | 03  | Composite, vacuum-jacketed tubing r<br>bellows in cryogenic systems         | eplaces              |            |
| BINARY SUMMATOR  |                          |     | LEWIS-67  | B63-10368            | 05         |
| Simple circuit performs binary addination                            |                          |     | BODY OF REVOLUTION  |                      |            |
| GSFC-399   | B65-10355                | 01  | Averaging probe reduces static-pres<br>sensing errors                       | sure                 |            |
| Binary counter uses fluid logic ele<br>M-FS-323                      | ements<br>B65-10377      | 01  | LANGLEY-36  | B65-10114            | 05         |
| BIOINSTRUMENTATION   |                          |     | BOLOMETER  Vedge immersed thermistor bolometer                              | me a til Pe c        |            |
| New low-level A-C amplifier provide able noise cancellation and auto |                          |     | infrared radiation<br>GSFC-443  | B65-10330            | 02         |
| ture compensation  | •                        |     |   | pos-10550            | UL         |
| ARC-2 Improved electrode gives high-qual:                            | B63-10003                | 04  | BONDING  New method forms bond line free of  LANGLEY-20                     | voids<br>B63-10558   | <b>0</b> 5 |
| biological recordings<br>MSC-17                                      | B64-10025                | 04  | Elastomers bonded to metal surfaces   | seai                 |            |
| Device induces lungs to maintain k                                   |                          |     | electrochemical cells<br>GSFC-168   | B64-10113            | 03         |
| constant pressure<br>MSC-50  | B64-10108                | 04  | Screening technique makes reliable  | bond at              |            |
| Subminiature biotelemetry unit per                                   | mits remote              |     | room temperature<br>M-FS-227  | B65-10004            | 03         |
| physiological investigations<br>ARC-39                               | B64-10171                | 01  | Thermocompression bonding produces  | efficient            |            |
| Inexpensive, stable circuit measure                                  | es heart                 |     | surface-barrier diode<br>JPL-SC-066   | B65-10007            | 05         |
| rate<br>MSC-95   | B65-10010                | 01  | Thermistor connector assembly incre   |                      |            |
|  |                          | V-2 | accuracy of measurements<br>LANGLEY-62                                      | B65-10045            | 01         |
| Improved conductive paste secures ( electrodes                       |                          | 0.7 |   |                      | V.1        |
| MSC-107  | B65-10015                | 03  | Selenium bond decreases On resistan<br>light-activated switch               |                      | 0.3        |
| Mouthpiece adapter for pinettes pro                                  | precis mouth             |     | JPL-SC-101  | B65-10324            | 01         |

| BOOLEAN ALGEBRA Veitch diagram plotter simplifies                                | boolean                  |    | С   |    |
|--|--------------------------|----|---|----|
| functions<br>JPL-385   | B63-10241                | 05 | CALIBRATION  Variable light source with a million-to-one                                    |    |
| BOOM Apparatus of small size can be ex   | tended into              |    | intensity ratio JPL-W00-008 B63-10424   | 03 |
| long, rigid boom<br>JPL-305  | B63-10200                | 05 | Fluid-pressure meter can be calibrated without  |    |
| Metal strip forms 21 foot boom, recompact storage                                | olls up for              |    | removal from flow line<br>M-FS-98 B63-10502   | 05 |
| GSFC-151   | B64-10011                | 05 | Device calibrates vibration transducers at amplitudes up to 20 G.                           |    |
| Scoop attachment makes helicopter<br>easier and safer                            | recoveries               |    | M-FS-86 B63-10572   | 01 |
| MSC-130  | B65-10229                | 05 | Attachment converts microscope to point source autocollimator                               |    |
| BORON CARBIDE  Boron carbide whiskers produced b                                 | y vapor                  |    | JPL-499 B64-10124   | 05 |
| deposition<br>HQ-24  | B65-10261                | 03 | Raster linearity of video cameras calibrated<br>with precision tester<br>GSFC-200 B64-10209 | 01 |
| BORON NITRIDE  |                          |    |   | 41 |
| Boron nitride housing cools trans<br>WOO-079                                     | B65-10289                | 01 | Gage measures electrical connector pin<br>retention force<br>JPL-SC-071 B65-10034           | 03 |
| BRAKE Frictional wedge shock mount is i  | nexpensive,              |    | Metal diaphragm used to calibrate miniature   |    |
| has good damping characteristic<br>JPL-IT-1001                                   | 863-10289                | 05 | transducers<br>M-FS-207 B65-10059   | 01 |
| Metal-bending brake facilitates l  | ightweight,              |    | Oil-damped mercury pool makes precise   |    |
| close-tolerance fabrication<br>ARC-29  | B64-10069                | 05 | optical alignment tool GSFC-353 B65-10253   | 02 |
| Compressed gas system operates se<br>brakes during winching operatio<br>JPL-0036 |                          | 05 | Simple device produces accelerometer<br>calibration pulse<br>M-FS-363 B65-10269             | 01 |
| Air brake-dynamometer accurately   | measures                 |    | Inflatable bladder provides accurate  |    |
| torque<br>LEWIS-163  | B65-10312                | 05 | calibration of pressure switch<br>M-FS-367 B65-10279  | 01 |
| Hydraulic drive system prevents b<br>JPL-371                                     | acklash<br>865-10351     | 05 | Volumetric system calibrates meters for large flow rates                                    |    |
| BRAZING  |                          |    | W00-130 B65-10323   | 05 |
| New alloy brazes titanium to stai<br>MSC-102                                     | nless steel<br>B65-10060 | 05 | Noncontacting vibration transducer has<br>constant sensitivity<br>LANGLEY-99 B65-10392      | 01 |
| Titanium treatment improves braze<br>MSC-127                                     | d joints<br>B65-10153    | 05 | CALIBRATOR  |    |
| Refractory metals welded or braze tungsten inert gas equipment                   | d with                   |    | Explosives actuate nonmagnetic indexing device<br>GSFC-237 B65-10017                        | 05 |
| LEWIS-219  | B65-10319                | 05 | Instrument calibrates low gas-rate flowmeters<br>MSC-134 B65-10137                          | 01 |
| Inert-gas welding and brazing enc<br>fabricated from sheet plastic<br>LEWIS-220  | B65-10338                | 05 | CALORIMETER Probe measures characteristics of hot gas                                       |    |
| Brazing method produces solid-sol  | ution bond               |    | stream<br>M-FS-240 B65-10133  | 02 |
| between refractory metals<br>LEWIS-212   | B65-10370                | 05 | Servo calorimeter measures material heating   | •  |
| Tungsten wire and tubing joined b  | ov nickel                |    | rate<br>NU-0024 865-10247   | 01 |
| brazing<br>M-FS-394  | B65-10391                | 05 | CAMERA  | •  |
| New brazing alloy eliminates meta  |                          | 00 | System selects framing rate for spectrograph camera   |    |
| cracking<br>WDO-249  | B65-10397                | 03 | LANGLEY-55 B65-10086  | 01 |
| BRIDGE   |                          | •  | Planetary camera control improves microfiche production                                     |    |
| Electronic modules easily separat<br>sink  | ted from heat            |    | HQ-1 B65-10313  | 01 |
| MSC-142 BUBBLE   | 865-10186                | 02 | Modified procedure speeds camera copy layout for offset printing                            | _  |
| Instrument calibrates low gas-rat  |                          |    | GSFC-424 B65-10373  | 02 |
| MSC-134<br>BUOY  | B65-10137                | 01 | CAMERA SHUTTER Electromechanically operated camera shutter provides uniform exposure        |    |
| Oceanborne transponder platform h  | nas good                 |    | JPL-357 B63-10227   | 01 |
| stability<br>M-FS-171  | B65-10035                | 05 | Camera shutter is actuated by electric signal<br>ARC-20 B63-10560                           | 0: |

| CAPACITANCE  |                         |    | CASE   |                 |    |
|--|-------------------------|----|--|-----------------|----|
| Thin-film resistors used in functio<br>electronic blocks<br>GSFC-380 | nal<br>B65-10305        | 01 | Compact cartridge drives coded tape<br>constant readout speed<br>JPL-472 | at<br>B64-10222 | 01 |
| CAPACITOR  |                         |    | CASTING  |                 |    |
| Improved sensor counts micrometeoro penetrations                     |                         |    | Refractory ceramic has wide usage,<br>fabrication cost                   | l ow            |    |
| LEWIS-76   | B63-10443               | 01 | M-FS-67  | B63-10481       | 03 |
| Circuit switches latching relay in                                   | response to             |    | Plastic molds reduce cost of encaps                                      | ulating         |    |
| signals of different polarity  | DC7 10500               |    | electric cable connectors  | •               |    |
| WQD-055  | B63-10508               | 01 | M-FS-69  | B63-10568       | 05 |
| Highly efficient square-wave oscill                                  | ator oper-              |    | Pressure molding of powdered materi                                      | als             |    |
| ator at high power levels<br>GSFC-112                                | B63-10554               | 01 | improved by rubber mold insert   | B64-10270       | 03 |
| 051 0 112  | DOD 10004               | •• | WOO-100  | B04-10270       | UJ |
| Thermistor connector assembly incre accuracy of measurements         | ases                    |    | Lightweight aluminum casting alloy                                       | is useful       |    |
| LANGLEY-62   | B65-10045               | 01 | at cryogenic temperatures<br>M-FS-267                                    | B65-10092       | 03 |
|  |                         |    |  |                 |    |
| Microparticle impact sensor measure directly                         | s energy                |    | Epoxy-resin patterns speed shell-mo<br>aluminum parts                    | iding of        |    |
| GSFC-252   | B65-10048               | 01 | M-FS-303   | B65-10177       | 05 |
| Digital-output cardiotachometer mea                                  | sures ranid             |    | CATALYST   |                 |    |
| changes in heartbeat rate  | -<br>-                  |    | Compact assembly generates plastic :                                     | foam,           |    |
| MSC-133  | B65-10143               | 01 | inflates flotation bag<br>LANGLEY-96                                     | B65-10090       | 05 |
| Circuit reduces distortion of FM mo                                  | dulator                 |    | LANGLEI-90   | P09-10090       | UĐ |
| GSFC-257   | B65-10152               | 01 | Plated nickel wire mesh makes super                                      | i or            |    |
| Electrostatically driven dynamic ca                                  | pacitor                 |    | catalyst bed<br>MSC-216  | B65-10321       | 03 |
| employs capacitive feedback  | -                       |    |  |                 |    |
| JPL-771  | B65-10293               | 01 | CATALYTIC ACTIVITY  Cryopumping of hydrogen in vacuum c                  | hambers is      |    |
| Coaxial capacitor used to determine                                  | fluid                   |    | aided by catalytic oxidation of h  | ydrogen         |    |
| density<br>LEWIS-232   | B65-10296               | 02 | LEWIS-15   | B63-10340       | 05 |
| DEWIO DOZ  | DOD TUESO               | 02 | CATHODE  |                 |    |
| Compact SCR trigger circuit for ign                                  | itron                   |    | Wire winding increases lifetime of                                       | oxide-          |    |
| switch operates efficiently<br>M-FS-371                              | B65-10347               | 01 | coated cathodes<br>LEWIS-154   | B65-10032       | 03 |
|  |                         |    |  |                 |    |
| Three-dimensional wire-mesh capacit measures fluid density           | or system               |    | Tantalum cathode improves electron— evaporation of tantalum              | beam            |    |
| W00-194  | B65-10379               | 01 | JPL-W00-021  | B65-10175       | 03 |
| CARBON ARC   |                         |    | Titanium diaphragm makes excellent                                       | amplitron       |    |
| Carbon arc ignition improved by sim                                  | ple                     |    | cathode support  | ump11 tron      |    |
| auxiliary circuit<br>MSC-103   | B65-10018               | 01 | GSFC-394   | B65-10298       | 01 |
| N3C-103  | B03-10010               | 01 | CAVITY   |                 |    |
| Carbon-arc rod holder has long life                                  | , reduces               |    | Sensitive low-pressure relief valve                                      | has             |    |
| arc splatter<br>MSC-144  | B65-10095               | 03 | positive seating against leakage<br>WOO-041                              | B64-10278       | 05 |
| w  |                         |    |  |                 |    |
| Magnetic field controls carbon arc<br>MSC-139                        | tail flame<br>B65-10108 | 01 | CENTRIFUGAL FORCE Helical tube separates nitrogen gas                    | from            |    |
|  |                         |    | liquid nitrogen  |                 |    |
| CARBON DIOXIDE  Gas diffusion cell removes carbon d                  | ioxide from             |    | JPL-398  | B63-10251       | 05 |
| occupied airtight enclosures   |                         |    | Centrifugal device separates liquid                                      | from gas        |    |
| MSC-118  | B64-10319               | 03 | MSC-282  | B65-10394       | 05 |
| CARBON DIOXIDE CONCENTRATION   |                         |    | CERAMAL PROTECTIVE COATING   |                 |    |
| Test strips detect different CO2 concentrations in closed comparts   |                         |    | Air-cured ceramic coating insulates<br>high heat fluxes                  | against         |    |
| MSC-210  | B65-10390               | 03 | M-FS-150   | 865-10357       | 03 |
| CARBON DIOXIDE REMOVAL   |                         |    | AFRANZA ROMPZNA  |                 |    |
| Removable well in reaction flask fa                                  | cilitates               |    | CERAMIC BONDING  Mounting for diodes provides efficient                  | ent heat        |    |
| carbon dioxide collection  |                         |    | sink   |                 |    |
| ARC-47   | B65-10316               | 03 | M-FS-197   | B64-10283       | 01 |
| CARDIOGRAPHY   | _                       |    | CERAMIC COATING  | _               |    |
| Digital cardiometer computes and di<br>heartbeat rate                | splays                  |    | Gate valve with ceramic-coated base at high temperatures                 | operates        |    |
| MSC-93   | B64-10258               | 01 | ARC-23   | B63-10562       | 03 |
| Digital-output cardiotachometer mea                                  | qurpe manid             |    | Ceramic-coated boat is chemically i                                      | nert.           |    |
| changes in heartbeat rate  | •                       |    | provides good heat transfer  | -               |    |
| HSC-133  | B65-10143               | 01 | LANGLEY-90   | B65-10063       | 05 |
| CARRIER SYSTEM   |                         |    | CERAMICS   |                 |    |
| Phase shift frequency synthesizer i efficient, small in size         | 5                       |    | Refractory coramic has wide usage,                                       | low             |    |
| M-FS-250   | B65-10169               | 01 | fabrication cost<br>M-FS-67  | B63-10481       | 03 |

| Lead oxide ceramic makes excellent                                     | high-           |    | Computer circuit will fit on single   | silicon     |     |
|--|-----------------|----|---|-------------|-----|
| temperature lubricant<br>LEWIS-144                                     | B64-10116       | 03 | chip<br>JPL-513   | B63-10514 0 | )1  |
| Fabrication method produces high-gr                                    | rade            |    | Simple circuit provides adjustable v  | voltage     |     |
| alumina crucibles<br>M-FS-216  | B65-10078       | 05 | with linear temperature variation<br>JPL-WOO-029                            | B63-10537 0 | 1   |
| Ceramic materials purified by expen                                    | rimental        |    | Transistorized trigger circuit is frontrollable                             | requency-   |     |
| method<br>LEWIS-225  | B65-10270       | 03 | GSFC-111  | B63-10553 0 | 1   |
| CESIUM IODIDE Cesium iodide crystals fused to vac                      | cuum tube       |    | Simple circuit continuously monitors thermocouple sensor                    |             |     |
| faceplates<br>GSFC-67  | B63-10476       | 03 | M-FS-61   | B63-10567 0 | 01  |
| CHANNEL  |                 |    | Circuit controls transients in SCR   GSFC-120                               |             | 01  |
| Integral coolant channels simply ma<br>out method                      | ade by melt-    |    | Monostable circuit with tunnel diode  | e has fast  |     |
| M-FS-91  | B63-10497       | 05 | recovery<br>GSFC-132  |             | 01  |
| Logic redundancy improves digital                                      | system          |    | Tonner-tuno-gongitius notusek deius   | a satable   |     |
| reliability<br>JPL-SC-069  | B65-10025       | 01 | Temperature-sensitive network drives<br>multivibrator<br>GSFC-137           |             | 01  |
| Pulsed plasma accelerator operates                                     |                 |    |   |             | -   |
| repetitively without complex con<br>LANGLEY-48                         | B65-10062       | 01 | Circuit reliability boosted by sold of disconnect plugs to sockets JPL-447  |             | 01  |
| Spiraled channels improve heat tra                                     | nsfer between   | ì  |   |             | , . |
| fluids<br>JPL-694  | B65-10291       | 02 | Low-power transistorized circuit prostaircase waveform                      |             |     |
| CHART  |                 |    | GSFC-48   | B64-10007 ( | 01  |
| Polychart contour enables data ext from multiple plotting charts       | rapolation      |    | Efficient circuit triggers high-cur voltage pulses                          | · -         |     |
| M-FS-37  | B64-10406       | 05 | MSC-14  | B64-10024 ( | 01  |
| CHASSIS  |                 |    | Continuity tester screens out fault   | y socket    |     |
| Modular chassis simplifies packagi<br>interconnecting of circuit board |                 |    | connections<br>JPL-596  | B64-10065 ( | 01  |
| JPL-236A   | B63-10174       | 01 | Ring counter may be advanced or ret   | anded by    |     |
| Rack mount device quickly inserts                                      | or extracts     |    | command signal GSFC-101   |             | 01  |
| chassis units<br>MSC-244   | B65-10385       | 05 |   |             | •   |
| Insulator-holder protects transist                                     | ors in dense    |    | Temperature-compensation circuit st performance of vidicons                 |             | 01  |
| electronic assemblies<br>MSC-214                                       | B65-10389       | 01 | JPL-486  Circuit converts AM signals to FM f                                |             | 01  |
| CHEMICAL ANALYSIS Removable well in reaction flask f                   | acilitates      |    | magnetic recording<br>GSFC-227  |             | 01  |
| carbon dioxide collection<br>ARC-47                                    | B65-10316       | 03 | Tunnel-diode circuit features zero-   | level       |     |
| Instrument performs nondestructive                                     |                 |    | clipping<br>GSFC-241  | B65-10002   | 01  |
| analysis, data can be telemetere<br>JPL-SC-078                         | ed<br>B65-10317 | 01 | Screening technique makes reliable  | bond at     |     |
| CHEMICAL COMPOUND  |                 |    | room temperature<br>M-FS-227  | B65-10004   | 03  |
| Crack detection method is safe in<br>liquid oxygen                     | presence of     |    | Circuit improvement produces monost   | able        |     |
| M-FS-236   | B65-10107       | 03 | multivibrator with load-carrying GSFC-34A                                   | capability  | 01  |
| CHEMICAL MILLING  Electroless nickel resist used in                    | alkali-         |    | Zener diode function generator requ   | ires no     |     |
| etching of aluminum GSFC-284   | B65-10162       | 03 | external reference voltage  JPL-33  |             | 01  |
| Reusable neoprene jacket protects                                      |                 |    | Use of tear ring permits repair of  | sealed      |     |
| chemical milling<br>WOG-071  | B65-10179       | 03 | module circuitry<br>M-FS-210  | B65-10014   | 05  |
| CHEMILUMINESCENCE  |                 |    | Carbon arc ignition improved by sim   | nple        |     |
| Porous glass makes effective subst                                     | trate for       |    | auxiliary circuit<br>MSC-103  | •           | 01  |
| GSFC-388   | B65-10364       | 03 | Stepping motor drive circuit design   | ed for low  |     |
| CIRCUIT<br>Circuit switches latching relay in                          | n response to   |    | power drain<br>GSFC-198   |             | 01  |
| signals of different polarity<br>WDD-055                               | -               |    |   |             |     |
| Frequency-shift-keyer circuit imp                                      | B63-10508       | 01 | Ionization vacuum gage starts quick unaffected by spurious currents JPL-304 |             | 02  |
| conversion for radio transmission                                      | on              |    |   |             |     |
| GSFC-80  | B63-10511       | 01 | Pulse generator permits nondestruct<br>testing of component breakdown vo    |             |     |

| MSC-122  | B65-10054               | 01        | H-FS-245  | B65-10209        | 01 |
|--|-------------------------|-----------|---|------------------|----|
| FM oscillator uses tetrode transisto<br>JPL-82                 | B65-10055               | 01        | Voltage controlled oscillator is eas<br>aligned, has low phase noise<br>JPL-510 | ily<br>B65-10223 | 01 |
| Vibrating-membrane electrometer has conversion gain            |                         |           | Simple BCD circuit accurately counts  | to 24            | 01 |
| ARC-38   | B65-10056               | 01        | GSFC-317  | B65-10225        | 01 |
| Feedback oscillator functions as lo<br>pulse stretcher         |                         |           | Simple circuit produces high-speed,<br>duration pulses                          |                  |    |
| GSFC-261   | B65-10069               | 01        | GSFC-285  | B65-10228        | 01 |
| Synchronized pulse generator needs power                       |                         |           | Electrometer has automatic zero bias<br>GSFC-350                                | B65-10242        | 01 |
| GSFC-274   | B65-10072               | 01        | Electrometer preamplifier has drift   | correction       |    |
| Light-sensitive potentiometer measure product of two variables | B65-10076               | 01        | feedback<br>JPL-SC-074  | 865-10267        | 01 |
| GSFC-240  Phase detector circuit synthesizes                   |                         | <b>V1</b> | Electronic ohmmeter provides direct output                                      | digital          |    |
| reference signal M-FS-247                                      | B65-10080               | 01        | GSFC-363  | B65-10274        | 01 |
| System selects framing rate for spe                            |                         | <b>V1</b> | Added diodes increase output of bala mixer circuit                              | inced            |    |
| camera LANGLEY-55  | B65-10086               | 01        | GSFC-354  | B65-10276        | 01 |
| Simple circuit functions as frequence                          |                         |           | Compact SCR trigger circuit for igni switch operates efficiently                | tron             |    |
| discriminator for PFM signals<br>GSFC-267                      | B65-10102               | 01        | M-FS-371  | B65-10347        | 01 |
| Unijunction frequency divider is fro                           |                         |           | Multiphase clock-pulse generator use<br>simplified circuitry                    | :5               |    |
| backward loading<br>JPL-WOO-010                                | B65-10112               | 01        | M-FS-297  | B65-10353        | 01 |
| Simplified electrometer has excelle                            |                         |           | Adhesive-backed terminal board elimi  | inates           |    |
| operating characteristics<br>JPL-413                           | B65-10125               | 01        | MSC-173   | B65-10396        | 01 |
| Traveling-wave tube circuit simplif                            | ies                     |           | CIRCUIT BOARD  Modular chassis simplifies packaging                             | and              |    |
| microwave relay<br>GSFC-299                                    | B65-10127               | 01        | interconnecting of circuit boards JPL-236A                                      | B63-10174        | 01 |
| Piezoresistive gage tests pin-connec                           | ctor                    |           | Handtool bends component leads accur  |                  |    |
| sockets<br>JPL–675   | B65-10128               | 01        | M-FS-308  | B65-10181        | 05 |
| Simple circuit positions film frame:                           | s in                    |           | Handtool facilitates extraction of a modules                                    | B65-10231        | 05 |
| projector<br>JPL-508   | B65-10132               | 02        | LANGLEY-38 CIRCUIT RELIABILITY  | B65-10231        | 03 |
| Instrument calibrates low gas-rate MSC-134                     | flowmeters<br>B65-10137 | 01        | Logic circuit exhibits optimum perfo<br>LANGLEY-129                             | B65-10193        | 01 |
| High-gain amplifier has excellent s and low power consumption  | tability                |           | CLAMP Novel clamps align large rocket case                                      | 29.              |    |
| GSFC-272   | B65-10138               | 01        | eliminate back-up bars<br>M-FS-1  | B63-10376        | 05 |
| Auxiliary circuit enables automatic of EKG                     | monitoring              |           | Transistorized circuit clamps voltag  | ge with          |    |
| MSC-106  | B65-10142               | 01        | 0.1 percent error<br>GSFC-196   | B65-10118        | 01 |
| Digital-output cardiotachometer mea changes in heartbeat rate  | sures rapid             |           | Self-aligning fixture used in lathe   | chuck jaw        |    |
| MSC-133  | B65-10143               | 01        | refacing<br>FRC-21  | B65-10198        | 05 |
| Rotor position sensor switches curr brushless Dc motors        |                         |           | Electrical cable connector-clamp has  | s smooth         |    |
| GSFC-315   | B65-10151               | 01        | exterior surface<br>MSC-154   | B65-10201        | 05 |
| Circuit reduces distortion of FM mo<br>GSFC-257                | dulator<br>B65-10152    | 01        | Remotely operated clamping tool has   | positive         |    |
| Phase shift frequency synthesizer i efficient, small in size   | s                       |           | grip<br>NU-0020   | B65-10254        | 05 |
| H-FS-250   | B65-10169               | 01        | CLEANING Stringent cleaning technique assure                                    | s reliable       |    |
| Pressure transducer system is force has digital output         | -balanced,              |           | epoxy bond<br>GSFC-161  | B64-10142        | 03 |
| M-FS-154   | B65-10174               | 05        | Portable tool cleans pipes and tubi   |                  |    |
| DC to AC converter operates efficie low input voltages         | ncy at                  |           | MSC-238   | B65-10375        | 05 |
| GSFC-130   | B65-10178               | 01        | CLEAVAGE<br>Electronic modules easily separated                                 | from heat        |    |
| Oscillator circuit measures liquid                             | level in                |           | sink<br>MSC-142   | 865-10186        | 02 |

| CLOCK  |                       |     | COLLECTOR   | . io liekė        |     |
|--|-----------------------|-----|---|-------------------|-----|
| Variable frequency magnetic multivib<br>generates stable square-wave outpu |                       |     | Wide-aperture solar energy collector<br>in weight                                 | is light          |     |
| GSFC-AE-21   | B65-10124             | 01  |   | B65-10046         | 02  |
| Simple BCD circuit accurately counts<br>GSFC-317                           | to 24<br>B65-10225    | 01  | Plastic bags in evacuated chamber ma<br>lightweight gas sampling system<br>FRC-31 | nke<br>B65~10264  | 01  |
| CLOSED LOOP SYSTEM Photoresistance analog multiplier ha                    | as wide               |     | Removable well in reaction flask fac  |                   | 01  |
| range  |                       |     | carbon dioxide collection   |                   |     |
| GSFC-360   | B65-10287             | 01  | ARC-47  | B65-10316         | 03  |
| CLOSURE  |                       |     | COLLOID   |                   |     |
| Valve designed with elastic seat   |                       |     | Magnetic fluid readily controlled in  | zero              |     |
| JPL-442  | B65-10040             | 05  | gravity environment   |                   |     |
| CI UTCU  |                       |     | LEWIS-126   | B65-10335         | 03  |
| CLUTCH Quick-acting clutch disengages idle                                 | drive                 |     | COLORIMETRY   |                   |     |
| motor  |                       |     | Test strips detect different CO2  |                   |     |
| GSFC-143   | B64-10028             | 05  | concentrations in closed compartme<br>MSC-210                                     | ents<br>B65-10390 | 03  |
| COATING  |                       |     | MSC-210   | B03-10390         | 03  |
| Elastomers bonded to metal surfaces  | seal                  |     | COLUMN  |                   |     |
| electrochemical cells  | DC4 10117             | 0.7 | Extendible column can be stowed on d<br>JPL-686                                   | 1rum<br>865-10191 | 05  |
| GSFC-168   | B64-10113             | 03  | JPL-000   | B03-10191         | 0.5 |
| Coating method enables low-temperate                                       | ure                   |     | COMBUSTION  |                   |     |
| brazing of stainless steel   | B65-10250             | 03  | Plastic bags in evacuated chamber ma  | ske               |     |
| NU-0030  | B03-10230             | 03  | lightweight gas sampling system<br>FRC-31   | B65-10264         | 01  |
| Special coatings control temperature                                       | e of                  |     |   |                   |     |
| structures   |                       |     | COMMAND SYSTEM  |                   |     |
| GSFC-444   | B65-10337             | 03  | Remote control electrical switching has 1000-output capability                    | ayatem            |     |
| Pigmented coating resists thermal s  | hock                  |     | M-FS-380  | B65-10318         | 01  |
| JPL-SC-083   | B65-10354             | 03  |   |                   |     |
| Nickel/tin coating protects threade  | A                     |     | COMMUNICATION SYSTEM  |                   |     |
| fasteners in corrosive environmen  |                       |     | Superconductor magnets used for stage traveling-wave maser                        | gger-tuning       |     |
| MSC-253  | B65-10398             | 03  | GSFC-292  | B65-10165         | 01  |
| COAXIAL CABLE  |                       |     |   |                   |     |
| Modified rf coaxial connector ends   | vacuum                |     | Lightweight coaxial cable connector signal loss                                   | reduces           |     |
| chamber wiring problem   |                       |     | JPL-720   | B65-10244         | 01  |
| GSFC-150   | B64-10010             | 01  |   |                   |     |
| Compact coaxial connector for print  | ed circuit            |     | COMMUNICATIONS DEVICE   |                   |     |
| adds reliability   | B64-10016             | 01  | Simple circuit produces high-speed,<br>duration pulses                            | fixed             |     |
| MSC-57   | B04-10010             | 01  | GSFC-285  | 865-10228         | 01  |
| Cutter and stripper reduces coaxial  | cable                 |     |   |                   |     |
| connection time<br>ARC-40  | B65-10094             | 05  | Circuit maintains digital decision at preset level                                | threshold         |     |
| ARC-40   | DOD 10034             | 00  | M-FS-331  | B65-10281         | 01  |
| Lightweight coaxial cable connector  | reduces               |     |   |                   |     |
| signal loss<br>JPL-720   | B65-10244             | 01  | COMPENSATION  |                   |     |
| V 100  |                       |     | Fastener provides cooling and compe-<br>thermal expansion                         | nsates for        |     |
| Boron trifluoride nuclear detector   |                       |     | NU-0003   | B65-10038         | 05  |
| preamplifier uses single-cable co<br>LEWIS-178                             | nnection<br>B65-10255 | 01  |   |                   |     |
| DEW13 170  | 200 10200             | ••  | COMPENSATOR   |                   |     |
| COBALT ALLOY   |                       |     | Detector circuit compensates for vi-  | dicon beam        |     |
| New cobait alloys have high-tempera<br>strength and long life in vacuum    |                       |     | current variations<br>GSFC-310  | B65-10212         | 01  |
| LEWIS-47   | B63-10351             | 03  |   |                   |     |
|  |                       |     | COMPONENT RELIABILITY Improved insertion-loss tester                              |                   |     |
| COIL Improved magnetometer uses toroidal                                   | gating                |     | JPL-358   | B64-10080         | 01  |
| coil   | guring                |     |   |                   |     |
| GSFC-249   | B65-10103             | 01  | Analog-to-digital converter has inc<br>reliability and reduced power con          |                   |     |
| Collapsible truss structure is auto  | matically             |     | GSFC-246  | B65-10194         | 01  |
| expandable   | •                     |     |   |                   |     |
| GSFC-265   | B65-10126             | 05  | Interferometer construction assures<br>parallelism of critical component          |                   |     |
| Collar positions strip stock used t  | o form coil           |     | JPL-704   | B65-10292         | 02  |
| on mandrel   |                       |     |   |                   |     |
| JPL-198  | B65~10130             | 05  | COMPOSITE STRUCTURE  Composite seal reduces alkaline bat                          | terv              |     |
| Spiral heater coils hand-formed wit  | h fixture             |     | leakage   | •                 |     |
| LEWIS-208  | B65-10192             | 05  | GSFC-337  | B65-10271         | 0 1 |
| COLD PRESSING  |                       |     | COMPRESSIBLE FLUID  |                   |     |
| Integral ribs formed in metal panel  | s by cold-            |     | Coaxial capacitor used to determine   | fluid             |     |
| press extrusion  |                       | 0.5 | density   | 065-14206         | 02  |
| M-FS-230   | B65-10141             | 05  | LEWIS-232   | B65-10296         | 0.4 |

| COMPUTATION  |            |    | JPL-447  | B64-10002               | 01  |
|--|------------|----|--|-------------------------|-----|
| Disk calculator indicates legible le<br>size for slide projection      | ttering    |    | Modified rf coaxial connector ends                             | Vacons                  |     |
|  | B65-10339  | 05 | chamber wiring problem GSFC-150                                | B64-10010               | 01  |
| COMPUTER   |            |    | 0  |                         |     |
| Computer determines high-frequency p<br>stability                      | nase       |    | Compact coaxial connector for print adds reliability           | ea circuit              |     |
|  | B63-10555  | 01 | MSC-57   | B64-10016               | 01  |
| Improved wire memory matrix uses ver                                   | y little   |    | Continuity tester screens out fault                            | y socket                |     |
| power<br>JPL-SC-167  | B65-10359  | 01 | connections<br>JPL-596   | B64-10065               | 01  |
| COMPUTER DESIGN  |            |    | Connector seals fluid lines at cryo                            | genic                   |     |
| Modular chassis simplifies packaging interconnecting of circuit boards | and        |    | temperatures and high vacuums<br>GSFC-253                      | ∂64−10327               | 05  |
| JPL-236A   | B63-10174  | 01 | Gage measures electrical connector                             | Din                     |     |
| Veitch diagram plotter simplifies bo                                   | olean      |    | retention force JPL-SC-071                                     | -                       | 0.7 |
| functions<br>JPL-385   | B63-10241  | 05 | JrL-3C-071   | B65-10034               | 03  |
| Transfluxor circuit amplifies sensin                                   | g current  |    | Feed-through has polyterminal featu<br>M-FS-25                 | B65-10057               | 01  |
| for computer memories JPL-406  | B63-10255  | 01 | Cutter and stripper reduces coaxial                            | ashla                   |     |
| Computer circuit will fit on single                                    |            | 01 | connection time ARC-40   | B65-10094               | 05  |
| chip   |            |    | · -  | _                       | •   |
|  | B63-10514  | 01 | New nut and sleeve improve flared c<br>M-FS-194                | onnections<br>865-10180 | 05  |
| New sintering process adjusts magnet of ferrite cores                  | ic value   |    | Improved solderless connector is ea                            | :1                      |     |
|  | B63-10606  | 01 | disconnected JPL-SC-060  | B65-10197               | 01  |
| Molded elastomer provides compact fe                                   | rrite-core |    |  |                         | •   |
| holder, simplifies assembly<br>JPL-584                                 | B64-10084  | 05 | Electrical cable connector-clamp ha<br>exterior surface        |                         |     |
| COMPUTER METHOD  |            |    | MSC-154  | B65-10201               | 05  |
| Computer modification reduces time of                                  | f          |    | Electrical probe ensures reliable c                            | ontact in               |     |
| performing iterative division<br>M-FS-166                              | B65-10005  | 01 | socket<br>M-FS-315   | B65-10215               | 01  |
| Density trace made with computer pri                                   | ntout      |    | Lightweight coaxial cable connector                            | reduces                 |     |
|  | B65-10200  | 01 | signal loss JPL-720  | B65-10244               | 01  |
| Uppercase and lowercase computer pri                                   | ntout      |    |  |                         |     |
| increases readability<br>HQ-12   | B65-10286  | 01 | Thermocouple-to-instrumentation con<br>features quick assembly |                         |     |
| Delayed ripple counter simplifies sq                                   |            |    | NU-0022  | B65-10246               | 05  |
| computation  | dale loot  |    | Indexing device ensures proper mati                            | ing of                  |     |
|  | B65-10343  | 01 | electrical connectors<br>MSC-155                               | B65-10263               | 01  |
| COMPUTER PROGRAM  Computer programs simplify optical s                 | weten      |    | feed-through connector withstands h                            | vi ah                   |     |
| analysis   | , ystem    |    | temperatures in vacuum environmen                              |                         |     |
| GSFC-306   | B65-10093  | 01 | GSFC-442   | B65-10328               | 01  |
| CONDUCTIVITY   |            |    | Keyed plugs and sockets prevent imp                            | roper                   |     |
| Meter accurately measures flow of lo<br>tivity fluids                  | w-conduc-  |    | connections<br>MSC-231   | B65-10381               | 01  |
| JPL-0021   | B63-10280  | 01 | 1100 001   | 200 10001               | •-  |
| CONE   |            |    | Threaded split ring connector separ<br>structural sections     | ates                    |     |
| Lathe attachment used to machine ell                                   | iptical    |    | LANGLEY-145  | B65-10383               | 05  |
| cones<br>MSC—100   | B65-10168  | 05 | Shrinkable sleeve eliminates shield                            | ling gap                |     |
| CONNECTOR  |            |    | in RF cable<br>WOO-207   | B65-10387               | 01  |
| Modular chassis simplifies packaging                                   | and        |    | WUU-207  | B03-10307               | 01  |
| interconnecting of circuit boards  JPL-236A                            | B63-10174  | 01 | CONTACT Improved holder protects crystal du                    | uring high              |     |
| Portable display paneling has wide w                                   | ise. easu  |    | acceleration and impact<br>JPL-463                             | B65-10037               | 05  |
| take down and assembly   |            |    | · ·  |                         | -   |
| ARC-17   | B63-10435  | 05 | CONTACT LEMS Thin transparent films formed from                | powdered                |     |
| Connector for thermocouple leads sav                                   | es costly  |    | glass<br>GSFC-352  | B65-10217               | 03  |
| LANGLEY-26   | B63-10529  | 01 |  | 200 10011               |     |
| Disatic molds moduce and of access                                     | .lating    |    | CONTACT POTENTIAL  Electrometer has automatic zero bia         | e contect               |     |
| Plastic molds reduce cost of encapsu<br>electric cable connectors      | rating     |    | GSFC-350   | B65-10242               | 01  |
| M-FS-69  | B63-10568  | 05 | Bushad marcard arek 1 4 1 7 7                                  |                         |     |
| Circuit reliability boosted by solde                                   | ring pins  |    | Rugged pressed disk electrode has l potential                  | ow contact              |     |
| of disconnect plugs to sockets   |            |    | MSC-158  | B65-10320               | 01  |

| CONTAINER  |      | Inexpensive check valve is installed in                                    |       |
|--|------|--|-------|
| Lightweight magnesium-lithium alloys show promise                        |      | standard AN fittings<br>JPL-2A B65-10222                                   | 05    |
| M-FS-17 B63-10389  | 03   | CONVERTER  | •     |
| Electrically heated diaphragm eliminates use of pyrotechnics             |      | Transistorized converter provides nondissipa-<br>tive regulation           |       |
| MSC-241 B65-10400  | 01   | GSFC-238 B64-10305   | 01    |
| CONTAMINATION  |      | DC to AC converter operates efficiency at                                  |       |
| Magnetic field controls carbon arc tail flame<br>MSC-139 B65-10108       |      | low input voltages<br>GSFC-130 B65-10178                                   | 01    |
|  |      |  | • • • |
| Double gloves reduce contamination of dry box atmosphere                 |      | COOLANT  Integral coolant channels simply made by melt-                    |       |
| LEWIS-211 B65-10117  | 03   | out method   |       |
| CONTINUOUS FUNCTION  |      | M-FS-91 B63-10497  | 05    |
| Ball-and socket joints provide accurate                                  |      | COOLING  |       |
| biaxial gimbal<br>JPL-658 B65-10205                                      | 05   | Cooling method prolongs life of hot-wire transducer                        |       |
| TOWNS WATER AGUA DADAD   |      | LEWIS-41 B63-10344   | 02    |
| CONTINUOUS WAVE /CW/ RADAR FM/CW system measures aircraft attitude       |      | Boron nitride housing cools transistors                                    |       |
| M-FS-276 B65-10290   | 01   | WOD-079 B65-10289  | 01    |
| CONTOUR  |      | COORDINATE SYSTEM  |       |
| Novel shock absorber features varying yield                              |      | Solar-angle sensor has no moving parts JPL-418 B63-10260                   | 02    |
| strengths<br>MSC-63A B64-10138   | 03   | JPL-416 B03-10200  | 02    |
| Noncontacting vibration transducer has                                   |      | COPPER Adherent protective coatings plated on                              |       |
| constant sensitivity   |      | magnesium-lithium alloy  |       |
| LANGLEY-99 B65-10392   | 01   | M-FS-365 B65-10294   | 03    |
| CONTROL DEVICE   |      | COPPER SULFIDE   |       |
| Knob linkage permits one-hand control of<br>several operations           |      | Crack detection method is safe in presence of<br>liquid oxygen             |       |
| MSC-30 B65-10022   | 05   | M-FS-236 B65-10107   | 03    |
| Simple control device senses solar position                              |      | CORROSION PREVENTION   |       |
| JPL-638 B65-10061  | 01   | Carbon-arc rod holder has long life, reduces                               |       |
| Pulsed plasma accelerator operates                                       |      | arc splatter MSC-144 B65-10095   | 03    |
| repetitively without complex controls                                    |      |  | -     |
| LANGLEY-48 B65-10062   | 01   | Galvanic corrosion reduced in aluminum fabrications                        |       |
| Variable frequency magnetic multivibrator                                |      | M-FS-272 B65-10140   | 03    |
| generates stable square-wave output<br>GSFC-AE-21 B65-10124              | 01   | CORROSION RESISTANCE   |       |
|  |      | Removable preheater elements improve oxide                                 |       |
| Zener diode controls switching of large direct currents                  |      | induction furnace JPL-288 B63-10193  | 01    |
| MSC-188 B65-10350  | 01   | Pille device for boddies bed security                                      |       |
| Rack mount device quickly inserts or extracts                            | ı    | Filler device for handling hot corrosive materials                         |       |
| chassis units<br>MSC-244 B65-10385                                       | 05   | MSC-85 B64-10166   | 03    |
|  | , 03 | Solder flux leaves corrosion-resistant                                     |       |
| CONTROL SYSTEM  Bidirectional torque filter eliminates                   |      | coating on metal<br>JPL-611 B64-10206                                      | 03    |
| backlash   |      | ***  |       |
| GSFC-335 B65-10148   | 05   | Wide-angle sensor measures radiant heat energy<br>in corrosive atmospheres | į     |
| Planetary camera control improves microfiche                             |      | M-FS-228 B65-10019   | 0.5   |
| production<br>HQ-1 B65-10313   | 01   | Inexpensive electrical connector is moisture                               |       |
|  |      | and corrosionproof   |       |
| Remote control electrical switching system<br>has 1000-output capability |      | MSC-164 B65-10196  | 01    |
| M-FS-380 B65-10318   | 01   | Nickel/tin coating protects threaded                                       |       |
| CONTROL VALVE  |      | fasteners in corrosive environment MSC-253 B65-10398                       | 03    |
| High-pressure regulating system prevents pressure surges                 |      | CAUNTED  |       |
| JPL-231 B63-10170  | 05   | COUNTER Ring counter may be advanced or retarded by                        |       |
| Flow control valve is independent of pressure                            |      | command signal<br>GSFC-101 B64-10144                                       | 01    |
| drop   |      |  | V.    |
| JPL-W00-039 B65-10121  | l 05 | Novel circuit combines pulse stretcher with NOR gate                       |       |
| Improved fluid control valve extends diaphrag                            | ) m  | GSFC-187 B64-10150   | 0 1   |
| life<br>JPL-345 B65-10147  | 7 05 | Simple BCD circuit accurately counts to 24                                 |       |
|  | • •  | GSFC-317 B65-10225   | 01    |
| Fluid check valve has fail-safe feature<br>JPL-0019 B65-10207            | 7 05 | Binary counter accumulates time by   |       |
| 200 1000   | 30   | complementary preset   |       |
|  |      | MSC-242 B65-10399  | 0.3   |

| COUNTERBALANCE SYSTEM  |                      |     | W00-142   | B65-10227     | 05 |
|--|----------------------|-----|---|---------------|----|
| Self-balancing beam permits safe,<br>handling under overhang<br>M-FS-84    | B63-10571            | 05  | CRYOGENIC STORAGE<br>Lightweight door seals cryogenic co                          | ntainer       |    |
| COUPLING   |                      |     | against diaphragm type loading<br><del>M-</del> FS~476                            | B65-10402     | 05 |
| New coupling compensates for shaft<br>misalignment<br>NU-0013              | B65-10077            | 05  | CRYOGENIC TEMPERATURE Connector seals fluid lines at cryo                         | nenic         |    |
| Device disconnects several couplin   |                      |     | temperatures and high vacuums<br>GSFC~253   | -             | 05 |
| simultaneously<br>JPL-226  | B65-10163            | 05  | Lightweight aluminum casting alloy  | is useful     |    |
| Quick-disconnect coupling safe tra   | nsfer of             |     | at cryogenic temperatures<br>M-FS-267   | B65-10092     | 03 |
| hazardous fluids<br>LEWIS-125  | B65-10202            | 01  | CRYOPUMPING<br>Cryopumping of hydrogen in vacuum c                                | <b></b>       |    |
| Diaphragm eliminates leakage in cr<br>fluid duct coupling<br>WDD-142       | yogenic<br>B65-10227 | 05  | aided by catalytic oxidation of hi<br>LEWIS-15                                    | ydrogen       | 05 |
| WOU-142  | DOJ-IVEL!            | 0.5 | CRYOSTAT  |               |    |
| CRACK Crack detection method is safe in                                    | presence of          |     | Low-cost insulation system for cryo-<br>eliminates need for a vacuum              |               |    |
| liquid oxygen<br>M-FS-236  | B65-10107            | 03  | LEWIS-64  | B63-10365     | 03 |
| CRACK FORMATION  |                      |     | Apparatus permits flexure testing of<br>at cryogenic temperatures                 | -             |    |
| New brazing alloy eliminates metal<br>cracking                             | -stress              |     | M-FS~257  | B65-10129     | 02 |
| W00-249  | B65-10397            | 03  | Vacuum chamber provides improved in:<br>and support for cryostat                  |               |    |
| CRANE Speed-sensing device aids crane op                                   |                      |     | M-FS-415  | B65-10368     | 20 |
| WS-4   | B64-10006            | 05  | CRYSTAL   |               |    |
| CROSS LINKING  |                      |     | Cesium iodide crystals fused to vacu  | aum tube      |    |
| Irradiation improves properties of aromatic polyester                      | an                   |     | faceplates<br>GSFC~67   | B63-10476     | 03 |
| LANGLEY-115  | B65-10164            | 03  | Improved holder protects crystal dus<br>acceleration and impact                   |               |    |
| CRUCIBLE Fabrication method produces high-g                                | rade                 |     | JPL-463   | B65-10037     | 05 |
| alumina crucibles<br>M-FS-216  | B65-10078            | 05  | FM oscillator uses tetrode transiste<br>JPL-82                                    |               | 01 |
| CRYOGENIC EQUIPMENT Cryogenic filter method produces s                     | uper-pure            |     | Crystal measures short-term, large-   | magn i tude   |    |
| helium and helium isotopes<br>JPL-374                                      | B63-10235            | 03  | JPL-77  | B65-10187     | 01 |
| Composite, vacuum-jacketed tubing  |                      | 03  | Voltage controlled oscillator is ea:<br>aligned, has low phase noise              | sily          |    |
| bellows in cryogenic systems<br>LEWIS-67                                   | B63-10368            | 05  | JPL-510   | B65-10223     | 01 |
|  |                      | ••  | CRYSTALLOGRAPHY   |               |    |
| Cryogenic waveguide window is seal plastic foam                            | ed with              |     | Spherical model provides visual aid cubic crystal study                           | for           |    |
| JPL-559  | B63-10613            | 01  | LEWIS-108   | B65-10065     | 03 |
| Sensitive low-pressure relief valv   |                      |     | Rotating filters permit wide range  | of optical    |    |
| positive seating against leakage<br>WOO-041                                | B64-10278            | 05  | pyrometry<br>Langley—33   | B65-10100     | 20 |
| Automatic thermal switch accelerat cooling-down of cryogenic system        |                      |     | CUBIC CRYSTAL Spherical model provides visual aid                                 | for           |    |
| JPL-655  | B65-10068            | 01  | cubic crystal study   |               |    |
| Insulation accelerates rate of coo   | ling with            |     | LEWIS-108   | B65-10065     | 03 |
| cryogenic fluid<br>MSC-161   | B65-10240            | 02  | CURRENT AMPLIFIER  New low-level A-C amplifier provide:                           | s adjust-     |    |
| CRYOGENIC FLUID  |                      |     | able noise cancellation and autom ture compensation                               | atic tempera- |    |
| Level of super-cold liquids automa<br>maintained by levelometer<br>JPL-397 | B63-10250            | 01  | ARC-2 Transfluxor circuit amplifies sensi:  |               | 04 |
| Liquid-level meter has no moving p   | arts                 |     | for computer memories JPL-406   | •             | 01 |
| H-FS-3   | B63-10378            | 03  | CURRENT DISTRIBUTION  |               |    |
| Inert gas spraying device aids in<br>hazardous systems<br>LEVIS-8B         | B65-10115            | 05  | Simple circuit functions as frequent<br>discriminator for PFM signals<br>GSFC-267 | ·             | 01 |
| Quick-disconnect coupling safe tra   |                      | -   | Increased junction lead inductance  |               |    |
| hazardous fluids<br>LEWIS-125  | B65-10202            | 01  | high-frequency transistors<br>GSFC-387  |               | 01 |
| Diaphragm eliminates leakage in cr<br>fluid duct coupling                  | yogenic              |     | CURRENT STABILIZER Electropneumatic rheostat regulates                            | high          |    |

| current<br>ARC-44  | B65-10299  | 01                         | DATA TRANSMISSION Instrument performs nondestructive c   | hemical   |                          |
|--|--|----------------------------|--|---|--------------------------|
| CURVED SURFACE   |  |                            | analysis, data can be telemetered  |   | 01                       |
| Flexible honeycomb structure can be  | nd to fit  |                            |  |   | -1                       |
| compound curves<br>M-FS-13   | B63-10385  | 05                         | DECELERATION  Kinetic-energy absorber employs fric force between mating cylinders  | tional  |                          |
| Lathe converted for grinding aspher<br>GSFC-115  | ic surfaces<br>B63-10556   | 05                         | LEWIS-75   |   | 05                       |
| Device measures curved surface fini  | sh on  |                            | Novel shock absorber features varyin strengths   | g yield   |                          |
| gear teeth   |  |                            |  | B64-10138   | 03                       |
| W00-112  | B65-10064  | 05                         | DECISION ELEMENT   |   |                          |
| CUTTING Cutter and stripper reduces coaxial  | cable  |                            | Circuit maintains digital decision t<br>at preset level  | hreshold  |                          |
| connection time  |  |                            |  | 865-10281   | 01                       |
| ARC-40   | B65-10094  | 05                         | DEGASSING  |   |                          |
| CYLINDER Supercold technique duplicates magn   | etic field   |                            | Baking enables McLeod gauge to measu<br>ultrahigh vacuum range   | re in   |                          |
| in second superconductor   |  | 0.5                        |  | B65-10329   | 01                       |
| JPL-376  | B63-10237  | 05                         | DELAY LINE   |   |                          |
| Shaped superconductor cylinder reta<br>magnetic field  | ins intense  |                            | Gapped toroid provides infinite reso<br>of delay-line pickup   | lution  |                          |
| JPL-381  | B63-10238  | 01                         |  | B65-10258   | 01                       |
| Simple mechanism combines positive   | locking and  |                            | DENSITOMETER   | -114  |                          |
| quick-release features<br>WOO-4  | B63-10420  | 05                         | Modified contour projector makes exc<br>contour densitometer   | ellent  |                          |
| Kinetic-energy absorber employs fri  |  |                            |  | B65-10084   | 02                       |
| force between mating cylinders   |  | 0.5                        | DENSITY MEASUREMENT  |   |                          |
| LEWIS-75   | B63-10442  | 05                         | Density trace made with computer pri<br>GSFC-322   |   | 01                       |
| Seal allows blind assembly and then<br>sion of components  | mal expan-   |                            | Coaxial capacitor used to determine  | fluid   |                          |
| NU-0005  | B65-10053  | 05                         | density  |   |                          |
| Vacuum chamber provides improved is  | nsulation  |                            | LEWIS-232  | B65-10296   | 02                       |
| and support for cryostat<br>M-FS-415   | B65-10368  | 02                         | Vibrating diaphragm measures high electrostatic field strengths  |   |                          |
|  | 200 10000  | <b>7</b> 0                 | MSC-189  | B65-10352   | 01                       |
| D  |  |                            | Thurs Atamatan I will not be a set   |   |                          |
|  |  |                            | Three-dimensional wire-mesh capacito   | r system  |                          |
| DAMAGE   | )-rinas  |                            | measures fluid density   | -   | 01                       |
| DAMAGE Low-cost tool minimizes damage to ( during installation   | -  | 05                         | measures fluid density<br>WOO-194  | -   | 01                       |
| DAMAGE Low-cost tool minimizes damage to ( during installation MSC-140   | B65-10116  | 05                         | measures fluid density<br>WOO-194<br>DEPOSITION<br>Integral coolant channels simply mad  | B65-10379   | 01                       |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140 Improved poppet valve provides pos  | B65-10116  | 05                         | measures fluid density WOO-194  DEPOSITION  Integral coolant channels simply mad   | B65-10379<br>le by melt-  |                          |
| DAMAGE Low-cost tool minimizes damage to ( during installation MSC-140   | B65-10116  | 05<br>05                   | measures fluid density<br>WOO-194<br>DEPOSITION<br>Integral coolant channels simply mad<br>out method<br>M-FS-91   | B65-10379   | 01                       |
| DAMAGE  Low-cost tool minimizes damage to ( during installation  MSC-140  Improved poppet valve provides pos damageproof seal  | B65-10116  |                            | measures fluid density WOO-194  DEPOSITION  Integral coolant channels simply mad   | B65-10379<br>le by melt-<br>B63-10497   |                          |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides posidamageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inc  | B65-10116 itive B65-10346 expensive,   |                            | measures fluid density WOD-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mid tester  | B65-10379  le by melt- B63-10497  croweld   | 05                       |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides pos damageproof seal M-FS-293  DAMPING  | B65-10116 itive B65-10346 expensive,   |                            | measures fluid density WOO-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mid tester WOO-125  | B65-10379<br>le by melt-<br>B63-10497   |                          |
| DAMAGE  Low-cost tool minimizes damage to (during installation MSC-140)  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING  Frictional wedge shock mount is inches good damping characteristics JPL-IT-1001  Shock absorber operates over wide:   | B65-10116 itive B65-10346 expensive, B63-10289   | 05                         | measures fluid density WOD-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mid tester  | B65-10379 le by melt- B63-10497 croweld B65-10182   | 05                       |
| DAMAGE  Low-cost tool minimizes damage to during installation  MSC-140  Improved poppet valve provides post damageproof seal  M-FS-293  DAMPING  Frictional wedge shock mount is inchas good damping characteristics  JPL-IT-1001  | B65-10116 itive B65-10346 expensive, B63-10289   | 05                         | measures fluid density WOO-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING. Force controlled solenoid drives mid tester WOO-125  DETECTION Continuity tester screens out faulty connections   | B65-10379 le by melt- B63-10497 croweld B65-10182   | 05                       |
| DAMAGE  Low-cost tool minimizes damage to (during installation MSC-140)  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING  Frictional wedge shock mount is inches good damping characteristics JPL-IT-1001  Shock absorber operates over wide MSC-168  DATA PROCESSING   | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241   | 05<br>05                   | measures fluid density W00-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mid tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  | B65-10379  le by melt- B63-10497  croweld B65-10182  y socket B64-10065   | 05                       |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inchas good damping characteristics JPL-IT-1001  Shock absorber operates over wide MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories  | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241   | 05<br>05                   | measures fluid density WOO-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mid tester WOO-125  DETECTION Continuity tester screens out faults connections JPL-596  Use of photographs speeds inspection printed-circuit boards   | B65-10379  le by melt- B63-10497  croweld B65-10182  y socket B64-10065   | 01                       |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inchas good damping characteristics JPL-IT-1001  Shock absorber operates over wide MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens  | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241   | 05<br>05                   | measures fluid density WOO-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mid tester WOO-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection  | B65-10379  le by melt- B63-10497  croweld B65-10182  y socket B64-10065   | 05                       |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inchas good damping characteristics JPL-IT-1001  Shock absorber operates over wide MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM   | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255   | 05<br>05                   | measures fluid density W00-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mid tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator perfor  | B65-10379 le by melt- B63-10497 croweld B65-10182 y socket B64-10065 c of B64-10118   | 01                       |
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| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inches good damping characteristics JPL-IT-1001  Shock absorber operates over wide MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM Nonlinear feedback reduces analog-converter error ARC-46  | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277  | 05<br>05<br>05             | measures fluid density W00-194  DEPOSITION Integral coolant channels simply made out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mide tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator performance in the sensing  | B65-10379 le by melt- B63-10497 croweld B65-10182 / socket B64-10065 n of B64-10118 cms own B65-10028   | 01                       |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inchas good damping characteristics JPL-IT-1001  Shock absorber operates over wide: MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM Nonlinear feedback reduces analog-converter error ARC-46  DATA RECORDER PCM magnetic tape system efficienciand reproduces data   | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277  | 05<br>05<br>05             | measures fluid density W00-194  DEPOSITION Integral coolant channels simply made out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mide tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator performs sensing GSFC-228  Weld leaks rapidly and safely detect M-FS-362  DETECTOR  | B65-10379  le by melt- B63-10497  croweld B65-10182  y socket B64-10065  of B64-10118  crms own B65-10028  ted B65-10265                                  | 015<br>011<br>011        |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inches good damping characteristics JPL-IT-1001  Shock absorber operates over wide: MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM Nonlinear feedback reduces analog-converter error ARC-46  DATA RECORDER PCM magnetic tape system efficience  | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277  | 05<br>05<br>05             | measures fluid density W00-194  DEPOSITION Integral coolant channels simply made out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives midentester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator performs sensing GSFC-228  Weld leaks rapidly and safely detect M-FS-362  DETECTOR Device detects unbonded areas in plantations.  | B65-10379  le by melt- B63-10497  croweld B65-10182  y socket B64-10065  of B64-10118  crms own B65-10028  ted B65-10265                                  | 015<br>011<br>011        |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inchast good damping characteristics JPL-IT-1001  Shock absorber operates over wide in MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM Nonlinear feedback reduces analog-converter error ARC-46  DATA RECORDER PCM magnetic tape system efficience and reproduces data GSFC-375  | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277 y records B65-10311                      | 05<br>05<br>05<br>01       | measures fluid density W00-194  DEPOSITION Integral coolant channels simply made out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mide tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator performs sensing GSFC-228  Weld leaks rapidly and safely detect M-FS-362  DETECTOR  | B65-10379  le by melt- B63-10497  croweld B65-10182  y socket B64-10065  of B64-10118  crms own B65-10028  ted B65-10265                                  | 015<br>011<br>011        |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is included a post damping characteristics JPL-IT-1001  Shock absorber operates over wide to MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM Nonlinear feedback reduces analog-converter error ARC-46  DATA RECORDER PCM magnetic tape system efficience and reproduces data GSFC-375  DATA REDUCTION Polychart contour enables data ext  | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277 y records B65-10311                      | 05<br>05<br>05<br>01       | measures fluid density W00-194  DEPOSITION Integral coolant channels simply mad out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mid tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator perfor sensing GSFC-228  Weld leaks rapidly and safely detect M-FS-362  DETECTOR Device detects unbonded areas in pla laminates   | B65-10379 le by melt- B63-10497 croweld B65-10182 y socket B64-10065 n of B64-10118 crms own B65-10028 ted B65-10265                                      | 010<br>011<br>011        |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is included a post damping characteristics JPL-IT-1001  Shock absorber operates over wide mSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM Nonlinear feedback reduces analog-converter error ARC-46  DATA RECORDER PCM magnetic tape system efficiency and reproduces data GSFC-375  DATA REDUCTION Polychart contour enables data ext   | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277 y records B65-10311                      | 05<br>05<br>05<br>01       | measures fluid density W00-194  DEPOSITION Integral coolant channels simply made out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mide tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator performs sensing GSFC-228  Weld leaks rapidly and safely detect M-FS-362  DETECTOR Device detects unbonded areas in planaminates W00-206  DIAPHRAGM Improved fluid control valve extends              | B65-10379 le by melt- B63-10497 croweld B65-10182 y socket B64-10065 n of B64-10118 rms own B65-1028 ted B65-10265 astic B65-10380                        | 010<br>011<br>011        |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is included as good damping characteristics JPL-IT-1001  Shock absorber operates over wide MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM Nonlinear feedback reduces analog-converter error ARC-46  DATA RECORDER PCM magnetic tape system efficience and reproduces data GSFC-375  DATA REDUCTION Polychart contour enables data ext from multiple plotting charts M-FS-37  | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277 y records B65-10311 rapolation B64-10406 | 05<br>05<br>05<br>01<br>01 | measures fluid density W00-194  DEPOSITION Integral coolant channels simply madout method M-FS-91  DESTRUCTIVE TESTING. Force controlled solenoid drives midtester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator performsensing GSFC-228  Weld leaks rapidly and safely detect M-FS-362  DETECTOR Device detects unbonded areas in plataminates W00-206  DIAPHRAGM  | B65-10379 le by melt- B63-10497 croweld B65-10182 y socket B64-10065 n of B64-10118 rms own B65-1028 ted B65-10265 astic B65-10380                        | 010<br>011<br>011        |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is included a proceed of the mount of the m | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277 y records B65-10311 rapolation B64-10406 | 05<br>05<br>05<br>01<br>01 | measures fluid density W00-194  DEPOSITION Integral coolant channels simply made out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mice tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator performs sensing GSFC-228  Weld leaks rapidly and safely detect M-FS-362  DETECTOR Device detects unbonded areas in plataminates W00-206  DIAPHRAGM Improved fluid control valve extends              | B65-10379 le by melt- B63-10497 croweld B65-10182 y socket B64-10065 n of B64-10118 rms own B65-10028 ted B65-10265 astic B65-10380 s diaphragm B65-10147 | 010<br>011<br>011<br>011 |
| DAMAGE Low-cost tool minimizes damage to during installation MSC-140  Improved poppet valve provides post damageproof seal M-FS-293  DAMPING Frictional wedge shock mount is inchas good damping characteristics JPL-IT-1001  Shock absorber operates over wide in MSC-168  DATA PROCESSING Transfluxor circuit amplifies sens for computer memories JPL-406  DATA READOUT SYSTEM Nonlinear feedback reduces analog-converter error ARC-46  DATA RECORDER PCM magnetic tape system efficience and reproduces data GSFC-375  DATA REDUCTION Polychart contour enables data ext from multiple plotting charts M-FS-37  DATA RETRIEVAL Gapped toroid provides infinite re   | B65-10116 itive B65-10346 expensive, B63-10289 range B65-10241 ing current B63-10255 to-digital B65-10277 y records B65-10311 rapolation B64-10406 | 05<br>05<br>05<br>01<br>01 | measures fluid density W00-194  DEPOSITION Integral coolant channels simply made out method M-FS-91  DESTRUCTIVE TESTING Force controlled solenoid drives mide tester W00-125  DETECTION Continuity tester screens out faulty connections JPL-596  Use of photographs speeds inspection printed-circuit boards MSC-72  Transistor voltage comparator performs sensing GSFC-228  Weld leaks rapidly and safely detect M-FS-362  DETECTOR Device detects unbonded areas in planaminates W00-206  DIAPHRAGM Improved fluid control valve extends life JPL-345 | B65-10379 le by melt- B63-10497 croweld B65-10182 y socket B64-10065 n of B64-10118 rms own B65-10028 ted B65-10265 astic B65-10380 s diaphragm B65-10147 | 010<br>011<br>011<br>011 |

| Burst diaphragm protects vacuum ves                              | sel from     |      | Hybrid computer technique yields ran                             | dom        |     |
|--|--------------|------|--|------------|-----|
| internal pressure transients<br>JPL-687                          | B65-10236    | 05   | signal probability distributions<br>ARC-34                       | B65-10208  | 01  |
| Titanium diaphragm makes excellent                               | amplitron    |      | DIGITAL DATA   |            |     |
| cathode support<br>GSFC-394                                      | B65-10298    | 01   | Interferometer combines laser light                              | source     |     |
| 65FC-394   | BG3-10290    | O.I. | and digital counting system<br>MSC-151                           | B65-10161  | 01  |
| Vibrating diaphragm measures high electrostatic field strengths  |              |      | Sensitive electrometer features digi                             | +=2        |     |
| MSC-189  | B65-10352    | 01   | output   | tas        |     |
| Die and telescoping punch form conv                              | calutions in |      | GSFC-288   | B65-10206  | 01  |
| thin diaphragm   |              |      | DIGITAL TECHNIQUE  |            |     |
| JPL-SC-135   | B65-10393    | 05   | Binary system generates sidereal rat<br>standard solar rate      | e from     |     |
| Electrically heated diaphragm elimi of pyrotechnics              | inates use   |      |  | B64-10200  | 01  |
| MSC-241  | B65-10400    | 01   | Digital cardiometer computes and dis                             | plays      |     |
| DIE  |              |      |  | B64-10258  | 01  |
| Guide for extrusion dies eliminates<br>straightening operation   | •            |      | Electron-beam deflection controlled                              | by digital |     |
| LEWIS-152  | B64-10014    | 05   | signals<br>GSFC-385  | B65-10283  | 02  |
| Metal parts hydrosized by explosive                              | force        |      | G5F C-365  | 865-10263  | 02  |
| M-FS-289   | B65-10170    | 05   | DIGITAL-TO-ANALOG CONVERTER Digital logic elements provide addit |            |     |
| Handtool bends component leads acco                              | irately      |      | functions from analog input                                      | IORAI      |     |
| M-FS-308   | B65-10181    | 05   | MSC-64   | B64-10064  | 01  |
| Fiberglass dies speed forming of la                              | rge metal    |      | Transistorized circuit clamps voltag                             | e with     |     |
| sheets<br>M—FS—214   | B65-10210    | 05   | 0.1 percent error<br>GSFC—196                                    | B65-10118  | 01  |
|  |              | 00   |  |            | 01  |
| Die and telescoping punch form con-<br>thin diaphragm            | olutions in  |      | Pressure transducer system is force-<br>has digital output       | balanced,  |     |
| JPL-SC-135   | B65-10393    | 05   | M-FS-154   | B65-10174  | 05  |
| DIELECTRIC MATERIAL  |              |      | Variable word length encoder reduces                             | . TV       |     |
| Microparticle impact sensor measure                              | s energy     |      | bandwidth requirements   |            |     |
| directly<br>GSFC-252   | B65-10048    | 01   | LANGLEY-87   | B65-10345  | 01  |
|  |              |      | DIGITAL TRANSDUCER   |            |     |
| DIELECTRICS Spherical electrode eliminates high                  | -voltage     |      | Frequency correction device uses dig                             | Ital       |     |
| breakdown  | •            |      | GSFC-268   | B65-10307  | 01  |
| LEWIS-155  | B65-10139    | 01   | DIMENSIONAL STABILITY  |            |     |
| DIFFUSION Fabrication method produces high-gr                    |              |      | Collapsible truss structure is autome expandable                 | atically   |     |
| alumina crucibles  | aue          |      | GSFC-265   | B65-10126  | 05  |
| M-FS-216   | B65-10078    | 05   | DIODE  |            |     |
| DIFFUSION BONDING  |              |      | Simple circuit provides adjustable v                             | oltage     |     |
| Thoriated nickel bonded by solid-st diffusion method             | tate         |      | with linear temperature variation<br>JPL-WOO-029                 | B63-10537  | 01  |
| LANGLEY-116  | B65-10220    | 03   |  | _          |     |
| Thermoelectric elements diffusion-t                              | onded to     |      | Mounting for diodes provides efficients sink                     | nt neat    |     |
| tungsten electrodes<br>GSFC-346                                  | DCE 10700    | 0.1  | M-FS-197   | B64-10283  | 01  |
|  | B65-10309    | 01   | Modification increases light output                              | of         |     |
| Brazing method produces solid-solution between refractory metals | tion bond    |      | injection-luminescent diodes<br>M-FS-192                         | B65-10006  | 01  |
| LEWIS-212  | B65-10370    | 05   |  |            | ••  |
| DIFFUSION ELECTRODE  |              |      | Thermocompression bonding produces e<br>surface-barrier diode    | fficient   |     |
| Segmented electrode increases opera                              | ating        |      | JPL-SC-066   | B65-10007  | 05  |
| pressure of MHD accelerator<br>LANGLEY-95                        | B65-10356    | 02   | Optical arrangement increases useful                             | liaht      |     |
| DIGITAL COMMAND SYSTEM   |              |      | output of semiconductor diodes JPL-SC-064                        | B65-10020  | 05  |
| Digital system accurately controls                               | velocity     |      |  | _          | ,,, |
| of electromechanical drive<br>GSFC-287                           | B65-10096    | 01   | Logarithmic amplifier uses field eff<br>transistors              | rect       |     |
|  |              |      | JPL-509  | B65-10145  | 01  |
| DIGITAL COMPUTER Small digital recording head has pa             | arallel bit  |      | Solid-state laser transmitter is am                              | olitude    |     |
| channels, minimizes cross talk                                   |              |      | modulated  |            |     |
| JPL-0029   | B63-10284    | 01   | MSC-121  | B65-10238  | 01  |
| Logic redundancy improves digital s                              | system       |      | Added diodes increase output of bala                             | nced       |     |
| reliability<br>JPL-SC-069  | B65-10025    | 01   | mixer circuit<br>GSFC-354  | B65-10276  | 01  |
| Instrument calibrates low gas-rate                               | flowmetars   |      | DIGXIDE  |            |     |
| MSC-134  | B65-10137    | 01   | IR-transmission glasses formed from bismuth and tellurium        | oxides of  |     |

| M-FS-279  | B65~10190   | 03   | take down and assembly<br>ARC-17 B63-10   | 435 05  |
|---|-------------|------|---|---------|
| DIRECT CURRENT /DC/ Liquid switch is remotely operated voltage      | by low DC   |      | New low-level AC amplifier provides adjustable noise cancellation and automa                | tic     |
| GSFC-119  | B63-10599   | 01   | temperature compensation MSC-108 B65-10   |         |
| High-pass RF coaxial filter reject: frequency signals               | DC and low  |      | DISTILLATION APPARATUS  | •••     |
| GSFC-73   | B64-10173   | 01   | Emergency solar still desalts seawater<br>MSC-135 B65-10                                    | 214 03  |
| Variable load automatically tests of supplies                       | ic power    |      | DISTRIBUTION FUNCTION   |         |
| GSFC-291  | B65-10105   | 01   | Polychart contour enables data extrapolati from multiple plotting charts                    | on      |
| Rotor position sensor switches cur<br>brushless Dc motors           | rents in    |      | M-FS-37 B64-10  | 406 05  |
| GSFC-315  | B65-10151   | 01   | DRAG BALANCE Device measures fluid drag on test vehicle                                     |         |
| DC to AC converter operates efficion low input voltages             | ency at     |      | LANGLEY-34 B65-10   |         |
| GSFC-130  | B65-10178   | . 01 | DRAG MEASUREMENT  |         |
| Inductor flyback characteristic give                                | ves voltage |      | Device measures fluid drag on test vehicle<br>LANGLEY-34 B65-10                             |         |
| regulator fast response<br>GSFC-361                                 | B65~10257   | 01   | DRILL   |         |
| Electropneumatic rheostat regulate:                                 | high        |      | Rock bit requires no flushing medium to maintain drilling speed                             |         |
| current<br>ARC-44   | B65-10299   | 01   | JPL-W00-031 B65-10  | 109 05  |
| Zener diode controls switching of                                   | large       |      | Drill bit design assures clean holes in<br>laminated materials                              |         |
| direct currents<br>MSC-188  | B65-10350   | 01   | ₩00-098 B65-10  | 386 05  |
| DIRECTIONAL CONTROL   |             |      | DRIVE<br>Quick-acting clutch disengages idle drive  |         |
| System measures unidirectional for<br>excludes extraneous forces    | •           |      | motor<br>GSFC-143 B64-10  | 028 05  |
| LEWIS-170   | B65-10154   | 05   | Bearing transmits rotary and axial motion   |         |
| Magnetic-shift-register circuit co<br>motor operations              |             |      | LANGLEY-27 B64-10   |         |
| GSFC-340  | B65-10226   | 01   | Threading hook facilitates safe recovery o<br>heavy loads                                   | ſ       |
| DISCHARGE Auxiliary silver electrode elimina                        |             | ,    | MSC-46 B64-10   | 185 05  |
| voltage discharge characteristic<br>zinc cells                      |             |      | Apparatus alters position of objects to facilitate demagnetization                          |         |
| GSFC-169  | B64-10114   | 01   | GSFC-234 B64-10   |         |
| DISCONNECT DEVICE  Device disconnects several couplin               | gs          |      | Stepping motor drive circuit designed for power drain                                       |         |
| simultaneously<br>JPL-226   | B65-10163   | 05   | GSFC-198 B65-10   | 0026 01 |
| DISCRIMINATOR   |             |      | Hydraulic drive system prevents backlash<br>JPL-371 B65-10                                  | 351 05  |
| Simple circuit functions as freque discriminator for PFM signals    | -           |      | DROP  |         |
| GSFC-267  | B65-10102   | 01   | Apparatus measures concentration of suspen droplets in gas streams                          |         |
| DISK Modified interelement spacing impr                             | oves Yagi   |      | LANGLEY-31 B64-10   | 0237 01 |
| antenna array<br>LANGLEY-130  | B65-10183   | 01   | DUCTED FLOW Lightweight hinged bellows restraint has  |         |
| DISPERSION  |             |      | high load capacity<br>WOD-151 B65-10  | 341 03  |
| Anodization process produces opaque reflective coatings on aluminum | •           |      | DYE   |         |
| M-FS-348  | B65-10336   | 03   | Porous glass makes effective substrate for ozone-sensing reagent                            |         |
| DISPLACEMENT<br>Seismic transducer measures small                   | horizontal  |      | GSFC-388 B65-10   | 0364 03 |
| displacements<br>M-FS-81  | B65-10029   | 05   | Test strips detect different CO2<br>concentrations in closed compartments<br>MSC-210 B65-10 | 390 03  |
| Transducer senses displacements of<br>subjected to vibration        | panels      |      | DYNAMIC LOAD  |         |
| ARC-37  | B65-10085   | 01   | Pressure responsive seal handles static an dynamic loads                                    | ıd      |
| Interferometer combines laser ligh and digital counting system      | t source    |      | GSFC-441 865-10   | 0327 05 |
| MSC-151   | B65-10161   | 01   | DYNAMOMETER Air brake-dynamometer accurately measures                                       |         |
| Hydraulic device provides accurate displacements to microinches     |             |      | torque<br>LEWIS-163 B65-10  | 0312 05 |
| MSC-112   | B65-10230   | 05   | -   |         |
| DISPLAY SYSTEM Portable display paneling has wide                   | use, easy   |      |   |         |

| E   |            |     | ing of electrical components<br>GSFC-91                                      | B63-10536                  | 01 |
|---|------------|-----|--|----------------------------|----|
| EDGE Upsetting butt edge increases weld-joint                     |            |     | Inexpensive electrical connector is  | moisture                   |    |
| strength<br>M-FS-175  | B64-10164  | 05  | and corrosionproof<br>MSC-164  | B65-10196                  | 01 |
| ELASTIC DEFORMATION Testing device subjects elastic mat           | erials to  |     | Electrical cable connector-clamp has exterior surface                        | smooth                     |    |
| biaxial deformations<br>JPL-616                                   | B65-10189  | 03  |  | B65-10201                  | 05 |
| ELASTIC PROPERTY  Valve designed with elastic seat                |            |     | Electrical probe ensures reliable consocket                                  |                            |    |
| JPL-442   | B65-10040  | 05  |  |                            | 01 |
| ELASTOMER Elastic orifice automatically regul                     | ates gas   |     | Keyed plugs and sockets prevent impro<br>commections<br>MSC-231              | •                          | 01 |
| bearings<br>JPL-135   | B63-10123  | 05  | ELECTRIC INSULATION  | 200 20002                  | •• |
| Molded elastomer provides compact f holder, simplifies assembly   |            |     | Connector for thermocouple leads save wire, makes reliable connectors        | •                          |    |
| JPL-584  Elastomers bonded to metal surfaces                      | B64-10084  | 05  |  |                            | 01 |
| electrochemical cells<br>GSFC-168                                 | B64-10113  | 03  | Continuity tester screens out faulty connections JPL-596                     |                            | 01 |
| Compact assembly generates plastic                                | foam,      |     | Ceramic materials purified by experi   |                            | 01 |
| inflates flotation bag<br>LANGLEY-96                              | B65-10090  | 05  | method   | B65-10270                  | 03 |
| ELBOW<br>Stainless-steel elbows formed by sp                      |            |     | ELECTRIC LEAD  |                            |    |
| M-FS-122  | B63-10590  | 05  | Handtool bends component leads accur<br>M-FS-308                             | ately<br>B65-10181         | 05 |
| Spring loaded beaded cable makes ef<br>wire puller<br>WOD-108     | B65-10031  | 05  | ELECTRIC MOTOR  Brushless DC motor uses electron bea                         | _                          |    |
| ELECTRIC CONNECTOR  | 500 10001  | ••• | switching tube as commutator   | -<br>865-10237             | 01 |
| Inexpensive electrical connector is<br>and corrosionproof         | moisture   |     | ELECTRIC POTENTIAL   |                            |    |
| MSC-164   | B65-10196  | 01  | Density trace made with computer pri<br>GSFC-322                             | ntout<br>B65-1020 <b>0</b> | 01 |
| ELECTRIC CONTACT  Continuity tester screens out fault connections | y socket   |     | ELECTRIC WIRING Circuit reliability boosted by solde                         | ring pine                  |    |
| JPL-596   | B64-10065  | 01  | of disconnect plugs to sockets   | B64-10002                  | 01 |
| Lightweight coaxial cable connector signal loss                   |            |     | ELECTRO-OPTICS   |                            |    |
| JPL-720 ELECTRIC CONTROL  | B65-10244  | 01  | Liquid-level meter has no moving par<br>M-FS-3                               | ts<br>B63-10378            | 03 |
| Binary counter accumulates time by complementary preset           |            |     | Communication system uses modulated GSFC-377                                 | laser beam<br>B65-10333    | 01 |
| MSC-242   | B65-10399  | 01  | ELECTROCARDIOGRAM  |                            |    |
| ELECTRIC CURRENT Igniting system for mercury vapor 1              |            |     | Digital cardiometer computes and dis<br>heartheat rate                       | •                          |    |
| tects transistorized sustaining s<br>JPL-421                      | B63-10262  | 01  | MSC-93 Simulator produces physiological wav                                  | B64-10258                  | 01 |
| Pickup device reads pressures from rotating mechanisms            | ports in   |     |  | B65-10091                  | 01 |
| LEWIS-158   | B65-10021  | 05  | Auxiliary circuit enables automatic of EKG                                   | •                          |    |
| Laser beam transmits electric power GSFC-293                      | B65-10158  | 01  |  | B65-10142                  | 01 |
| Sensitive electrometer features dig                               | ital       |     | Digital-output cardiotachometer meas<br>changes in heartbeat rate<br>MSC-133 | B65-10143                  | 01 |
| GSFC-288  | B65-10206  | 01  | Tiny biomedical amplifier combines h   | igh                        |    |
| Electrical probe ensures reliable c socket                        |            |     | performance, low power drain<br>ARC-41                                       | B65-10203                  | 01 |
| M-FS-315  | B65-10215  | 01  | ELECTROCARDIOGRAPHY  | hasst                      |    |
| ELECTRIC ENERGY  Camera shutter is actuated by elect  ARC-20      | ric signal | 05  | Inexpensive, stable circuit measures<br>rate<br>MSC-95                       | B65-10010                  | 01 |
| ELECTRIC ENERGY STORAGE   | 200 20000  |     | ELECTROCHEMICAL CELL   |                            | -  |
| Regenerative fuel cell combines hig efficiency with low cost      | h          |     | Elastomers bonded to metal surfaces electrochemical cells                    | seal                       |    |
| WDD-090   | B65-10363  | 01  |  | B64-10113                  | 03 |
| ELECTRIC EQUIPMENT  |            |     | Apparatus measures swelling of membr   | anes in                    |    |

|   | GSFC-280   | B65-10087  | 01                         | Electromechanically operated camera  | shutter  |           |
|---|--|--|----------------------------|--|--|-----------|
| ELECTE                                  |  |  |                            | provides uniform exposure<br>JPL-357   | B63-10227 0  | 1         |
|   | proved electrode gives high-qualit   | y  |                            | Knob linkage permits one-hand contro   | 1 00   |           |
|   | oiological recordings<br>4SC-17  | B64-10025  | 04                         | several operations   | 1 01   |           |
| •                                       | 100 11   |  | • •                        |  | 865-10022 0  | 5         |
| Aux                                     | ciliary silver electrode eliminate   | s two-step   |                            |  |  |           |
|   | voltage discharge characteristic o   | of silver-   |                            | Digital system accurately controls v<br>of electromechanical drive   | elocity  |           |
|   | zinc cells<br>GSFC-169   | B64-10114  | 01                         |  | B65-10096 0  | 1         |
|   |  |  |                            |  |  |           |
|   | dification increases light output  | of   |                            | Device measures fluid drag on test v   |  |           |
|   | injection-luminescent diodes   | B65-10006  | 01                         | LANGLEY-34   | B65-10195 0  | 1         |
| ,                                       | M-FS-192   | B03-10000  | 01                         | ELECTROMETER   |  |           |
| Im                                      | proved conductive paste secures bi   | omedical   |                            | Field-effect transistor improves ele   | ctrometer  |           |
|   | electrodes   | 205 10015  |                            | amplifier  | DC4 10147 A  |           |
|   | MSC-107  | B65-10015  | 03                         | ARC-36   | B64-10143 0  | 1         |
| Die                                     | dymium compound improves nickel-ca   | admium   |                            | Vibrating-membrane electrometer has  | high   |           |
|   | cell   |  |                            | conversion gain  |  |           |
| •                                       | GSFC-295   | B65-10083  | 03                         | ARC-38   | B65-10056 0  | 1         |
| Sn                                      | herical electrode eliminates high-   | -voltage   |                            | Simplified electrometer has excellen   | ıt   |           |
|   | breakdown  |  |                            | operating characteristics  |  |           |
| 1                                       | LEWIS-155  | B65-10139  | 01                         | JPL-413  | B65-10125 0  | 1         |
| F1.                                     | ectrostatically driven dynamic cap   | nacitor  |                            | Sensitive electrometer features digi   | tal  |           |
|   | ectrostatically driven dynamic cap<br>employs capacitive feedback  | pacitor  |                            | output   | 101  |           |
|   | JPL-771  | B65-10293  | 01                         | GSFC-288   | B65-10206 0  | 1         |
| _                                       |  |  |                            |  |  |           |
|   | gged pressed disk electrode has le<br>potential  | ow contact   |                            | Electrometer has automatic zero bias<br>GSFC-350   |  | 1         |
|   | MSC-158  | B65-10320  | 01                         | 03.0 000   | 200 10212 0  | •         |
|   |  |  |                            | Electrometer preamplifier has drift  | correction   |           |
|   | otosensors used to maintain weldi  | ng   |                            | feedback   | B65-10267 0  |           |
|   | electrode-to-joint alignment<br>MSC-243  | B65-10401  | 05                         | JPL-SC-074   | 000-10207  | 1         |
|   | 1150 240   | 200 20102  | ••                         | Electrostatically driven dynamic cap   | acitor   |           |
| ELECTRODEPOSITION                       |  |  |                            | employs capacitive feedback  | 545 14405  |           |
|   | esnel zone plate forms images at   | wavelengths  |                            | JPL-771  | B65-10293 0  | 1         |
|   | below 1000 angstroms<br>GSFC-231   | B65-10171  | 02                         | ELECTROMOTIVE FORCE  |  |           |
|   |  |  |                            |  |  |           |
|   |  |  |                            | Metal sheath improves thermocouple u   | ısing  |           |
|   | RODERMAL RESPONSE  |  |                            | Metal sheath improves thermocouple u<br>graphite in one leg  | -  | •         |
| Im                                      | proved conductive paste secures b  | iomedical  |                            | Metal sheath improves thermocouple u   | -  | 1         |
| Im                                      |  | iomedical<br>B65-10015   | 03                         | Metal sheath improves thermocouple u<br>graphite in one leg  | -  | 1         |
| Im                                      | proved conductive paste secures b<br>electrodes<br>MSC-107   |  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines h  | B65-10051 0  | 1         |
| I m                                     | proved conductive paste secures b<br>electrodes<br>MSC-107<br>ROFORMING  | B65-10015  | 03                         | Metal sheath improves thermocouple useraphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines herformance, low power drain  | B65-10051 0  |           |
| Im<br>ELECT<br>Ni                       | proved conductive paste secures b<br>electrodes<br>MSC-107<br>ROFORMING<br>ckel solution prepared for precis   | B65-10015  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines h  | B65-10051 0  | )1        |
| Im<br>ELECT<br>Ni                       | proved conductive paste secures b<br>electrodes<br>MSC-107<br>ROFORMING  | B65-10015  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM Tiny biomedical amplifier combines herformance, low power drain ARC-41  ELECTRON BEAM  | B65-10051 0  |           |
| Im<br>ELECT<br>Ni                       | proved conductive paste secures belectrodes MSC-107  ROFORMING ckel solution prepared for precis electroforming WOO-070  | B65-10015  |                            | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM Tiny biomedical amplifier combines to performance, low power drain ARC-41  ELECTRON BEAM Tantalum gathode improves electron-b  | B65-10051 0  |           |
| ELECT<br>Ni<br>ELECT                    | proved conductive paste secures be lectrodes MSC-107  ROFORMING ckel solution prepared for preciselectroforming WOO-070  ROLYTIC MACHINING   | B65-10015 ion B65-10303  |                            | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM Tiny biomedical amplifier combines he performance, low power drain ARC-41  ELECTRON BEAM Tantalum gathode improves electron-be evaporation of tantalum   | B65-10051 0<br>nigh<br>B65-10203 0   | )1        |
| Im ELECT Ni ELECT Im                    | proved conductive paste secures belectrodes MSC-107 ROFORMING ckel solution prepared for preciselectroforming WOO-070 ROLYTIC MACHINING proved technique for localizing e  | B65-10015 ion B65-10303  |                            | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM Tiny biomedical amplifier combines to performance, low power drain ARC-41  ELECTRON BEAM Tantalum gathode improves electron-b  | B65-10051 0 nigh B65-10203 0   |           |
| ELECT<br>Ni<br>ELECT<br>Im              | proved conductive paste secures be lectrodes MSC-107  ROFORMING ckel solution prepared for preciselectroforming WOO-070  ROLYTIC MACHINING   | B65-10015 ion B65-10303  |                            | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM Tantalum gathode improves electron-tevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled  | B65-10051 0  righ  B65-10203 0  oeam  B65-10175 0  | )1        |
| Im<br>ELECT<br>Ni<br>ELECT<br>Im        | proved conductive paste secures belectrodes MSC-107 ROFORMING ckel solution prepared for preciselectroforming WOO-070 ROLYTIC MACHINING Proved technique for localizing epolishing features novel nozzles WOO-101  | B65-10015 ion B65-10303  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM Tiny biomedical amplifier combines be performance, low power drain ARC-41  ELECTRON BEAM Tantalum gathode improves electron-tevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals  | B65-10051 0  nigh  B65-10203 0  Deam  B65-10175 0  by digital  | )1        |
| ELECT Ni ELECT Im                       | proved conductive paste secures be lectrodes MSC-107  ROFORMING ckel solution prepared for precise lectroforming WOO-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101  ROMAGNET  | B65-10015  ion  B65-10303  lectro-  B64-10271  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM Tantalum gathode improves electron-tevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled  | B65-10051 0  nigh  B65-10203 0  Deam  B65-10175 0  by digital  | )1        |
| ELECT<br>Ni<br>ELECT<br>Im              | proved conductive paste secures belectrodes MSC-107 ROFORMING ckel solution prepared for preciselectroforming WOO-070 ROLYTIC MACHINING Proved technique for localizing epolishing features novel nozzles WOO-101  | B65-10015  ion  B65-10303  lectro-  B64-10271  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM Tiny biomedical amplifier combines be performance, low power drain ARC-41  ELECTRON BEAM Tantalum gathode improves electron-tevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals  | B65-10051 0  nigh  B65-10203 0  Deam  B65-10175 0  by digital  | )1        |
| ELECT IM                                | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for precise electroforming WOO-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101  ROMAGNET gnetic field controls carbon arc MSC-139   | B65-10015 ion B65-10303 lectro- B64-10271 tail flame   | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-toevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source processing the source of the source  | B65-10051 0  nigh  B65-10203 0  Deam  B65-10175 0  by digital  B65-10283 0   | )1        |
| ELECT Im ELECT Ma                       | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for preciselectroforming W00-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles W00-101  ROMAGNET gnetic field controls carbon arc MSC-139   | B65-10015  ion  B65-10303  lectro-  B64-10271  tail flame B65-10108  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum qathode improves electron-toevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source purification   | B65-10051 0  nigh  B65-10203 0  Deam  B65-10175 0  by digital  B65-10283 0  produces   | 01        |
| ELECT Im  ELECT Me                      | proved conductive paste secures be electrodes MSC-107 ROFORMING ckel solution prepared for preciselectroforming WOO-070 ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101 ROMAGNET gnetic field controls carbon arc MSC-139 ROMAGNETIC CONTROL vice calibrates vibration transdu   | B65-10015  ion  B65-10303  lectro-  B64-10271  tail flame B65-10108  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-toevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source processing the source of the source  | B65-10051 0  nigh  B65-10203 0  Deam  B65-10175 0  by digital  B65-10283 0  produces   | )1        |
| ELECT Im  ELECT Ma  ELECT De            | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for preciselectroforming W00-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles W00-101  ROMAGNET gnetic field controls carbon arc MSC-139   | B65-10015  ion  B65-10303  lectro-  B64-10271  tail flame B65-10108  | 03                         | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum qathode improves electron-toevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source purification   | B65-10051 0  nigh B65-10203 0  Deam B65-10175 0  by digital B65-10283 0  produces B65-10082 0  | 01        |
| ELECT Im ELECT Ma                       | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for precise electroforming W00-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles W00-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduamplitudes up to 20 G. M-FS-86   | B65-10015  ion  B65-10303  lectro-  B64-10271  tail flame B65-10108  cers at   | 03<br>01<br>01             | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-to-evaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source in wide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency  | B65-10051 0  nigh B65-10203 0  Deam B65-10175 0  by digital B65-10283 0  produces B65-10082 0  n chamber   | 01        |
| ELECT Im ELECT Me                       | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for precise electroforming WOO-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduantly in the controls of the controls amplitudes up to 20 G. M-FS-86   | B65-10015 ion B65-10303 lectro- B64-10271 tail flame B65-10108 cers at B63-10572   | 03<br>01<br>01             | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-toevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source puide range of radiation GSFC-286  Electron bombardment improves vacuum  | B65-10051 0  nigh B65-10203 0  Deam B65-10175 0  by digital B65-10283 0  produces B65-10082 0  n chamber   | 01        |
| ELECT Ni ELECT Im ELECT De              | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for precise electroforming W00-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles W00-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduamplitudes up to 20 G. M-FS-86   | B65-10015 ion B65-10303 lectro- B64-10271 tail flame B65-10108 cers at B63-10572   | 03<br>01<br>01             | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-to-evaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source in wide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency  | B65-10051 0  nigh B65-10203 0  Deam B65-10175 0  by digital B65-10283 0  produces B65-10082 0  n chamber   | 01        |
| ELECT Im  ELECT Ma  ELECT De            | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for preciselectroforming W00-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles W00-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduant itudes up to 20 G. M-FS-86  ROMAGNETIC INSTRUMENT ectromagnetic hammer removes weld  | B65-10015 ion B65-10303 lectro- B64-10271 tail flame B65-10108 cers at B63-10572   | 03<br>01<br>01             | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum qathode improves electron-to-evaporation of tantalum JPL-WOO-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source puide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency LEWIS-160  ELECTRON DENSITY  Microwave technique measures plasma   | B65-10051 0  nigh B65-10203 0  Deam B65-10175 0  by digital B65-10283 0  produces B65-10082 0  n chamber   | 01        |
| ELECT No ELECT Me                       | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for precise electroforming WOO-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduant litudes up to 20 G. M-FS-86  ROMAGNETIC INSTRUMENT ectromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  | B65-10015  ion  B65-10303  lectro-  B64-10271  tail flame B65-10108  cers at  B63-10572  | 03<br>01<br>01             | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-toevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source puide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency LEWIS-160  ELECTRON DENSITY  Microwave technique measures plasma characteristics  | B65-10051 0  nigh  B65-10203 0  neam  B65-10175 0  by digital  B65-10283 0  produces  B65-10082 0  n chamber  B65-10280 0                          | 01        |
| ELECT No ELECT De ELECT E1              | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for precise electroforming W00-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles W00-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduamplitudes up to 20 G.  M-FS-86  ROMAGNETIC INSTRUMENT ectromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  | B65-10015  ion  B65-10303  lectro-  B64-10271  tail flame B65-10108  cers at  B63-10572  | 03<br>01<br>01             | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum qathode improves electron-to-evaporation of tantalum JPL-WOO-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source puide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency LEWIS-160  ELECTRON DENSITY  Microwave technique measures plasma   | B65-10051 0  nigh  B65-10203 0  neam  B65-10175 0  by digital  B65-10283 0  produces  B65-10082 0  n chamber  B65-10280 0                          | 01        |
| ELECT No ELECT De ELECT E1              | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for preciselectroforming WOO-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduant itudes up to 20 G. M-FS-86  ROMAGNETIC INSTRUMENT ectromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  ROMAGNETIC MEASUREMENT eter accurately measures flow of letivity fluids  | B65-10015  ion  B65-10303  lectro-  B64-10271  tail flame B65-10108  cers at  B63-10572  B65-10342  ow-conduc-   | 03<br>01<br>01<br>01       | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-toevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source puide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency LEWIS-160  ELECTRON DENSITY  Microwave technique measures plasma characteristics LANGLEY-134  ELECTRON ENERGY   | B65-10051 0  nigh  B65-10203 0  neam  B65-10175 0  by digital  B65-10283 0  produces  B65-10082 0  m chamber  B65-10280 0  B65-10280 0             | 01        |
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| ELECT No ELECT De ELECT E1 ELECT Me     | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for preciselectroforming WOO-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduant itudes up to 20 G. M-FS-86  ROMAGNETIC INSTRUMENT ectromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  ROMAGNETIC MEASUREMENT eter accurately measures flow of letivity fluids  | B65-10015 ion B65-10303 lectro- B64-10271 tail flame B65-10108 cers at B63-10572 B65-10342 ow-conduc- B63-10280  | 03<br>01<br>01<br>01       | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-to-evaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source in wide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency LEWIS-160  ELECTRON DENSITY  Microwave technique measures plasma characteristics LANGLEY-134  ELECTRON ENERGY  Multiaxial analyzer detects low-energietect-329   | B65-10051 0  nigh B65-10203 0  peam B65-10175 0  by digital B65-10283 0  produces B65-10082 0  m chamber B65-10280 0  B65-10122 0                  | 01        |
| ELECT No ELECT De ELECT E1 ELECT Me     | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for precise electroforming WOO-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduant amplitudes up to 20 G. M-FS-86  ROMAGNETIC INSTRUMENT ectromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  ROMAGNETIC MEASUREMENT ter accurately measures flow of livity fluids JPL-0021  ROMAGNETIC SHIELDING enscherce of strong electromagnin presence of strong electromagnin presen | B65-10015  ion B65-10303  lectro- B64-10271  tail flame B65-10108  cers at B63-10572  B65-10342  ow-conduc- B63-10280  ferentials etic fields            | 03<br>01<br>01<br>01<br>05 | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-toevaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source puide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency LEWIS-160  ELECTRON DENSITY  Microwave technique measures plasma characteristics LANGLEY-134  ELECTRON ENERGY  Multiaxial analyzer detects low-energications GSFC-329  ELECTRON FLUX  | B65-10051 0  nigh B65-10203 0  peam B65-10175 0  by digital B65-10283 0  produces B65-10082 0  m chamber B65-10280 0  B65-10122 0  rgy B65-10213 0 | 011013033 |
| ELECT No ELECT De ELECT E1 ELECT Me     | proved conductive paste secures be electrodes MSC-107  ROFORMING ckel solution prepared for precise electroforming WOO-070  ROLYTIC MACHINING proved technique for localizing epolishing features novel nozzles WOO-101  ROMAGNET gnetic field controls carbon arc MSC-139  ROMAGNETIC CONTROL vice calibrates vibration transduamplitudes up to 20 G.  M-FS-86  ROMAGNETIC INSTRUMENT ectromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  ROMAGNETIC MEASUREMENT ter accurately measures flow of livity fluids JPL-0021  ROMAGNETIC SHIELDING cansducer measures temperature dif  | B65-10015  ion B65-10303  lectro- B64-10271  tail flame B65-10108  cers at B63-10572  B65-10342  ow-conduc- B63-10280  ferentials                        | 03<br>01<br>01<br>01<br>05 | Metal sheath improves thermocouple of graphite in one leg NU-0011  ELECTROMYOGRAM  Tiny biomedical amplifier combines in performance, low power drain ARC-41  ELECTRON BEAM  Tantalum gathode improves electron-to-evaporation of tantalum JPL-W00-021  Electron-beam deflection controlled signals GSFC-385  ELECTRON BOMBARDMENT  Multiple element soft X-ray source puide range of radiation GSFC-286  Electron bombardment improves vacuum efficiency LEWIS-160  ELECTRON DENSITY  Microwave technique measures plasma characteristics LANGLEY-134  ELECTRON ENERGY  Multiaxial analyzer detects low-energistics GSFC-329  ELECTRON FLUX  Multiaxial analyzer detects low-energistics in the second s | B65-10051 0  nigh B65-10203 0  peam B65-10175 0  by digital B65-10283 0  produces B65-10082 0  m chamber B65-10280 0  B65-10122 0  rgy B65-10213 0 | 011013033 |
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| LEWIS-160   | B65-10280                  | 02  | Handtool facilitates extraction of ci   | rcuit      |    |
|---|----------------------------|-----|---|------------|----|
| ELECTRON MULTIPLIER                                     |                            |     | modules<br>LANGLEY-38 B   | 65-10231   | 05 |
| Multiaxial analyzer detects low-                        | energy                     |     |   |            |    |
| electrons<br>GSFC-329                                   | B65-10213                  | 01  | ELECTRONIC STRUCTURE  Screening technique makes reliable bo   | nd at      |    |
|   |                            |     | room temperature  |            |    |
| ELECTRON TUBE  Wire winding incréases lifetime of       | of oride-                  |     | M-FS-227 B  | 65-10004   | 03 |
| coated cathodes   | or oxide                   |     | ELECTROPLATING  |            |    |
| LEWIS-154   | B65-10032                  | 03  | High purity electroforming yields sup metal models  | erior      |    |
| Brushless DC motor uses electron                        | beam                       |     |   | 63-10007   | 05 |
| switching tube as commutator<br>GSFC-345                | 205 14077                  |     | B111 11 1 11 1 11 |            |    |
| GSF C=345   | B65-10237                  | 01  | Ellipsoidal optical reflectors reprod<br>electroforming   | luced by   |    |
| Titanium diaphragm makes excelle                        | nt amplitron               |     |   | 63-10547   | 05 |
| cathode support<br>GSFC-394                             | B65-10298                  | 01  | Metals plated on fluorocarbon polymer   | •          |    |
|   | 200 2000                   | -   |   |            | 03 |
| ELECTRONIC EQUIPMENT Electronic assembly rack panels:   | enen on and                |     | Nickel/tin coating protects threaded  |            |    |
| off   | skap on and                |     | fasteners in corrosive environment  |            |    |
| GSFC-59   | B64-10121                  | 05  | MSC-253 B   | 65-10398   | 03 |
| Wire mesh isolator protects sens                        | itive elec-                |     | ELECTROSTATIC CHARGING  |            |    |
| tronic components                                       | DCE_10216                  | 05  | Vibrating diaphragm measures high   |            |    |
| GSFC-347  | B65-10216                  | ŲĐ  | electrostatic field strengths MSC-189 B   | 65-10352   | 01 |
| Electronic ohmmeter provides dire                       | ect digital                |     |   |            |    |
| output<br>GSFC—363                                      | B65-10274                  | 01  | ELECTROSTATIC SHIELDING Improved magnetometer uses toroidal g   | ating      |    |
|   |                            |     | coil  |            |    |
| Electron-beam deflection control:<br>signals            | led by digital             |     | GSFC-249  | 865-10103  | 01 |
| GSFC-385  | B65-10283                  | 20  | ELLIPSOID   |            |    |
| Paramaitaido bausino conto taran                        |                            |     | Fresnel cup reflector directs maximum from light source   | energy     |    |
| Boron nitride housing cools trans<br>WOO-079            | B65-10289                  | 01  |   | 63-10263   | 03 |
| mile 411  | 41                         |     | Pinnteri Pinne  |            |    |
| Thin-film resistors used in function electronic blocks  | tional                     |     | EMBRITTLEMENT  New alloy brazes titanium to stainles  | s steel    |    |
| GSFC-380  | B65-10305                  | 01  |   |            | 05 |
| Standoff tool speeds placement of                       | f friction-fit             |     | ENISSION  |            |    |
| electrical terminals                                    |                            |     | Emission tester for high-power vacuum   |            |    |
| ₩00-029   | B65-10348                  | 05  | JPL-628   | 364-10158  | 01 |
| Multiphase clock-pulse generator                        | uses                       |     | EMITTER   |            |    |
| simplified circuitry<br>M-FS-297                        | B65-10353                  | 01  | Two-stage emitter follower is tempera<br>stabilized   | ature      |    |
| H-1 3-237   | pes-10333                  | 01  |   | 863-10493  | 01 |
| Blood-pressure measuring system                         | gives accurate             |     | ENCAPSULATION   |            |    |
| graphic output<br>MSC-191                               | B65-10365                  | 01  | Connector for thermocouple leads save   | s costly   |    |
|   |                            |     | wire, makes reliable connectors   |            |    |
| Insulator-holder protects transis electronic assemblies | stors in dense             |     | LANGLEY-26  | 363-10529  | 01 |
| MSC-214   | B65-10389                  | 01  | Plastic molds reduce cost of encapsul   | lating     |    |
| Adhesive-backed terminal board e                        | liminates                  |     | electric cable connectors<br>M-FS-69  | 863-10568  | 05 |
| mounting screws   | 112186103                  |     |   |            | •- |
| MSC-173   | B65-10396                  | 01  | Encapsulation process sterilizes and<br>surgical instruments  | preserves  |    |
| ELECTRONIC EQUIPMENT TESTING                            |                            |     |   | B64-10066  | 05 |
| Probe tests microweld strength WOO-118                  | 945_10111                  | 05  | ENCODER   |            |    |
| 400 110   | B65-10111                  | V-0 | Variable word length encoder reduces  | TV         |    |
| Piezoresistive gage tests pin-co-<br>sockets            | nnector                    |     | bandwidth requirements<br>LANGLEY-87  | 865-10345  | 01 |
| JPL-675   | B65-10128                  | 01  | LANGLET-OF  | 100-100-10 | -  |
|   |                            |     | ENERGY  |            |    |
| Novel probe simplifies electronic testing               | c component                |     | Fresnel cup reflector directs maximum from light source   | m susidA   |    |
| GSFC-342  | B65-10243                  | 01  |   | B63-10263  | 03 |
| ELECTRONIC INSPEGTION DEVICE                            |                            |     | Regenerative fuel cell combines high  |            |    |
| Continuity tester screens out fa                        | ulty socket                |     | efficiency with low cost  | nes 12025  |    |
| connections<br>JPL-596                                  | B64-10065                  | 01  | WDD-090   | B65-10363  | 01 |
|   | DO4-10009                  | V.  | ENERGY ABSORPTION   |            |    |
| ELECTRONIC MODULE Use of tear ring permits repair       | of easled                  |     | Frictional wedge shock mount is inexp<br>has good damping characteristics   | pensive,   |    |
| module circuitry  | O: 250160                  |     |   | B63-10289  | 05 |
| M-FS-210  | B65-10014                  | 05  | Kinetic-energy absorber employs frict   | tional     |    |
|   |                            |     |   |            |    |
| Electronic modules easily separa                        | ted from heat              |     | force between mating cylinders  |            |    |
| Electronic modules easily separa<br>sink<br>MSC-142     | ted from heat<br>B65-10186 | 02  | force between mating cylinders  | B63-10442  | 05 |

| ENERGY CONVERSION  Laser beam transmits electric power             |        |     | JPL-544  | B63-10612               | 03  |
|--|--------|-----|--|-------------------------|-----|
|  | 10158  | 01  | Electroless nickel resist used in a etching of aluminum                | lkali-                  |     |
| ENERGY DISSIPATION  Break-up of metal tube makes one-time sho      | ock    |     | GSFC-284   | B65-10162               | 03  |
| absorber, bars rebound   |        | 05  | Fresnel zone plate forms images at below 1000 angstroms                | wavelengths             |     |
| ENERGY SOURCE  |        |     | GSFC-231   | B65-10171               | 02  |
| Closed fluid system without moving parts controls temperature      |        |     | ETHER Test monkeys anesthetized by routin                              | e procedure             |     |
|  | 10331  | 02  | HQ-18  | B65-10332               | 04  |
| ENGINE Self-balancing beam permits safe, easy lo                   | n a d  |     | ETHYLENE OXIDE  Encapsulation process sterilizes an                    | d Dreserves             |     |
| handling under overhang  |        | 05  | surgical instruments JPL-484   | B64-10066               | 05  |
|  | 10371  | 03  | EUTECTIC ALLOY   | D04-10000               | Ų.  |
| ENGINBERING DEVELOPMENT  Modified contour projector makes excelled | n t    |     | Coating method enables low-temperat                                    | ure                     |     |
| contour densitometer<br>LANGLEY-93 B65-:                           | 10084  | 02  | brazing of stainless steel<br>NU-0030                                  | B65-10250               | 03  |
| ENVIRONMENT  |        |     | EVAPORATION  |                         |     |
| Gallium useful bearing lubricant in high-<br>vacuum environment    | _      |     | Tantalum cathode improves electron-<br>evaporation of tantalum         | beam                    |     |
|  | 10337  | 03  | JPL-W00-021  | B65-10175               | 03  |
| Improved molybdenum disulfide-silver moto                          | or     |     | EXHAUST Refractory thermal insulation for s                            | mooth                   |     |
|  | 10479  | 03  | metal surfaces M-FS-160  | B64-10099               | 0.7 |
| Miniature servo accelerometer is force-                            |        |     |  | #                       | 03  |
| balanced<br>JPL-155 B65-:  | 10340  | 01  | Magnetic field controls carbon arc<br>MSC-139                          | tail flame<br>B65-10108 | 01  |
| ENVIRONMENTAL CHAMBER  |        |     | EXHAUST GAS  |                         |     |
| Double gloves reduce contamination of dry atmosphere               | y box  |     | Plastic bags in evacuated chamber m<br>lightweight gas sampling system | ake                     |     |
|  | 10117  | 03  | FRC-31   | B65-10264               | 01  |
| ENVIRONMENTAL TESTING System transmits mechanical vibration in     | •-     |     | EXHAUST JET Probe samples components of rocket                         | angina                  |     |
| hazardous environment  |        | 0.5 | exhaust  | · ·                     |     |
|  | 10248  | 05  | M-FS-485   | B65-10384               | 03  |
| Multiple test chamber exposes materials<br>various environments    |        |     | EXOTHERMIC REACTION  Nitrogen dioxide produced by self-s               | ustained                |     |
| MSC-179 B65-   | 10268  | 01  | pyrolysis of nitrous oxide<br>LANGLEY-32                               | B65-10074               | 05  |
| EPOXIDE  Integral coolant channels simply made by                  | melt-  |     | EXPANDABLE STRUCTURE   |                         |     |
| out method   | 10497  | 05  | Collapsible truss structure is auto expandable                         | matically               |     |
| EPOXY RESIN  |        |     | GSFC-265   | B65-10126               | 05  |
| Integral coolant channels simply made by out method                | melt-  |     | EXPIRATION  Device induces lungs to maintain kn                        | . Olan                  |     |
|  | 10497  | 05  | constant pressure  |                         |     |
| Stringent cleaning technique assures rel                           | iable  |     | MSC-50   | B64-10108               | 04  |
| epoxy bond<br>GSFC-161 B64-  | 10142  | 03  | EXPLOSIVE Explosives actuate nonmagnetic inde                          | xing device             |     |
| Screening technique makes reliable bond                            | at     |     | GSFC-237   | B65-10017               | 05  |
| room temperature<br>M-FS-227 B65-                                  | 10004  | 03  | EXPLOSIVE DEVICE  Splice plate design assures structu                  | ıral                    |     |
| Aluminum alloys protected against stress                           | _      |     | separation by mild explosive MSC-137                                   | B65-10166               | 05  |
| corrosion cracking   | 10172  | 03  | Threaded split ring connector separ                                    |                         | ••  |
| Epoxy-resin patterns speed shell-molding                           |        | 00  | structural sections LANGLEY-145  | B65-10383               | 05  |
| aluminum parts   |        |     | EXPLOSIVE FORMING  | B05-10363               | 0.5 |
| <del></del> -  | 10177  | 05  | Metal parts hydrosized by explosive                                    |                         |     |
| EQUILIBRIUM FLOW Averaging probe reduces static-pressure           |        |     | M-FS-289   | B65-10170               | 05  |
| sensing errors LANGLEY-36 B65-                                     | 10114  | 05  | EXPOSURE  Electromechanically operated camera                          | shutter                 |     |
| ERROR SIGNAL   |        |     | provides uniform exposure<br>JPL-357                                   | B63-10227               | 01  |
| Circuit detects errors in address curren magnetic core arrays      | ts for |     | EXTRUSION  | J                       |     |
|  | 10047  | 01  | Rapid billet loader aids extrusion                                     | of refrac-              |     |
| ETCHING  |        |     | tory metals<br>LEWIS-50  | B63-10354               | 05  |
| Metals plated on fluorocarbon polymers                             |        |     |  |                         |     |

| Guide for extrusion dies eliminates                            | •                    |     | M-FS-257   | B65-10129         | 02 |
|--|----------------------|-----|--|-------------------|----|
| straightening operation<br>LEWIS-152                           | B64-10014            | 05  | FEEDBACK   |                   |    |
|  |                      |     | Electrostatically driven dynamic ca                                      | pacitor           |    |
| Integral ribs formed in metal pane! press extrusion            | la by cold-          |     | employs capacitive feedback<br>JPL-771                                   | B65-102 <b>93</b> | 01 |
| M-FS-230   | B65-10141            | 05  |  | 10230             | •• |
| EYE HOVEMENT   |                      |     | FEEDBACK AMPLIFIER Voltage variable oscillator has hig                   | h                 |    |
| Photoelectric sensor output control                            | lled by              |     | stability  | n phase           |    |
| eyeball movements<br>M-FS-274                                  | B65-10079            | 01  | LANGLEY-123  | B65-10204         | 01 |
| n-15-2/4   | B03-10073            | 01  | FEEDBACK CONTROL SYSTEM  |                   |    |
| F  |                      |     | Apparatus measures very small thrus                                      |                   |    |
| FAIRING  |                      |     | W00~048  | 864-10284         | 05 |
| Pressure transducer 3/8-inch in siz                            | e can be             |     | Feedback oscillator functions as lo                                      | w-level           |    |
| foired into surface<br>WOO-065                                 | B64-10021            | 05  | pulse stretcher<br>GSFC-261  | 865-10069         | 01 |
|  |                      |     |  |                   |    |
| FASTENER V-slotted scrow head and matching of                  | iriving tool         |     | Noncontacting vibration transducer constant sensitivity                  | has               |    |
| facilitate insertion and removal                               |                      |     | LANGLEY-99   | B65-10392         | 01 |
| fasteners<br>FRC-16  | B63-10023            | 05  | FEEDING DEVICE   |                   |    |
|  |                      |     | Tension is servo controlled in film                                      | advance           |    |
| Heavy-duty staple remover operated<br>JPL-IT-1004              | by hand<br>B63-10292 | 05  | system<br>Langley-54   | B65-10075         | 05 |
| 3FL-11-1004  | 56301-608            | 0.5 | LANGLEI-34   | D03-10075         | 05 |
| Buckle joins web straps quickly, ad                            | ijusts               |     | FERRITE  |                   |    |
| easily<br>Langley-21   | B64-10119            | 05  | Small digital recording head has pa<br>channels, minimizes cross talk    | rallel bit        |    |
|  |                      |     | JPL-0029   | B63-10284         | 01 |
| Electronic assembly rack panels sna<br>off                     | p on and             |     | New sintering process adjusts magne                                      | tic value         |    |
| GSFC-59  | B64-10121            | 05  | of ferrite cores   |                   |    |
| Flexible fastener allows thermal ex                            | pansion              |     | GSFC-129   | B63-10606         | 01 |
| LANGLEY-40   | B64-10145            | 05  | Molded elastomer provides compact f                                      | errite-core       |    |
| Threading hook facilitates safe rec                            | overy of             |     | holder, simplifies assembly<br>JPL-584                                   | B64-10084         | 05 |
| heavy loads  | <u> </u>             |     |  | 20. 1000.         | •• |
| MSC-46   | B64-10185            | 05  | FIBER Plastic plus stainless-steel fibers                                | nako              |    |
| Fastener provides cooling and compe                            | ensates for          |     | resilient, impermeable material  |                   |    |
| thermal expansion<br>NU-0003                                   | B65-10038            | 05  | ₩00 <b>-24</b> 6   | B65-10374         | 03 |
| 40 VVVV  | B00 10000            |     | FIELD EFFECT TRANSISTOR /FET/  |                   |    |
| Low-cost tool minimizes damage to ( during installation        | -rings               |     | Field-effect transistor improves el<br>amplifier                         | ectrometer        |    |
| MSC-140  | B65-10116            | 05  | ARC-36   | B64-10143         | 01 |
| Coiled spring makes self-locking de                            | wice for             |     | Field effect transistors used as vo                                      | ltage-            |    |
| threaded fasteners   | evice ior            |     | controlled resistors   | 1 taye-           |    |
| MSC-149  | B65-10135            | 05  | M-FS-174   | B64-10163         | 01 |
| Galvanic corrosion reduced in alumi                            | num                  |     | Logarithmic amplifier uses field ef                                      | fect              |    |
| fabrications<br>H-FS-272                                       | B65-10140            | 0.7 | transistors<br>JPL-509   | 265 1 0 1 4 5     | 01 |
| n-13-212   | D03-10140            | 03  | JFL-309  | B65-10145         | U1 |
| Captive nut fastener securely joins materials                  | s brittle            |     | Field effect transistor presents hi                                      | gh input          |    |
| NU-0008  | B65-10245            | 05  | impëdance in AC amplifier<br>JPL-500                                     | B65-10232         | 01 |
| Bundahing took-i   |                      |     | Pielderddark Americker 1   | .1                |    |
| Burnishing technique improves lubri<br>threaded fasteners      | cation of            |     | Field-effect transistor replaces bu<br>transformer in analog-gate circui |                   |    |
| LEWIS-217  | B65-10302            | 03  | GSFC-351   | B65-10284         | 01 |
| Fastener distributes stress evenly                             | from                 |     | FILAMENT   |                   |    |
| sandwich-panel-hung items                                      |                      |     | Radiant heater for vacuum furnaces                                       |                   |    |
| MSC-236  | B65-10358            | 05  | structural rigidity, low heat los<br>LEWIS-39                            | B63-10342         | 01 |
| Nickel/tin coating protects thread                             |                      |     |  |                   |    |
| fasteners in corrosive environment MSC-253                     | nt<br>B65–10398      | 03  | FILAMENT WINDING  Fiberglass parts cured during filas                    | ent winding       |    |
| PATTGUP  |                      |     | eliminates oven, saves time  | -                 |    |
| FATIGUE Apparatus facilitates pressure-test                    | ting of              |     | M-FS-14  | B65-10088         | 03 |
| metal tubing   |                      |     | FILM   | _                 |    |
| LEWIS-174  | B65-10131            | 05  | Tension is servo controlled in file                                      | advance           |    |
| FATIGUE LIFE   |                      |     | LANGLEY-54   | B65-10075         | 05 |
| Control of component differential bearing life                 | nardness             |     | System selects framing rate for spe                                      | ctrograph         |    |
| LEWIS-190  | B65-10251            | 05  | camera   | •                 |    |
| FATIGUE TESTING MACHINE  |                      |     | LANGLEY-55   | B65-10086         | 01 |
| Apparatus permits flexure testing of at cryogenic temperatures | of specimens         |     | FILTER Modified filter prevents conduction                               | of micro-         |    |

| wave signals along high-voltag<br>leads<br>JPL-63                         | ge power supply<br>B63-10091 | 01  | FLIP-FLOP<br>Binary counter uses fluid logic elements<br>M-FS-323 B65-10377     | 01 |
|---|------------------------------|-----|---|----|
| Filter for high-pressure gases h<br>down, assembly                        | •                            | 0.7 | FLOOR Portable flooring protects finished surfaces,                             |    |
| JPL-373   | B63-10234                    | 03  | is easily moved<br>M-FS-15 B63-10387  | 05 |
| Cryogenic filter method produces<br>helium and helium isotopes<br>JPL-374 | 863-10235                    | 03  | FLOW CHARACTERISTICS Oil-smeared models aid wind tunnel                         |    |
| Fine-particle filter prevents de  | amage to vacuum              |     | measurements<br>LANGLEY-4 B63-10311   | 03 |
| LEWIS-106   | B63-10489                    | 05  | Probe measures characteristics of hot gas stream                                |    |
| High-pass RF coaxial filter rejo  | ects DC and low              |     | M-FS-240 B65-10133  | 02 |
| GSFC-73   | B64-10173                    | 01  | FLOW MEASUREMENT Fluid-pressure meter can be calibrated without                 |    |
| Rotating filters permit wide ran<br>pyrometry                             | nge of optical               |     | removal from flow line M-FS-98 B63-10502  | 05 |
| LANGLEY-33  | B65-10100                    | 02  | Instrument calibrates low gas-rate flowmeters                                   |    |
| FITTING  Self sealing disconnect for tub                                  | ing forms metal              |     | MSC-134 B65-10137   | 01 |
| seal after breakaway<br>JPL-354   | B63-10226                    | 05  | FLOW METER Meter accurately measures flow of low-conduc-                        |    |
| Special pliers connect hose con-  | taining liquid               |     | tivity fluids JPL-0021 B63-10280  | 01 |
| under pressure<br>JPL-IT-1003   | B63~10291                    | 05  | Fluid-pressure meter can be calibrated without removal from flow line           |    |
| Inexpensive check valve is inst   | alled in                     |     | M-FS-98 B63-10502   | 05 |
| standard AN fittings<br>JPL-2A  | B65-10222                    | 05  | Ball bearing used in design of rugged flow-<br>meter                            |    |
| Strainer fits inside flared-tub<br>LANGLEY-180                            | e fittings<br>B65-10388      | 05  | LEWIS-159 B64-10170   | 05 |
| FLAME   | B63-10366                    | 0.5 | Instrument calibrates low gas-rate flowmeters<br>MSC-134 B65-10137              | 01 |
| Magnetic field controls carbon<br>MSC-139                                 | arc tail flame<br>B65-10108  | 01  | Electromechanical flowmeter accurately monitors fluid flow                      |    |
| FLANGE Flange on microwave antenna sub                                    | reflector cuts               |     | GSFC-357 B65-10273  | 01 |
| ground noise<br>JPL-362   | B63-10229                    | 01  | Improved strain-wire flowmeter has fast<br>response time<br>LEWIS-241 865-10304 | 01 |
| FLARED BODY   | . #!##:                      |     |   | -  |
| Strainer fits inside flared-tub<br>LANGLEY-180                            | B65-10388                    | 05  | Volumetric system calibrates meters for large flow rates WOD-130 B65-10323      | 05 |
| FLAT SURFACE Sensitive level sensor made wit                              |                              |     | Optical output enhances flowmeter accuracy                                      |    |
| level, gives electrical outpu<br>LANGLEY-49                               | B65-10067                    | 01  | M-FS-482 B65-10395 FLOW RATE  | 02 |
| FLAW  |                              |     | Elastic orifice automatically regulates gas                                     |    |
| Apparatus facilitates pressure-<br>metal tubing                           | testing of                   |     | bearings<br>JPL-135 B63-10123   | 05 |
| LEWIS-174   | B65-10131                    | 05  | FLOW REGULATOR  |    |
| FLAW DETECTION Crack detection method is safe                             | in presence of               |     | Flow control valve is independent of pressure drop                              |    |
| liquid oxygen<br>M-FS-236   | B65-10107                    | 03  | JPL-W00-039 B65-10121   | 05 |
| FLEXPBILITY   | 200 20201                    |     | Electromechanical flowmeter accurately monitors fluid flow                      |    |
| Flexible honeycomb structure ca   | in bend to fit               |     | GSFC-357 B65-10273  | 01 |
| M-FS-13   | B63-10385                    | 05  | FLUID High-pressure regulating system prevents                                  |    |
| Adhesive for vacuum environment and vibration                             |                              |     | pressure surges  JPL-231  B63-10170   | 05 |
| MSC-56  | B65-10016                    | 03  | Cooling method prolongs life of hot-wire  |    |
| Extendible column can be stowed JPL-686                                   | l on drum<br>B65-10191       | 05  | transducer<br>LEWIS-41 863-10344  | 02 |
| FLEXURE   |                              |     | Connector seals fluid lines at cryogenic  |    |
| Lightweight universal joint tra<br>torque and thrust                      |                              |     | temperatures and high vacuums GSFC-253 B64-10327                                | 05 |
| JPL-375   | B63-10236                    | 05  | Improved fluid control valve extends diaphragm                                  | 1  |
| Flexure support system protects dynamically loaded models                 | s thermally and              |     | life<br>JPL-345 B65-10147   | 05 |
| LANGLEY-39  | B65-10042                    | 05  | Closed fluid system without moving parts  |    |
|   |                              |     |   |    |

| controls temperature  |                          |     | Light ray modulation controls optica                                      | ıl system   |     |
|---|--------------------------|-----|---|-------------|-----|
| LEWIS-222   | B65-10331                | 02  | alignment<br>GFSC-171   | B65-10211 0 | 2   |
| Magnetic fluid readily controlled i<br>gravity environment          | in zero                  |     | FOIL  |             |     |
| LEWIS-126   | B65-10335                | 03  | Indium foil with beryllia washer importantial transistor heat dissipation | roves       |     |
| Binary counter uses fluid logic ele<br>M-FS-323                     | ments<br>B65-10377       | 01  | GSFC-42   | B63-10033 0 | )1  |
|   |                          | -   | Ceramic-coated boat is chemically in                                      | iert,       |     |
| Three-dimensional wire-mesh capacit<br>measures fluid density       |                          |     | provides good heat transfer<br>LANGLEY-90                                 | B65-10063 0 | )5  |
| WD0-194   | B65-10379                | 01  | FORCE   |             |     |
| Electrically heated diaphragm elimi of pyrotechnics                 | inates use               |     | System measures unidirectional force excludes extraneous forces           | <b>:</b> 5, |     |
| MSC-241   | B65-10400                | 01  | LEWIS-170   | B65-10154 0 | )5  |
| FLUID POWER   |                          |     | FORGING   |             |     |
| Fluid-pressure measurement apparatu<br>short-length manometer tubes | is uses                  |     | Upsetting butt edge increases weld-j<br>strength                          | joint       |     |
| LEWIS-28  | B65-10027                | 05  | M-FS-175  | B64-10164 0 | )5  |
| FLUID SWITCHING ELEMENT   | h. 1 20                  |     | FORMING   |             |     |
| Liquid switch is remotely operated voltage                          |                          |     | Angular glass tubing drawn from rous<br>HQ-20                             |             | 15  |
| GSFC-119  | B63-10599                | 01  | FRACTURE  |             |     |
| FLUID TRANSMISSION LINE Safety restrainer prevents whipping         | . of                     |     | Pressure molding of powdered materia<br>improved by rubber mold insert    | ıls         |     |
| ruptured high-pressure hose   |                          |     | WOO-100   | B64-10270 0 | 3   |
| LEWIS-99  | B64-10348                | 05  | FRAGMENTATION   |             |     |
| FLUORESCENCE Oil-smeared models aid wind tunnel                     |                          |     | Break-up of metal tube makes one-time absorber, bars rebound              | ae shock    |     |
| measurements  |                          |     | LANGLEY-1A  | B63-10304 0 | 05  |
| LANGLEY-4   | B63-10311                | 03  | FRAME   |             |     |
| Distant objects detected visually wood optical filters              | ith                      |     | Apparatus alters position of objects facilitate demagnetization           | ; to        |     |
| LANGLEY-166   | B65-10252                | 02  | GSFC-234  | B64-10277 C | 05  |
| FLUORO COMPOUND   |                          |     | Simple circuit positions film frame:                                      | s in        |     |
| Organic reactants rapidly produce p LANGLEY-37                      | lastic foam<br>B65-10288 | 03  | projector<br>JPL-508  | B65-10132 ( | 02  |
| FLUOROCARBON  |                          |     | FREE STREAM   |             |     |
| Metals plated on fluorocarbon polys                                 |                          |     | Averaging probe reduces static-press                                      | sure        |     |
| JPL-544   | B63-10612                | 03  | sensing errors<br>Langley-36  | B65-10114 ( | 05  |
| Low-cost seal compensates for surfa<br>irregularities               | ice                      |     | FREQUENCY   |             |     |
| NU-0016   | B65-10160                | 05  | Voltage generator sweeps oscillator                                       | frequency   |     |
| Electronic modules easily separated                                 | i from heat              |     | linearly with time<br>M-FS-219  | B64-10320 ( | 01  |
| sink<br>HSC-142   | B65-10186                | 02  | FREQUENCY CONTROL   |             |     |
| FLUX  |                          |     | Transistorized trigger circuit is for controllable                        | requency-   |     |
| Improved magnetometer uses toroidal coil                            | gating                   |     | GSFC-111  | B63-10553 ( | 01  |
| GSFC-249  | B65-10103                | 01  | FM oscillator uses tetrode transiste                                      |             |     |
| FLUX DENSITY  |                          |     | JPL-82  | B65-10055 ( | 01  |
| Shaped superconductor cylinder reta                                 | sins intense             |     | Variable frequency transistor inver-<br>mutiple core transformers         | ters use    |     |
| JPL-381   | B63-10238                | 01  | GSFC-183  | B65-10119 ( | 01  |
| Computer programs simplify optical                                  | system                   |     | Frequency offset in linear FM/CW tra                                      | ansponder   |     |
| analysis<br>GSFC-306  | 865-10093                | 01  | eliminates clutter<br>M-FS-249  | B65-10146 ( | 01  |
| FOAM  | 200 20020                |     | Frequency correction device uses di                                       | aital       |     |
| Organic reactants rapidly produce ;                                 |                          |     | circuitry   | -           |     |
| LANGLEY-37  | B65-10288                | 03  | GSFC-268  | B65-10307 ( | 01  |
| FOAMED MATERIAL Compact assembly generates plastic                  | foam.                    |     | FREQUENCY CONVERSION  Frequency-shift-keyer circuit improve               | ves PCM     |     |
| inflates flotation bag  |                          | 0.5 | conversion for radio transmission GSFC-80                                 |             | 01  |
| LANGLEY-96  | B65-10090                | 05  |   |             | , 1 |
| Soluble undercoating facilitates i foamed-in-place insulation       | removal of               |     | Electronic ampere—hour integrator is to one percent                       | s accurate  |     |
| LEWIS-193   | B65-10344                | 03  | GSFC-203  | B65-10308   | 01  |
| FOCUS   |                          |     | Frequency discriminator with binary                                       | output      |     |
| Fresnel cup reflector directs maxis from light source               | um energy                |     | eliminates tuned circuits   |             |     |
| JPL-424   | B63-10263                | 03  |   |             |     |

| M-FS-376  | B65-10349                 | 01         | ible drive<br>ARC-8   | B63-10009           | 05 |
|---|---------------------------|------------|---|---------------------|----|
| FREQUENCY CONVERTER Circuit converts AM signals to FM             | for                       |            | Kinetic-energy absorber employs fri   |                     | 05 |
| magnetic recording GSFC-227                                       | B65-10001                 | 01         | force between mating cylinders<br>LEWIS-75                                  | B63-10442           | 05 |
| Traveling-wave tube circuit simpl                                 | ifies                     |            | Gate valve with ceramic-coated base   |                     |    |
| microwave relay<br>GSFC-299                                       | B65-10127                 | 01         | at high temperatures<br>ARC-23  | B63-10562           | 03 |
| FREQUENCY DIVIDER   |                           |            | Buckle joins web straps quickly, ad   | justs               |    |
| Unijunction frequency divider is a backward loading               | free of                   |            | easily<br>LANGLEY-21  | B64-10119           | 05 |
| JPL-W00-010   | B65-10112                 | 01         | FUEL CELL   |                     |    |
| Frequency divider is free of spur<br>GSFC-308                     | ious outputs<br>B65-10334 | 01         | Fuel cell serves as oxygen level de<br>JPL-SC-072                           | tector<br>B65-10066 | 01 |
| FREQUENCY MEASUREMENT Small foamed polystyrene shield p           | rotects low-              |            | Regenerative fuel cell combines hig<br>efficiency with low cost             | h                   |    |
| frequency microphones from wind M-FS-123                          |                           | 01         | WD0-090   | B65-10363           | 01 |
| Nonresonant support facilitates v                                 |                           | <b>V</b> - | FUNCTION GENERATOR Zener diode function generator requ                      | ires no             |    |
| testing of structures M-FS-224                                    | B65-10039                 | 05         | external reference voltage<br>JPL-33  | B65-10013           | 01 |
| FREQUENCY MODULATION  | 000 10005                 | •••        | FURNACE   | 200 10010           | •• |
| Tunnel-diode circuit features zer clipping                        | o-level                   |            | Radiant heater for vacuum furnaces<br>structural rigidity, low heat los     |                     |    |
| GSFC-241  | B65-10002                 | 01         | LEWIS-39  | B63-10342           | 01 |
| Voltage variable oscillator has h<br>stability                    | igh phase                 |            | Rapid billet loader aids extrusion tory metals                              | of refrac-          |    |
| LANGLEY-123   | B65-10204                 | 01         | LEWIS-50  | B63-10354           | 05 |
| FM/CW system measures aircraft at M-FS-276                        | titude<br>B65-10290       | 01         | FUSE<br>Splice plate design assures structu                                 | 1                   |    |
|   | B03-10290                 | 01         | separation by mild explosive MSC-137  | B65-10166           | 05 |
| FREQUENCY MULTIPLIER Phase detector circuit synthesize            | s own                     |            |   |                     | US |
| reference signal<br>M-FS-247                                      | B65-10080                 | 01         | Cam-operated limit switch features replacement                              |                     |    |
| FREQUENCY RANGE   | -1.4.14                   |            | MSC-218<br>FUSION   | B65-10322           | 01 |
| Increased performance reliability with dual /redundant/ oscillato | r system                  | 0.1        | Circuit reliability boosted by sold   | ering pins          |    |
| GSFC-36   | B63-10027                 | 01         | of disconnect plugs to sockets<br>JPL-447                                   | B64-10002           | 01 |
| Photoresistance analog multiplier range                           |                           |            | G   |                     |    |
| GSFC-360  | B65-10287                 | 01         | GALLIUM   |                     |    |
| FREQUENCY REGULATOR Hybrid circuit achieves pulse reg             | eneration                 |            | Gallium useful bearing lubricant in vacuum environment                      | -                   |    |
| with low power drain<br>GSFC-382                                  | B65-10314                 | 01         | LEWIS-12  | B63-10337           | 03 |
| FREQUENCY RESPONSE  |                           |            | GALLIUM ARSENIDE  New method used to fabricate galliu                       | m arsenide          |    |
| Simple device produces accelerome calibration pulse               |                           |            | photovoltaic device<br>WOO-062  | B64-10019           | 01 |
| M-FS-363  | B65-10269                 | 01         | Economical fabrication process prod   | uces high-          |    |
| Device detects unbonded areas in<br>laminates                     |                           |            | quality junction transistors<br>JPL-SC-065                                  | B64-10330           | 01 |
| W00-206   | B65-10380                 | 01         | Thermocompression bonding produces  | efficient           |    |
| FREQUENCY-SHIFT KEYING Frequency-shift-keyer circuit imp          |                           |            | surface-barrier diode<br>JPL-SC-066   | B65-10007           | 05 |
| conversion for radio transmissi<br>GSFC-80                        | on<br>B63-10511           | 01         | Laser beam transmits electric power<br>GSFC-293                             | В65-10158           | 01 |
| FREQUENCY SYNTHESIS  Phase shift frequency synthesizer            | is                        |            | GALVANOMETER  |                     |    |
| efficient, small in size<br>M-FS-250                              | B65-10169                 | 01         | Light-sensitive potentiometer measu<br>product of two variables<br>GSFC-240 | B65-10076           | 01 |
| FRESNEL REFLECTOR Fresnel cup reflector directs max               | imum energy               |            | GAP   |                     |    |
| from light source<br>JPL-424                                      | B63-10263                 | 03         | Shrinkable sleeve eliminates shield in RF cable                             | ing gap             |    |
| Wide-aperture solar energy collec                                 |                           |            | WOO-207   | B65-10387           | 01 |
| in weight JPL-SC-055  | B65-10046                 | 02         | GAS Filter for high-pressure gases has                                      | easy take-          |    |
| FRICTION  |                           |            | down, assembly JPL-373  | B63-10234           | 03 |
| Chain friction system gives posit                                 | ive, revers-              |            |   |                     |    |

| Pulsed plasma accelerator operates  |               |    | GASKET  |                       |     |
|---|---------------|----|---|-----------------------|-----|
| repetitively without complex controls LANGLEY-48 B65-                           |               | 01 | Flexible plastic ring assembly makes shaft seal               | durable               |     |
|   |               | •• |   | B65-10367             | 05  |
| Inert gas spraying device aids in repair  | r of          |    |   |                       |     |
| hazardous systems<br>LEWIS-8B B65-  | <b>⊢10115</b> | 05 | GASOLINE  Inert gas spraying device aids in re                | nair of               |     |
| 22413 02  | 10110         | •0 | hazardous systems   | pari or               |     |
| GAS ANALYZER  |               |    | LEWIS-8B  | B65-10115             | 05  |
| Rapid helium-air analyzer can measure o<br>binary gas mixtures                  | ther          |    | GAUGE   |                       |     |
|   | -10557        | 03 | Level of super-cold liquids automati                          | cally                 |     |
|   |               |    | maintained by levelometer                                     |                       |     |
| GAS BEARING   |               |    | JPL-397   | B63-10250             | 01  |
| Elastic orifice automatically regulates<br>bearings                             | ges           |    | GEAR  |                       |     |
|   | -10123        | 05 | Chain friction system gives positive                          | . revers-             |     |
|   |               |    | ible drive  |                       |     |
| Hodified gas bearing is adjustable to o<br>stiffness ratio                      | ptimum        |    | ARC-8   | B63-10009             | 05  |
|   | -10050        | 05 | Shock absorber protects motive compo                          | nen ts                |     |
|   |               |    | against overloads   |                       |     |
| Pneumatic power is transmitted through  | air           |    | W00-092   | B65-10008             | 05  |
| bearing<br>MSC-8 B64:   | -10141        | 05 | Bidirectional torque filter eliminat                          | 09                    |     |
|   |               | •- | backlash  |                       |     |
| GAS COOLING SYSTEM  | _             |    | GSFC-335  | B65-10148             | 05  |
| High-temperature, high-pressure spheric<br>segment valve provides quick opening | al            |    | Unique core design provides colf-lub                          | niestien              |     |
|   | -10431        | 05 | Unique gear design provides self-lub<br>JPL-SC-079            | B65-10366             | 03  |
| -   |               |    |   |                       |     |
| GAS EVOLUTION   |               |    | GEAR TOOTH  |                       |     |
| Plated nickel wire mesh makes superior catalyst bed                             |               |    | Device measures curved surface finis gear teath               | n on                  |     |
|   | -10321        | 03 | •   | B65-10064             | 05  |
|   |               |    |   |                       |     |
| GAS FLOW High-pressure regulating system prevent:                               |               |    | Unique gear design provides self-lub JPL-SC-079               | rication<br>B65-10366 | 03  |
| pressure surges   | . 5           |    | 3F 12-3C-V/3  | B03-10300             | 0.5 |
|   | <b>-10170</b> | 05 | GENERATOR   |                       |     |
| Blade valve isolates compartment in pip-  | _             |    | Binary system generates sidereal rat                          | e from                |     |
| opens to allow free flow  | e,            |    | standard solar rate<br>GSFC-190                               | B64-10200             | 01  |
|   | -10188        | 05 | 33. 4 233   |                       |     |
| * . 4   |               |    | Voltage generator sweeps oscillator                           | frequency             |     |
| Instrument calibrates low gas-rate flow<br>MSC-134 B65-                         |               | 01 | linearly with time<br>M-FS-219                                | B64-10320             | 01  |
| 101   |               |    |   | 501 20000             |     |
| GAS LUBRICATED BEARING  |               |    | GEOGRAPHY   |                       |     |
| Slit feeds reduce unbalanced torques in gas-lubricated bearings                 | ì             |    | Density trace made with computer pri<br>GSFC-322              | ntout<br>B65-10200    | 01  |
|   | -10099        | 05 | 051 C 022   | 500 10200             | •-  |
|   |               |    | GINBAL  |                       |     |
| GAS MIXTURE   | Ab            |    | Ball-and socket joints provide accur<br>biaxial gimbal        | ate                   |     |
| Rapid helium-air analyzer can measure o<br>binary gas mixtures                  | raer          |    |   | B65-10205             | 05  |
|   | -10557        | 03 |   |                       |     |
| CAC DEFECUE   |               |    | GLASS   |                       |     |
| GAS PRESSURE Precision gage measures ultrahigh vacuu                            | 12            |    | IR-transmission glasses formed from bismuth and tellurium     | OXIGES OF             |     |
| levels  | -             |    |   | B65-10190             | 03  |
| GSFC-114 B63  | -10597        | 01 |   |                       |     |
| Device induces lungs to maintain known  |               |    | Thin transparent films formed from p glass                    | owdered               |     |
| constant pressure   |               |    |   | B65-10217             | 03  |
|   | -10108        | 04 |   |                       |     |
| GAS STREAM  |               |    | Angular glass tubing drawn from roun HO-20                    | d tubing<br>B65-10235 | 05  |
| Apparatus measures concentration of sus   | pended        |    | uáea  | C62017-600            | Ųΰ  |
| droplets in gas streams   | .,            |    | Porous glass makes effective substra                          | te for                |     |
| LANGLEY-31 B64  | -10237        | 01 | ozone-sensing reagent   | DCE10364              | ۵.  |
| Probe measures characteristics of hot g   | las           |    | GSFC-388  | B65-10364             | 03  |
| stream  | , 4.5         |    | GLASS FIBER   |                       |     |
| H-FS-240 B65  | -10133        | 02 | Flexible curtain shields equipment f                          | rom                   |     |
| Instrument calibrates low gas-rate flow   | mete          |    | intense heat fluxes<br>M-FS-48                                | 865-10044             | 03  |
|   |               | 01 |   |                       |     |
|   |               |    | Fiberglass parts cured during filame                          | ent winding           |     |
| Internal cooling increases range of   |               |    | eliminates oven, saves time<br>M-FS-14                        | B65-10088             | 03  |
| immersion-type temperature probe<br>LEVIS-171 B65                               | -10157        | 02 | U_L9_T4   | #03-1000              | UJ  |
|   |               |    | Fiberglass dies speed forming of lar                          | ge metal              |     |
| GASEOUS DIFFUSION   |               |    | sheets<br>M-FS-214  | P65_10210             | 05  |
| Impurity diffusion process for silicon semiconductors is fast and precise       |               |    | :1-F 3-614  | B65-10210             | 40  |
|   | 5-10300       | 01 | GOLD ALLOY  |                       |     |
|   |               |    | Thermocompression bonding produces e<br>surface-barrier diode | erricient             |     |

| JPL-SC-066  | B65-10007                 | 05 | LANGLEY-6A   | B63-10318                | 03 |
|---|---------------------------|----|--|--------------------------|----|
| GRAPH Simple scale interpolator facilita                                    | ites                      |    | GYROSCOPE Slit feeds reduce unbalanced torques   | s in                     |    |
| reading of graphs<br>LANGLEY-88   | B65-10070                 | 05 | gas-lubricated bearings<br>JPL-264   | B65-10099                | 05 |
| Blood-pressure measuring system gi  | ves accurate              |    | н  |                          |    |
| graphic output<br>MSC-191   | B65-10365                 | 01 | HAND   |                          |    |
| GRAPHIC ARTS Disk calculator indicates legible                              | lettering                 |    | Standoff tool: speeds placement of fi<br>electrical terminals<br>WOO-029               | B65-10348                | 05 |
| size for slide projection<br>GSFC-409                                       | B65-10339                 | 05 | HANDLING EQUIPMENT   |                          |    |
| Modified procedure speeds camera of for offset printing                     | opy layout                |    | Filler device for handling hot corre<br>materials<br>MSC-85                            | B64-10166                | 03 |
| GSFC-424  | B65-10373                 | 02 | Remotely operated clamping tool has  | positive                 |    |
| GRAPHITE  Metal sheath improves thermocouple  graphite in one leg           | using                     |    | grip<br>NU-0020  | B65-10254                | 05 |
| NU-6011   | B65-10051                 | 01 | Hollow plastic hoops protect thermo-<br>in storage and handling                        | souple                   |    |
| Graphite element serves as radians<br>M-FS-105                              | heat source<br>B65-10218  | 01 | NU-0023  | B65-10256                | 05 |
| GRATING   |                           |    | HARDENING Quick-hardening problems are elimina   |                          |    |
| Simple optical system used to all<br>spectrograph<br>LANGLEY-92             | gn<br>B65–10071           | 02 | spray gun modification which mixes<br>accelerator liquids during applica<br>LANGLEY-6A |                          | 03 |
| GRAVITATIONAL EFFECT  |                           |    | Stringent cleaning technique assure  | s reliable               |    |
| Technique simulates effect of red<br>LANGLEY-44                             | uced gravity<br>B64-10146 | 04 | epoxy bond<br>GSFC-161   | B64-10142                | 03 |
| GRAVITY   | _                         |    | HAZARD   |                          |    |
| Miniature servo accelerometer is :<br>balanced<br>JPL-155                   | B65-10340                 | 01 | Low-cost insulation system for cryo:<br>eliminates need for a vacuum<br>LEWIS-64       | B63-10365                | 03 |
| GREASE  |                           |    | HEART RATE   |                          |    |
| Lightweight load support serves a:<br>damper                                |                           |    | Digital cardiometer computes and dis<br>heartbeat rate                                 | •                        |    |
| JPL-661   | B65-10144                 | 05 | MSC-93   | B64-10258                | 01 |
| Electronic modules easily separate sink                                     |                           |    | Inexpensive, stable circuit measure:<br>rate   | s heart                  |    |
| MSC-142   | B65-10186                 | 02 | MSC-95   | B65-10010                | 01 |
| GRID Fine-mesh screen made by simplification WOO-104                        | ed method<br>864-10282    | 03 | Digital-output cardiotachometer mea<br>changes in heartbeat rate<br>MSC-133            | sures rapid<br>B65-10143 | 01 |
| Radiation detector-optical hangin   | g device is               |    | HEAT CONTENT   |                          |    |
| of simplified construction GSFC-251   | B64-10299                 | 01 | Probe measures characteristics of he stream  | ot gas                   |    |
| Forming blocks speed production o   | f strain gage             |    | M-FS-240   | B65-10133                | 02 |
| grids<br>LEWIS-182  | B65~10009                 | 05 | HEAT DISSIPATION<br>Indium foil with beryllia washer im                                | proves                   |    |
| Wire bundle formed into grids wit   | h minute                  |    | transistor heat dissipation GSFC-42  | β63-10033                | 01 |
| interstices<br>WOO-089  | B65-10372                 | 03 | HEAT EXCHANGER   |                          |    |
| GRINDING MACHINE Lathe converted for grinding asph                          | eric surfaces             |    | Cantilever springs maintain tension<br>thermally expanded wires<br>LEWIS-136           | 1n<br>B65-10149          | 05 |
| GSFC-115  | B63-10556                 | 05 | Spiraled channels improve heat tran  | sfer between             |    |
| Rotating holder permits accurate<br>metallurgical microsamples<br>LEWIS-131 | grinding of<br>B65-10262  | 05 | fluids<br>JPL-694  | B65-10291                | 02 |
|   | 10202                     | 03 | HEAT FLUX  | • -• · ·                 |    |
| GROOVE  New package for belleville spring change, easy disassembly          | permits rate              |    | Graphite element serves as radiant<br>M-FS-105   | B65-10218                | 01 |
| JPL-392   | B63-10247                 | 05 | Air-cured ceramic coating insulates<br>high heat fluxes                                | against                  |    |
| GROUND RESONANCE Flange on microwave antenna subre                          | flector cuts              |    | M-FS-150   | B65-10357                | 03 |
| ground noise<br>JPL-362   | B63-10229                 | 01 | HEAT RESISTANGE<br>Removable preheater elements improv<br>induction furnace            | e oxide                  |    |
| GUN<br>Quick-hardening problems are elim                                    | inated with               |    | JPL-288  | 863-10193                | 01 |
| spray gun modification which mi<br>accelerator liquids during appl          | xes resin and             |    | Thermally conductive metal wool-sil  |                          |    |

| vibration damper  |   |                                  |  |  |                      |
|---|---|----------------------------------|--|--|----------------------|
| JPL-321   | B63-10207   | 03                               | Wire winding increases lifetime of a<br>coated cathodes<br>LEWIS-154   |  | 03                   |
| HEAT SHIELD   |   |                                  |  |  |                      |
| New method forms bond line free of<br>LANGLEY-20  | B63-10558   | 05                               | Efficient thin film heating element minimum space GSFC-289   | takes<br>B65-10123   | 01                   |
| Refractory thermal insulation for   | smooth  |                                  |  |  |                      |
| metal surfaces<br>M-FS-160  | B64-10099   | 03                               | Cantilever springs maintain tension thermally expanded wires   | in   |                      |
| HEAT SINK   | BO4 10033   | 0.5                              | LEWIS-136  | B65-10149  | 05                   |
| Indium foil with beryllia washer i  | improves  |                                  | Heater decomposes oil backstreaming  | from   |                      |
| transistor heat dissipation<br>GSFC-42  | B63-10033   | 01                               | high-vacuum pumps<br>GSFC-356  | B65-10224  | 20                   |
| Mounting for diodes provides effic  | ient heat   |                                  | HEATING Integral coolant channels simply ma  | de by melt-  |                      |
| M-FS-197  | B64-10283   | 01                               | out method   |  |                      |
| Automatic thermal switch accelerat  |   |                                  | M-FS-91  | B63-10497  | 05                   |
| cooling-down of cryogenic system  |   |                                  | HEATING EQUIPMENT  |  |                      |
| JPL-655   | B65-10068   | 01                               | Refractory metal shielding /insulat  | i on/  |                      |
|   |   |                                  | increases operating range of indu  |  |                      |
| Refractory oxides evaluated for<br>high-temperature use   |   |                                  | LEWIS-202  | B65-10188  | 02                   |
| LANGLEY-121   | B65-10167   | 03                               | HELICAL WINDING  |  |                      |
|   | 200 2020.   | ••                               | Helical tube separates nitrogen gas  | from   |                      |
| Electronic modules easily separate  | ed from heat  |                                  | liquid nitrogen  |  |                      |
| sink  | DCE 1010C   |                                  | JPL-398  | B63-10251  | 05                   |
| MSC-142   | B65-10186   | 02                               | Helical coaxial-resonator makes exc  | ellent   |                      |
| Wire mesh isolator protects sensit  | ive elec-   |                                  | RF filter  | errent.  |                      |
| tronic components   |   |                                  | GSFC-243   | B65-10012  | 01                   |
| GSFC-347  | B65-10216   | 05                               | Int rathers  |  |                      |
| Boron mitride housing cools transi  | ietore  |                                  | HELICOPTER Scoop attachment makes helicopter re  | ecoveries  |                      |
| W00-079   | B65-10289   | 01                               | easier and safer   | ecover rea   |                      |
|   |   |                                  | MSC-130  | B65-10229  | 05                   |
| HEAT SOURCE   |   |                                  |  |  |                      |
| Graphite element serves as radiant  | heat source<br>B65-10218  | 01                               | HELIUM  Cryogenic filter method produces su  |  |                      |
| H-13-103  | 903-10210   | 01                               | helium and helium isotopes   | per-pure   |                      |
| HEAT TRANSFER   |   |                                  | JPL-374  | B63-10235  | 03                   |
| High purity electroforming yields   | superior  |                                  |  |  |                      |
| metal models<br>ARC-6   | B63-10007   | 05                               | Supercold technique duplicates magne   | etic field   |                      |
| ARC-0   | B63-10007   | US                               | in second superconductor<br>JPL-376  | B63-10237  | 05                   |
|   |   |                                  |  |  |                      |
| Cooling method prolongs life of ho  | ot-wire   |                                  |  |  |                      |
| transducer  |   |                                  | Low-cost insulation system for cryo  | stats  |                      |
|   | B63-10344   | 02                               | eliminates need for a vacuum   |  | 0.2                  |
| transducer<br>LEWIS-41  | B63-10344   | 02                               |  | stats<br>B63-10365   | 03                   |
| transducer  | B63-10344   | 02                               | eliminates need for a vacuum   | B63-10365  | 03                   |
| transducer<br>LEWIS-41<br>New method used to fabricate light  | B63-10344   | 02                               | eliminates need for a vacuum<br>LEWIS-64<br>Rapid helium-air analyzer can measu<br>binary gas mixtures   | B63-10365<br>re other  |                      |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43   | B63-10344<br>t-weight heat<br>B63-10346   |                                  | eliminates need for a vacuum<br>LEWIS-64<br>Rapid helium-air analyzer can measu  | B63-10365  | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her   | B63-10344<br>t-weight heat<br>B63-10346   |                                  | eliminates need for a vacuum<br>LEWIS-64<br>Rapid helium-air analyzer can measu<br>binary gas mixtures<br>LANGLEY-16   | B63-10365<br>re other  |                      |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43   | B63-10344<br>t-weight heat<br>B63-10346   |                                  | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety hel  | B63-10365 re other B63-10557   |                      |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466   | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122   | 02                               | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety hel- radio transmitter, receiver   | B63-10365 re other B63-10557 met holds   | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i   | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122   | 02                               | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety hel  | B63-10365 re other B63-10557   |                      |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments a and vibration   | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122<br>resists shock  | 02                               | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  | B63-10365 re other B63-10557 met holds   | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i   | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122   | 02                               | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety hel- radio transmitter, receiver   | B63-10365 re other B63-10557 met holds B64-10015   | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly inco  | B63-10344 i-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016   | 02                               | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled is gravity environment  | B63-10365 re other B63-10557 met holds B64-10015   | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low hea rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly inci accuracy of measurements   | B63-10344 it-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016  | 02<br>01<br>03                   | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in  | B63-10365 re other B63-10557 met holds B64-10015   | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly inco  | B63-10344 i-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016   | 02                               | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  | B63-10365 re other B63-10557 met holds B64-10015   | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly incr accuracy of measurements LANGLEY-62  | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122<br>resists shock<br>B65-10016<br>reases   | 02<br>01<br>03                   | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL   | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335  | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments and vibration MSC-56  Thermistor connector assembly inca accuracy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probe  | B63-10344 i-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045  | 02<br>01<br>03<br>01             | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall  | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet-  | 03<br>05             |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly incr accuracy of measurements LANGLEY-62  Internal cooling increases range of   | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122<br>resists shock<br>B65-10016<br>reases<br>B65-10045  | 02<br>01<br>03                   | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro   | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335  | 03                   |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly inci accuracy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probe LEWIS-171  | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122<br>resists shock<br>B65-10016<br>reases<br>B65-10045  | 02<br>01<br>03<br>01             | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198  | 03<br>05             |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments and vibration MSC-56  Thermistor connector assembly increased of measurements LANGLEY-62  Internal cooling increases range immersion-type temperature probellewis-171  Insulation accelerates rate of coorgogenic fluid   | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122<br>resists shock<br>B65-10016<br>reases<br>B65-10045  | 02<br>01<br>03<br>01             | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids  | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198  | 03<br>05<br>03       |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments is and vibration MSC-56  Thermistor connector assembly increacy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probatewis-171  Insulation accelerates rate of cooling increases   | B63-10344<br>t-weight heat<br>B63-10346<br>at-transfer<br>B64-10122<br>resists shock<br>B65-10016<br>reases<br>B65-10045  | 02<br>01<br>03<br>01             | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro   | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198  | 03<br>05             |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments is and vibration MSC-56  Thermistor connector assembly increacy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probectives-171  Insulation accelerates rate of concryogenic fluid MSC-161   | B63-10344 i-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240                                    | 02<br>01<br>03<br>01             | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47   | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth  | 03<br>05<br>03       |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments is and vibration MSC-56  Thermistor connector assembly increaccuracy of measurements LANGLEY-62  Internal cooling increases range is immersion-type temperature probe LEWIS-171  Insulation accelerates rate of concryogenic fluid MSC-161  Vacuum chamber provides improved is   | B63-10344 i-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240                                    | 02<br>01<br>03<br>01             | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY  | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043                                      | 03<br>05<br>03       |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments is and vibration MSC-56  Thermistor connector assembly increacy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probectives-171  Insulation accelerates rate of concryogenic fluid MSC-161   | B63-10344 i-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240                                    | 02<br>01<br>03<br>01             | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY Highly efficient square-wave oscill ator at high power levels  | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043 ator oper-                           | 03<br>05<br>03       |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments is and vibration MSC-56  Thermistor connector assembly increased of measurements LANGLEY-62  Internal cooling increases range is immersion-type temperature probe LEWIS-171  Insulation accelerates rate of concryogenic fluid MSC-161  Vacuum chamber provides improved is and support for cryostat M-FS-415   | B63-10344 t-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240 Insulation                         | 02<br>01<br>03<br>01<br>02       | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERNETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY Highly efficient square-wave oscill  | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043                                      | 03<br>05<br>03       |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly incr accuracy of measurements LANGLEY-62  Internal cooling increases range immersion-type temperature probe LEWIS-171  Insulation accelerates rate of cor cryogenic fluid MSC-161  Vacuum chamber provides improved i and support for cryostat M-FS-415   | B63-10344 t-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240 insulation B65-10368               | 02<br>01<br>03<br>01<br>02       | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERNETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY Highly efficient square-wave oscill ator at high power levels GSFC-112   | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043 ator oper-                           | 03<br>05<br>03       |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments is and vibration MSC-56  Thermistor connector assembly increacy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probe LEWIS-171  Insulation accelerates rate of cor cryogenic fluid MSC-161  Vacuum chamber provides improved and support for cryostat M-FS-415  HEATER Apparatus facilitates high-tempera   | B63-10344 t-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240 insulation B65-10368               | 02<br>01<br>03<br>01<br>02       | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measu binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety heli radio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY Highly efficient square-wave oscill ator at high power levels  | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043 ator oper- B63-10554                 | 03<br>05<br>03       |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly incr accuracy of measurements LANGLEY-62  Internal cooling increases range immersion-type temperature probe LEWIS-171  Insulation accelerates rate of cor cryogenic fluid MSC-161  Vacuum chamber provides improved i and support for cryostat M-FS-415   | B63-10344 t-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240 insulation B65-10368               | 02<br>01<br>03<br>01<br>02       | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measur binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety helication transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY Highly efficient square-wave oscill ator at high power levels GSFC-112  HIGH FREQUENCY Computer determines high-frequency stability         | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043 ator oper- B63-10554 phase           | 03<br>05<br>03<br>05 |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly incr accuracy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probe LEWIS-171  Insulation accelerates rate of cor cryogenic fluid MSC-161  Vacuum chamber provides improved i and support for cryostat M-FS-415  HEATER  Apparatus facilitates high-temperatesting in vacuum LEWIS-42                                      | B63-10344 t-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240 insulation B65-10368 ature tensile | 02<br>01<br>03<br>01<br>02<br>02 | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measur binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety helicadio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY Highly efficient square-wave oscill ator at high power levels GSFC-112  HIGH FREQUENCY Computer determines high-frequency                    | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043 ator oper- B63-10554                 | 03<br>05<br>03       |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments is and vibration MSC-56  Thermistor connector assembly increaccuracy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probe LEWIS-171  Insulation accelerates rate of coorcyogenic fluid MSC-161  Vacuum chamber provides improved is and support for cryostat M-FS-415  HEATER  Apparatus facilitates high-temperatusting in vacuum LEWIS-42  Filler device for handling hot con | B63-10344 t-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240 insulation B65-10368 ature tensile | 02<br>01<br>03<br>01<br>02<br>02 | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measur binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety helicadio transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY Highly efficient square-wave oscill ator at high power levels GSFC-112  HIGH FREQUENCY Computer determines high-frequency stability GSFC-113 | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043 ator oper- B63-10554 phase B63-10555 | 03<br>05<br>03<br>05 |
| transducer LEWIS-41  New method used to fabricate light exchanger for rocket motor LEWIS-43  Simple transducer measures low her rates JPL-466  Adhesive for vacuum environments i and vibration MSC-56  Thermistor connector assembly incr accuracy of measurements LANGLEY-62  Internal cooling increases range of immersion-type temperature probe LEWIS-171  Insulation accelerates rate of cor cryogenic fluid MSC-161  Vacuum chamber provides improved i and support for cryostat M-FS-415  HEATER  Apparatus facilitates high-temperatesting in vacuum LEWIS-42                                      | B63-10344 t-weight heat B63-10346 at-transfer B64-10122 resists shock B65-10016 reases B65-10045 of B65-10157 oling with B65-10240 insulation B65-10368 ature tensile | 02<br>01<br>03<br>01<br>02<br>02 | eliminates need for a vacuum LEWIS-64  Rapid helium-air analyzer can measur binary gas mixtures LANGLEY-16  HELMET Comfortable, lightweight safety helication transmitter, receiver MSC-53  HEPTANE Magnetic fluid readily controlled in gravity environment LEWIS-126  HERMETIC SEAL Device transmits rotary motion thro ically sealed wall JPL-303  Mouthpiece adapter for pipettes pro from harmful liquids LANGLEY-47  HIGH EFFICIENCY Highly efficient square-wave oscill ator at high power levels GSFC-112  HIGH FREQUENCY Computer determines high-frequency stability         | B63-10365 re other B63-10557 met holds B64-10015 n zero B65-10335 ugh hermet- B63-10198 tects mouth B65-10043 ator oper- B63-10554 phase B63-10555 | 03<br>05<br>03<br>05 |

| HIGH POWER<br>Highly efficient square-wave oscilla   | tor oner-                 |     | JPL-463  | B65-10037          | 05 |
|--|---------------------------|-----|--|--------------------|----|
| ator at high power levels  | ator oper                 |     | Carbon-arc rod holder has long life,   | reduces            |    |
| GSFC-112   | B63-10554                 | 01  | arc splatter   | B65-10095          | 03 |
| HIGH PRESSURE  |                           |     |  |                    |    |
| High-pressure regulating system prev   | vents                     |     | Insulator-holder protects transistor   | s in dense         |    |
| pressure surges<br>JPL-231   | B63-10170                 | 05  | electronic assemblies<br>MSC-214   | B65-10389          | 01 |
|  |                           |     | HONEYCOMB  |                    |    |
| High-temperature, high-pressure sphe<br>segment valve provides quick openi   |                           |     | Apparatus permits flexure testing of   | gnecimens          |    |
| ARC-13   | B63-10431                 | 05  | at oryogenic temperatures  | opoor              |    |
|  |                           |     | M-FS-257   | B65-10129          | 02 |
| Pneumatic power is transmitted throu   | ugh air                   |     | WOULDWARKS GODS  |                    |    |
| bearing<br>MSC-8   | B64-10141                 | 05  | HONEYCOMB CORE  Flexible honeycomb structure can ber   | d to #1+           |    |
| H3C-0  | D04-10141                 | 0.5 | compound curves  | id to III          |    |
| HIGH SPEED   |                           |     | M-FS-13  | B63-10385          | 05 |
| Ohmmeter senses depletion of lubrica   | ant in                    |     | HORY ANDRINA   |                    |    |
| journal bearings<br>LEWIS-37   | B64-10042                 | 01  | HORN ANTENNA Novel horn antenna reduces side lobe  |                    |    |
| 22,15 07   | DO4 10042                 | 01  | improves radiation pattern   | ,                  |    |
| HIGH STRENGTH ALLOY  |                           |     |  | B63-10264          | 01 |
| New cobalt alloys have high-temperat   |                           |     |  |                    |    |
| strength and long life in vacuum of LEWIS-47   | environments<br>B63-10351 | 03  | HOT GAS  Probe measures characteristics of ho  |                    |    |
| DERIO TI   | 200 10001                 | ••  | stream   | , t gas            |    |
| HIGH TEMPERATURE   |                           |     | M-FS-240   | B65-10133          | 02 |
| Radiant heater for vacuum furnaces   |                           |     | HOW HERE ANDMONDERS  |                    |    |
| structural rigidity, low heat los:<br>LEWIS-39   | s<br>B63-10342            | 01  | HOT-WIRE ANEMOMETER Cooling method prolongs life of hot-   | uino               |    |
| 22413 03   | B00 10012                 | 01  | transducer   | <b>4</b> 11.6      |    |
| Apparatus facilitates high-temperat  | ure tensile               |     | LEWIS-41   | B63-10344          | 02 |
| testing in vacuum<br>LEWIS-42  | B63-10345                 | 03  | HUMAN BODY   |                    |    |
| PEM12-45   | B03-10345                 | 03  | Novel shock absorber features varying  | a vield            |    |
| High-temperature, high-pressure sphe   | erical                    |     | strengths  |                    |    |
| segment valve provides quick open  |                           |     | MSC-63A  | B64-10138          | 03 |
| ARC-13   | B63-10431                 | 05  | HUMAN REACTION   |                    |    |
| Gate valve with ceramic-coated base  | operates                  |     | Technique simulates effect of reduce   | d aravity          |    |
| at high temperatures   |                           |     | LANGLEY-44   | B64-10146          | 04 |
| ARC-23   | B63-10562                 | 03  | HYBRID COMPUTER  |                    |    |
| HIGH TEMPERATURE ENVIRONMENT   |                           |     | Hybrid computer technique yields ran   | ndom.              |    |
| New cobalt alloys have high-tempera  | ture                      |     | signal probability distributions   |                    |    |
| strength and long life in vacuum   |                           |     | ARC-34   | B65-10208          | 01 |
| LEWIS-47   | B63-10351                 | 03  | HYDRAULIC ACTUATOR   |                    |    |
| Fastener provides cooling and compe  | nsates for                |     | Device disconnects several couplings   | 3                  |    |
| thermal expansion  |                           |     | simultaneously   |                    |    |
| NU-0003  | B65-10038                 | 05  | JPL-226  | B65~10163          | 05 |
| Refractory oxides evaluated for  |                           |     | HYDRAULIC EQUIPMENT  |                    |    |
| high-temperature use   |                           |     | Upsetting butt edge increases weld-  | joint              |    |
| LANGLEY-121  | B65-10167                 | 03  | strength<br>M-FS-175   | DC4 101C4          | 05 |
| HIGH TEMPERATURE MATERIAL  |                           |     | n-13-173   | B64-10164          | 03 |
| Rapid billet loader aids extrusion   | of refrac-                |     | Hydraulic device provides accurate   |                    |    |
| tory metals  |                           |     | displacements to microinches   |                    |    |
| LEWIS-50   | B63-10354                 | 05  | MSC-112  | B65-10230          | 05 |
| HIGH VACUUM  |                           |     | Shock absorber operates over wide ra   | ange               |    |
| Gallium useful bearing lubricant in  | high-                     |     | MSC-168  | B65-10241          | 05 |
| vacuum environment<br>LEWIS-12   | B63-10337                 | 03  | HYDRAULIC SYSTEM   |                    |    |
| BUTTO 10   | 700 - 10001               | 00  | New nut and sleeve improve flared co   | onnections         |    |
| Improved molybdenum disulfide-silve  | r motor                   |     | M-FS-194   | B65-10180          | 05 |
| brushes have extended life   | nca 10:==                 | 0.0 | The Account to the Control of the Co | . 1                |    |
| M-FS-64  | B63-10479                 | 03  | Hydraulic drive system prevents back<br>JPL-371  | klash<br>B65-10351 | 05 |
| Instrument accurately measures extr  | emely low                 |     | *. u 0/1   | 200 20001          |    |
| air densities  |                           |     | HYDRAZINE  |                    |    |
| M-FS-193   | B65-10221                 | 01  | Solder flux leaves corrosion-resistation coating on metal  | ant                |    |
| HIGH VOLTAGE   |                           |     | JPL-611  | B64~10206          | 03 |
| Modified filter prevents conduction  | of micro-                 |     |  |                    | _  |
| wave signals along high-voltage p<br>leads   | ower ambby                |     | HYDROGEN  Cryopumping of hydrogen in vacuum c  | h                  |    |
| JPL-63   | B63-10091                 | 01  | aided by catalytic oxidation of h  |                    |    |
|  |                           |     | LEWIS-15   | B63-10340          | 05 |
| HOLDER   |                           |     | MAR 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1  |                    |    |
| Molded elastomer provides compact f holder, simplifies assembly  | errite-core               |     | Miniature oxygen-hydrogen cutting to<br>constructed from hypodermic needle   |                    |    |
| JPL-584  | B64-10084                 | 05  | JPL-545  | B63-10517          | 05 |
| Tomasson & bolder or a set of the |                           |     |  |                    |    |
| Improved holder protects crystal du  | ring high                 |     | HYDROGEN PEROXIDE  |                    |    |
| acceleration and impact  |                           |     | Plated nickel wire mesh makes super  | ior                |    |

| catalyst bed<br>MSC-216  | B65-10321       | 03    | ARC-26  | B64-10004     | 01  |
|--|-----------------|-------|---|---------------|-----|
| H3C-210  | DOD 10021       | •••   | IMPACT ACCELERATION   |               |     |
| HYDROSTATIC PRESSURE   |                 |       | Improved holder protects crystal dur                                | ing high      |     |
| Nonresonant support facilitates                                  | vibration       |       | acceleration and impact   | •             |     |
| testing of structures  |                 |       | JPL-463   | B65-10037     | 05  |
| M-FS-224   | B65-10039       | 05    | 7404 ch   |               |     |
| HYSTERESIS   |                 |       | IMPACT DECELERATION  Kinetic-energy absorber employs fric           | . + I a = 1   |     |
| New package for belleville spri                                  | ng permits rate |       | force between mating cylinders                                      | LIURAI        |     |
| change, easy disassembly   |                 |       | LEWIS-75  | 863-10442     | 05  |
| JPL-392  | B63-10247       | 05    |   |               |     |
| _  |                 |       | INPEDANCE   |               |     |
| Į.   |                 |       | High-pass RF coaxial filter rejects frequency signals               | DC and low    |     |
| I-BEAN   |                 |       | GSFC-73   | B64-10173     | 01  |
| Self-balancing beam permits saf                                  | e. easy load    |       | 0010 10   | 501 101.0     | ••  |
| handling under overhang  | . •             |       | IMPINGEMENT   |               |     |
| H-FS-84  | B63-10571       | 05    | Improved technique for localizing el                                | ectro-        |     |
| TOUTOPD  |                 |       | polishing features novel nozzles WDO-101                            | 864-10271     | ^1  |
| IGNITER Igniting system for mercury vap                          | or lamps pro-   |       | WOU-101   | 004-102/1     | 01  |
| tects transistorized sustaini                                    |                 |       | IMPURITY  |               |     |
| JPL-421  | B63-10262       | 01    | Impurity diffusion process for silic                                | on            |     |
|  |                 |       | semiconductors is fast and precise                                  |               |     |
| IGNITION SYSTEM  |                 |       | GSFC-397  | B65-10300     | 01  |
| Igniting system for mercury vap<br>tects transistorized sustaini |                 |       | INCLINATION   |               |     |
| JPL-421  | B63-10262       | 01    | Averaging probe reduces static-press                                | ure           |     |
| #1 L 401   | 200 10202       | •-    | sensing errors  |               |     |
| Circuit controls transients in                                   | SCR inverters   |       | LANGLEY-36  | B65-10114     | 05  |
| GSFC-120   | B63-10600       | 01    |   |               |     |
| g  |                 |       | INDICATOR   | 4             |     |
| Carbon arc ignition improved by<br>auxiliary circuit             | Simple          |       | Speed-sensing device aids crane oper WS-4                           | B64-10006     | 05  |
| MSC-103  | B65-10018       | 01    | *5 4  | DO4 10000     | ••• |
|  |                 |       | Coaxial capacitor used to determine                                 | fluid         |     |
| IGNITRON   |                 |       | density   |               |     |
| Compact SCR trigger circuit for                                  | ignitron        |       | LEWIS-232   | B65-10296     | 02  |
| switch operates efficiently                                      | DCE 16747       |       | 74 -4-1 4-44 41884 603  |               |     |
| H-FS-371   | B65-10347       | 01    | Test strips detect different CO2 concentrations in closed compartme |               |     |
| ILLUNINATION   |                 |       | MSC-210   | B65-10390     | 03  |
| New low-level AC amplifier prov                                  | ides            |       |   |               |     |
| adjustable noise cancellation                                    | and automatic   |       | INDIUM  |               |     |
| temperature compensation   |                 |       | Indium foil with beryllia washer imp                                | proves        |     |
| MSC-108  | B65-10003       | 05    | transistor heat dissipation<br>GSFC-42                              | B63-10033     | 01  |
| IMAGE  |                 |       | 03FC-42   | B03-10033     | 01  |
| Setting of angles on machine to                                  | ols speeded by  |       | INDUCTANGE  |               |     |
| magnetic protractor  | •               |       | Simple circuit produces high-speed,                                 | fixed         |     |
| ARC-5  | B63-10006       | 01    | duration pulses   |               |     |
| Built-is towntobes asset up asset                                | *               |       | GSFC-285  | B65-10228     | 01  |
| Built-in templates speed up pro<br>accurate models               | cess for making |       | Increased junction lead inductance t                                | allasts       |     |
| LANGLEY-23   | B63-10526       | 05    | high-frequency transistors  |               |     |
|  |                 |       | GSFC-387  | B65-10259     | 01  |
| Fresnel zone plate forms images                                  | at wavelengths  |       |   |               |     |
| below 1000 angstroms<br>GSFC-231                                 | Dec 1015-       | • • • | INDUCTION HEATING EQUIPMENT  Removable preheater elements improve   | . aulde       |     |
| G5FC-251   | B65-10171       | 02    | induction furnace   | e oxide       |     |
| IMAGE CONVERTER  |                 |       | JPL-288   | B63-10193     | 01  |
| Electron-beam deflection contro                                  | lled by digital |       |   |               |     |
| signals  | - <del>-</del>  |       | Refractory metal shielding /insulati                                |               |     |
| GSFC-385   | B65-10283       | 02    | increases operating range of induc                                  | ction furnace | e   |
| IMAGE TRANSDUCER   |                 |       | LEWIS-202   | B65-10188     | 02  |
| Cesium iodide crystals fused to                                  | vacuum tube     |       | INDUCTOR  |               |     |
| faceplates   | vacuum tuoc     |       | Inductor flyback characteristic give                                | es voltage    |     |
| GSFC-67  | B63-10476       | 03    | regulator fast response   | _             |     |
| THATTIC SPANITANT  |                 |       | GSFC-361  | B65-10257     | 01  |
| IMAGING TECHNIQUE  |                 |       | INERT ATMOSPHERE  |               |     |
| Electromechanically operated ca<br>provides uniform exposure     | mera snutter    |       | Thoristed nickel bonded by solid-st                                 | ate           |     |
| JPL-357  | B63-10227       | 01    | diffusion method  | <del>-</del>  |     |
|  |                 |       | LANGLEY-116   | B65-10220     | 03  |
| IMBEDDING  |                 |       |   |               |     |
| Pressure transducer 3/8-inch in                                  | size can be     |       | Refractory metals welded or brazed                                  | with          |     |
| faired into surface<br>WNN-065                                   | DE410021        | 05    | tungsten inert gas equipment<br>LEWIS-219                           | B65-10319     | 05  |
| WUU-VO3  | B64-10021       | 05    | Praid-CTA   | 700 10313     | 00  |
| IMMERSION  |                 |       | Inert-gas welding and brazing enclos                                | sure          |     |
| Wedge immersed thermistor bolom                                  | eter measures   |       | fabricated from sheet plastic                                       |               |     |
| infrared radiation   |                 |       | LEWIS-220   | B65-10338     | 05  |
| GSFC-443   | B65-10330       | 02    | THERT CAC   |               |     |
| IMPACT   |                 |       | INERT GAS  Novel clamps align large rocket case                     | es.           |     |
| Ultra-sensitive transducer adva                                  | inces micro-    |       | eliminate back-up bars  | 7             |     |
| Beaturement range  |                 |       | M-FS-1  |               | 05  |

| Welding procedure improves quality   | of welds,  |                                  | Transistor voltage comparator perfor sensing   | ms own  |                                  |
|--|--|----------------------------------|--|---|----------------------------------|
| offers other advantages<br>M-FS-32   | B64-10309  | 01                               |  | B65-10028   | 01                               |
| INERTIA MOMENT   |  |                                  | Photoelectric semiconductor switch o   | perates   |                                  |
| Device enables measurement of momen inertia about three axes   | ts of  |                                  | with low level inputs  | -   | 01                               |
| GSFC-49  | B65-10176  | 05                               |  | 200   |                                  |
| INFLATABLE STRUCTURE   |  |                                  | INSERT Gate valve with ceramic-coated base   | operates  |                                  |
| New inflatable liferaft is nontippa<br>MSC-4A  | ble<br>B64-10001   | 05                               | at high temperatures<br>ARC-23   | B63-10562   | 03                               |
|  | 20. 10001  |                                  | INSERTION  |   |                                  |
| INFORMATION PROCESSING Superconductor magnets used for sta   | gger-tuning  |                                  | Improved insertion-loss tester   |   |                                  |
| traveling-wave maser<br>GSFC-292   | B65-10165  | 01                               | JPL-358  | 864-10080   | 01                               |
| INFORMATION RETRIEVAL  |  |                                  | INSPECTION Use of photographs speeds inspection  | . of  |                                  |
| Opaque microfiche masthead permits   | easy   |                                  | printed-circuit boards   |   | ^1                               |
| reading<br>HQ-7  | B65-10306  | 01                               | · · · · · -  |   | 01                               |
| INFRARED RADIATION   |  |                                  | Crack detection method is safe in pr<br>liquid oxygen  | esence of   |                                  |
| IR-transmission glasses formed from bismuth and tellurium  | oxides of  |                                  |  | B65-10107   | 03                               |
| M-FS-279   | B65-10190  | 03                               | INSTALLATION   |   |                                  |
| Infrared shield facilitates optical  | pyrometer  |                                  | Low-cost tool minimizes damage to O-<br>during installation  | rings   |                                  |
| measurements<br>LANGLEY-133  | B65-10272  | 02                               | MSC-140  | B65-10116   | 05                               |
|  |  |                                  | INSTRUMENTATION  |   |                                  |
| Wedge immersed thermistor bolometer<br>infrared radiation  |  |                                  | Instrument adjustment knob locks to accidental maladjustment   |   |                                  |
| GSFC-443   | B65-10330  | 02                               | M-FS-190   | B64-10249   | 05                               |
| INJECTION Filler device for handling hot corr  | ogi vo   |                                  | Gapped toroid provides infinite reso<br>of delay-line pickup   | lution  |                                  |
| materials  |  | •=                               |  | B65-10258   | 01                               |
| MSC-85   | B64-10166  | 03                               | INSULATING MATERIAL  |   |                                  |
| Economical fabrication process produ<br>quality junction transistors<br>JPL-SC-065   | uces high-   |                                  | Modified rf coaxial connector ends w chamber wiring problem  | acuum   |                                  |
|  | B64-10330  | 01                               |  | B64-10010   | 01                               |
| *** ** ***   |  |                                  |  |   |                                  |
| INLET  |  |                                  | INSULATION   |   |                                  |
| INLET Packless valve with all-metal seal   |  |                                  | INSULATION Low-cost insulation system for cryos eliminates need for a vacuum   |   |                                  |
| INLET  |  | 05                               | Low-cost insulation system for cryos<br>eliminates need for a vacuum   |   | 03                               |
| INLET Packless valve with all-metal seal wide temperature, pressure range JPL-361 Filter for high-pressure gases has   | handles<br>B63-10228   | 05                               | Low-cost insulation system for cryos<br>eliminates need for a vacuum<br>LEWIS-64<br>Spherical electrode eliminates high-   | stats<br>863-10365  |                                  |
| INLET Packless valve with all-metal seal wide temperature, pressure range JPL-361  | handles<br>B63-10228   | 05<br>03                         | Low-cost insulation system for cryos<br>eliminates need for a vacuum<br>LEWIS-64   | stats<br>863-10365  |                                  |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  | handles<br>B63-10228<br>easy take-<br>B63-10234  |                                  | Low-cost insulation system for cryos<br>eliminates need for a vacuum<br>LEWIS-64<br>Spherical electrode eliminates high-<br>breakdown<br>LEWIS-155   | stats<br>863-10365<br>-voltage  | 03                               |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibra removal from flow line  | handles<br>B63-10228<br>easy take-<br>B63-10234<br>ated without  | 03                               | Low-cost insulation system for cryos<br>eliminates need for a vacuum<br>LEWIS-64<br>Spherical electrode eliminates high-<br>breakdown<br>LEWIS-155<br>Refractory oxides evaluated for<br>high-temperature use  | 8tats<br>863-10365<br>-voltage<br>865-10139   | 03                               |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibratemoval from flow line M-FS-98   | handles<br>B63-10228<br>easy take-<br>B63-10234  |                                  | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates high- breakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121   | 863-10365<br>-voltage<br>865-10139  | 03                               |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibra removal from flow line  | handles  B63-10228  easy take-  B63-10234  sted without  B63-10502   | 03                               | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates high- breakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from p   | 863-10365<br>-voltage<br>865-10139  | 03<br>01                         |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibratemoval from flow line M-FS-98  INORGANIC COATING  Anodization process produces opaque reflective coatings on aluminum   | handles  B63-10228  easy take-  B63-10234  sted without  B63-10502   | 03                               | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates high- breakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from p   | 863-10365<br>-voltage<br>865-10139  | 03                               |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibrated removal from flow line M-FS-98  INGRGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348   | handles  B63-10228  easy take-  B63-10234  sted without  B63-10502   | 03                               | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from pglass GSFC-352  Insulation accelerates rate of cooli   | 863-10365<br>-voltage<br>865-10139<br>865-10167<br>powdered<br>865-10217  | 03<br>01                         |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibratemoval from flow line M-FS-98  INORGANIC COATING  Anodization process produces opaque reflective coatings on aluminum M-FS-348  INORGANIC COMPOUND Inorganic paint is durable, firepro  | handles  B63-10228 easy take-  B63-10234 ited without  B63-10502   | 03                               | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from pglass GSFC-352   | 863-10365<br>-voltage<br>865-10139<br>865-10167<br>powdered<br>865-10217  | 03<br>01<br>03                   |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibratemoval from flow line M-FS-98  INGRGANIC COATING  Anodization process produces opaque reflective coatings on aluminum M-FS-348  INGRGANIC COMPOUND  | handles  B63-10228 easy take-  B63-10234 ited without  B63-10502   | 03                               | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates high- breakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from p glass GSFC-352  Insulation accelerates rate of cooli cryogenic fluid MSC-161  Closed fluid system without moving p  | ### ### ### ### ### ### ### ### ### ##  | 03<br>01<br>03                   |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibratemoval from flow line M-FS-98  INGRGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INGRGANIC COMPOUND Inorganic paint is durable, fireproto apply   | handles  B63-10228 easy take-  B63-10234 ated without  B63-10502 c,  B65-10336   | 03<br>05<br>03                   | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates high-breakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from pglass GSFC-352  Insulation accelerates rate of coolingryogenic fluid MSC-161  | ### ### ### ### ### ### ### ### ### ##  | 03<br>01<br>03                   |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibrated removal from flow line M-FS-98  INGRGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INGRGANIC COMPOUND Inorganic paint is durable, fireproto apply GSFC-366  INPUT Veitch diagram plotter simplifies to  | handles  B63-10228 easy take-  B63-10234 ated without  B63-10502 c,  B65-10336 cof, easy  B65-10156  | 03<br>05<br>03                   | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from g glass GSFC-352  Insulation accelerates rate of cooli cryogenic fluid MSC-161  Closed fluid system without moving g controls temperature LEWIS-222   | 863-10365<br>-voltage<br>B65-10139<br>B65-10167<br>powdered<br>B65-10217<br>ing with<br>B65-10240<br>parts<br>B65-10331 | 03<br>01<br>03<br>03             |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibratemoval from flow line M-FS-98  INGRGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INGRGANIC COMPOUND Inorganic paint is durable, fireproto apply GSFC-366  | handles  B63-10228 easy take-  B63-10234 ated without  B63-10502 c,  B65-10336 cof, easy  B65-10156  | 03<br>05<br>03                   | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from pglass GSFC-352  Insulation accelerates rate of coolicryogenic fluid MSC-161  Closed fluid system without moving pcontrols temperature LEWIS-222  Soluble undercoating facilitates refoamed-in-place insulation   | ### ### ### ### ### ### ### ### ### ##  | 03<br>01<br>03<br>03             |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibrated removal from flow line M-FS-98  INORGANIC COATING  Anodization process produces opaque reflective coatings on aluminum M-FS-348  INORGANIC COMPOUND  Inorganic paint is durable, fireproto apply GSFC-366  INPUT  Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device swite  | handles  B63-10228 easy take- B63-10234 ated without B63-10502 e, B65-10336 cof, easy B65-10156 coolean B63-10241  | 03<br>05<br>03                   | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from p glass GSFC-352  Insulation accelerates rate of cooli cryogenic fluid MSC-161  Closed fluid system without moving p controls temperature LEWIS-222  Soluble undercoating facilitates re  | 863-10365<br>-voltage<br>B65-10139<br>B65-10167<br>powdered<br>B65-10217<br>ing with<br>B65-10240<br>parts<br>B65-10331 | 03<br>01<br>03<br>03             |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibratemoval from flow line M-FS-98  INGRGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INGRGANIC COMPOUND Inorganic paint is durable, fireproto apply GSFC-366  INPUT  Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device switchines quickly   | handles  B63-10228 easy take-  B63-10234 ated without  B63-10502 e,  B65-10336 cof, easy  B65-10156 coolean  B63-10241 ches two  | 03<br>05<br>03<br>03             | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from glass GSFC-352  Insulation accelerates rate of coolicryogenic fluid MSC-161  Closed fluid system without moving controls temperature LEWIS-222  Soluble undercoating facilitates refoamed-in-place insulation LEWIS-193  Air-cured ceramic coating insulates  | ### ### ### ### ### ### ### ### ### ##  | 03<br>01<br>03<br>03             |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibrated removal from flow line M-FS-98  INORGANIC COATING  Anodization process produces opaque reflective coatings on aluminum M-FS-348  INORGANIC COMPOUND  Inorganic paint is durable, fireproto apply GSFC-366  INPUT  Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device switchines quickly JPL-410   | handles  B63-10228 easy take- B63-10234 ated without B63-10502 e, B65-10336 cof, easy B65-10156 coolean B63-10241 ches two B63-10258   | 03<br>05<br>03                   | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from pglass GSFC-352  Insulation accelerates rate of coolid cryogenic fluid MSC-161  Closed fluid system without moving pcontrols temperature LEWIS-222  Soluble undercoating facilitates refoamed-in-place insulation LEWIS-193   | ### ### ### ### ### ### ### ### ### ##  | 03<br>01<br>03<br>03             |
| INLET Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibrated removal from flow line M-FS-98  INORGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INORGANIC COMPOUND Inorganic paint is durable, fireproto apply GSFC-366  INPUT Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device switch lines quickly JPL-410  Computer circuit will fit on single chip   | handles  B63-10228 easy take- B63-10234 ated without B63-10502 e, B65-10336 cof, easy B65-10156 coolean B63-10241 ches two B63-10258 e silicon                                 | 03<br>05<br>03<br>03<br>05       | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from paglass GSFC-352  Insulation accelerates rate of coolicryogenic fluid MSC-161  Closed fluid system without moving particular temperature LEWIS-222  Soluble undercoating facilitates reformed-in-place insulation LEWIS-193  Air-cured ceramic coating insulates high heat fluxes M-FS-150  INSULATOR   | B65-1031<br>B65-1034<br>B65-10240<br>B65-10331<br>B65-10344<br>B65-10344<br>B65-10357                                   | 03<br>01<br>03<br>02<br>02       |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibratemoval from flow line M-FS-98  INGRGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INGRGANIC COMPOUND Inorganic paint is durable, fireproto apply GSFC-366  INPUT  Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device switchines quickly JPL-410  Computer circuit will fit on single  | handles  B63-10228 easy take- B63-10234 ated without B63-10502 e, B65-10336 cof, easy B65-10156 coolean B63-10241 ches two B63-10258   | 03<br>05<br>03<br>03             | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from pglass GSFC-352  Insulation accelerates rate of coolicryogenic fluid MSC-161  Closed fluid system without moving pcontrols temperature LEWIS-222  Soluble undercoating facilitates refoamed-in-place insulation LEWIS-193  Air-cured ceramic coating insulates high heat fluxes M-FS-150  INSULATOR Connector for thermocouple leads say  | B65-1031<br>B65-1034<br>B65-10240<br>B65-10331<br>B65-10344<br>B65-10344<br>B65-10357                                   | 03<br>01<br>03<br>02<br>02       |
| INLET Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibrated removal from flow line M-FS-98  INORGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INORGANIC COMPOUND Inorganic paint is durable, fireproto apply GSFC-366  INPUT Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device switch lines quickly JPL-410  Computer circuit will fit on single chip JPL-513  Transistorized converter provides in the side of the | handles  B63-10228 easy take- B63-10234 ited without B63-10502   B65-10336  D0f, easy B65-10156  D00lean B63-10241 Ches two B63-10258 e silicon B63-10514                      | 03<br>05<br>03<br>03<br>05       | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from paglass GSFC-352  Insulation accelerates rate of coolicryogenic fluid MSC-161  Closed fluid system without moving particular temperature LEWIS-222  Soluble undercoating facilitates reformed-in-place insulation LEWIS-193  Air-cured ceramic coating insulates high heat fluxes M-FS-150  INSULATOR   | B65-1031<br>B65-1034<br>B65-10240<br>B65-10331<br>B65-10344<br>B65-10344<br>B65-10357                                   | 03<br>01<br>03<br>02<br>02       |
| INLET  Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibrated the removal from flow line M-FS-98  INGRGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INGRGANIC COMPOUND Inorganic paint is durable, fireproto apply GSFC-366  INPUT  Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device switch lines quickly JPL-410  Computer circuit will fit on single chip JPL-513   | handles  B63-10228 easy take- B63-10234 ited without B63-10502   B65-10336  D0f, easy B65-10156  D00lean B63-10241 Ches two B63-10258 e silicon B63-10514                      | 03<br>05<br>03<br>03<br>05       | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from glass GSFC-352  Insulation accelerates rate of coolicryogenic fluid MSC-161  Closed fluid system without moving grontrols temperature LEWIS-222  Soluble undercoating facilitates refoamed-in-place insulation LEWIS-193  Air-cured ceramic coating insulates high heat fluxes M-FS-150  INSULATOR  Connector for thermocouple leads sawire, makes reliable connectors LANGLEY-26  Insulator-holder protects transistore                        | ### ### ### ### ### ### ### ### ### ##  | 03<br>01<br>03<br>02<br>02<br>03 |
| INLET Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibre removal from flow line M-FS-98  INORGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INORGANIC COMPOUND Inorganic paint is durable, firepre to apply GSFC-366  INPUT Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device swite lines quickly JPL-410  Computer circuit will fit on single chip JPL-513  Transistorized converter provides a tive regulation GSFC-238  Stepping motor drive circuit design   | handles  B63-10228 easy take- B63-10234 ated without B63-10502  B65-10336  pof, easy B65-10156  poolean B63-10241 ches two B63-10258 e silicon B63-10514 hondissipa- B64-10305 | 03<br>05<br>03<br>03<br>05<br>01 | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from pglass GSFC-352  Insulation accelerates rate of coolicryogenic fluid MSC-161  Closed fluid system without moving pcontrols temperature LEWIS-222  Soluble undercoating facilitates refoamed-in-place insulation LEWIS-193  Air-cured ceramic coating insulates high heat fluxes M-FS-150  INSULATOR  Connector for thermocouple leads saw wire, makes reliable connectors LANGLEY-26  | ### ### ### ### ### ### ### ### ### ##  | 03<br>01<br>03<br>02<br>02<br>03 |
| INLET Packless valve with all-metal seal wide temperature, pressure range JPL-361  Filter for high-pressure gases has down, assembly JPL-373  Fluid-pressure meter can be calibrated removal from flow line M-FS-98  INORGANIC COATING Anodization process produces opaque reflective coatings on aluminum M-FS-348  INORGANIC COMPOUND Inorganic paint is durable, fireproto apply GSFC-366  INPUT Veitch diagram plotter simplifies to functions JPL-385  Double-throw microwave device switch lines quickly JPL-410  Computer circuit will fit on single chip JPL-513  Transistorized converter provides a tive regulation GSFC-238   | handles  B63-10228 easy take- B63-10234 ated without B63-10502  B65-10336  pof, easy B65-10156  poolean B63-10241 ches two B63-10258 e silicon B63-10514 hondissipa- B64-10305 | 03<br>05<br>03<br>03<br>05<br>01 | Low-cost insulation system for cryos eliminates need for a vacuum LEWIS-64  Spherical electrode eliminates highbreakdown LEWIS-155  Refractory oxides evaluated for high-temperature use LANGLEY-121  Thin transparent films formed from pglass GSFC-352  Insulation accelerates rate of coolicryogenic fluid MSC-161  Closed fluid system without moving pcontrols temperature LEWIS-222  Soluble undercoating facilitates refoamed-in-place insulation LEWIS-193  Air-cured ceramic coating insulates high heat fluxes M-FS-150  INSULATOR  Connector for thermocouple leads sawire, makes reliable connectors LANGLEY-26  Insulator-holder protects transistore electronic assemblies | ### ### ### ### ### ### ### ### ### ##  | 03<br>01<br>03<br>02<br>02<br>03 |

| transformer in analog-gate circuit   |   |   | LEWIS-73   | B63-10440  | 01                         |
|--|---|---|--|--|----------------------------|
| GSFC-351 B65-1   | 10284 0   |   | paratus measures very small thrust   | •  |                            |
| INTEGRATOR   |   |   |  |  | 05                         |
| Digital logic elements provide additional functions from analog input  | 1   | 11.2  |  | *  |                            |
|  | 10064 0   |   | re bundle formed into grids with m<br>interstices  | inute  |                            |
|  |   |   |  | B65-10372  | 03                         |
| Solid-state switching used to speed up<br>capacitive integrator  |   | ION P   | IIMD   |  |                            |
|  | 10159 0   |   | onr<br>n pump provides increased vacuum p  | umping   |                            |
|  |   |   | speed  | • •  |                            |
| Electronic ampere-hour integrator is accu-<br>to one percent   | urate   |   | NEO-13   | B65-10239  | 02                         |
|  | 10308 0   |   | ATION GAUGE  |  |                            |
| INTENSITY  |   |   | ecision gage measures ultrahigh va<br>levels   | cuum   |                            |
| Variable light source with a million-to-   | one   |   |  | B63-10597  | 01                         |
| intensity ratio  |   |   |  |  |                            |
| JPL-W00-008 B63-1  | 10424 0   | 3 IRON  | dified filter prevents conduction  | of micro-  |                            |
| INTERFACE  |   |   | wave signals along high-voltage po   |  |                            |
| Indium foil with beryllia washer improves  | \$  |   | leads  | DC2 10001  |                            |
| transistor heat dissipation GSFC-42 B63-1  | 10033 0   | 1   | JPL-63   | B63-10091  | 01                         |
|  |   | IRON  | OXIDE  |  |                            |
| Seal allows blind assembly and thermal ex<br>sion of components  | xpan-   |   | yogenic filter method produces sup<br>helium and helium isotopes   | er-pure  |                            |
|  | 10053 0   |   |  | B63-10235  | 03                         |
| INTERFEROMETER   |   |   |  |  |                            |
| INTERFERUMETER Interferometer combines laser light source  | re  |   | gnetic fluid readily controlled in<br>gravity environment  | zero   |                            |
| and digital counting system  |   |   |  | B65-10335  | 03                         |
| MSC-151 B65-1  | 10161 0   | 1   | TION   |  |                            |
| Interferometer construction assures  |   | ISOLA<br>Hi   | iiun<br>gh-pass RF coaxial filter rejects  | DC and low   |                            |
| parallelism of critical components   |   |   | frequency signals  |  |                            |
| JPL-704 B65-1  | 10292 0   | 2   | GSFC-73  | ₿64-10173  | 01                         |
| Unique construction makes interferometer   |   | ISOLA   | TOR  |  |                            |
| insensitive to mechanical stresses<br>JPL-725 B65-1  | 10005 0   |   | re mesh isolator protects sensitiv   | e elec-  |                            |
| Jhr-152 Re2-1  | 10295 0   |   | tronic compenents<br>GSFC-347  | B65-10216  | 05                         |
| INTERPOLATION  |   |   |  |  |                            |
|  |   |   |  |  |                            |
| Simple scale interpolator facilitates  |   | ITERA   |  | . •  |                            |
| Simple scale interpolator facilitates reading of graphs  | 10070 0   | 5 Co  | mputer modification reduces time o<br>performing iterative division  |  |                            |
| Simple scale interpolator facilitates<br>reading of graphs<br>LANGLEY-88 B65-1   | 10070 0   | 5 Co  | mputer modification reduces time o<br>performing iterative division  |  | 01                         |
| Simple scale interpolator facilitates reading of graphs  |   | 5 Co  | mputer modification reduces time o<br>performing iterative division  |  | 01                         |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88 B65-1 INTERSTICE Wire bundle formed into grids with minute interstices  | e   | Co<br>5   | mputer modification reduces time o<br>performing iterative division<br>M-FS-166  |  | 01                         |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88 B65-1 INTERSTICE Wire bundle formed into grids with minute interstices  | e   | 5 Co  | mputer modification reduces time o<br>performing iterative division<br>M-FS-166<br>J<br>UEL  | B65-10005  | 01                         |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1 INVERTER   | e<br>10372 0  | Co<br>5<br>3 JET F  | mputer modification reduces time o<br>performing iterative division<br>M-FS-166<br>J<br>UEL<br>ntrifugal device separates líquid   | B65-10005  | 01<br>05                   |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices W00-089  B65-1  INVERTER Circuit controls transients in SCR inverted  | e<br>10372 0<br>ters  | 5 Co<br>3 <b>JET F</b><br>Ce  | mputer modification reduces time o<br>performing iterative division<br>M-FS-166<br>J<br>UEL<br>ntrifugal device separates liquid   | B65-10005  |                            |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR inverting GSFC-120  B63-1   | e<br>10372 0<br>ters  | 5 Co<br>5 JET F<br>Ce   | mputer modification reduces time o<br>performing iterative division<br>M-FS-166<br>J<br>UEL<br>ntrifugal device separates liquid   | B65-10005<br>from gas<br>B65-10394   |                            |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR inverting GSFC-120  INVESTMENT CASTING  | e<br>10372 0<br>ter <del>s</del><br>1060 <b>0</b> 0   | 5 Co 3 JET F Ce 1 JIG Ji  | mputer modification reduces time operforming iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of t  | B65-10005<br>from gas<br>B65-10394<br>ungsten  | 05                         |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet res   | e<br>10372 0<br>ters<br>10600 0   | 5 Co 3 JET F Ce 1 JIG Ji  | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of t  | B65-10005<br>from gas<br>B65-10394<br>ungsten  |                            |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resign low-cost investment casting patterns  | e<br>10372 0<br>ters<br>10600 0<br>sults  | 5 Co 5 JET F Ce 1 JIG Ji  | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEVIS-185  iral heater coils hand-formed with  | B65-10005  from gas B65-10394  ungsten B65-10101   | 05<br>05                   |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices W00-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1   | e<br>10372 0<br>ters<br>10600 0<br>sults  | 5 Co 5 JET F Ce 1 JIG Ji  | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEVIS-185  | B65-10005  from gas B65-10394  ungsten B65-10101   | 05                         |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WCO-089  B65-1  INVERTER Circuit controls transients in SCR inverting GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resign low-cost investment casting patterns  | e 10372 0 ters 10600 0 sults s  | 5 Co 5 JET F Ce 1 JIG Ji  | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185 iral heater coils hand-formed with LEWIS-208   | B65-10005  from gas B65-10394  ungsten B65-10101   | 05<br>05                   |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WGO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum te faceplates   | e 10372 0 ters 10600 0 sults 10008 0  | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li                                  | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185  iral heater coils hand-formed with LEWIS-208  | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192  | 05<br>05                   |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WGO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum te faceplates   | e 10372 0 ters 10600 0 sults 10008 0  | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp   | mputer modification reduces time of performing iterative division M-FS-166  UEL  Mrtifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets  LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmittorque and thrust   | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192  | 05<br>05                   |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arse  | e 10372 0 ters 10600 0 sults s 10008 0  | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li                                  | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmittorque and thrust JPL-375   | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both  | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88 B65-1  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089 B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120 B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7 B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67 B63-1  New method used to fabricate gallium arse photovoltaic device   | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide  | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li 3                                | mputer modification reduces time of performing iterative division M-FS-166  UEL INTRIBUTE AND ADDITIONS OF THE PROPERTY OF THE | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both  | 05<br>05                   |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88 B65-1  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089 B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120 B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7 B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67 B63-1  New method used to fabricate gallium arse photovoltaic device   | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide  | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li                                  | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmittorque and thrust JPL-375   | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236   | 05<br>05                   |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arse photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can  | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide  | 5 Co 3 JET F Ce 1 JIG Ji 5 Sp JOINT Li 3 S1                             | mputer modification reduces time of performing iterative division M-FS-166  UEL Intrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185 iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375 eeve and cutter simplify disconnect welded joint in tubing JPL-384   | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>eting  | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WGO-089  B65-1  INVERTER Circuit controls transients in SCR inverting GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resis in low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arse photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface   | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide 10019 0                                      | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li 3 Sl                             | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185 iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375 eeve and cutter simplify disconnect welded joint in tubing  | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>eting  | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arse photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface WOO-065  B64-1   | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide 10019 0                                      | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li 3 S1                             | mputer modification reduces time of performing iterative division M-FS-166  UEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185 iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375 eeve and cutter simplify disconnect welded joint in tubing JPL-384 w method used to fabricate light-w   | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>eting<br>B63-10240   | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WGO-089  B65-1  INVERTER Circuit controls transients in SCR inverting GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resis in low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arse photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface WOO-065  B64-1  ION   | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide 10019 0 be                                   | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li 3 Sl                             | mputer modification reduces time of performing iterative division M-FS-166  J  UEL  Intrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375  eeve and cutter simplify disconnect weided joint in tubing JPL-384  w method used to fabricate light-weights-43  | from gas B65-10394  ungsten B65-10101  fixture B65-10192  s both B63-10236  ting B63-10240  reight heat B63-10346  | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium area photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface WOO-065  B64-1  ION Fine-mesh screen made by simplified method   | e 10372 0 ters 10600 0 sults 10008 0 ube 10476 0 enide 10019 0 be 10021 0                             | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li 3 Sl                             | mputer modification reduces time of performing iterative division M-FS-166  J  UEL Intrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375  eeve and cutter simplify disconnect welded joint in tubing JPL-384  w method used to fabricate light-weexchanger for rocket motor LEWIS-43  rcuit reliability boosted by solde of disconnect plugs to sockets   | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>eting<br>B63-10240<br>reight heat<br>B63-10346<br>ering pins   | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR inverting GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resis in low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arse photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface WOO-065  B64-1  ION Fine-mesh screen made by simplified methol WOO-104  | e 10372 0 ters 10600 0 sults 10008 0 ube 10476 0 enide 10019 0 be 10021 0                             | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li 13 S1 11 Ne 5 Ci                 | mputer modification reduces time of performing iterative division M-FS-166  UEL    MSC-282  g and fixture aid fabrication of trivets LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375  eeve and cutter simplify disconnect welded joint in tubing JPL-384  w method used to fabricate light-we exchanger for rocket motor LEWIS-43  rcuit reliability boosted by solde  | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>eting<br>B63-10240<br>reight heat<br>B63-10346<br>ering pins   | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  B63-1  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium area photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface WOO-065  B64-1  ION Fine-mesh screen made by simplified methor WOO-104  ION BEAM   | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide 10019 0 be 10021 0                           | 5 Co 5 JET F Ce 1 JIG Ji 5 Sp JOINT Li 6 Ne 5 Ci                        | mputer modification reduces time of performing iterative division M-FS-166  UEL    MTT    MTT | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>tting<br>B63-10240<br>reight heat<br>B63-10346<br>tring pins   | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls translents in SCR invert GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet rein low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arso photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface WOO-065  B64-1  ION Fine-mesh screen made by simplified methor woo-104  ION BEAM New apparatus increases ion beam power deceases   | e 10372 0 ters 10600 0 sults 10008 0 ube 10476 0 enide 10019 0 be 10021 0 od 10282 0                  | S Co  | mputer modification reduces time of performing iterative division M-FS-166  J  UEL Intrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375  eeve and cutter simplify disconnect welded joint in tubing JPL-384  w method used to fabricate light-weexchanger for rocket motor LEWIS-43  rcuit reliability boosted by solde of disconnect plugs to sockets   | from gas<br>B65-10094<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>eting<br>B63-10240<br>reight heat<br>B63-10346<br>ering pins<br>B64-10002                                  | 05<br>05<br>05             |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls transients in SCR invert GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resin low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arse photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface WOO-065  B64-1  ION Fine-mesh screen made by simplified methor woo-104  ION BEAM New apparatus increases ion beam power de LEWIS-73  B65-1  | e 10372 0 ters 10600 0 sults 10008 0 ube 10476 0 enide 10019 0 be 10021 0 od 10282 0                  | JET F Ce  JIG Ji SS JOINT Li Ne  Ci JIG Ji FI                           | mputer modification reduces time of performing iterative division M-FS-166  UEL    modification separates liquid MSC-282  g and fixture aid fabrication of trivets   LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375  eeve and cutter simplify disconned welded joint in tubing JPL-384  w method used to fabricate light-welded sexchanger for rocket motor LEWIS-43  rcuit reliability boosted by solded of disconnect plugs to sockets JPL-447  exible fastener allows thermal explanations.  | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>sting<br>B63-10240<br>reight heat<br>B63-10346<br>sring pins<br>B64-10002<br>consion<br>B64-10145          | 05<br>05<br>05<br>05       |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WOO-089  B65-1  INVERTER Circuit controls translents in SCR invert GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet rein low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium iodide crystals fused to vacuum to faceplates GSFC-67  New method used to fabricate gallium arso photovoltaic device WOO-062  Pressure transducer 3/8-inch in size can faired into surface WOO-065  B64-1  ION Fine-mesh screen made by simplified methor woo-104  ION BEAM New apparatus increases ion beam power deceases   | e 10372 0 ters 10600 0 sults 10008 0 ube 10476 0 enide 10019 0 be 10021 0 od 10282 0 ensity 10440 0   | JET F Ce  JIG Ji SS JOINT Li Ne  Ci JIG Ji FI                           | mputer modification reduces time of performing iterative division M-FS-166  UEL Intrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185 iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375 eeve and cutter simplify disconnect welded joint in tubing JPL-384  w method used to fabricate light-weexchanger for rocket motor LEWIS-43 rcuit reliability boosted by solde of disconnect plugs to sockets JPL-447 exible fastener allows thermal exp  | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>sting<br>B63-10240<br>reight heat<br>B63-10346<br>sring pins<br>B64-10002<br>consion<br>B64-10145          | 05<br>05<br>05<br>05       |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WGO-089  B65-1  INVERTER Circuit controls transients in SCR inverting GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resis in low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium lodide crystals fused to vacuum transpection of the second of th | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide 10019 0 be 10021 0 od 10282 0 ensity 10440 0 | JET F Ce  JIG Ji SS JOINT Li Ne  Ci JIG Ji FI                           | mputer modification reduces time of performing iterative division M-FS-166  J  UEL Intrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185  iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375  eeve and cutter simplify disconnect welded joint in tubing JPL-384  w method used to fabricate light-weexchanger for rocket motor LEWIS-43  rcuit reliability boosted by solde of disconnect plugs to sockets JPL-447  exible fastener allows thermal explane plate design assures structured.  | from gas<br>B65-10394<br>ungsten<br>B65-10394<br>ungsten<br>B65-10101<br>fixture<br>B65-10192<br>s both<br>B63-10236<br>ting<br>B63-10240<br>reight heat<br>B63-10346<br>ering pins<br>B64-10002           | 05<br>05<br>05<br>05       |
| Simple scale interpolator facilitates reading of graphs LANGLEY-88  INTERSTICE Wire bundle formed into grids with minute interstices WGO-089  B65-1  INVERTER Circuit controls transients in SCR inverting GSFC-120  INVESTMENT CASTING Vacuum forming of thermoplastic sheet resis in low-cost investment casting patterns ARC-7  B63-1  IODIDB Cesium lodide crystals fused to vacuum transpection of the second of th | e 10372 0 ters 10600 0 sults s 10008 0 ube 10476 0 enide 10019 0 be 10021 0 od 10282 0 ensity 10440 0 | 5 Co  3 JET F Ce  1 JIG Ji  5 Sp JOINT Li  3 S1  1 Ne  5 Ci  3 F1  5 Sp | mputer modification reduces time of performing iterative division M-FS-166  JUEL ntrifugal device separates liquid MSC-282  g and fixture aid fabrication of trivets LEWIS-185 iral heater coils hand-formed with LEWIS-208  ghtweight universal joint transmit torque and thrust JPL-375 eeve and cutter simplify disconnect weided joint in tubing JPL-384  w method used to fabricate light-weight and the weight with the serior could be sockets JPL-437  recuit reliability boosted by solde of disconnect plugs to sockets JPL-447  exible fastener allows thermal explands of plate design assures structur separation by mild explosive   | from gas<br>B65-10394<br>ungsten<br>B65-10101<br>if fixture<br>B65-10192<br>is both<br>B63-10236<br>iting<br>B63-10240<br>reight heat<br>B63-10346<br>ring pins<br>B64-10002<br>pansion<br>B64-10145<br>al | 05<br>05<br>05<br>05<br>05 |

| JPL-658   | B65-10205   | 05                               | LATHE Lathe converted for grinding aspheri  | c surfaces   |                      |
|---|---|----------------------------------|---|--|----------------------|
| Thermocouple-to-instrumentation conn features quick assembly  | ector   |                                  |   |  | 05                   |
|   | B65-10246   | 05                               | Metal bellows custom-fabricated from<br>LEWIS-192   |  | 05                   |
| Universal bellows joint restraint pe  | rmits   |                                  | <del>_</del>  |  |                      |
| angular and offset movement   | B65-10371   | 05                               | Lathe attachment used to machine ell cones  | iptical  |                      |
|   |   |                                  | MSC-100   | B65-10168  | 05                   |
| Photosensors used to maintain weldin electrode-to-joint alignment   | _   |                                  | Self-aligning fixture used in lathe   | chuck jaw  |                      |
|   | B65-10401   | 05                               | refacing<br>FRC-21  | B65-10198  | 05                   |
| JOURNAL BEARING   |   |                                  | LEAD  |  |                      |
| Ohmmeter senses depletion of lubrica  | int in  |                                  | Metals plated on fluorocarbon polyme  |  |                      |
| journal bearings<br>LEWIS-37  | B64-10042   | 01                               |   |  | 03                   |
| JUNCTION TRANSISTOR   |   |                                  | LEAD OXIDE  |  |                      |
| Economical fabrication process produ  | ces high-   |                                  | Lead oxide ceramic makes excellent h  | igh-   |                      |
| quality junction transistors  |   |                                  | temperature lubricant   | •  |                      |
| JPL-SC-065  | B64-10330   | 01                               | LEWIS-144   | B64-10116  | 03                   |
| 1/  |   |                                  | LEAD TELLURIDE  |  |                      |
| K   |   |                                  | Thermoelectric elements diffusion-bo  | nded to  |                      |
| KINETIC ENERGY  |   |                                  | tungsten electrodes   | naca to  |                      |
| Kinetic-energy absorber employs fric  | tional  |                                  |   | B65-10309  | 01                   |
| force between mating cylinders  |   |                                  |   |  |                      |
|   | B63-10442   | 05                               | LEAKAGE Vented piston seal prevents fluid le  | akage  |                      |
| Shock absorber operates over wide ra  |   |                                  | between two chambers  |  |                      |
| MSC-168   | B65-10241   | 05                               | JPL-179   | B63-10141  | 05                   |
| 1   |   |                                  | Self sealing disconnect for tubing f  | orms metal   |                      |
| L   |   |                                  | seal after breakaway  |  |                      |
| LABORATORY APPARATUS  |   |                                  | JPL-354   | B63-10226  | 05                   |
| Ceramic-coated boat is chemically in  | nert,   |                                  |   |  |                      |
| provides good heat transfer   | DGE 10063   | 0.5                              | Diaphragm eliminates leakage in cryo  | genic  |                      |
| LANGLEY-90  | B65-10063   | 05                               | fluid duct coupling<br>WOO-142  | 865-10227  | 05                   |
| LAMINATE  |   |                                  | WOO 145   | 200 1022.  | •                    |
| Flexible curtain shields equipment i  | rom   |                                  | Weld leaks rapidly and safely detect  | ed   |                      |
| intense heat fluxes   |   |                                  | M-FS-362  | B65-10265  | 01                   |
| M-FS-48   | B65-10044   | 03                               | I COIDIL TOV  |  |                      |
| LAMINATED MATERIAL  |   |                                  | LEGIBILITY Disk calculator indicates legible le   | ****   |                      |
|   |   |                                  |   |  |                      |
|   | ccurately   |                                  |   | ttering  |                      |
| Peel resistance of adhesive bonds ac<br>measured  | ccurately   |                                  | size for slide projection   |  | 05                   |
| Peel resistance of adhesive bonds ac  | ccurately<br>B65-10173  | 03                               | size for slide projection<br>GSFC-409   |  | 05                   |
| Peel resistance of adhesive bonds ac<br>measured<br>GSFC-320  | B65-10173   | 03                               | size for slide projection<br>GSFC-409<br>LENS   | B65-10339  | 05                   |
| Peel resistance of adhesive bonds admeasured<br>GSFC-320<br>Device detects unbonded areas in pla  | B65-10173   | 03                               | size for slide projection<br>GSFC-409<br>LENS<br>Lathe converted for grinding aspheri   | B65-10339  |                      |
| Peel resistance of adhesive bonds ac<br>measured<br>GSFC-320  | B65-10173   | 03                               | size for slide projection<br>GSFC-409<br>LENS   | B65-10339  | 05                   |
| Peel resistance of adhesive bonds admeasured<br>GSFC-320<br>Device detects unbonded areas in pla<br>laminates<br>WOO-206  | B65-10173<br>astic<br>B65-10380   |                                  | size for slide projection<br>GSFC-409<br>LENS<br>Lathe converted for grinding aspheri<br>GSFC-115<br>Optical arrangement increases useful   | B65-10339<br>c surfaces<br>B63-10556   |                      |
| Peel resistance of adhesive bonds ac<br>measured<br>GSFC-320<br>Device detects unbonded areas in pla<br>laminates<br>WDD-206<br>Drill bit design assures clean holes  | B65-10173<br>astic<br>B65-10380   |                                  | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes   | B65-10339<br>c surfaces<br>B63-10556   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in pla laminates WUD-206  Drill bit design assures clean holes laminated materials   | B65-10173<br>astic<br>B65-10380<br>s in   | 01                               | size for slide projection<br>GSFC-409<br>LENS<br>Lathe converted for grinding aspheri<br>GSFC-115<br>Optical arrangement increases useful   | B65-10339<br>c surfaces<br>B63-10556   |                      |
| Peel resistance of adhesive bonds ac<br>measured<br>GSFC-320<br>Device detects unbonded areas in pla<br>laminates<br>WDD-206<br>Drill bit design assures clean holes  | B65-10173<br>astic<br>B65-10380   |                                  | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  | B65-10339<br>c surfaces<br>B63-10556   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in pla laminates WUD-206  Drill bit design assures clean holes laminated materials   | B65-10173<br>astic<br>B65-10380<br>s in   | 01                               | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes   | B65-10339<br>c surfaces<br>B63-10556<br>light<br>B65-10020   | 05                   |
| Peel resistance of adhesive bonds ac measured GSFC-320  Device detects unbonded areas in pla laminates WDD-206  Drill bit design assures clean holes laminated materials WDD-098  LAMP  Igniting system for mercury vapor la  | B65-10173 astic B65-10380 s in B65-10386 amps pro-  | 01                               | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio  | B65-10339<br>c surfaces<br>B63-10556<br>light<br>B65-10020   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in pla laminates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining si   | B65-10173 astic B65-10380 s in B65-10386 amps pro-  | 01<br>05                         | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million  | B65-10339<br>c surfaces<br>B63-10556<br>light<br>B65-10020   | 05                   |
| Peel resistance of adhesive bonds ac measured GSFC-320  Device detects unbonded areas in pla laminates WDD-206  Drill bit design assures clean holes laminated materials WDD-098  LAMP  Igniting system for mercury vapor la  | B65-10173 astic B65-10380 s in B65-10386 amps pro-  | 01                               | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio JPL-W00-008  | B65-10339<br>c surfaces<br>B63-10556<br>light<br>B65-10020   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in pla laminates WDD-206  Drill bit design assures clean holes laminated materials WOD-098  LAMP  Igniting system for mercury vapor la tects transistorized sustaining su JPL-421  | B65-10173 astic B65-10380 s in B65-10386 amps pro-  | 01<br>05                         | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION  | B65-10339<br>c surfaces<br>B63-10556<br>light<br>B65-10020<br>a-to-one<br>B63-10424  | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in pla laminates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining si   | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262  | 01<br>05                         | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes  | B65-10339<br>c surfaces<br>B63-10556<br>light<br>B65-10020<br>a-to-one<br>B63-10424  | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planaminates WUD-206  Drill bit design assures clean holes laminated materials WUD-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer  | 01<br>05<br>01                   | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful   | B65-10339<br>c surfaces<br>B63-10556<br>light<br>B65-10020<br>a-to-one<br>B63-10424  | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planamates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor 1stects transistorized sustaining stapp-421  LAP JOINT  Lightweight door seals cryogenic con  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262  | 01<br>05                         | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064   | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planamates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor 1st tects transistorized sustaining su JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading M-FS-476   | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer  | 01<br>05<br>01                   | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY  | c surfaces<br>B63-10556<br>light<br>B65-10020<br>a-to-one<br>B63-10424<br>light<br>B65-10020   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in pla laminates WUDD-206  Drill bit design assures clean holes laminated materials WUDD-098  LAMP  Igniting system for mercury vapor la tects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading M-FS-476  LASER  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402  | 01<br>05<br>01                   | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-W00-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY Variable light source with a million  | c surfaces<br>B63-10556<br>light<br>B65-10020<br>a-to-one<br>B63-10424<br>light<br>B65-10020   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in plantanes W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor 1st tects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes   | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402  | 01<br>05<br>01                   | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY  | c surfaces<br>B63-10556<br>light<br>B65-10020<br>a-to-one<br>B63-10424<br>light<br>B65-10020   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in plantates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic conagainst diaphragm type loading M-FS-476  LASER  Modification increases light output   | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402  | 01<br>05<br>01                   | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-W00-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY Variable light source with a million intensity ratio JPL-W00-008  | E Surfaces B63-10556  light B65-10020  | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in plantates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic conagainst diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192   | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402  | 01<br>05<br>01                   | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR  | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in plantanes W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor 1st tects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes   | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10006   | 01<br>05<br>01<br>05             | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR LIGHT ray modulation controls optice   | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planamates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining su JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402  | 01<br>05<br>01                   | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR  | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planamates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10006   | 01<br>05<br>01<br>05             | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR Light ray modulation controls optical alignment GFSC-171   | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planinates WUDD-206  Drill bit design assures clean holes laminated materials WUD-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic colagainst diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light and digital counting system  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10006 B65-10158 source                              | 01<br>05<br>01<br>05<br>01       | size for slide projection GSFC-409  LENS Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR Light ray modulation controls optical alignment GFSC-171  Communication system uses modulated  | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211  laser beam                             | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planamates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10006   | 01<br>05<br>01<br>05             | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR Light ray modulation controls optical alignment GFSC-171   | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211   | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planamates W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic con against diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light and digital counting system MSC-151  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10066 B65-10158 source B65-10161                    | 01<br>05<br>01<br>05<br>01       | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR Light ray modulation controls optical alignment GFSC-171  Communication system uses modulated GSFC-377   | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211  laser beam                             | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in planinates WUDD-206  Drill bit design assures clean holes laminated materials WUD-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic colagainst diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light and digital counting system  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10066 B65-10158 source B65-10161                    | 01<br>05<br>01<br>05<br>01       | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheri GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-W00-008  LIGHT EMISSION Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY Variable light source with a million intensity ratio JPL-W00-008  LIGHT MODULATOR Light ray modulation controls optical alignment GFSC-171  Communication system uses modulated GSFC-377  LIGHT PROBE  | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211 laser beam B65-10333                    | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in plantantes WUD-206  Drill bit design assures clean holes laminated materials WUO-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining staff. JPL-421  LAP JOINT  Lightweight door seals cryogenic conagainst diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light and digital counting system MSC-151  Solid-state laser transmitter is am  | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10066 B65-10158 source B65-10161                    | 01<br>05<br>01<br>05<br>01       | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheric GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR Light ray modulation controls opticalignment GFSC-171  Communication system uses modulated GSFC-377  LIGHT PROBE Photoelectric system continuously meliquid level             | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211 laser beam B65-10333                    | 05<br>05<br>03<br>05 |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in plantantes W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic conagainst diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light and digital counting system MSC-151  Solid-state laser transmitter is ammodulated MSC-121                                     | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10158 source B65-10161 plitude B65-10238            | 01<br>05<br>01<br>05<br>01<br>01 | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheric GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR Light ray modulation controls optical alignment GFSC-171  Communication system uses modulated GSFC-377  LIGHT PROBE Photoelectric system continuously me                      | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211 laser beam B65-10333                    | 05                   |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in plantanes W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic conagainst diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light and digital counting system MSC-151  Solid-state laser transmitter is ammodulated MSC-121  Communication system uses modulated | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10158 source B65-10161 plitude B65-10238 laser beam | 01<br>05<br>01<br>05<br>01<br>01 | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheric GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR Light ray modulation controls optical alignment GFSC-171  Communication system uses modulated GSFC-377  LIGHT PROBE Photoelectric system continuously meliquid level M-FS-417 | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211 laser beam B65-10333                    | 05<br>05<br>03<br>05 |
| Peel resistance of adhesive bonds admeasured GSFC-320  Device detects unbonded areas in plantantes W00-206  Drill bit design assures clean holes laminated materials W00-098  LAMP  Igniting system for mercury vapor latects transistorized sustaining st JPL-421  LAP JOINT  Lightweight door seals cryogenic conagainst diaphragm type loading M-FS-476  LASER  Modification increases light output injection-luminescent diodes M-FS-192  Laser beam transmits electric power GSFC-293  Interferometer combines laser light and digital counting system MSC-151  Solid-state laser transmitter is ammodulated MSC-121                                     | B65-10173 astic B65-10380 s in B65-10386 amps pro- upply B63-10262 ntainer B65-10402 of B65-10158 source B65-10161 plitude B65-10238            | 01<br>05<br>01<br>05<br>01<br>01 | size for slide projection GSFC-409  LENS  Lathe converted for grinding aspheric GSFC-115  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT EMISSION  Optical arrangement increases useful output of semiconductor diodes JPL-SC-064  LIGHT INTENSITY  Variable light source with a million intensity ratio JPL-WOO-008  LIGHT MODULATOR Light ray modulation controls opticalignment GFSC-171  Communication system uses modulated GSFC-377  LIGHT PROBE Photoelectric system continuously meliquid level             | B65-10339  c surfaces B63-10556  light B65-10020  a-to-one B63-10424  light B65-10020  a-to-one B63-10424  al system B65-10211 laser beam B65-10333  onitors B65-10382 | 05<br>05<br>05<br>05 |

|     | IDI424   | P63_10263   | 0.2        | cone aca   | 205 10150             |    |
|-----|--|-------------|------------|--|-----------------------|----|
|     | JPL-424  | B63-10263   | 03         | GSFC-257   | B65-10152             | 01 |
|     | Mirror device aligns machine surface dicular to sight lines  | e perpen-   |            | LINK   |                       |    |
|     | WOO-5  | B63-10421   | 20         | Electromechanically operated camera provides uniform exposure            | shutter               |    |
|     | Maniable light gourse with a million   |             |            | JPL-357  | B63-10227             | 01 |
|     | Variable light source with a million intensity ratio   | 1-10-0ne    |            | LIQUID   |                       |    |
|     | JPL-W00-008  | B63-10424   | 03         | Level of super-cold liquids automat                                      | ically                |    |
|     | Attachment converts microscope to p  | oint source |            | maintained by levelometer<br>JPL-397                                     | B63-10250             | 01 |
|     | autocollimator<br>JPL-499  | B64-10124   | 05         | <b>4</b>   |                       |    |
|     |  |             | <b>V</b> 3 | Special pliers connect hose contains under pressure                      | ing liquia            |    |
|     | Electronic device simulates respiration and depth  | tion rate   |            | JPL-IT-1003  | B63-10291             | 05 |
|     | MSC-89   | B64-10255   | 01         | Tool facilitates sealing of metal fi                                     | ill tubes             |    |
|     | Modification increases light output  | 0.5         |            | MSC-24   | B63-10519             | 05 |
|     | injection-luminescent diodes   |             |            | Filler device for handling hot corre                                     | osive                 |    |
|     | M-FS-192   | B65-10006   | 01         | materials<br>MSC-85  | B64-10166             | 03 |
|     | Simple optical system used to align  |             |            |  | 504 14100             | •• |
|     | spectrograph<br>LANGLEY-92   | B65-10071   | 02         | LIQUID FLOW  Meter accurately measures flow of lo                        | ou-conduc-            |    |
|     | Total control of the same and t | e1 4        |            | tivity fluids  |                       |    |
|     | Instrument calibrates low gas-rate : MSC-134   | B65-10137   | 01         | JPL-0021   | B63-10280             | 01 |
|     | Interferometer combines laser light  |             |            | Fluid check valve has fail-safe feat                                     |                       | 05 |
|     | and digital counting system  |             |            | JPL-0019   | B65-10207             | 05 |
|     | MSC-151  | B65-10161   | 01         | Spiraled channels improve heat trans                                     | sfer between          |    |
|     | Photoresistance analog multiplier ha   | s wide      |            | JPL-694  | B65-10291             | 02 |
|     | range<br>GSFC~360  | B65-10287   | 01         | Volumetric system calibrates meters                                      | for large             |    |
|     |  | 200 10201   | V-1        | flow rates   | •                     |    |
| LI  | GHTING New low-level AC amplifier provides   |             |            | W00-130  | B65-10323             | 05 |
|     | adjustable noise cancellation and  | automatic   |            | LIQUID-GAS MIXTURE   |                       |    |
|     | temperature compensation<br>MSC-108  | B65-10003   | 05         | Centrifugal device separates liquid<br>MSC-282                           | from gas<br>B65-10394 | 05 |
|     | GHTWEIGHT  |             |            | LIGHTS HELITIM   |                       |    |
| 21  | Break-up of metal tube makes one-time  | e shock     |            | LIQUID HELIUM  Cryogenic filter method produces sup                      | per-pure              |    |
|     | absorber, bars rebound<br>LANGLEY-1A   | B63-10304   | 05         | helium and helium isotopes<br>JPL-374                                    | B63-10235             | 03 |
|     |  |             | •0         |  |                       | VJ |
|     | Lightweight magnesium—lithium alloy: promise   | s show      |            | Automatic thermal switch accelerate:<br>cooling-down of cryogenic system | 5                     |    |
|     | M-FS-17  | B63-10389   | 03         | JPL-655  | B65-10068             | 01 |
|     | Comfortable, lightweight safety heli   | et holds    |            | Vacuum chamber provides improved ins                                     | sulation              |    |
|     | radio transmitter, receiver<br>MSC-53  | B64-10015   | 05         | and support for cryostat<br>M-FS-415                                     | B65-10368             | 02 |
|     |  | D04-10013   | •0         |  | D03-10308             | VZ |
| LI  | MITER<br>  Tunnel-diode circuit features zero-   | level       |            | Liquid-level meter has no moving par                                     | rta                   |    |
|     | clipping   |             |            | M-FS-3   | B63-10378             | 03 |
|     | GSFC-241   | B65-10002   | 01         | Oscillator circuit measures liquid                                       | level in              |    |
|     | High-speed square-wave current limit   | ter         |            | tanks  |                       |    |
|     | operates efficiently<br>JPL-SC-073   | B65-10233   | 01         | M-FS-245   | B65-10209             | 01 |
| į,T | MEAR CIRCUIT   |             |            | Photoelectric system continuously mo                                     | onitors               |    |
|     | Simple circuit functions as frequence  | :y          |            | liquid level<br>M-FS-417   | B65-10382             | 01 |
|     | discriminator for PFH signals<br>GSFC-267  | B65-10102   | 01         | LIQUID MERCURY   |                       |    |
|     | NEAR SYSTEM  |             |            | Liquid switch is remotely operated t                                     | y low DC              |    |
| LI  | Simple circuit provides adjustable :   | oltage      |            | voltage<br>GSFC-119  | B63-10599             | 01 |
|     | with linear temperature variation<br>JPL-WOO-029   |             | 01         | LIQUID NITROGEN  |                       | -  |
|     |  | B63-10537   | 01         | Helical tube separates nitrogen gas                                      | from                  |    |
|     | Voltage generator sweeps oscillator linearly with time   | frequency   |            | liquid nitrogen<br>JPL-398   | B63-10251             | 05 |
|     | M-FS-219   | B64-10320   | 01         |  |                       |    |
|     | Interferometer combines laser light  | source      |            | Cryopumping of hydrogen in vacuum chaided by catalytic oxidation of hy   |                       |    |
|     | and digital counting system  |             |            | LEWIS-15   | 863-10340             | 05 |
|     | MSC-151  | B65-10161   | 01         | LIQUID OXYGEN /LOX/  |                       |    |
| LI  | MEARITY  |             |            | Crack detection method is safe in pr                                     | resence of            |    |
|     | Raster linearity of video cameras co<br>with precision tester  | ilibrated   |            | liquid oxygen<br>M-FS-236  | B65-10107             | 03 |
|     | GSFC-200   | B64-10209   | 01         | LITHIUM ALLOY  |                       |    |
|     | Circuit reduces distortion of FM mod   | lulator     |            | Lightweight magnesium-lithium alloys                                     | s show                |    |
|     |  |             |            |  |                       |    |

|         | omise   |                       |     | LANGLEY-129   | B65-10193               | 01 |
|---------|---|-----------------------|-----|---|-------------------------|----|
| M-      | FS-17   | 863-10389             | 03  | Delayed ripple counter simplifies sq  | uare-root               |    |
|         | I FLUORIDE<br>um iodide crystals fused to vacu                                    | um tube               |     | computation<br>GSFC-398   | B65-10343               | 01 |
|         | aceplates<br>SFC-67   | B63-10476             | 03  | Simple circuit performs binary addit  | ion and                 |    |
| LOAD FA | ACTOR   |                       |     | subtraction   | B65-10355               | 01 |
|         | id billet loader aids extrusion o<br>ory metals                                   | f refrac-             |     | LOOP  |                         |    |
| LE      | EWIS-50   | B63-10354             | 05  | Bandwidth switching is transient-fre<br>loss of loop lock                                   | e, avoids               |    |
|         | g counter may be advanced or reta<br>ommand signal                                | rded by               |     |   | B64-10349               | 01 |
| GS      | SFC-101   | B64-10144             | 01  | LOW FREQUENCY New low-level A-C amplifier provides  |                         |    |
| mu      | cuit improvement produces monosta<br>ultivibrator with load-carrying c<br>BFC-34A |                       | 01  | able noise cancellation and automa<br>ture compensation<br>ARC-2                            | B63-10003               | 04 |
| Vari    | iable load automatically tests dc   | power                 |     | High-pass RF coaxial filter rejects   | DC and low              |    |
| sı      | upplies   | B65-10105             | 01  | frequency signals   | B64-10173               | 01 |
|         | htweight door seals cryogenic con   | tainer                |     | LOW PASS FILTER   |                         |    |
|         | gainst diaphragm type loading<br>-FS-476  | B65-10402             | 05  | Computer determines high-frequency p<br>stability<br>GSFC-113                               | hase<br>B63-10555       | 01 |
| LOADING |   | 1                     |     | LOW POWER   |                         | -  |
| ha      | f-balancing beam permits safe, ea<br>andling under overhang<br>-FS-84             | B63-10571             | 05  | Radiant heater for vacuum furnaces of structural rigidity, low heat loss                    | 3                       |    |
| Circ    | cuit controls transients in SCR i   | nverters              |     | LEWIS-39  | B63-10342               | 01 |
|         | SFC-120<br>kle joins web straps quickly, adj                                      | B63-10600             | 01  | LOW TEMPERATURE BRAZING  Coating method enables low-temperature  brazing of stainless steel | ıre                     |    |
| e       | asily   |                       |     | NU-0030   | B65-10250               | 03 |
|         | ANGLEY-21<br>tc thermistor protects multiloade                                    | B64-10119<br>ed power | 05  | LOW TEMPERATURE ENVIRONMENT Gallium useful bearing lubricant in                             | high-                   |    |
|         | upplies<br>SFC-236  | B64-10281             | 01  | vacuum environment<br>LEWIS-12  | B63-10337               | 03 |
|         | G APPARATUS   |                       |     | LUBRICANT   |                         |    |
| Rap     | id billet loader aids extrusion o   | of refrac-            |     | Gallium useful bearing lubricant in   | high-                   |    |
|         | ory metals<br>EWIS-50   | B63-10354             | 05  | vacuum environment<br>LEWIS-12  | B63-10337               | 03 |
| LOADIN  | G RATE  |                       |     | Molybdenum disulfide mixtures make e  | effective               |    |
|         | ck absorber operates over wide ra<br>SC-168                                       | nge<br>B65-10241      | 05  | high-vacuum lubricants<br>M-FS-54   | B63-10453               | 03 |
| LOGARI  | THM   |                       |     | Burnishing technique improves lubric  | cation of               |    |
| Log     | arithmic amplifier uses field eff<br>ransistors                                   | ect.                  |     | threaded fasteners<br>LEWIS-217   | B65-10302               | 03 |
|         | PL-509  | B65-10145             | 01  |   |                         | 00 |
| LOGIC   |   |                       |     | Unique gear design provides self-lu<br>JPL-SC-079   | B65-10366               | 03 |
|         | ary counter uses fluid logic elem<br>-FS-323                                      | ments<br>B65-10377    | 01  | LUBRICATING OIL Ohmmeter senses depletion of lubrication                                    | ant in                  |    |
|         | ary counter accumulates time by omplementary preset                               |                       |     | journal bearings<br>LEWIS-37  | B64-10042               | 01 |
|         | SC-242  | B65-10399             | 01  | LUBRICATION   |                         |    |
|         | CIRCUIT<br>quency-shift-keyer circuit impro-                                      | ues PCM               |     | Gate valve with ceramic-coated base at high temperatures                                    | operates                |    |
| c       | onversion for radio transmission<br>SFC-80  |                       | 0.1 | ARC-23  | B63-10562               | 03 |
|         | src-ov<br>puter circuit will fit on single  | B63-10511<br>silicon  | 01  | LUBRICATION SYSTEM Miniature bearings lubricated by so                                      | nic                     |    |
|         | hip<br>PL-513   | 863-10514             | 01  | dispersion method<br>M~FS-202   | B65-10106               | 03 |
|         | ital logic elements provide addi  |                       |     | LUNAR GRAVITATIONAL EFFECT  |                         |    |
| ſ       | unctions from analog input  | B64-10064             | 01  | Technique simulates effect of reduc<br>LANGLEY-44   | ed gravity<br>B64-10146 | 04 |
|         |   |                       | 01  |   | 204-10140               | •  |
| c       | g counter may be advanced or ret  |                       |     | LUNG  Device induces lungs to maintain kn   | own                     |    |
| G       | SFC-101   | B64-10144             | 01  | constant pressure<br>MSC-50   | B64-10108               | 04 |
|         | rel circuit combines pulse stretc<br>IAR gate                                     | her with              |     |   |                         |    |
|         | SFC-187   | B64-10150             | 01  | MACHINE TOOL  |                         |    |
| Log     | ic circuit exhibits optimum perf  | ormance               |     | MACHINE TOOL Setting of angles on machine tools   | speeded by              |    |

| magnetic protractor<br>ARC-5   | B63-10006   | 01             | reliability and reduced power con-<br>GSFC-246  | sumption<br>B65-10194   | 01             |
|--|---|----------------|---|---|----------------|
| Sleeve and cutter simplify disconne  | ctina   |                | MAGNETIC FIELD  |   |                |
| welded joint in tubing<br>JPL-384  | B63-10240   | 05             | Supercold technique duplicates magnetic in second superconductor  | etic field  |                |
| MACHINING  |   |                | JPL-376   | B63-10237   | 05             |
| Metal-bending brake facilitates lig  | htweight,   |                | Shaped superconductor cylinder retai  | ins intense   |                |
| close-tolerance fabrication<br>ARC-29  | B64~10069   | 05             | magnetic field<br>JPL-381   | B63-10238   | 01             |
| Micromachining produces optical ape  | rtures to   |                | Explosives actuate nonmagnetic inde   | ring device   |                |
| micron dimensions<br>GSFC-206  | B64-10211   | 05             | GSFC-237  | B65-10017   | 05             |
| Lathe attachment used to machine el  | liptical  |                | Magnetic field controls carbon arc<br>MSC-139   | tail flame<br>B65-10108   | 01             |
| cones<br>MSC-100   | B65-10168   | 05             | High permeability semiconductors per  | rmit  |                |
| MAGNESIUM  |   |                | close-tolerance soldering<br>GSFC-319   | B65-10134   | 05             |
| New method forms bond line free of   | voids   |                | 0010 017  | DOO 10104   | 00             |
| LANGLEY-20   | B63-10558   | 05             | Density trace made with computer pr<br>GSFC-322   | intout<br>B65-10200   | 01             |
| MAGNESIUM ALLOY  |   |                |   | _   |                |
| Lightweight magnesium-lithium alloy promise  | s snow  |                | Superconductor shields test chamber<br>ambient magnetic fields  | from  |                |
| M-FS-17  | B63-10389   | 03             | JPL-627   | B65-10297   | 02             |
| MAGNESIUM-LITHIUM ALLOY  |   |                | Magnetometer measures orthogonal co   | mponents  |                |
| Adherent protective coatings plated  | on  |                | of magnetic fields  |   |                |
| magnesium-lithium alloy<br>M-FS-365  | B65-10294   | 03             | GSFC-395  | 865-10315   | 01             |
| H-L 2-262  | D03-10294   | 03             | MAGNETIC FIELD COIL   |   |                |
| MAGNET   |   |                | Magnetic field test coils are temper  | rature  |                |
| Unmanned seismometer levels self, c  | orrects   |                | compensated   |   |                |
| drift errors   |   |                | GSFC-294  | B65-10081   | 02             |
| GSFC-100   | B63-10551   | 01             | V.4   |   |                |
| Ball bearing used in design of rugg  | ed flow-  |                | MAGNETIC FIELD INTENSITY Shaped superconductor cylinder reta  | ins intense   |                |
| LEWIS-159  | B64-10170   | 05             | magnetic field<br>JPL-381   | B63-10238   | 01             |
|  |   |                |   | 200 2000  |                |
| MAGNETIC CIRCUIT   |   |                | MAGNETIC INSTRUMENT   |   |                |
| Transfluxor circuit amplifies sensi  | ng current  |                | Variable frequency magnetic multivi   |   |                |
| for computer memories<br>JPL-406   | B63-10255   | 01             | generates stable square-wave outpo<br>GSFC-AE-21  | ut<br>B65-10124   | 01             |
| 3FE-400  | B03-10233   | 01             | GSF C-RE-21   | 003-10124   | 01             |
| Variable frequency transistor inver mutiple core transformers  |   |                | Optical output enhances flowmeter as M-FS-482   | ccuracy<br>B65-10395  | 02             |
| variable frequency transistor inv  | erters use  |                |   |   |                |
| multiple core transformers<br>GSFC-183   | DCE 10110   |                | MAGNETIC MATERIAL   |   |                |
| G2FC-192   | B65-10119   | 01             | Flexible magnetic planning boards as<br>transported   | re easily   |                |
| Magnetic-shift-register circuit con  | trols step  |                | M-FS-340  | B65-10219   | 05             |
| motor operations   | •   |                |   |   |                |
| GSFC-340   | B65-10226   | 01             | MAGNETIC MEMORY   |   |                |
| MACHICATO COMADOL  |   |                | Transfluxor circuit amplifies sensi   | ng current  |                |
| MAGNETIC CONTROL  Magnetic fluid readily controlled i  | n zero  |                | for computer memories<br>JPL-406  | B63-10255   | 01             |
| gravity environment  | 11 2010   |                | 01 L 400  | 10200   | 01             |
| LEWIS-126  | B65-10335   | 03             | MAGNETIC RESONANCE  |   |                |
| W. 4000000 - 40000   |   |                | Magnetometer measures orthogonal co   | <b>m</b> ponents  |                |
| MAGNETIC CORE  |   |                | of magnetic fields  | DCE . 10715   | ٠-             |
| Transfluxor circuit amplifies sensi  | ng current  |                | GSFC-395  | B65-10315   | 01             |
| JPL-406  | B63-10255   | 01             | MAGNETIC TAPE   |   |                |
|  |   |                | Low-cost tape system measures veloc   | ity of  |                |
| New sintering process adjusts magne  | tic value   |                | acceleration  |   |                |
| of ferrite cores   | 110 14140   |                |   |   |                |
|  |   |                | GSFC-85   | B63-10512   | 01             |
| GSFC-129   | B63-10606   | 01             |   |   | 01             |
|  | B63-10606   | 01             | Metal strip forms 21 foot boom, rol   |   | 01             |
| Blocking oscillator uses low trigge voltage  | B63-10606   | 01             |   |   | 01<br>05       |
| Blocking oscillator uses low trigge  | B63-10606   | 01             | Metal strip forms 21 foot boom, rol<br>compact storage<br>GSFC-151  | ls up for<br>B64-10011  |                |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58   | B63-10606<br>ring<br>B64-10017  |                | Metal strip forms 21 foot boom, rol<br>compact storage<br>GSFC-151<br>Compact cartridge drives coded tape   | ls up for<br>B64-10011  |                |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58<br>Molded elastomer provides compact f  | B63-10606<br>ring<br>B64-10017  |                | Metal strip forms 21 foot boom, rol<br>compact storage<br>GSFC-151<br>Compact cartridge drives coded tape<br>constant readout speed   | ls up for<br>B64-10011<br>at  | 05             |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58<br>Molded elastomer provides compact f<br>holder, simplifies assembly   | B63-10606<br>ring<br>B64-10017<br>errite-core   | 01             | Metal strip forms 21 foot boom, rol<br>compact storage<br>GSFC-151<br>Compact cartridge drives coded tape   | ls up for<br>B64-10011  |                |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58<br>Molded elastomer provides compact f  | B63-10606<br>ring<br>B64-10017  |                | Metal strip forms 21 foot boom, rol<br>compact storage<br>GSFC-151<br>Compact cartridge drives coded tape<br>constant readout speed   | ls up for<br>B64-10011<br>at  | 05             |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58  Molded elastomer provides compact f<br>holder, simplifies assembly<br>JPL-584  Circuit detects errors in address c   | B63-10606 ring B64-10017 errite-core B64-10084  | 01             | Metal strip forms 21 foot boom, rol compact storage GSFC-151  Compact cartridge drives coded tape constant readout speed JPL-472  MAGNETIC TAPE RECORDER Small digital recording head has pa  | ls up for<br>B64-10011<br>at<br>B64-10222   | 05             |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58  Molded elastomer provides compact f<br>holder, simplifies assembly<br>JPL-584  Circuit detects errors in address c<br>magnetic core arrays                                     | B63-10606 ring B64-10017 errite-core B64-10084 urrents for                            | 01             | Metal strip forms 21 foot boom, rol compact storage GSFC-151  Compact cartridge drives coded tape constant readout speed JPL-472  MAGNETIC TAPE RECORDER Small digital recording head has parchannels, minimizes cross talk   | ls up for<br>B64-10011<br>at<br>B64-10222<br>rallel bit                                 | 05             |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58  Molded elastomer provides compact f<br>holder, simplifies assembly<br>JPL-584  Circuit detects errors in address c   | B63-10606 ring B64-10017 errite-core B64-10084  | 01             | Metal strip forms 21 foot boom, rol compact storage GSFC-151  Compact cartridge drives coded tape constant readout speed JPL-472  MAGNETIC TAPE RECORDER Small digital recording head has pa  | ls up for<br>B64-10011<br>at<br>B64-10222   | 05             |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58  Molded elastomer provides compact f<br>holder, simplifies assembly<br>JPL-584  Circuit detects errors in address c<br>magnetic core arrays<br>M-FS-234                         | B63-10606 ring B64-10017 errite-core B64-10084 urrents for B65-10047                  | 01             | Metal strip forms 21 foot boom, rol compact storage GSFC-151  Compact cartridge drives coded tape constant readout speed JPL-472  MAGNETIC TAPE RECORDER  Small digital recording head has parchannels, minimizes cross talk JPL-0029   | ls up for<br>B64-10011<br>at<br>B64-10222<br>rallel bit<br>B63-10284                    | 05             |
| Blocking oscillator uses low trigge<br>voltage<br>MSC-58  Molded elastomer provides compact f<br>holder, simplifies assembly<br>JPL-584  Circuit detects errors in address c<br>magnetic core arrays                                     | B63-10606 ring B64-10017 errite-core B64-10084 urrents for B65-10047                  | 01             | Metal strip forms 21 foot boom, rol compact storage GSFC-151  Compact cartridge drives coded tape constant readout speed JPL-472  MAGNETIC TAPE RECORDER  Small digital recording head has pachannels, minimizes cross talk JPL-0029  Circuit converts AM signals to FM for                   | ls up for<br>B64-10011<br>at<br>B64-10222<br>rallel bit<br>B63-10284                    | 05             |
| Blocking oscillator uses low trigge voltage MSC-58  Molded elastomer provides compact f holder, simplifies assembly JPL-584  Circuit detects errors in address c magnetic core arrays M-FS-234  Improved magnetometer uses toroidal      | B63-10606 ring B64-10017 errite-core B64-10084 urrents for B65-10047                  | 01             | Metal strip forms 21 foot boom, rol compact storage GSFC-151  Compact cartridge drives coded tape constant readout speed JPL-472  MAGNETIC TAPE RECORDER  Small digital recording head has parchannels, minimizes cross talk JPL-0029   | ls up for<br>B64-10011<br>at<br>B64-10222<br>rallel bit<br>B63-10284                    | 05             |
| Blocking oscillator uses low trigge voltage MSC-58  Molded elastomer provides compact f holder, simplifies assembly JPL-584  Circuit detects errors in address c magnetic core arrays M-FS-234  Improved magnetometer uses toroidal coil | B63-10606 ring B64-10017 errite-core B64-10084 urrents for B65-10047 gating B65-10103 | 01<br>05<br>01 | Metal strip forms 21 foot boom, rol compact storage GSFC-151  Compact cartridge drives coded tape constant readout speed JPL-472  MAGNETIC TAPE RECORDER Small digital recording head has parchannels, minimizes cross talk JPL-0029  Circuit converts AM signals to FM formagnetic recording | ls up for<br>B64-10011<br>at<br>B64-10222<br>rallel bit<br>B63-10284<br>or<br>B65-10001 | 05<br>01<br>01 |

| and reproduces data<br>GSFC-375  | B65-10311                | 01  | ARC-28   | B64-10068 | 03 |
|--|--------------------------|-----|--|-----------|----|
| MAGNETISM  | B00 10011                | ••  | Delayed ripple counter simplifies sq<br>computation                      | uare-root |    |
| Setting of angles on machine tools                                     | speeded by               |     |  | B65-10343 | 01 |
| magnetic protractor<br>ARC-5   | B63-10006                | 01  | MCLEOD GAUGE Baking enables McLeod gauge to measu                        | ıra in    |    |
| MAGNETOHYDRODYNAMIC ACCELERATION                                       |                          |     | ultrahigh vacuum range   | 116 111   |    |
| Segmented electrode increases opera                                    | ating                    |     |  | B65-10329 | 01 |
| LANGLEY-95   | B65-10356                | 02  | MEASURES   |           |    |
| MAGNETOHYDRODYNAMIC GENERATOR  |                          |     | Oil-smeared models aid wind tunnel measurements                          |           |    |
| Wire winding increases lifetime of                                     | oxide-                   |     | LANGLEY-4  | B63-10311 | 03 |
| coated cathodes<br>LEWIS-154   | B65-10032                | 03  | Ultra-sensitive transducer advances                                      | micro-    |    |
| MAGNETOMETER   |                          |     | measurement range<br>ARC-26  | B64-10004 | 01 |
| Improved magnetometer uses toroida                                     | l gating                 |     |  | DO1 10001 | •• |
| coil<br>GSFC-249   | B65-10103                | 01  | MEASURING APPARATUS  Low-cost tape system measures veloci                | ity of    |    |
|  |                          | ••  | acceleration   |           |    |
| Magnetometer measures orthogonal confidence of magnetic fields         | omponents                |     | GSFC-85  | B63-10512 | 01 |
| GSFC-395   | B65-10315                | 01  | Ultra-sensitive transducer advances                                      | micro-    |    |
| MAGNETRON  |                          |     | measurement range<br>ARC-26  | B64-10004 | 01 |
| Ion pump provides increased vacuum                                     | pumping                  |     | *  |           |    |
| speed<br>N£0-13  | B65-10239                | 02  | Improved insertion-loss tester<br>JPL-358                                | B64-10080 | 01 |
| MATNECHANOC  |                          |     | Apparatus measures concentration of                                      | avanandad |    |
| MAINTENANCE Magnetic field controls carbon arc                         | tail flame               |     | droplets in gas streams  | suspended |    |
| MSC-139  | B65-10108                | 01  | LANGLEY-31   | B64-10237 | 01 |
| MANDREL  |                          |     | Gage measures electrical connector p                                     | pin       |    |
| Vacuum forming of thermoplastic sh<br>in low-cost investment casting p | eet results              |     | retention force<br>JPL-SC-071  | 865-10034 | 03 |
| ARC-7  | B63-10008                | 05  |  |           | •  |
| Collar positions strip stock used                                      | to form coil             |     | Ionization vacuum gage starts quick?<br>unaffected by spurious currents  | ly, is    |    |
| on mandrel   |                          |     | JPL-304  | B65-10036 | 02 |
| JPL-198  | B65-10130                | 05  | Metal diaphragm used to calibrate mi                                     | iniature  |    |
| Metal bellows custom-fabricated fr                                     |                          |     | transducers  |           |    |
| LEWIS-192  | B65-10150                | 05  | M-FS-207   | B65-10059 | 01 |
| MANOMETER  |                          |     | Device measures curved surface finis                                     | sh on     |    |
| Fluid-pressure measurement apparat<br>short-length manometer tubes     | us uses                  |     | W00-112  | B65-10064 | 05 |
| LEWIS-28   | B65-10027                | 05  | Sensitive level sensor made with sp                                      | irit      |    |
| MANUAL CONTROL   |                          |     | level, gives electrical output   |           |    |
| Heavy-duty staple remover operated<br>JPL-IT-1004                      | by hand<br>B63-10292     | 05  | LANGLEY-49   | B65-10067 | 01 |
|  |                          | • • | System measures angular displacement                                     | t without |    |
| Knob linkage permits one-hand cont<br>several operations               | rol of                   |     | contact<br>LANGLEY-46  | B65-10073 | 01 |
| MSC-30   | B65-10022                | 05  | m  | 1-        |    |
| Handtool facilitates extraction of                                     | circuit                  |     | Transducer senses displacements of properties of properties to vibration | •         |    |
| modules<br>LANGLEY-38  | B65-10231                | 05  | ARC-37   | B65-10085 | 01 |
|  |                          | 0.0 | Apparatus measures swelling of memb                                      | ranes in  |    |
| Manual-feed adapter permits microf<br>continuous oscillograph output   | ilming of                |     | electrochemical cells<br>GSFC-280  | B65-10087 | 01 |
| NU-0029  | B65-10249                | 01  |  |           |    |
| Rack mount device quickly inserts                                      | or extracts              |     | Microwave technique measures plasma<br>characteristics                   |           |    |
| chassis units  |                          | •   | LANGLEY-134  | B65-10122 | 02 |
| MSC-244  | B65-10385                | 05  | System measures unidirectional forc                                      | es,       |    |
| MASKING Reugable recorded tacket protects                              | nauta fan                |     | excludes extraneous forces<br>LEWIS-170                                  | B65-10154 | 05 |
| Reusable neoprene jacket protects chemical milling                     | -                        |     |  |           | 33 |
| WDO-071  | B65-10179                | 03  | Device enables measurement of momen inertia about three axes             | ts of     |    |
| MATERIAL TESTING   |                          |     | GSFC-49  | B65-10176 | 05 |
| Graphite element serves as radiant<br>M-FS-105                         | heat source<br>B65-10218 | 01  | Sensitive electrometer features dig                                      | i tal     |    |
| Multiple test shamber  |                          |     | output<br>GSFC-288   | B65-10206 | 01 |
| Multiple test chamber exposes mate<br>various environments             | riais to                 |     |  |           | 01 |
| MSC-179  | B65-10268                | 01  | Oscillator circuit measures liquid tanks                                 | level in  |    |
| MATHEMATICS /GEN/  |                          |     | M-FS-245   | B65-10209 | 01 |
| Mechanical properties of plastics ed by empirical method               | predetermin-             |     | Multiavial analyzer detects low-ene                                      | ray       |    |

| electrons<br>GSFC-329   | 865-10213               | 01 | MECHANISM Simple mechanism combines positive quick-release features            | locking and           |    |
|---|-------------------------|----|--|-----------------------|----|
| Instrument accurately measures extra<br>air densities         | enely low               |    | W00-4  | B63-10420             | 05 |
| M-FS-193  | B65-10221               | 01 | MEDICAL EQUIPMENT Tiny biomedical amplifier combines                           | high                  |    |
| Servo calorimeter measures material rate                      | heating                 |    | performance, low power drain<br>ARC-41   | B65~10203             | 01 |
| NU-0024   | B65-10247               | 01 | MELTING POINT  | 200 2000              | •- |
| Differential pressure gauge has fas<br>M-FS-358               | t response<br>B65-10285 | 05 | Integral coolant channels simply ma<br>out method                              |                       |    |
| Coaxial capacitor used to determine                           | fluid                   |    | M-FS-91  | B63-10497             | 05 |
| density<br>LEWIS-232  | B65-10296               | 02 | MEMORY STORAGE UNIT  Circuit detects errors in address c  magnetic core arrays | urrents for           |    |
| Remote rapidly varying pressures ac                           | curately                |    | M-FS-234   | B65-10047             | 01 |
| FRC-28  | B65-10301               | 01 | Improved wire memory matrix uses ve  | ry little             |    |
| Improved strain-wire flowmeter has : response time            | fast                    |    | JPL-SC-167   | B65-10359             | 01 |
| LEWIS-241   | B65-10304               | 01 | MERCURY /METAL/<br>Oil-damped mercury pool makes preci                         | 90                    |    |
| Electronic ampere-hour integrator is to one percent           | s accurate              |    | optical alignment tool<br>GSFC-353   | B65-10253             | 02 |
| GSFC-203  | B65-10308               | 01 | MERCURY ARC  | 200 14200             | •• |
| Air brake-dynamometer accurately me<br>torque                 | asures                  |    | Emission tester for high-power vacu  | um tubes<br>B64-10158 | 01 |
| LEWIS-163   | B65-10312               | 05 |  | B04-10135             | VI |
| Magnetometer measures orthogonal co                           | ponents                 |    | MERCURY LIGHT Igniting system for mercury vapor 1                              | amps pro-             |    |
| of magnetic fields<br>GSFC-395                                | B65-10315               | 01 | tects transistorized sustaining s<br>JPL-421                                   | upply<br>B63-10262    | 01 |
| Direct force-measuring transducer u                           | sed in                  |    | High-intensity flashing beacon powe  | red by                |    |
| blood pressure research<br>ARC-53                             | B65-10325               | 01 | mercury cells<br>Langley-80  | B65-10361             | 01 |
| Rough surface improves stability of                           | air-                    |    | MERCURY VAPOR  |                       |    |
| sounding balloons<br>M-FS-320                                 | B65-10326               | 05 | Igniting system for mercury vapor l<br>tects transistorized sustaining s       |                       |    |
| Baking enables McLeod gauge to meas                           | ire in                  |    | JPL-421  | B63-10262             | 01 |
| ultrahigh vacuum range<br>GSFC-440                            | B65-10329               | 01 | METAL High purity electroforming yields s                                      | uperior               |    |
| Wedge immersed thermistor bolometer                           | measures                |    | metal models<br>ARC-6  | B63-10007             | 05 |
| infrared radiation<br>GSFC- <b>443</b>                        | B65-10330               | 02 | Packless valve with all-metal seal   | handles               |    |
| Vibrating diaphragm measures high                             |                         |    | wide temperature, pressure range<br>JPL-361                                    | 863-10228             | 05 |
| electrostatic field strengths<br>MSC-189                      | B65-10352               | 01 | Break-up of metal tube makes one-ti  | me shock              |    |
| Three-dimensional wire-mesh capacite                          | or system               |    | absorber, bars rebound<br>LANGLEY-1A   | B63-10304             | 05 |
| measures fluid density<br>WOO-194                             | B65-10379               | 01 | Tool facilitates sealing of metal f  | ill tubes             |    |
| Photoelectric system continuously m                           |                         |    | MSC-24   | B63-10519             | 05 |
| liquid level<br>M-FS-417                                      | B65-10382               | 01 | Refractory thermal insulation for s<br>metal surfaces                          | mooth                 |    |
| ECHANICAL DRAVING   | DOD 1000E               | •• | M-FS-160   | B64-10099             | 03 |
| Built-in templates speed up process accurate models           | for making              |    | Mounting for diodes provides effici  | ent heat              |    |
| LANGLEY-23  | B63-10526               | 05 | M-FS-197   | B64-10283             | 01 |
| Use of photographs speeds inspection printed-circuit boards   | n of                    |    | Metal sheath improves thermocouple graphite in one leg                         | using                 |    |
| MSC-72  | B64-10118               | 01 | NU-0011  | 865-10051             | 01 |
| ECHANICAL PROPERTY  Mechanical properties of plastics p       | redetermin-             |    | Titanium treatment improves brazed MSC-127                                     | joints<br>B65-10153   | 05 |
| ed by empirical method<br>ARC-28                              | B64-10068               | 03 | METAL BONDING  |                       |    |
| ECHANICAL SYSTEM  |                         |    | Refractory metals welded or brazed tungsten inert gas equipment                |                       |    |
| Electromechanically operated camera provides uniform exposure |                         |    | LEWIS-219  | в65-10319             | 05 |
| JPL-357   | B63-10227               | 01 | METAL FORMING Integral ribs formed in metal panel                              | s by cold-            |    |
| Multiple test tubes stirred mechanical ARC-42                 | 685-10120               | 01 | press extrusion<br>M-FS-230  | B65-10141             | 05 |
|   |                         |    | Metal parts hydrosized by explosive  | force                 |    |

| M-FS-289   | B65-10170   | 05  | continuous oscillograph output  | 255 12240   |     |
|--|-------------|-----|---|-------------|-----|
| Fiberglass dies speed forming of la                                    | rge metal   |     | NU-0029   | B65-10249   | 01  |
| sheets<br>M-FS-214   | B65-10210   | 05  | Opaque microfiche masthead permits e reading                                  |             |     |
| Die and telescoping punch form conve                                   | alutions in |     | HQ-7  | B65-10306   | 01  |
| thin diaphragm   |             |     | Planetary camera control improves mi  | crofiche    |     |
| JPL-SC-135   | B65-10393   | 05  | production<br>HQ-1  | B65-10313   | 01  |
| METAL-METAL BONDING Stringent cleaning technique assure                | s reliable  |     | MICROINSTRUMENTATION  |             |     |
| epoxy bond   | B64-10142   | 03  | Micromachining produces optical aper micron dimensions                        | tures to    |     |
| GSFC~161   | 804-10142   | 00  | GSFC-206  | B64-10211   | 05  |
| METAL OXIDE SEMICONDUCTOR /MOS/<br>Field-effect transistor replaces bu | lkv         |     | MICROMETROROID  |             |     |
| transformer in analog-gate circui                                      | t           |     | Improved sensor counts micrometeoroi  | id          |     |
| GSFC-351   | B65-10284   | 01  | penetrations<br>LEWIS-76  | B63-10443   | 01  |
| METAL PLATE Built-in templates speed up process                        | for making  |     | Ultra-sensitive transducer advances   | micro-      |     |
| accurate models  |             |     | measurement range   |             | 0.1 |
| LANGLEY-23   | B63-10526   | 05  | ARC-26  | B64-10004   | 01  |
| METAL REINFORCEMENT  Method of welding joint in closed v               | egge]       |     | MICROMETER Apparatus measures swelling of membr                               | ranes in    |     |
| improves quality of seam   |             |     | electrochemical cells   |             |     |
| JPL-170  | B63-10139   | 05  | GSFC-280  | B65-10087   | 01  |
| METAL WORKING  | -66         |     | MICROMINIATURIZED ELECTRONIC EQUIPMENT<br>Frequency discriminator with binary | outnut      |     |
| Rapid billet loader aids extrusion tory metals                         | oi reirac-  |     | eliminates tuned circuits   | -           |     |
| LEWIS-50   | B63-10354   | 05  | M-FS-376  | B65-10349   | 01  |
| Guide for extrusion dies eliminates                                    |             |     | MICROMOTOR  | -414        |     |
| straightening operation<br>LEWIS-152                                   | B64-10014   | 05  | Computer circuit will fit on single chip                                      | 3111CON     |     |
| Jig and fixture aid fabrication of                                     | tungeton    |     | JPL-513   | B63-10514   | 01  |
| rivets   | =           |     | MICROPHONE  |             |     |
| LEWIS-185  | B65-10101   | 05  | Small foamed polystyrene shield prof<br>frequency microphones from wind no    |             |     |
| Collar positions strip stock used t                                    | o form coil |     | M-FS-123  | B63-10579   | 01  |
| on mandrel<br>JPL-198  | 865-10130   | 05  | MICROSCOPE  |             |     |
| Lathe attachment used to machine el                                    | liptical    |     | Attachment converts microscope to po<br>autocollimator                        | oint source |     |
| cones  | •           | 0.5 | JPL-499   | B64-10124   | 05  |
| MSC-100  | B65-10168   | 05  | Micromachining produces optical ape   | rtures to   |     |
| METALLURGY Rotating filters permit wide range                          | of ontical  |     | micron dimensions<br>GSFC-206   | B64-10211   | 05  |
| pyrometry  |             |     |   |             | -   |
| LANGLEY-33   | B65-10100   | 02  | MICROWAVE  Novel horn antenna reduces side lobe                               | es,         |     |
| Rotating holder permits accurate gr<br>metallurgical microsamples      | inding of   |     | improves radiation pattern<br>JPL-425   | B63-10264   | 01  |
| LEWIS-131  | B65-10262   | 05  |   | 10204       | •-  |
| METEOROID  |             |     | MICROWAVE ANTENNA  Flange on microwave antenna subrefly                       | ector cuts  |     |
| Ultra-sensitive transducer advances<br>measurement range               | micro-      |     | ground noise<br>JPL-362   | B63-10229   | 01  |
| ARC-26   | 864-10004   | 01  |   | DOG TOELS   | ٠.  |
| METEOROLOGICAL BALLOON   |             |     | MICROWAVE ATTENUATION  Modified filter prevents conduction                    | of micro-   |     |
| Rough surface improves stability of                                    | air-        |     | wave signals along high-voltage p   |             |     |
| sounding balloons<br>M-FS-320  | B65-10326   | 05  | leads<br>JPL-63   | B63-10091   | 01  |
| METER  |             |     | MICROWAVE CIRCUIT   |             |     |
| Liquid-level meter has no moving pa                                    |             |     | Double-throw microwave device switc   | hes two     |     |
| M-FS-3   | B63-10378   | 03  | lines quickly<br>JPL-410  | B63-10258   | 01  |
| MICROCIRCUIT Field-effect transistor replaces by                       | ılkv        |     | Superconductor magnets used for sta   | aaer-tunina |     |
| transformer in analog-gate circu:                                      | it          | 0.1 | traveling-wave maser  | B65-10165   |     |
| GSFC-351   | B65-10284   | 01  | GSFC-292  | P07-10109   | 01  |
| MICROELECTRONICS Logic circuit exhibits optimum per                    | formance    |     | MICROWAVE FILTER  Modified filter prevents conduction                         | of micro-   |     |
| LANGLEY-129  | B65-10193   | 01  | wave signals along high-voltage p   |             |     |
| MICROFILM  |             |     | leads<br>JPL-63   | B63-10091   | 01  |
| Library of documents compressed in display kit                         | to lap-held |     | MICROWAVE FREQUENCY   |             |     |
| MSC-125  | B65-10030   | 01  | Modified filter prevents conduction   |             |     |
| Manual-food adaptoniti   | ilmina of   |     | wave signals along high-voltage p   | ower supply |     |

| JPL-63   | B63-10091  | 01  | Improved molybdenum disulfide-silven<br>brushes have extended life | r motor                  |     |
|--|------------|-----|--|--------------------------|-----|
| Cryogenic waveguide window is seale                        | d with     |     | M-FS-64  | B63-10479                | 03  |
| plastic foam<br>JPL-559                                    | B63-10613  | 01  | MONITOR  |                          |     |
| JVL-959  | PP3-10013  | 01  | Circuit switches latching relay in                                 | response to              |     |
| MICROWAVE SWITCHING  |            |     | signals of different polarity                                      |                          |     |
| Double-throw microwave device switc<br>lines quickly       | hes two    |     | W00-055  | B63-10508                | 01  |
| JPL-410  | B63-10258  | 01  | Simple circuit continuously monitors                               | 3                        |     |
|  |            |     | thermocouple sensor  |                          |     |
| MICROWAVE TRANSMISSION Traveling-wave tube circuit simplif | ies        |     | M-FS-61  | B63-10567                | 01  |
| microwave relay  | 103        |     | Auxiliary circuit enables automatic                                | monitoring               |     |
| GSFC-299   | B65-10127  | 01  | of EKG   | 705 10110                |     |
| MINIATURE ELECTRONIC EQUIPMENT                             |            |     | MSC-106  | B65-10142                | 01  |
| Metal diaphrage used to calibrate s                        | iniature   |     | Electromechanical flowmeter accurate                               | ely                      |     |
| transducers  | DCE 100E0  |     | monitors fluid flow  | B65-10273                | 01  |
| M-FS-207   | B65-10059  | 01  | GSFC-357   | B03-10273                | 01  |
| MINIATURIZATION  |            |     | Rugged pressed disk electrode has le                               | ow contact               |     |
| Welded pressure transducer made as 1/8th-inch in diameter  | small as   |     | potential<br>MSC-158   | B65-10320                | 01  |
| ARC-11   | B63-10429  | 03  | H3C-100  | DOD 10020                | • • |
|  |            |     | MONKEY   |                          |     |
| MIRROR Variable-transparency wall regulate                 | a tempera- |     | Test monkeys anesthetized by routine<br>HQ-18                      | e procedure<br>±65-10332 | 04  |
| tures of structures  | .s tempera |     |  | 200                      | •   |
| LANGLEY-25   | B63-10528  | 03  | MONOCHROMATIC RADIATION  |                          |     |
| Light-sensitive potentiometer measu                        | res        |     | Computer programs simplify optical : analysis                      | system                   |     |
| product of two variables                                   |            |     | GSFC-306   | B65-10093                | 01  |
| GSFC-240   | B65-10076  | 01  | MONOMOLECULAR LAYER  |                          |     |
| MISSILE  |            |     | Miniature bearings lubricated by so                                | nic                      |     |
| High purity electroforming yields s                        | uperior    |     | dispersion method  |                          |     |
| metal models<br>ARC-6                                      | B63-10007  | 05  | M-FS-202   | B65-10106                | 03  |
| ARC-0  | BOD 10001  | ••  | MOTOR SYSTEM   |                          |     |
| MIXER  |            |     | Improved molybdenum disulfide-silve                                | r motor                  |     |
| Added diodes increase output of bal mixer circuit          | anced      |     | brushes have extended life<br>M-FS-64                              | B63-10479                | 03  |
| GSFC-354   | B65-10276  | 01  |  |                          |     |
| MODULATOR  |            |     | Quick-acting clutch disengages idle                                | drive                    |     |
| Added diodes increase output of bal                        | anced      |     | GSFC-143   | B64-10028                | 05  |
| mixer circuit  |            |     |  |                          |     |
| GSFC-354   | B65-10276  | 01  | Vehicle walks on varied terrain, can<br>handicapped persons        | n assist                 |     |
| MODULE   |            |     | WD0-005  | B64-10274                | 05  |
| Portable display paneling has wide take down and assembly  | use, easy  |     | Rotor position sensor switches curr                                | ents in                  |     |
| ARC-17   | B63-10435  | 05  | brushless Dc motors  | citta III                |     |
|  |            |     | GSFC-315   | B65-10151                | 01  |
| MOLD Improved molybdenum disulfide-silve                   | r motor    |     | MULTIPLIER   |                          |     |
| brushes have extended life                                 |            |     | Computer determines high-frequency                                 | phase                    |     |
| M-FS-64  | B63-10479  | 03  | stability<br>GSFC-113  | B63-10555                | 01  |
| Refractory ceramic has wide usage,                         | low        |     |  |                          | 71  |
| fabrication cost   |            |     | Variable load automatically tests d                                | c power                  |     |
| M-FS-67  | B63-10481  | 03  | supplies<br>GSFC-291   | B65-10105                | 01  |
| Plastic molds reduce cost of encaps                        | sulating   |     |  |                          |     |
| electric cable connectors                                  |            | 05  | Photoresistance analog multiplier h                                | as wide                  |     |
| M-FS-69  | 863-10568  | 05  | range<br>GSFC-360  | B65-10287                | 01  |
| Pressure molding of powdered materi                        | ials       |     |  |                          |     |
| improved by rubber mold insert<br>WOD-100                  | B64-10270  | 03  | MULTIVIBRATOR  Monostable circuit with tunnel diod                 | e has fast               |     |
| #GG-100  | B0410270   | 0.5 | recovery   |                          |     |
| MOLECULAR DISSOCIATION                                     | ā          |     | GSFC-132   | B63-10603                | 01  |
| Heater decomposes oil backstreaming high-vacuum pumps      | ı rom      |     | Temperature-sensitive network drive                                | s astable                |     |
| GSFC-356   | B65-10224  | 20  | multivibrator  |                          | ٠.  |
| MOLECULAR FLOW   |            |     | GSFC-137   | в63-10609                | 01  |
| Test device prevents molecular bour                        | nce-back   |     | Circuit improvement produces monost                                | able                     |     |
| GSFC-82  | B63-10546  | 03  | multivibrator with load-carrying                                   | capability<br>B65-10011  | 01  |
| MOLECULE   |            |     | GSFC-34A   | 110011-690               | 71  |
| Test device prevents molecular bou                         |            |     | Variable frequency transistor inver                                | ters use                 |     |
| GSFC-82  | B63-10546  | 03  | mutiple core transformers variable frequency transistor inv        | erters use               |     |
| MOLYBDENUM SULFIDE   |            |     | multiple core transformers   |                          |     |
| Molybdenum disulfide mixtures make                         | effective  |     | GSFC-183   | B65-10119                | 01  |
| high-vacuum lubricants                                     |            |     |  |                          |     |

| generates stable square-wave outpu<br>GSFC-AE-21                             | B65-10124                | 01  | NOISE ELIMINATION<br>New low-level A-C amplifier provides a<br>able noise cancellation and automati |           |    |
|--|--------------------------|-----|---|-----------|----|
| Digital-output cardiotachometer meas<br>changes in heartbeat rate<br>MSC-133 | sures rapid<br>865-10143 | 01  | ture compensation<br>ARC-2 B6   | 3-10003   | 04 |
| H3C-130  | 000 10140                | ••  | Flange on microwave antenna subreflect  | or cuts   |    |
| N  |                          |     | ground noise<br>JPL-362 B6  | 3-10229   | 01 |
| N-P-N JUNCTION  Two-stage emitter follower is temper                         | nature.                  |     | NOISE INTENSITY   |           |    |
| stabilized MSC-20  | B63-10493                | 01  | Small foamed polystyrene shield protec frequency microphones from wind nois                         | e         | 01 |
| NAVIGATION AID   |                          |     | N 13 123  | 0 100/5   | ٠. |
| Improved magnetometer uses toroidal coil                                     | gating                   |     | NOISE REDUCTION  Flange on microwave antenna subreflect   | or cuts   |    |
| GSFC-249   | B65-10103                | 01  | ground noise<br>JPL-362 B6  | 3-10229   | 01 |
| NEOPRENE Chain friction system gives positive                                | e, revers-               |     | NOISE SUPPRESSOR  |           |    |
| ible drive<br>ARC-8  | B63-10009                | 05  | New low-level A-C amplifier provides a<br>able noise cancellation and automati<br>ture compensation |           |    |
| Elastomers bonded to metal surfaces electrochemical cells                    | seal                     |     |   | 3-10003   | 04 |
| GSFC-168   | B64-10113                | 03  | Novel horn antenna reduces side lobes, improves radiation pattern                                   |           |    |
| Reusable neoprene jacket protects po<br>chemical milling                     | arts for                 |     |   | 3-10264   | 01 |
| W00-071  | B65-10179                | 03  | Smail digital recording head has paral channels, minimizes cross talk                               | lel bit   |    |
| NETWORK SYNTHESIS  Boron trifluoride nuclear detector                        |                          |     |   | 53-10284  | 01 |
| preamplifier uses single-cable co<br>LEWIS-178                               | nnection<br>B65-10255    | 01  | Field-effect transistor improves elect<br>amplifier   | rometer   |    |
| NICKEL   |                          |     | ARC-36 B6   | 64-10143  | 01 |
| Ellipsoidal optical reflectors reprelectroforming                            | oduced by                |     | NONDESTRUCTIVE TESTING  Force controlled solenoid drives micro                                      | ual d     |    |
| GSFC-92  | 863-10547                | 05  | tester  |           | 01 |
| Tungsten wire and tubing joined by   | nickel                   |     | WOU-125   | ,0 TUTOE  | 01 |
| brazing<br>M-FS-394  | B65-10391                | 05  | NONLINEAR FEEDBACK Nonlinear feedback reduces analog-to-d   | iigital   |    |
| NICKEL-CADHIUM BATTERY   | .4.1                     |     | converter error<br>ARC-46 B6  | 55~10277  | 01 |
| Didymium compound improves nickel-c<br>cell                                  |                          | 0.7 | NONLINEARITY  |           |    |
| GSFC-295   | B65-10083                | 03  | Digital-output cardiotachometer measur<br>changes in heartbeat rate<br>MSC-133 B6                   | •         | 01 |
| NICKEL COMPOUND  Thoriated nickel bonded by solid-st                         | ate                      |     | NSC-133   | 35-10143  | VI |
| diffusion method<br>LANGLEY-116  | B65-10220                | 03  | NOSE CONE High purity electroforming yields supe  | rior      |    |
| NICKEL PLATING   |                          |     | metal models<br>ARC-6 B6  | 53-10007  | 05 |
| Electroless nickel resist used in a etching of aluminum                      | lkali-                   |     | NOTCH   |           |    |
| GSFC-284   | B65-10162                | 03  | Apparatus of small size can be extende long, rigid boom   | ed into   |    |
| Nickel solution prepared for precis electroforming                           | ion                      |     |   | 63-10200  | 05 |
| WDD-070  | B65-10303                | 03  | NOZZLE Quick-hardening problems are eliminate   | ed with   |    |
| Nickel/tin coating protects threade  |                          |     | spray gun modification which mixes r  | resin and |    |
| fasteners in corrosive environmen<br>MSC-253                                 | t<br>B65-10398           | 03  | accelerator liquids during applicati<br>LANGLEY-6A Be   |           | 03 |
| NITROGEN   |                          |     | Improved technique for localizing elec  | ctro-     |    |
| Helical tube separates nitrogen gas<br>liquid nitrogen                       | from                     |     | polishing features novel nozzles<br>WOO-101   | 64-10271  | 01 |
| JPL-398  | B63-10251                | 05  | NOZZLE FLOW   |           |    |
| Compressed gas system operates semi<br>brakes during winching operation      | trailer                  |     | flow control valve is independent of party drop   | pressure  |    |
| JPL-0036   | B64-10306                | 05  | JPL-W00-039 B6  | 65-10121  | 05 |
| NITROGEN COMPOUND  Nitrogen dioxide produced by self-s                       | sustained                |     | NUCLEAR HEAT<br>Servo calorimeter measures material he  | eating    |    |
| pyrolysis of nitrous oxide<br>LANGLEY-32                                     | B65-10074                | 05  | rate<br>NU-0024 Bo  | 65-10247  | 01 |
| NOISE ATTENUATION  |                          |     | NUCLEAR PARTICLE  |           |    |
| Small foamed polystyrene shield pro<br>frequency microphones from wind r     |                          |     | Instrument performs nondestructive che<br>analysis, data can be telemetered                         | emical    |    |
| M-FS-123   | B63-10579                | 01  |   | 65-10317  | 01 |

| NUTS AND BOLTS Simple mechanism combines positive la         | ocking and |     | Ellipsoidal optical reflectors repro<br>electroforming                     | duced by    |    |
|--|------------|-----|--|-------------|----|
| quick-release features                                       | -          |     |  | B63-10547   | 05 |
|  | B63-10420  | 05  | Plastic films for reflective surface                                       | : <b>s</b>  |    |
| Instrument adjustment knob locks to accidental maladjustment | prevent    |     | reproduced from masters<br>GSFC-188  | B64-10151   | 03 |
|  | B64-10249  | 05  |  |             | •• |
| Captive nut fastener securely joins                          | hnittla    |     | Micromachining produces optical aper<br>micron dimensions                  | tures to    |    |
| materials  |            |     |  | B64-10211   | 05 |
| NU-0008  | B65-10245  | 05  | Carbon-arc rod holder has long life,                                       | ******      |    |
| NYLON  |            |     | arc splatter   | reduces     |    |
| Portable flooring protects finished                          | surfaces,  |     | MSC-144  | B65-10095   | 03 |
| is easily moved<br>M-FS-15                                   | B63-10387  | 05  | Interferometer construction assures  |             |    |
|  |            |     | parallelism of critical components<br>JPL-704                              |             | 20 |
| O  |            |     | 3FL-704  | D03-10232   | 02 |
| O-RING SEAL Reinforcement core facilitates O-rin             | _          |     | Unique construction makes interferom<br>insensitive to mechanical stresses |             |    |
| installation   | y          |     |  |             | 02 |
| W00-228  | B65-10378  | 05  | N. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.                                  |             |    |
| OHMMETER   |            |     | Nickel solution prepared for precisi electroforming                        | OR          |    |
| Ohmmeter senses depletion of lubrica                         | nt in      |     |  | B65-10303   | 03 |
| journal bearings<br>LEWIS-37                                 | B64-10042  | 01  | OPTICAL METHOD   |             |    |
|  |            |     | Liquid-level meter has no moving par                                       |             |    |
| Continuity tester screens out faulty connections             | socket     |     | H-FS-3   | B63-10378   | 03 |
|  | B64-10065  | 01  | OPTICAL PATH   |             |    |
| Electronic ohmmeter provides direct                          | digital    |     | Photoelectric system continuously mo<br>liquid level                       | nitors      |    |
| output   | -          |     | M-FS-417   | B65-10382   | 01 |
| GSFC-363   | B65-10274  | 01  | OPTICAL PROPERTY   |             |    |
| OIL  |            |     | Optical output enhances flowmeter ac                                       |             |    |
| Oil-smeared models aid wind tunnel measurements              |            |     | M-FS-482   | B65-10395   | 02 |
|  | B63-10311  | 03  | OPTICAL PUMPING  |             |    |
| Fine-particle filter prevents damage                         |            |     | Magnetometer measures orthogonal com<br>of magnetic fields                 | iponents    |    |
| bamba Lius-barricis litter breasurs agmade                   | to vacuum  |     | GSFC-395   | B65-10315   | 01 |
| LEWIS-106  | B63-10489  | 05  | OPTICAL PYRONETER  |             |    |
| OLEFIN   |            |     | Infrared shield facilitates optical  | pyrometer   |    |
| Variable-transparency wall regulates                         | tempera-   |     | measurements<br>LANGLEY—133  | B65-10272   | 02 |
| tures of structures<br>LANGLEY-25                            | B63-10528  | 03  | LANGLEI-133  | 10212       | 02 |
| OMNITATOR OFFICE A LABORATA                                  |            |     | OPTICAL REFLECTIVITY   | . without   |    |
| OMNIDIRECTIONAL ANTENNA Lightweight load support serves as v | ibration   |     | System measures angular displacement<br>contact                            | . WITHOUT   |    |
| damper   |            | 25  | LANGLEY-46   | B65-10073   | 01 |
| JPL-661  | B65-10144  | 05  | OPTICAL SENSOR   |             |    |
| OPACITY  |            |     | Low-cost tape system measures veloci                                       | ity of      |    |
| Opaque microfiche masthead permits e reading                 | asy        |     | acceleration<br>GSFC-85  | B63-10512   | 01 |
|  | B65-10306  | 01  |  |             |    |
| OPTICAL CORRECTION PROCEDURE                                 |            |     | OPTICS Attachment converts microscope to po                                | oint source |    |
| Oil-damped mercury pool makes precis                         | e          |     | autocollimator   |             |    |
| optical alignment tool<br>GSFC-353                           | B65-10253  | 02  | JPL-499  | B64-10124   | 05 |
|  | 230 14600  | 70  | Simple optical system used to align  |             |    |
| OPTICAL EQUIPMENT  Computer programs simplify optical s      | wetom      |     | spectrograph<br>LANGLEY-92   | B65-10071   | 02 |
| analysis   | 9516       |     |  |             |    |
| GSFC-306   | B65-10093  | 01  | System measures angular displacement contact                               | t without   |    |
| Light ray modulation controls optica                         | l system   |     | LANGLEY-46   | B65-10073   | 01 |
| alignment<br>GFSC-171  | B65-10211  | 02  | ORIFICE  |             |    |
|  | 200-16211  | JE  | Elastic orifice automatically regula                                       | ntes gas    |    |
| OPTICAL FILTER Thin transparent films formed from p          | oudoned    |     | bearings<br>JPL-135  | B63-10123   | 05 |
| glass  | -CHUELEQ   |     | 9.FT00   | DOG TOTEO   | -  |
|  | B65-10217  | 03  | Modified gas bearing is adjustable   | to optimum  |    |
| OPTICAL INSTRUMENT   |            |     | stiffness ratio<br>M-FS-145  | B64-10050   | 05 |
| Optics used to measure torque at hig                         | ıh.        |     | A  |             |    |
| rotational speeds<br>LEWIS-13                                | B63-10338  | 01  | Averaging probe reduces static-pressessing errors                          | Sure        |    |
| Minney dentes alters are the                                 |            |     | LANGLEŸ-36   | B65-10114   | 05 |
| Mirror device aligns machine surface dicular to sight lines  | : perpen-  |     | OSCILLATION  |             |    |
| 40a-5  | R63-10421  | 0.2 | Device enables measurement of momen  | tenf        |    |

| inertia about three axes<br>GSFC-49                                      | B65-10176       | 05  | OSCILLOGRAPH  Manual-feed adapter permits microfil  continuous oscillograph output     | iming of                |    |
|--|-----------------|-----|--|-------------------------|----|
| OSCILLATION FREQUENCY  |                 |     | NU-0029  | B65-10249               | 01 |
| Circuit converts AM signals to FM f<br>magnetic recording<br>GSFC-227    | or<br>B65-10001 | 01  | OUTPUT Double-throw microwave device switch  | nes two                 |    |
| OSCILLATOR   |                 |     | lines quickly<br>JPL-410   | B63-10258               | 01 |
| Increased performance reliability o with dual /redundant/ oscillator     |                 |     | Simple circuit provides adjustable o   | voltage                 |    |
| GSFC-36  | B63-10027       | 01  | with linear temperature variation JPL-W00-029  |                         | 01 |
| Frequency-shift-keyer circuit impro<br>conversion for radio transmission |                 |     | Transistorized converter provides no   | ondíssipa-              |    |
| GSFC-80  | B63-10511       | 01  | tive regulation<br>GSFC-238  | B64-10305               | 01 |
| Transistorized trigger circuit is f controllable                         | requency-       |     | Voltage generator sweeps oscillator  | frequency               |    |
| GSFC-111   | B63-10553       | 01  | linearly with time<br>M-FS-219   | B64-10320               | 01 |
| Highly efficient square-wave oscill<br>ator at high power levels         |                 |     | Stepping motor drive circuit design  | ed for low              |    |
| GSFC-112   | B63-10554       | 01  | power drain<br>GSFC-198  | B65-10026               | 01 |
| Computer determines high-frequency<br>stability                          | _               |     | Digital-output cardiotachometer meas   | sures rapid             |    |
| GSFC-113   | B63-10555       | 01  | changes in heartbeat rate<br>MSC-133   | B65-10143               | 01 |
| Blocking oscillator uses low trigge voltage                              |                 |     | Sensitive electrometer features dig  | ital                    |    |
| MSC-58   | B64-10017       | 01  | output<br>GSFC-288   | B65-10206               | 01 |
| Electronic device simulates respira                                      | tion rate       |     |  |                         | 01 |
| and depth<br>MSC-89  | B64-10255       | 01  | Frequency divider is free of spuriou<br>GSFC-308                                       | us outputs<br>B65-10334 | 01 |
| Voltage generator sweeps oscillator                                      | frequency       |     | Binary counter uses fluid logic ele  |                         |    |
| linearly with time<br>M-FS-219   | B64-10320       | 01  | M-FS-323<br>OXIDATION  | B65-10377               | 01 |
| FM oscillator uses tetrode transist<br>JPL-82                            | B65-10055       | 01  | Cryopumping of hydrogen in vacuum cl<br>aided by catalytic oxidation of hy<br>LEWIS-15 |                         | 05 |
| Feedback oscillator functions as lo pulse stretcher                      | w-level         |     | OXIDE  |                         |    |
| GSFC-261   | B65-10069       | 01  | Reference black body is compact, con<br>use  |                         |    |
| Unijunction frequency divider is frequency                               | ee of           |     | ARC-3  | B63-10004               | 03 |
| JPL-W00-010  | B65-10112       | 01  | Removable preheater elements improve induction furnace                                 | e oxide                 |    |
| Variable frequency transistor inver                                      |                 |     | JPL-288  | B63-10193               | 01 |
| variable frequency transistor inv  | verters use     |     | DXYGEN Miniature oxygen~hydrogen cutting to  | orch                    |    |
| GSFC-183   | B65-10119       | 01  | constructed from hypodermic needle<br>JPL-545  | e<br>863-10517          | 05 |
| Circuit reduces distortion of FM mo<br>GSFC-257                          | B65-10152       | 01  | OXYGEN APPARATUS<br>Respiratory transfer value has fail                                | -safe                   |    |
| DC to AC converter operates efficie                                      | ency at         |     | feature  |                         |    |
| low input voltages<br>GSFC-130   | B65-10178       | 01  | ARC-1  | B65-10369               | 01 |
| Voltage variable oscillator has hig                                      | jh phase        |     | OXYGEN BREATHING Respiratory transfer value has fail                                   | -safe                   |    |
| stability<br>LANGLEY-123   | B65-10204       | 01  | feature<br>ARC-1   | B65-10369               | 01 |
| Oscillator circuit measures liquid                                       | laugh in        |     | OXYGEN DETECTOR  |                         |    |
| tanks  |                 |     | Fuel cell serves as oxygen level de  | tector                  |    |
| M-FS-245   | B65-10209       | 01  | JPL-SC-072   | B65-10066               | 01 |
| Voltage controlled oscillator is ea<br>aligned, has low phase noise      | •               |     | OZONE<br>Porous glass makes effective substr   | ate for                 |    |
| JPL-510  Electrostatically driven dynamic ca                             | B65-10223       | 01  | ozone-sensing reagent<br>GSFC-388  | B65-10364               | 03 |
| employs capacitive feedback  | -               |     | P  |                         |    |
| JPL-771  | B65-10293       | 01  | P-N-P JUNCTION   |                         |    |
| Frequency correction device uses di                                      | igital          |     | Two-stage emitter follower is tempe  | rature                  |    |
| GSFC-268   | B65-10307       | 01  | stabilized<br>MSC-20   | B63-10493               | 01 |
| Hybrid circuit achieves pulse reger                                      | neration        |     | PACKAGING  |                         |    |
| with low power drain<br>GSFC-382   | B65-10314       | 01  | Modular chassis simplifies packagin<br>interconnecting of circuit boards               |                         |    |
|  | 200 10014       | 0.1 | JPL-236A   |                         | 01 |

| 3FL-39Z B03-10247 U3 L   | reamplifier uses single-cable connection   |
|--|--|
|  | EWIS-178 865-10255 01  |
| Lightweight magnesium-lithium alloys show PARTIC   | LE MASS  |
|  | roparticle impact sensor measures energy   |
| <u> </u>   | irectly  |
| G  | SFC-252 B65-10048 01   |
| Use of tear ring permits repair of sealed  |  |
|  | LE PROPERTY  |
|  | be samples components of rocket engine   |
|  | :xhaust<br>!-FS-485 B65-10384 <b>03</b>  |
| display kit  | 1-12-400 00-10304 03   |
|  | ULATE FILTER   |
|  | e-particle filter prevents damage to vacuum  |
|  | amba   |
| in storage and handling B65-10256 05   | .EW1S-106 B63-10489 05   |
| PAYLOA   | ın.  |
|  | ed-sensing device aids crane operators   |
|  | /S-4 B64-10006 05  |
| M-FS-376 B65-10349 01  |  |
| PENDUL PENGLEY   |  |
|  | smic transducer measures small horizontal  |
|  | FS-81 B65-10029 05   |
| GSFC-375 B65-10311 01  | 200 1002   |
|  | UM APPARATUS   |
| PAINT  | cous-pendulum damper suppresses structural   |
|  | ibrations  |
| to apply L<br>GSFC-366 B65-10156 03  | ANGLEY-45 B64-10272 05   |
|  | ice enables measurement of moments of  |
| Aluminum alloys protected against stress—  | nertia about three axes  |
|  | SFC-49 B65-10176 05  |
| M-FS-235 B65-10172 03  |  |
|  | NATING PARTICLE Proved sensor counts micrometeoroid  |
|  | enetrations  |
| r  | EWIS-76 863-10443 01   |
|  |  |
| PANEL PHASE  |  |
|  | puter determines high-frequency phase<br>tability  |
|  | tability   |
|  | SPC-113 R63-10555 01   |
|  | SFC-113 B63-10555 01   |
| ARC-17 B63-10435 05 G  | SFC-113 B63-10555 01  DETECTOR   |
| ARC-17 B63-10435 05 G  Electronic assembly rack panels snap on and PHASE off Phase   | DETECTOR use detector circuit synthesizes own  |
| ARC-17 B63-10435 05 G  Electronic assembly rack panels snap on and PHASE off Phate GSFC-59 B64-10121 05 r  | DETECTOR use detector circuit synthesizes own eference signal  |
| ARC-17 B63-10435 05 G  Electronic assembly rack panels snap on and PHASE off Phate GSFC-59 B64-10121 05 r  Material Research Phate GSFC-59 B64-10121 05 r  Material Research Phate Research Phate Research Phate Research Ph   | DETECTOR use detector circuit synthesizes own  |
| ARC-17 B63-10435 05 G  Electronic assembly rack panels snap on and PHASE off Phase Phase SFC-59 B64-10121 05 r  Instrument adjustment knob locks to prevent  | DETECTOR use detector circuit synthesizes own eference signal -FS-247 B65-10080 01   |
| ARC-17 B63-10435 05 G  Electronic assembly rack panels snap on and PHASE off Pha GSFC-59 B64-10121 05 r  Instrument adjustment knob locks to prevent accidental maladjustment PHASE  | DETECTOR use detector circuit synthesizes own eference signal -FS-247 B65-10080 01   |
| ARC-17 B63-10435 05 G  Electronic assembly rack panels snap on and PHASE off Phate off | DETECTOR  ise detector circuit synthesizes own reference signal I-FS-247  SHIFT Ise shift frequency synthesizer is efficient, small in size  |
| ARC-17 B63-10435 05 G  Electronic assembly rack panels snap on and PHASE off Phase off B64-10121 05 r  Instrument adjustment knob locks to prevent accidental maladjustment B64-10249 05 Phase Phase Phase of Phase Phase of Phase Phase Phase of Phase of Phase of Phase Phase of Phase of Phase Phase of Phas | DETECTOR use detector circuit synthesizes own eference signal H-FS-247 B65-10080 01 SHIFT use shift frequency synthesizer is   |
| ARC-17  Electronic assembly rack panels snap on and phase off Phase off SFC-59  Instrument adjustment knob locks to prevent accidental maladjustment B64-10249 05  Transducer senses displacements of panels Message of SFC-100 Message of SFC-10 | DETECTOR use detector circuit synthesizes own eference signal H-FS-247 B65-10080 01 SHIFT use shift frequency synthesizer is efficient, small in size H-FS-250 B65-10169 01  |
| ARC-17  Electronic assembly rack panels snap on and pHASE off Phase off SFC-59  Instrument adjustment knob locks to prevent accidental maladjustment PHASE M-FS-190  Transducer senses displacements of panels subjected to vibration ARC-37  B63-10435  B64-10121  B64-10121  B64-10249  B64-10249  B64-10249  B64-10249  B64-10249  B64-10249  B65-10085  B65-10085  | DETECTOR use detector circuit synthesizes own reference signal r-FS-247 B65-10080 01 SHIFT see shift frequency synthesizer is refficient, small in size r-FS-250 B65-10169 01  |
| ARC-17  Electronic assembly rack panels snap on and phase off SFC-59  Instrument adjustment knob locks to prevent accidental maladjustment M-FS-190  Transducer senses displacements of panels subjected to vibration ARC-37  B63-10435  B64-10121  B64-10121  B64-10249  B64-10249  B65-10085  B65-10085  B65-10085  B65-10085  B65-10085   | DETECTOR use detector circuit synthesizes own reference signal u-FS-247 B65-10080 01 SHIFT use shift frequency synthesizer is reflicient, small in size u-FS-250 B65-10169 01 CONDUCTIVE CELL ar-angle sensor has no moving parts  |
| ARC-17  Electronic assembly rack panels snap on and off SFC-59  Instrument adjustment knob locks to prevent accidental maladjustment H-FS-190  Transducer senses displacements of panels subjected to vibration ARC-37  Galvanic corrosion reduced in aluminum J  Electronic assembly rack panels solution Solution Galvanic corrosion reduced in aluminum J   | DETECTOR use detector circuit synthesizes own reference signal 1-FS-247 B65-10080 01 SHIFT use shift frequency synthesizer is reflicient, small in size 1-FS-250 B65-10169 01 CONDUCTIVE CELL ar-angle sensor has no moving parts  |
| ARC-17  Electronic assembly rack panels snap on and off SFC-59  Instrument adjustment knob locks to prevent accidental maladjustment B64-10249  Transducer senses displacements of panels subjected to vibration ARC-37  Galvanic corrosion reduced in aluminum J Fabrications M-FS-272  B65-10140  O3  PHOTOC   | DETECTOR use detector circuit synthesizes own reference signal u-FS-247 B65-10080 01 SHIFT use shift frequency synthesizer is reflicient, small in size u-FS-250 B65-10169 01 CONDUCTIVE CELL ar-angle sensor has no moving parts upl-418 B63-10260 02   |
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| ARC-17  Electronic assembly rack panels snap on and off GSFC-59  Instrument adjustment knob locks to prevent accidental maladjustment B64-10249  Transducer senses displacements of panels subjected to vibration ARC-37  Galvanic corrosion reduced in aluminum fabrications M-FS-272  Integral ribs formed in metal panels by cold-  | DETECTOR use detector circuit synthesizes own reference signal 1-FS-247 B65-10080 01  SHIFT use shift frequency synthesizer is refficient, small in size 1-FS-250 B65-10169 01  CONDUCTIVE CELL ar-angle sensor has no moving parts PL-418 B63-10260 02  CONDUCTOR with the sensitive potentiometer measures broduct of two variables  |
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| Electronic assembly rack panels anap on and off GSFC-59 B64-10121 05 Phase occidental maladjustment B64-10249 05 Phase M-FS-190 B64-10249 05 Phase occidental maladjustment B65-10085 01 PHOTOC Galvanic corrosion reduced in aluminum Jabrications M-FS-272 B65-10140 03 PHOTOC Light Integral ribs formed in metal panels by coldpress extrusion GM-FS-230 B65-10141 05 PHOTOC M-FS-230 B65-10295 02 Insensitive to mechanical stresses JPL-725 B65-10295 02 Insensitive to mechanical stresses JPL-725 B65-10295 02 Insensitive to mechanical stresses JPL-725 B65-10046 02 GGF M-FS-255 B65-10046 D2 GGF M-FS-255  | DETECTOR use detector circuit synthesizes own reference signal 1-FS-247 B65-10080 01  SHIFT use shift frequency synthesizer is reflicient, small in size 1-FS-250 B65-10169 01  CONDUCTIVE CELL ar-angle sensor has no moving parts PL-418 B63-10260 02  CONDUCTOR thit-sensitive potentiometer measures roduct of two variables USFC-240 B65-10076 01  PIODE TORE TORE TORE TORE TORE TORE TORE TOR   |
| Electronic assembly rack panels snap on and off GSFC-59 B64-10121 05 Phase M-FS-190 B64-10249 05 Phase M-FS-190 B64-10249 05 Phase of panels subjected to vibration ARC-37 B65-10085 01 PHOTOC Galvanic corrosion reduced in aluminum fabrications M-FS-272 B65-10140 03 PHOTOC Lig Integral ribs formed in metal panels by coldpress extrusion M-FS-230 B65-10141 05 PHOTOC M-FS-230 B65-10141 05 PHOTOC Simple Construction makes interferometer insensitive to mechanical stresses JPL-725 B65-10295 02 Insensitive to mechanical stresses JPL-725 B65-10046 02 G6 G7 PARTICLE Fine-mesh screen made by simplified method Fine-mesh screen made fine-method Fine-mesh screen made fine-method Fine-method Fine-mesh screen made fine-method  | DETECTOR use detector circuit synthesizes own reference signal 1-FS-247 B65-10080 01  SHIFT use shift frequency synthesizer is reflicient, small in size 1-FS-250 B65-10169 01  CONDUCTIVE CELL ar-angle sensor has no moving parts PL-418 B63-10260 02  CONDUCTOR (ht-sensitive potentiometer measures roduct of two variables USFC-240 B65-10076 01  PIOBE uple circuit positions film frames in projector PL-508 B65-10132 02  Atrument calibrates low gas-rate flowmeters USC-134 B65-10137 01  Rer beam transmits electric power USFC-293 B65-10158 01  Atoresistance analog multiplier has wide usange USFC-360 B65-10287 01   |
| Electronic assembly rack panels snap on and off GSFC-59 B64-10121 05 Phase off GSFC-59 B64-10121 05 Phase accidental maladjustment knob locks to prevent accidental maladjustment B64-10249 05 Phase M-FS-190 B64-10249 05 Phase subjected to vibration ARC-37 B65-10085 01 PHOTOC Galvanic corrosion reduced in aluminum fabrications M-FS-272 B65-10140 03 PHOTOC Integral ribs formed in metal panels by coldpress extrusion M-FS-230 B65-10141 05 PARABOLIC REFLECTOR Unique construction makes interferometer insensitive to mechanical stresses JPL-725 B65-10295 02 Insensitive to mechanical stresses JPL-725 B65-10046 02 GPARABOLIC REFLECTOR Wide-aperture solar energy collector is light in weight JPL-SC-055 B65-10046 02 GPARTICLE PARAILLE DETECTOR PHOTOE PHOTOE PARAILLE DETECTOR PHOTOE PHOTOE PARAILLE DETECTOR PHOTOE PARAILLE | DETECTOR  Ise detector circuit synthesizes own reference signal I-FS-247  B65-10080  01  SHIFT Ise shift frequency synthesizer is refficient, small in size I-FS-250  B65-10169  01  CONDUCTIVE CELL ar-angle sensor has no moving parts IPL-418  B63-10260  02  CONDUCTOR Intransitive potentiometer measures reduct of two variables ISFC-240  B65-10076  01  RIODE Riple circuit positions film frames in rejector IPL-508  B65-10132  02  Atrument calibrates low gas-rate flowmeters ISC-134  B65-10137  01  Rer beam transmits electric power ISFC-293  B65-10158  01  Atoresistance analog multiplier has wide lange ISFC-360  B65-10287  01  CLASTIC STRESS MEASUREMENT  |
| Electronic assembly rack panels snap on and off GSFC-59 B64-10121 05 That street adjustment knob locks to prevent accidental maladjustment B64-10249 05 Phamers and perfect to vibration ARC-37 B65-10085 01 PHOTOG Galvanic corrosion reduced in aluminum fabrications M-FS-272 B65-10140 03 PHOTOG Lig Integral ribs formed in metal panels by coldpress extrusion M-FS-230 B65-10141 05 PHOTOG Simples of the metal stresses JPL-725 B65-10295 02 PARABOLOIDAL MIRROR Wide-aperture solar energy collector is light in weight JPL-SC-055 B65-10046 02 GFARTICLE Fine-mesh screen made by simplified method MOD-104 B64-10282 03 GFARTICLE DETECTOR PHOTOG Service of the measures energy Service of the metal panels of the measures energy Service of the metal screen made by simplified method Microparticle impact sensor measures energy Service of the metal panels of the measures energy Service of the metal panels of the met | DETECTOR use detector circuit synthesizes own reference signal 1-FS-247 B65-10080 01  SHIFT use shift frequency synthesizer is reflicient, small in size 1-FS-250 B65-10169 01  CONDUCTIVE CELL ar-angle sensor has no moving parts PL-418 B63-10260 02  CONDUCTOR (ht-sensitive potentiometer measures roduct of two variables USFC-240 B65-10076 01  PIOBE uple circuit positions film frames in projector PL-508 B65-10132 02  Atrument calibrates low gas-rate flowmeters USC-134 B65-10137 01  Rer beam transmits electric power USFC-293 B65-10158 01  Atoresistance analog multiplier has wide usange USFC-360 B65-10287 01   |
| Electronic assembly rack panels anap on and off GSFC-59 B64-10121 05 respectively. B65-10121 05 respectively. B64-10121 05 respectively. B65-10140 03 respectively. B65-10140 03 respectively. B65-10141 05 respec | DETECTOR use detector circuit synthesizes own reference signal 1-FS-247 B65-10080 01  SHIFT use shift frequency synthesizer is reflicient, small in size 1-FS-250 B65-10169 01  CONDUCTIVE CELL ar-angle sensor has no moving parts PL-418 B63-10260 02  CONDUCTOR thit-sensitive potentiometer measures roduct of two variables SFC-240 B65-10076 01  PLODE uple circuit positions film frames in rojector PL-508 B65-10132 02  Atrument calibrates low gas-rate flowmeters SFC-134 B65-10137 01  Atrument calibrates low gas-rate flowmeters SFC-293 B65-10158 01  Atoresistance analog multiplier has wide range SFC-360 B65-10287 01  CLASTIC STRESS MEASUREMENT Two system facilitates photoelastic strain  |
| Electronic assembly rack panels snap on and off GSFC-59 B64-10121 05 Phase off GSFC-59 B64-10249 05 Phase off GSFC-59 B64-10249 05 Phase off GSFC-59 B65-1029 05 Phase off GSFC-252 B65-10140 03 PHOTOC DISTRICT OF GSFC-252 B65-1040 02 GSFC-252 B65-1046 02 GSFC-252 B65-1046 02 GSFC-252 B65-1046 01 DISTRICT OF GSFC-252 B65-10048 01 DISTRICT OF G | DETECTOR  use detector circuit synthesizes own reference signal 1-FS-247  B65-10080  01  SHIFT  use shift frequency synthesizer is reflicient, small in size 1-FS-250  B65-10169  01  CONDUCTIVE CELL  ar-angle sensor has no moving parts PL-418  CONDUCTOR  tht-sensitive potentiometer measures roduct of two variables SFC-240  B65-10076  DIODE  uple circuit positions film frames in rojector PL-508  detrument calibrates low gas-rate flowmeters SFC-134  ser beam transmits electric power SFC-293  detroresistance analog multiplier has wide range SFC-360  B65-10287  01  CLASTIC STRESS MEASUREMENT row system facilitates photoelastic strain neasurements on resins PL-504  01   |
| Electronic assembly rack panels snap on and off PHASE Off Phase GSFC-59 B64-10121 05 Transducer senses displacements of panels subjected to vibration ARC-37 B65-10085 01 PHOTOG Sol Galvanic corrosion reduced in aluminum fabrications M-FS-272 B65-10140 03 PHOTOG Lig Integral ribs formed in metal panels by coldpress extrusion M-FS-230 B65-10141 05 PARABOLIC REFLECTOR Unique construction makes interferometer insensitive to mechanical stresses JPL-725 B65-10295 02 Inserticle in metal by simplified method WIGH-104 WIGH-105 B64-10282 03 G64-10282 03 G65-10140 03 G65-10141 05 G7   | DETECTOR  Ise detector circuit synthesizes own reference signal I-FS-247  B65-10080  O1  SHIFT S |

| Photoelectric semiconductor switch op                                   | erates    |     | PIEZOELECTRIC CRYSTAL  |                   |     |
|---|-----------|-----|--|-------------------|-----|
| with low level inputs<br>JPL-SC-068 B                                   | 65-10033  | 01  | Piezoresistive gage tests pin-connec<br>sockets<br>JPL-675     |                   | 01  |
| PHOTOELECTRIC CELL Solar-angle sensor has no moving part                | 9         |     | Crystal measures short-term, large-m                           |                   | -   |
| JPL-418 B   | 63-10260  | 02  | forces   | · ·               | 01  |
| New method used to fabricate gallium photovoltaic device                | arsenide  |     | PIEZOELECTRICITY   |                   |     |
|   | 64-10019  | 01  | Device calibrates vibration transduc<br>amplitudes up to 20 G. | ers at            |     |
| Sensitive level sensor made with spir<br>level, gives electrical output | it        |     |  | B63-10572         | 01  |
|   | 65-10067  | 01  | Ultra-sensitive transducer advances measurement range          | micro-            |     |
| Photoelectric system continuously mon<br>liquid level                   | itors     |     |  | B64-10004         | 01  |
|   | 65-10382  | 01  | Pressure transducer 3/8-inch in size faired into surface       | can be            |     |
| PHOTOGRAPH Built-in templates speed up process f                        | or making |     | WOD-065  | B64-10021         | 05  |
| accurate models   | 63-10526  | 05  | PIEZORESISTIVE DEVICE Pressure transducer 3/8-inch in size     | can be            |     |
| Use of photographs speeds inspection                                    |           | Vo  | faired into surface WOO-065                                    |                   | 05  |
| printed-circuit boards  | 64-10118  | 01  | Miniature stress transducer has dire                           |                   | •   |
|   | 10110     | 01  | capability JPL-591   |                   | 01  |
| PHOTOGRAPHIC APPARATUS  New low-level AC amplifier provides             |           |     |  | 503-10023         | U I |
| adjustable noise cancellation and a<br>temperature compensation         |           | 0.5 | PIGMENT  Pigmented coating resists thermal st                  |                   | 03  |
|   | 65-10003  | 05  | JPL-SC-083   | 865-10354         | 03  |
| Nulling pyrometer uses KERR cell shut fast responses                    |           |     | PIPE Spring loaded beaded cable makes eff                      | icient            |     |
|   | 865-10050 | 01  | wire puller<br>WOO-108   | B65-10031         | 05  |
| Rotating filters permit wide range of<br>pyrometry                      | •         |     | Portable tool removes burrs from pip                           | e and             |     |
|   | 365-10100 | 02  | tubing<br>MSC-237  | B65-10360         | 05  |
| Simple circuit positions film frames projector                          |           |     | Portable tool cleans pipes and tubir                           |                   |     |
|   | 365-10132 | 02  | MSC-238  | B65-10375         | 05  |
| Planetary camera control improves mid production                        | rofiche   |     | PIPELINE Special pliers connect hose contain:                  | ing liquid        |     |
| HQ-1  | 365-10313 | 01  | under pressure<br>JPL-IT-1003                                  | B63-10291         | 05  |
| PHOTOGRAPHIC DEVELOPER  Modified developer increases line re:           | solution  |     | Blade valve isolates compartment in                            | pipe,             |     |
| in photosensitive resist<br>GSFC-386                                    | 865-10278 | 01  | opens to allow free flow<br>JPL-585                            | B64-10188         | 05  |
| PHOTOGRAPHY   |           |     | PISTON   |                   |     |
| Front and back printed circuit layou presented on single sheet          | ts        |     | Vented piston seal prevents fluid lo<br>between two chambers   | eakage            |     |
|   | 863-10596 | 01  | JPL-179  | B63-10141         | 05  |
| PHOTOMULTIPLIER  Variable light source with a million                   | -to-one   |     | Inexpensive check valve is installed standard AN fittings      | d in              |     |
| intensity ratio   | B63-10424 | 03  | JPL-2A   | B65-10222         | 05  |
| System selects framing rate for spec                                    |           |     | PIVOT Solenoid permits remote control of                       | stop watch        |     |
| camera  | B65-10086 | 01  | and assures restarting FRC-17                                  | B63-10024         | 01  |
| PHOTOVOLTAIC EFFECT   | 1000      | V-  | PLASMA   |                   |     |
| Pressure transducer 3/8-inch in size faired into surface                | can be    |     | Microwave technique measures plasma<br>characteristics         |                   |     |
|   | B64-10021 | 05  | LANGLEY-134  | B65-10122         | 02  |
| PHYSICAL PROPERTY Tiny sensor-transmitter can withstan                  | d extreme |     | PLASMA ACCELERATOR Pulsed plasma accelerator operates          |                   |     |
| acceleration, gives digital output                                      |           | 01  | repetitively without complex cont<br>LANGLEY-48                | rols<br>B65-10062 | 01  |
| PHYSIOLOGICAL TELEMETRY   | 200 20002 | ••  | PLASHA JET   | <del>-</del>      |     |
| Analog device simulates physiologica waveforms                          | 1         |     | Carbon arc ignition improved by sim                            | ple               |     |
|   | B64-10109 | 01  | MSC-103  | B65-10018         | 01  |
| PHYSIOLOGY Test monkeys anesthetized by routine                         | nanceduse |     | PLASTIC  Mechanical properties of plastics p                   | redetermin-       |     |
|   | B65-10332 | 04  | ed by empirical method  ARC-28                                 | B64-10068         | 03  |
|   |           |     |  |                   |     |

| Improved holder protects crystal dur   | ing high          |     | in RF cable  | 555 10505   |    |
|--|-------------------|-----|--|-------------|----|
| acceleration and impact JPL-463  | B65-10037         | 05  | W00-207  | B65-10387   | 01 |
| Epoxy-resin patterns speed shell-mol   |                   |     | PLASTICIZER  Mechanical properties of plastics p                     | redetermin- |    |
| aluminum parts<br>M-FS-303   | B65-10177         | 05  | ed by empirical method<br>ARC-28                                     | B64-10068   | 03 |
| Organic reactants rapidly produce pl   | astic foam        |     | PLATE  |             |    |
| LANGLEY-37   | B65-10288         | 03  | Device transmits rotary motion throu<br>ically sealed wall           | ugh hermet- |    |
| Drill bit design assures clean holes   | in                |     | JPL-303  | B63-10198   | 05 |
| laminated materials<br>WOO-098   | B65-10386         | 05  | Lightweight universal joint transmi                                  | ts both     |    |
|  |                   |     | torque and thrust  |             | 05 |
| PLASTIC COATING  Quick-hardening problems are elimina  | ited with         |     | JPL-375  | B63-10236   | US |
| spray gun modification which mixes   | resin and         |     | Simple mechanism combines positive                                   | locking and |    |
| accelerator liquids during application LANGLEY-6A  | tion<br>B63-10318 | 03  | quick-release features<br>WOO-4                                      | B63-10420   | 05 |
| Flexible magnetic planning boards as   | a anily           |     | Unmanned seismometer levels self, c                                  | orrects     |    |
| transported  | e cosing          |     | drift errors   |             |    |
| M-FS-340   | B65-10219         | 05  | GSFC-100   | B63-10551   | 01 |
| PLASTIC DEFORMATION  |                   |     | Splice plate design assures structu                                  | ral         |    |
| Plastic plus stainless-steel fibers  | make              |     | separation by mild explosive<br>MSC-137                              | 865-10166   | 05 |
| resilient, impermeable material<br>WOO-246   | B65-10374         | 03  | H3C-137  | D03-10100   | •5 |
|  |                   |     | PLATFORM   | •           |    |
| PLASTIC FILM Plastic films for reflective surface reproduced from masters  | 28                |     | Apparatus measures very small thrus<br>WOO-048                       | 864-10284   | 05 |
| GSFC-188   | B64-10151         | 03  | PLATING  |             |    |
|  |                   |     | Adherent protective coatings plated<br>magnesium-lithium alloy       | on          |    |
| Thermistor connector assembly increased accuracy of measurements   | 1363              |     | M-FS-365   | B65-10294   | 03 |
| LANGLEY-62   | B65-10045         | 01  | District of the Laster when any                                      |             |    |
| PLASTIC MATERIAL   |                   |     | Plated nickel wire mesh makes super<br>catalyst bed                  | 100         |    |
| Portable flooring protects finished  | surfaces,         |     | MSC-216  | B65-10321   | 03 |
| is easily moved<br>M-FS-15   | B63-10387         | 05  | PLENUM CHAMBER   |             |    |
|  |                   |     | Averaging probe reduces static-pres                                  | sure        |    |
| A technique for making animal restra<br>ARC-25   | B63-10564         | 05  | sensing errors<br>Langley-36   | B65-10114   | 05 |
| Plastic molds reduce cost of encaps  | ulating           |     | PLOTTING   |             |    |
| electric cable connectors  | •                 |     | Veitch diagram plotter simplifies b                                  | oolean      |    |
| M-FS-69  | B63-10568         | 05  | functions<br>JPL-385   | B63-10241   | 05 |
| Cryogenic waveguide window is sealed   | dwith             |     | Dalambara sandana amablan dada anda                                  |             |    |
| plastic foam<br>JPL-559  | B63~10613         | 01  | Polychart contour enables data extr<br>from multiple plotting charts | apolation   |    |
|  |                   |     | M-FS-37  | B64-10406   | 05 |
| Mechanical properties of plastics properties of plastics properties at the second section of the second section of the second se | redetermin-       |     | PLOTTING INSTRUMENT  |             |    |
| ARC-28   | B64~10068         | 03  | Polychart contour enables data extr<br>from multiple plotting charts | apolation   |    |
| New low-level AC amplifier provides adjustable noise cancellation and  |                   |     | M-FS-37  | B64-10406   | 05 |
| temperature compensation   |                   |     | Variable load automatically tests d                                  | c power     |    |
| MSC-108  | B65~10003         | 05  | supplies<br>GSFC-291   | B65-10105   | 01 |
| Vapor pressure measured with inflat  | able              |     | PLUG   |             |    |
| plastic bag<br>GSFC-281  | B65-10136         | 03  | PLUG Design of valve permits sealing eve                             | n if the    |    |
| Inexpensive electrical connector is  |                   |     | stem is misaligned<br>LEWIS-38                                       | B63-10341   | 05 |
| and corrosionproof<br>MSC-164  | B65-10196         | 01  | Circuit reliability boosted by sold                                  | lering nine |    |
| H3C-104  | B03-10190         | O I | of disconnect plugs to sockets                                       |             |    |
| Inert~gas welding and brazing enclo:<br>fabricated from sheet plastic  | sure              |     | JPL-447  | B64-10002   | 01 |
| LEWIS-220  | B65-10338         | 05  | Keyed plugs and sockets prevent imp                                  | roper       |    |
| Flexible plastic ring assembly make  |                   |     | connections<br>MSC-231   | B65-10381   | 01 |
| shaft seal   | - datable         |     |  |             |    |
| <b>V</b> 00-227  | B65-10367         | 05  | PNEUMATIC EQUIPMENT Pneumatic power is transmitted thro              | ough air    |    |
| Plastic plus stainless-steel fibers  | make              |     | bearing<br>MSC-8   | B64-10141   | 05 |
| resilient, impermeable material<br>WOO-246   | B65-10374         | 03  | MSC-0  | 904-10141   | 93 |
|  |                   | -   | Electropneumatic rheostat regulates                                  | high        |    |
| Device detects unbonded areas in pl  | astic             |     | current<br>ARC-44  | B65-10299   | 01 |
| W0D-206  | B65-10380         | 01  |  |             |    |
| Shrinkable sleeve eliminates shield  | ing ger           |     | PNEUMOGRAPHY Electronic device simulates respira                     | ation rate  |    |
| PATTINGUE STEER CITATIONES SHIELD  | A A A A A         |     | atmosarco teabire  |             |    |

| and depth<br>MSC-89   | B64-10255   | 01             | PORTABILITY  Portable flooring protects finished is easily moved  | l surfaces,  |                      |
|---|---|----------------|---|--|----------------------|
| Pneumotachometer counts respirati<br>human subject  | on rate of  |                | M-FS-15   | B63-10387  | 05                   |
| MSC-92  | B64-10259   | 01             | Portable display paneling has wide<br>take down and assembly  |  |                      |
| POLARIZATION Circuit switches latching relay i  | n response to   |                | ARC-17  | B63-10435  | 05                   |
| signals of different polarity<br>WOO-055  | B63-10508   | 01             | POSITIONING Three-position rocker switch actuat   | or has   |                      |
| Nulling pyrometer uses KERR cell<br>fast responses  | shutter for   |                | positive centering<br>MSC-261   | B65-10376  | 01                   |
| NU-0010  Magnetic field controls carbon ar  | B65-10050   | 01             | POSITIONING EQUIPMENT Screw locking cups quickly and neat NU-0009   | tly crimped<br>B65-10049   | 05                   |
| MSC-139   | B65-10108   | 01             | POTASSIUM SILICATE  | 000-10049  | 03                   |
| POLE Threading hook facilitates safe r  | ecovery of  |                | Inorganic paint is durable, fireproto to apply  | of, easy   |                      |
| heavy loads<br>MSC-46   | B64-10185   | 05             | GSFC-366  | B65-10156  | 03                   |
| POLISHING   |   |                | POTENTIOMETER  Tension is servo controlled in film  | n advance  |                      |
| Improved technique for localizing polishing features novel nozzle   |   |                | system<br>LANGLEY-54  | B65-10075  | 05                   |
| WOO-101   | B64-10271   | 01             | Light-sensitive potentiometer measu   |  |                      |
| Portable tool cleans pipes and tu<br>MSC-238  | bing<br>B65-10375   | 05             | product of two variables<br>GSFC-240  | в65-10076  | 01                   |
| POLYANIDE   |   |                | Simple circuit reduces transistor s   | switching  |                      |
| Aluminum alloys protected against<br>corrosion cracking   |   |                | time<br>GSFC-314  | 865-10234  | 01                   |
| M-FS-235  | B65-10172   | 03             | POWDERED METAL  |  |                      |
| POLYESTER  Irradiation improves properties of aromatic polyester  | of an   |                | Modified filter prevents conduction wave signals along high-voltage pleads  |  |                      |
| LANGLEY-115   | B65-10164   | 03             | JPL-63  | 863-10091  | 01                   |
| POLYESTER RESIN Modified filter prevents conducti   |   |                | POWER GAIN  New apparatus increases ion beam po   |  |                      |
| wave signals along high-voltage<br>leads  | , , , ,   |                | LEWIS-73  | B63-10440  | 01                   |
| JPL-63 POLYMER  | B63-10091   | 01             | POWER SUPPLY Igniting system for mercury vapor l tects transistorized sustaining s  | supply   |                      |
| Metals plated on fluorocarbon pol<br>JPL-544  | 963-10612   | 03             | JPL-421   | B63-10262  | 01                   |
| Encapsulation process sterilizes surgical instruments   | and preserves   |                | <pre>ptc thermistor protects multiloade     supplies     GSFC-236</pre>   | B64-10281  | 01                   |
| JPL-484   | B64-10066   | 05             | Zener diode is starter for transist   |  | •                    |
| Low-cost seal compensates for sur<br>irregularities   | face  |                | regulated power supply NU-0015  | B65-10052  | 01                   |
| NU-0016   | B65-10160   | 05             | NO-0013   | 000-10002  | 0.1                  |
| Electronic modules easily separat   |   |                | M-mf-hl   | 41.4   |                      |
|   | ed from heat  |                | Variable voltage supply uses zener reference  |  | 0.1                  |
| sink<br>MSC-142   | ted from heat<br>B65-10186  | 02             | reference<br>GSFC-262   | B65-10097  | 01                   |
| sink<br>MSC-142<br>POLYMETHYL METHACRYLATE  | B65-10186   | 02             | reference<br>GSFC-262<br>Variable load automatically tests of<br>supplies   | 865-10097<br>dc power  |                      |
| sink<br>MSC-142<br>POLYMETHYL METHACRYLATE<br>Spherical model provides visual a<br>cubic crystal study  | 865-10186   |                | reference<br>GSFC-262<br>Variable load automatically tests of<br>supplies<br>GSFC-291   | B65-10097<br>dc power<br>B65-10105   | 01                   |
| sink MSC-142  POLYMETHYL METHACRYLATE  Spherical model provides visual a cubic crystal study LEWIS-108  | B65-10186   | 02             | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages  | B65-10097<br>dc power<br>B65-10105<br>ency at  |                      |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual a cubic crystal study LEWIS-108  POLYSTYRENE Small foamed polystyrene shield p  | B65-10186 aid for B65-10065   |                | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficie   | B65-10097<br>dc power<br>B65-10105   |                      |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual a cubic crystal study LEWIS-108  POLYSTYRENE  | B65-10186 aid for B65-10065   |                | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages  | B65-10097<br>dc power<br>B65-10105<br>ency at<br>B65-10178   | 01                   |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual a cubic crystal study LEWIS-108  POLYSTYRENE Small foamed polystyrene shield prequency microphones from winc  | B65-10186  aid for  B65-10065  protects low- i noise  B63-10579   | 03             | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages GSFC-130  Modular thermoelectric cell is easi  | B65-10097<br>dc power<br>B65-10105<br>ency at<br>B65-10178   | 01                   |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual a cubic crystal study LEWIS-108  POLYSTYRENE Small foamed polystyrene shield p frequency microphones from wind M-FS-123   | B65-10186  aid for  B65-10065  protects low- inoise  B63-10579  aled with                               | 03             | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages GSFC-130  Modular thermoelectric cell is easion various arrays   | B65-10097 dc power   | 01                   |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual a cubic crystal study LEWIS-108  POLYSTYRENE Small foamed polystyrene shield p frequency microphones from wind M-FS-123  Cryogenic waveguide window is see plastic foam JPL-559   | B65-10186  aid for  B65-10065  protects low- i noise  B63-10579   | 03             | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages GSFC-130  Modular thermoelectric cell is easin various arrays GSFC-339  Improved wire memory matrix uses verience.   | B65-10097 dc power   | 01                   |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual acubic crystal study LEWIS-108  POLYSTYRENE Small foamed polystyrene shield prequency microphones from wind M-FS-123  Cryogenic waveguide window is see plastic foam JPL-559  POROSITY Apparatus facilitates pressure-to  | B65-10186  aid for  B65-10065  protects low- 1 noise  B63-10579  aled with  B63-10613                   | 03             | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages GSFC-130  Modular thermoelectric cell is easing various arrays GSFC-339  Improved wire memory matrix uses very power JPL-SC-167  POWER TRANSMISSION  | B65-10097 dc power B65-10105 ency at B65-10178 illy packaged B65-10199 ery little B65-10359                    | 01<br>01<br>01       |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual acubic crystal study LEWIS-108  POLYSTYRENE Small foamed polystyrene shield prequency microphones from wind M-FS-123  Cryogenic waveguide window is seen jlastic foam JPL-559   | B65-10186  aid for  B65-10065  protects low- 1 noise  B63-10579  aled with  B63-10613                   | 03             | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages GSFC-130  Modular thermoelectric cell is easin various arrays GSFC-339  Improved wire memory matrix uses very power JPL-SC-167   | B65-10097 dc power B65-10105 ency at B65-10178 illy packaged B65-10199 ery little B65-10359                    | 01<br>01<br>01       |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual a cubic crystal study LEWIS-108  POLYSTYRENE Small foamed polystyrene shield prequency microphones from wind M-FS-123  Cryogenic waveguide window is seen plastic foam JPL-559  POROSITY Apparatus facilitates pressure-temetal tubing LEWIS-174  POROUS MATERIAL Porous glass makes effective subs | B65-10186  aid for  B65-10065  protects low- inoise B63-10579  aled with B63-10613  esting of B65-10131 | 03<br>01<br>01 | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages GSFC-130  Modular thermoelectric cell is easing various arrays GSFC-339  Improved wire memory matrix uses very power JPL-SC-167  POWER TRANSMISSION Laser beam transmits electric power GSFC-293  System transmits mechanical vibrations | B65-10097 dc power B65-10105 ency at B65-10178 ily packaged B65-10199 ery little B65-10359  B65-10158 ion into | 01<br>01<br>01<br>01 |
| sink MSC-142  POLYMETHYL METHACRYLATE Spherical model provides visual a cubic crystal study LEWIS-108  POLYSTYRENE Small foamed polystyrene shield p frequency microphones from wind M-FS-123  Cryogenic waveguide window is see plastic foam JPL-559  POROSITY Apparatus facilitates pressure-temetal tubing LEWIS-174  POROUS MATERIAL                                  | B65-10186  aid for  B65-10065  protects low- inoise B63-10579  aled with B63-10613  esting of B65-10131 | 03<br>01<br>01 | reference GSFC-262  Variable load automatically tests of supplies GSFC-291  DC to AC converter operates efficiently low input voltages GSFC-130  Modular thermoelectric cell is easin various arrays GSFC-339  Improved wire memory matrix uses very power JPL-SC-167  POWER TRANSMISSION Laser beam transmits electric power GSFC-293  System transmits mechanical vibratics   | B65-10097 dc power B65-10105 ency at B65-10178 illy packaged B65-10199 ery little B65-10359                    | 01<br>01<br>01       |

| of EKG<br>MSC-106  | B65-10142  | 01                         | PRESSURE MEASUREMENT Improved variable-reluctance transducer mea ures transient pressures  | 15-  |
|--|--|----------------------------|--|--|
| Borom trifluoride nuclear detector<br>preamplifier uses single-cable c   |  |                            | LANGLEY-10 B63-103   | 321 01   |
| LEWIS-178  | B65-10255  | 01                         | Fluid-pressure meter can be calibrated with removal from flow line   | nout   |
| Electrometer preamplifier has drif<br>feedback   | t correction   |                            | M-FS-98 B63-105  | 502 05   |
| JPL-SC-074   | B65-10267  | 01                         | Precision gage measures ultrahigh vacuum<br>levels   |  |
| PRECIPITATION  Crack detection method is safe in   | presence of  |                            | GSFC-114 B63-105   | 597 01   |
| liquid oxygen<br>M-FS-236  | B65-10107  | 03                         | Multiple port pressure scanner valve featur<br>greater accuracy, quicker data  |  |
| PRESSING   |  |                            | JPL-555 B64-100  | 031 05   |
| Rapid billet loader aids extrusion tory metals   |  | 4.5                        | Fluid-pressure measurement apparatus uses short-length manometer tubes   |  |
| LEWIS-50   | B63-10354  | 05                         | LEWIS-28 B65-100   |  |
| PRESSURE High-pressure regulating system pr  | events   |                            | Apparatus measures swelling of membranes in<br>electrochemical cells<br>GSFC-280 B65-10  |  |
| pressure surges<br>JPL-231   | B63-10170  | 05                         | Averaging probe reduces static-pressure  | , VI   |
| Special pliers connect hose contai under pressure  | ning liquid  |                            | sensing errors LANGLEY-36 B65-10:  | 114 05   |
| JPL-IT-1003  | B63-10291  | 05                         | Vapor pressure measured with inflatable  | 114 00   |
| Device induces lungs to maintain k<br>constant pressure  | noun   |                            | plastic bag GSFC-281 B65-10:   | 136 03   |
| MSC-50   | B64-10108  | 04                         | Differential pressure gauge has fast respon  |  |
| Pulsed plasma accelerator operates repetitively without complex con  |  |                            | M-FS-358 B65-102   |  |
| LANGLEY-48   | B65-10062  | 01                         | Remote rapidly varying pressures accurately measured   | y  |
| Electrically heated diaphragm elime of pyrotechnics  | inates use   |                            | FRC-28 865-103   | 301 01   |
| MSC-241  | B65-10400  | 01                         | PRESSURE RECORDER Pressure transducer system is force-balance  | ed,  |
| PRESSURE APPARATUS Upsetting butt edge increases weld  | -joint   |                            | has digital output<br>M-FS-154 B65-10  | 174 05   |
|  |  |                            |  |  |
| strength<br>M-FS-175   | B64-10164  | 05                         | PRESSURE REGULATOR   |  |
| M-FS-175<br>Apparatus facilitates pressure-tes   |  | 05                         | High-pressure regulating system prevents pressure surges   | 120 05   |
| M-FS-175   |  | 05                         | High-pressure regulating system prevents pressure surges JPL-231 B63-10  |  |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura  | ting of<br>B65-10131   |                            | High-pressure regulating system prevents pressure surges JPL-231 B63-10 Pressure transducer system is force-balance has digital output   | ed,  |
| M-FS-175 Apparatus facilitates pressure-tes metal tubing LEWIS-174   | ting of<br>B65-10131   |                            | High-pressure regulating system prevents pressure surges JPL-231 B63-10 Pressure transducer system is force-balance has digital output   | ed,  |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch   | 865-10131<br>te<br>B65-10279   | 05                         | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balance has digital output M-FS-154  B65-10  | ed,<br>174 05  |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER  | 865-10131<br>te<br>B65-10279   | 05                         | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balanchas digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER  | ed,<br>174 05<br>266 05  |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP  | hting of<br>B65-10131<br>hte<br>B65-10279<br>leakage<br>B63-10141  | 05                         | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balance has digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures  | ed,<br>174 05<br>266 05  |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER  Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP  Universal bellows joint restraint angular and offset movement  | ### ### ##############################   | 05<br>01<br>05             | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balance has digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  B63-10   | ed, 174 05 266 05 as- 321 01   |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER  Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP  Universal bellows joint restraint angular and offset movement WOO-102  | hting of<br>B65-10131<br>hte<br>B65-10279<br>leakage<br>B63-10141  | 05                         | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balanchas digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer meures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter   | ed, 174 05 266 05 as- 321 01   |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP Universal bellows joint restraint angular and offset movement WOD-102  PRESSURE EFFECT Pressure responsive seal handles seal pressure seal pressure seal pressure seal pressure responsive seal pressure-tes metal search | ### B65-10131  ### B65-10279  leakage  ### B63-10141  permits  ### B65-10371   | 05<br>01<br>05             | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balance has digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  B63-10   | ed, 174 05 266 05 as- 321 01 s   |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER  Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP  Universal bellows joint restraint angular and offset movement WOO-102  PRESSURE EFFECT   | ### B65-10131  ### B65-10279  leakage  ### B63-10141  permits  ### B65-10371   | 05<br>01<br>05             | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balanchas digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  B63-10  Fluid-pressure meter can be calibrated wit removal from flow line  | ed, 174 05 266 05 as- 321 01 s 429 03 hout                                     |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP Universal bellows joint restraint angular and offset movement WOO-102  PRESSURE EFFECT Pressure responsive seal handles a dynamic loads GSFC-441  PRESSURE GAUGE   | B65-10131  te  B65-10279  leakage  B63-10141  permits  B65-10371  static and  B65-10327  | 05<br>01<br>05             | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balance has digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  Fluid-pressure meter can be calibrated wit removal from flow line M-FS-98  B63-10  | ed, 174 05 266 05 as- 321 01 s 429 03 hout 502 05                              |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP Universal bellows joint restraint angular and offset movement WOD-102  PRESSURE EFFECT Pressure responsive seal handles s dynamic loads GSFC-441  PRESSURE GAUGE Rapid helium-air analyzer can meas binary gas mixtures  | hting of<br>B65-10131<br>hte<br>B65-10279<br>leakage<br>B63-10141<br>permits<br>B65-10371<br>htatic and<br>B65-10327                             | 05<br>01<br>05<br>05       | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balance has digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  Fluid-pressure meter can be calibrated wit removal from flow line M-FS-98  B63-10  Pressure transducer 3/8-inch in size can b faired into surface  | ed, 174 05 266 05 as- 321 01 s 429 03 hout 502 05                              |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER  Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP  Universal bellows joint restraint angular and offset movement WOO-102  PRESSURE EFFECT  Pressure responsive seal handles s dynamic loads GSFC-441  PRESSURE GAUGE  Rapid helium-air analyzer can meas binary gas mixtures  LANGLEY-16  | B65-10131  te B65-10279  leakage B63-10141  permits B65-10371  static and B65-10327  cure other B63-10557  | 05<br>01<br>05             | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balanchas digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  B63-10  Fluid-pressure meter can be calibrated wit removal from flow line M-FS-98  Pressure transducer 3/8-inch in size can b faired into surface WOO-065  B64-10  | ed, 174 05 266 05 as- 321 01 s 429 03 hout 502 05 e 021 05                     |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP Universal bellows joint restraint angular and offset movement WOD-102  PRESSURE EFFECT Pressure responsive seal handles s dynamic loads GSFC-441  PRESSURE GAUGE Rapid helium-air analyzer can meas binary gas mixtures  | B65-10131  te B65-10279  leakage B63-10141  permits B65-10371  static and B65-10327  cure other B63-10557  | 05<br>01<br>05<br>05       | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balance has digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  Fluid-pressure meter can be calibrated wit removal from flow line M-FS-98  B63-10  Pressure transducer 3/8-inch in size can b faired into surface  | ed, 174 05 266 05 as- 321 01 s 429 03 hout 502 05 e 021 05 res                 |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP Universal bellows joint restraint angular and offset movement WOO-102  PRESSURE EFFECT Pressure responsive seal handles sidynamic loads GSFC-441  PRESSURE GAUGE Rapid helium-air analyzer can measurant binary gas mixtures LANGLEY-16  Pickup device reads pressures from rotating mechanisms LEWIS-158  Differential pressure gauge has face  | ### ### ##############################   | 05<br>01<br>05<br>05<br>05 | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balanchas digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer meures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  Fluid-pressure meter can be calibrated wit removal from flow line M-FS-98  Pressure transducer 3/8-inch in size can b faired into surface WOO-065  B64-10  Multiple port pressure scanner valve featu greater accuracy, quicker data JPL-555  Hetal diaphragm used to calibrate miniatur  | ed, 174 05 266 05 as- 321 01 s 429 03 hout 502 05 e 021 05 res 031 05          |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP Universal bellows joint restraint angular and offset movement WOO-102  PRESSURE EFFECT Pressure responsive seal handles sidynamic loads GSFC-441  PRESSURE GAUGE Rapid helium-air analyzer can meas binary gas mixtures LANGLEY-16  Pickup device reads pressures from rotating mechanisms LEWIS-158  Differential pressure gauge has family seasons to the seasons of the sea | hting of  B65-10131  Ite  B65-10279  leakage  B63-10141  permits  B65-10371  Itatic and  B65-10327  Itatic and  B65-10557  Itatic and  B65-10557 | 05<br>01<br>05<br>05       | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balance has digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  Fluid-pressure meter can be calibrated wit removal from flow line M-FS-98  B63-10  Pressure transducer 3/8-inch in size can b faired into surface WOO-065  Multiple port pressure scanner valve featu greater accuracy, quicker data JPL-555  B64-10   | ed, 174 05 266 05 as- 321 01 s 429 03 hout 502 05 e 021 05 res 031 05 e        |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER  Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP  Universal bellows joint restraint angular and offset movement WOO-102  PRESSURE EFFECT  Pressure responsive seal handles shamic loads GSFC-441  PRESSURE GAUGE  Rapid helium-air analyzer can meas binary gas mixtures  LANGLEY-16  Pickup device reads pressures from rotating mechanisms  LEWIS-158  Differential pressure gauge has fam-FS-358  PRESSURE GRADIENT  Packless valve with all-metal seal   | ### ### ##############################   | 05<br>01<br>05<br>05<br>05 | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balanchas digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer me ures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  Fluid-pressure meter can be calibrated wit removal from flow line M-FS-98  Pressure transducer 3/8-inch in size can b faired into surface WOO-065  B64-10  Multiple port pressure scanner valve featu greater accuracy, quicker data JPL-555  B64-10  Metal diaphragm used to calibrate miniatur transducers M-FS-207  B65-10  Averaging probe reduces static-pressure | ed, 174 05 266 05 as- 321 01 s 429 03 hout 502 05 e 021 05 res 031 05 e        |
| M-FS-175  Apparatus facilitates pressure-tes metal tubing LEWIS-174  Inflatable bladder provides accura calibration of pressure switch M-FS-367  PRESSURE CHAMBER Vented piston seal prevents fluid between two chambers JPL-179  PRESSURE DROP Universal bellows joint restraint angular and offset movement WDD-102  PRESSURE EFFECT Pressure responsive seal handles dynamic loads GSFC-441  PRESSURE GAUGE Rapid hellum-air analyzer can meast binary gas mixtures LANGLEY-16  Pickup device reads pressures from rotating mechanisms LEWIS-158  Differential pressure gauge has fam-FS-358  PRESSURE GRADIENT   | ### ### ##############################   | 05<br>01<br>05<br>05<br>05 | High-pressure regulating system prevents pressure surges JPL-231  Pressure transducer system is force-balanchas digital output M-FS-154  PRESSURE RELIEF VALVE One-shot valve may be remotely actuated WOO-195  PRESSURE TRANSDUCER Improved variable-reluctance transducer meures transient pressures LANGLEY-10  Welded pressure transducer made as small a 1/8th-inch in diameter ARC-11  Fluid-pressure meter can be calibrated wit removal from flow line M-FS-98  Pressure transducer 3/8-inch in size can b faired into surface WOO-065  B64-10  Multiple port pressure scanner valve featu greater accuracy, quicker data JPL-555  Metal diaphragm used to calibrate miniatur transducers M-FS-207  B65-10   | ed, 174 05 266 05 as- 321 01 s 429 03 hout 502 05 e 021 05 res 031 05 e 059 01 |

| M-FS-154  | B65-10174              | 05 | PROTECTIVE CLOTHING  |     |
|---|------------------------|----|--|-----|
| Pressure sensor responds only to st<br>M-FS-238                                   | nock wave<br>B65-10184 | 01 | Double gloves reduce contamination of dry box<br>atmosphere<br>LEWIS-211 B65-10117                         | 03  |
| Direct force-measuring transducer of blood pressure research                      |                        |    | PROTECTIVE COATING Solder flux leaves corrosion-resistant  |     |
| ARC-53  | B65-10325              | 01 | coating on metal JPL-611 B64-10206   | 03  |
| PRESSURE TUBE Remote rapidly varying pressures ac                                 | ccurately              |    | Burnishing technique improves lubrication of threaded fasteners  |     |
| measured<br>FRC-28  | B65-10301              | 01 | LEWIS-217 B65-10302  | 03  |
| PRESSURE VESSEL  Method of welding joint in closed of improves quality of seam    | vessel                 |    | PROTRACTOR  Setting of angles on machine tools speeded by magnetic protractor                              |     |
| JPL-170   | B63-10139              | 05 | ARC-5 B63-10006  | 01  |
| Lightweight door seals cryogenic co<br>against diaphragm type loading<br>M-FS-476 | ontainer<br>865-10402  | 05 | PULLEY  Chain friction system gives positive, reversible drive   |     |
| PRESSURIZATION  | DOO 10402              | •• | ARC-8 B63-10009  | 05  |
| Low-cost insulation system for cry  | ostats                 |    | Apparatus alters position of objects to  |     |
| eliminates need for a vacuum<br>LEWIS-64  | B63-10365              | 03 | facilitate demagnetization<br>GSFC-234 B64-10277   | 05  |
| PRINTED CIRCUIT   |                        |    | PULSE  |     |
| Modular chassis simplifies packagi<br>interconnecting of circuit board            | s                      |    | Pulsed plasma accelerator operates<br>repetitively without complex controls                                |     |
| JPL-236A  | B63-10174              | 01 | LANGLEY-48 B65-10062   | 01  |
| Front and back printed circuit lay presented on single sheet                      | outs                   |    | Auxiliary circuit enables automatic monitoring of EKG  | g   |
| GSFC-93   | B63-10596              | 01 | MSC-106 B65-10142  | 01  |
| Compact coaxial connector for prin adds reliability                               | ted circuit            |    | PULSE AMPLITUDE Simple device produces accelerometer   |     |
| MSC-57  | B64-10016              | 01 | calibration pulse M-FS-363 B65-10269   | 01  |
| Use of photographs speeds inspecti  | on of                  |    |  | 01  |
| printed-circuit boards<br>MSC-72  | B64-10118              | 01 | PULSE CODE MODULATION /PCM/ Frequency-shift-keyer circuit improves PCM                                     |     |
| Handtool bends component leads acc  |                        |    | conversion for radio transmission<br>GSFC-80 B63-10511   | 01  |
| M-FS-308  | B65-10181              | 05 | PCM magnetic tape system efficiency records  |     |
| PRINTER  Density trace made with computer p                                       | rintout                |    | and reproduces data<br>GSFC-375 B65-10311  | 01  |
| GSFC-322  | B65-10200              | 01 | PULSE DURATION MODULATION /PDM/  |     |
| Uppercase and lowercase computer p increases readability                          | rintout                |    | Novel circuit combines pulse stretcher with NDR gate   |     |
| HQ-12   | B65-10286              | 01 | GSFC-187 B64-10150   | 01  |
| PRISM Liquid-level meter has no moving p M-FS-3                                   | arts<br>863-10378      | 03 | PULSE FREQUENCY MODULATION /PFM/<br>Simple circuit functions as frequency<br>discriminator for PFM signals |     |
| PROBABILITY DISTRIBUTION  |                        |    | GSFC-267 B65-10102   | 01  |
| Hybrid computer technique yields r<br>signal probability distributions            |                        |    | PULSE HEIGHT Pulse height analyzer operates at high  |     |
| ARC-34  | B65-10208              | 01 | repetition rates, low power WOO-046 B65-10041  | 01  |
| PROBE Cooling method prolongs life of ho  | t-wire                 |    | Instrument performs nondestructive chemical  |     |
| transducer LEWIS-41   | B63-10344              | 02 | analysis, data can be telemetered  JPL-SC-078  865-10317   | 0.1 |
| PROJECTION  | 003-10344              | 02 |  | 01  |
| Use of photographs speeds inspecti  | on of                  |    | PULSE MODULATION  Efficient circuit triggers high-current, high-   | -   |
| printed-circuit boards<br>MSC-72  | B64-10118              | 01 | voltage pulses<br>MSC-14 B64-10024   | 01  |
| Disk calculator indicates legible size for slide projection                       | lettering              |    | Frequency divider is free of spurious outputs<br>GSFC-308 B65-10334  |     |
| GSFC-409  | B65-10339              | 05 |  | 01  |
| PROPAGATION MODE  | h                      |    | PULSE MOTOR  Magnetic-shift-register circuit controls step   |     |
| Novel horn antenna reduces side lo<br>improves radiation pattern                  |                        |    | motor operations<br>GSFC-340 B65-10226   | 01  |
| JPL-425   | B63-10264              | 01 | PULSE RECORDER   |     |
| PROPAGATION VELOCITY Improved circuit minimizes generat pseudonoise check bits    | ion of                 |    | Simple BCD circuit accurately counts to 24<br>GSFC-317 B65-10225   | 01  |
| JPL-698   | B65-10275              | 01 | PULSE TRANSMISSION SYSTEM Tiny sensor-transmitter can withstand extreme                                    |     |

| acceleration, gives digital output<br>ARC-22                   | B63-10561              | 01  | R   |                |    |
|--|------------------------|-----|---|----------------|----|
|  |                        |     | DADAD CONTRACT  |                |    |
| Simple pulse counting circuit comput<br>of squares<br>GSFC-391 | 865-10260              | 01  | RADAR EQUIPMENT  Circuit converts AM signals to FM f  magnetic recording              | or .           |    |
| Frequency correction device uses dig                           |                        |     | GSFC-227  | B65-10001      | 01 |
| circuitry<br>GSFC-268  | B65-10307              | 01  | RADAR SYSTEM FM/CW system measures aircraft atti M-FS-276                             |                | 01 |
| PULSE WIDTH Simple circuit produces high-speed,                | fixed                  |     | RADIANT ENERGY  |                |    |
| duration pulses  | B65-10228              | 01  | Wide-angle sensor measures radiant<br>in corrosive atmospheres<br>M-FS-228            |                | 05 |
| Threshold detector produces narrow p                           | ulses at               |     | RADIANT HEATING   |                |    |
| high repetition rates<br>GSFC-383<br>PULSED GENERATOR          | B65-10310              | 01  | Radiant heater for vacuum furnaces<br>structural rigidity, low heat los<br>LEWIS-39   | 35             | 01 |
| Pulse generator permits nondestructi                           |                        |     |   |                | •  |
| testing of component breakdown vol<br>MSC-122                  | tage<br>B65-10054      | 01  | Graphite element serves as radiant<br>M-FS-105  |                | 01 |
| Synchronized pulse generator needs n                           | o external             |     | RADIATION ABSORPTION  |                |    |
| power<br>GSFC-274  | B65-10072              | 01  | Flange on microwave antenna subrefl<br>ground noise<br>JPL-362                        |                | 01 |
| Hybrid circuit achieves pulse regene with low power drain      | ration                 |     | RADIATION DETECTOR  |                |    |
|  | B65-10314              | 01  | Radiation detector-optical hanging of simplified construction                         |                |    |
| Multiphase clock-pulse generator use<br>simplified circuitry   | : 5                    |     | GSFC-251  | B64-10299      | 01 |
| M-FS-297   | B65-10353              | 01  | RADIATION DISTRIBUTION  Novel horn antenna reduces side lob                           | es,            |    |
| PUMP<br>Level of super-cold liquids automati                   | cally                  |     | improves radiation pattern<br>JPL-425   | 863-10264      | 01 |
| maintained by levelometer<br>JPL-397                           | B63-10250              | 01  | Polychart contour enables data extr<br>from multiple plotting charts                  | apolation      |    |
| Fine-particle filter prevents damage pumps                     | to vacuum              |     | M-FS-37   | B64-10406      | 05 |
| LEWIS-106  Heater decomposes oil backstreaming                 | B63-10489              | 05  | RADIATION EFFECT  Irradiation improves properties of aromatic polyester               | an             |    |
| high-vacuum pumps  |                        |     | LANGLEY-115   | B65-10164      | 03 |
| GSFC-356   | B65-10224              | 02  | RADIATION FIELD   |                |    |
| Flexible plastic ring assembly makes shaft seal WOO-227        | durable<br>  B65-10367 | 05  | Fluid pressure used to test turbope<br>NU-0001  |                | 03 |
|  | B03-10307              | 0.5 | RADIATION SHIELDING   |                |    |
| PUNCH Die and telescoping punch form convo                     | olutions in            |     | Refractory metal shielding /insulating increases operating range of indu<br>LEWIS-202 | uction furnace | 02 |
|  | B65-10393              | 05  | RADIATION SOURCE  |                |    |
| PURIFICATION  Cryogenic filter method produces sup             | ·<br>per-pure          |     | Multiple element soft X-ray source wide range of radiation                            | -              |    |
| helium and helium isotopes<br>JPL-374                          | B63-10235              | 03  | GSFC-286  | B65-10082      | 02 |
| Ceramic materials purified by experi                           | mental                 |     | RADIATOR Graphite element serves as radiant   |                | 01 |
| LEWIS-225  | B65-10270              | 03  | M-FS-105  | 862-10518      | •  |
| PYROLYSIS Nitrogen dioxide produced by self-su                 | istained               |     | RADIO COMMUNICATION  Comfortable, lightweight safety hele radio transmitter, receiver | lmet holds     |    |
| pyrolysis of nitrous oxide<br>LANGLEY-32                       | B65~10074              | 05  | MSC-53  | B64-10015      | 05 |
|  | 200 10014              | ••  | RADIO EQUIPMENT   |                |    |
| PYROMETER Nulling pyrometer uses KERR cell sho                 | itter for              |     | Added diodes increase output of ball mixer circuit                                    | lanced         |    |
| fast responses<br>NU-0010                                      | B65-10050              | 01  | GSFC-354  | B65-10276      | 01 |
|  | 200 10000              | V.  | RADIO FILTER  |                |    |
| PYROMETRY Rotating filters permit wide range of pyrometry      | of optical             |     | Helical coaxial-resonator makes exe<br>RF filter<br>GSFC-243                          | B65-10012      | 01 |
| LANGLEY-33   | B65-10100              | 02  |   |                |    |
| PYROTECHNICS Electrically heated diaphragm elimin              | nates use              |     | RADIO FREQUENCY  Modified rf coaxial connector ends chamber wiring problem            |                |    |
| of pyrotechnics<br>MSC-241                                     | B65-10400              | 01  | GSFC-150  | B64-10010      | 01 |
|  | 250 10400              | V-  | Solid-state laser transmittér is an<br>modulated                                      | mplitude       |    |

| MSC-121  | B65-10238   | 01             | REEL  |   |
|--|---|----------------|---|---|
| RADIO FREQUENCY SHIELDING  |   |                | Dispensing system eliminates torsion in deployed hoses  |   |
| Shrinkable sleeve eliminates shield<br>in RF cable   | •   |                |   | 5-10185 05  |
| WOO-207  | B65-10387   | 01             | REFERENCE SYSTEM  Reference black body is compact, conven   | nient to  |
| RADIO RECEIVER  Comfortable, lightweight safety help   | net holds   |                | use<br>ARC-3 863  | 3-10004 03  |
| radio transmitter, receiver<br>MSC-53  | 864-10015   | 05             | REFLECTION  |   |
|  | 864-10013   | 03             | Attachment converts microscope to point   | t source  |
| RADIO TRANSMITTER Comfortable, lightweight safety hel  | net holds   |                | autocollimator<br>JPL-499 B64   | 4-10124 05  |
| radio transmitter, receiver<br>MSC-53  | B64-10015   | 05             | REFLECTOR   |   |
|  | 201   |                | Flange on microwave antenna subreflecto   | or cuts   |
| RAFT New inflatable liferaft is nontippa   |   |                | ground noise<br>JPL-362 B63   | 3-10229 01  |
| MSC-4A   | B64-10001   | 05             | Test device prevents molecular bounce-t   | back  |
| RANDOM SIGNAL  Hybrid computer technique yields ra   | nd om   |                | GSFC-82 B63   | 3-10546 03  |
| signal probability distributions<br>ARC-34   | B65-10208   | 01             | Ellipsoidal optical reflectors reproduc   | ced by  |
|  | B03-10200   | O.I.           | electroforming<br>GSFC-92 B63   | 3-10547 05  |
| RAY TRACING  Computer programs simplify optical  | system  |                | Plastic films for reflective surfaces   |   |
| analysis<br>GSFC-306   | B65-10093   | 01             | reproduced from masters<br>GSFC-188 B64   | 4-10151 03  |
| READOUT  | 20:   |                |   |   |
| Optics used to measure torque at hi  | gh  |                | Optical arrangement increases useful li<br>output of semiconductor diodes   | -   |
| rotational speeds<br>LEWIS-13  | B63-10338   | 01             | JPL-SC-064 B69  | 5-10020 05  |
| Low-cost tape system measures veloc  | ity of  |                | Oil-damped mercury pool makes precise optical alignment tool  |   |
| acceleration<br>GSFC-85  | R63-10512   | 01             |   | 5-10253 02  |
|  | 20: -:  | 01             | Nickel solution prepared for precision  |   |
| Compact cartridge drives coded tape<br>constant readout speed  |   |                | electroforming<br>WOD-070 B65   | 5-10303 03  |
| JPL-472  | B64-10222   | 01             | Communication system uses modulated las   | ser beam  |
| Simple pulse counting circuit compu of squares   | tes sum   |                |   | 5-10333 01  |
| GSFC-391   | B65-10260   | 01             | REFRACTORY ALLOY  | _   |
| RECEIVER   |   |                | New cobalt alloys have high-temperature<br>strength and long life in vacuum envi  | i ronments  |
| Tunnel-diode circuit features zero-<br>clipping  | level   |                | LEWIS-47 B63  | 3-10351 03  |
| GSFC-241   | B65-10002   | 01             | REFRACTORY MATERIAL Apparatus facilitates high-temperature  | tensile   |
| Helical coaxial-resonator makes exc<br>RF filter   | ellent  |                | testing in vacuum   | 3-10345 03  |
| GSFC-243   | B65-10012   | 01             |   | 3-10345 03  |
| RECORDING INSTRUMENT   |   |                | Refractory ceramic has wide usage, low fabrication cost   |   |
| Small digital recording head has pa<br>channels, minimizes cross talk  | rallel bit  |                | M-FS-67 B63   | 3-10481 03  |
| JPL-0029   | B63-10284   | 01             | Refractory thermal insulation for smoo<br>metal surfaces  | th  |
|  |   |                |   |   |
| Improved electrode gives high-quali  | ty  |                | M-FS-160 B64  | 4-10099 03  |
| biological recordings  | ty<br>B64-10025   | 04             | Refractory oxides evaluated for   |   |
| biological recordings  | B64-10025   | 04             | Refractory oxides evaluated for high-temperature use  |   |
| biological recordings<br>MSC-17<br>Manual-feed adapter permits microfi<br>continuous oscillograph output   | B64-10025   |                | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6   | 4-10099 03  |
| biological recordings<br>MSC-17<br>Manual-feed adapter permits microfi<br>continuous oscillograph output<br>NU-0029  | B64-10025   | 04             | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6: REFRACTORY METAL Radiant heater for vacuum furnaces offe   | 4-10099 03<br>5-10167 03  |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p   | B64-10025 lming of B65-10249 lastic foam  | 01             | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces off structural rigidity, low heat loss  | 4-10099 03<br>5-10167 03  |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p LANGLEY-37  | B64-10025  lming of  B65-10249  |                | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces off structural rigidity, low heat loss  | 4-10099 03<br>5-10167 03<br>ers high<br>3-10342 01                            |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p LANGLEY-37  RECOVERY DEVICE   | B64-10025<br>lming of<br>B65-10249<br>lastic foam<br>B65-10288                                    | 01             | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces off structural rigidity, low heat loss LEWIS-39 B6:  Rapid billet loader aids extrusion of story metals   | 4-10099 03<br>5-10167 03<br>ers high<br>3-10342 01                            |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p LANGLEY-37  | B64-10025<br>lming of<br>B65-10249<br>lastic foam<br>B65-10288<br>ecoveries                       | 01             | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces official structural rigidity, low heat loss LEWIS-39 B6:  Rapid billet loader aids extrusion of tory metals LEWIS-50 B6:  | 4-10099 03 5-10167 03 ers high 3-10342 01 refrac- 3-10354 05                  |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p LANGLEY-37  RECOVERY DEVICE Scoop attachment makes helicopter r easier and safer MSC-130  | B64-10025<br>lming of<br>B65-10249<br>lastic foam<br>B65-10288                                    | 01             | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces offer structural rigidity, low heat loss LEWIS-39 B6:  Rapid billet loader aids extrusion of the tory metals LEWIS-50 B6:  Ceramic-coated boat is chemically inerprovides good heat transfer  | 4-10099 03 5-10167 03 ers high 3-10342 01 refrac- 3-10354 05                  |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p LANGLEY-37  RECOVERY DEVICE Scoop attachment makes helicopter r easier and safer MSC-130  RECTIFIER Emission tester for high-power vacu                           | B64-10025  Iming of  B65-10249  lastic foam  B65-10288  ecoveries  B65-10229                      | 01             | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces off structural rigidity, low heat loss LEWIS-39 B6:  Rapid billet loader aids extrusion of tory metals LEWIS-50 B6:  Ceramic-coated boat is chemically inerprovides good heat transfer LANGLEY-90 B6:   | 4-10099 03 5-10167 03 ers high 3-10342 01 refrac- 3-10354 05 t,               |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p LANGLEY-37  RECOVERY DEVICE Scoop attachment makes helicopter r easier and safer MSC-130  RECTIFIER   | B64-10025<br>lming of<br>B65-10249<br>lastic foam<br>B65-10288<br>ecoveries<br>B65-10229          | 01             | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces offer structural rigidity, low heat loss LEWIS-39 B6:  Rapid billet loader aids extrusion of the tory metals LEWIS-50 B6:  Ceramic-coated boat is chemically inerprovides good heat transfer LANGLEY-90 B6:  Apparatus facilitates pressure-testing           | 4-10099 03 5-10167 03 ers high 3-10342 01 refrac- 3-10354 05 t,               |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p LANGLEY-37  RECOVERY DEVICE Scoop attachment makes helicopter r easier and safer MSC-130  RECTIFIER Emission tester for high-power vacu JPL-628  REDUNDANT SYSTEM | B64-10025  lming of  B65-10249  lastic foam  B65-10288  ecoveries  B65-10229  um tubes  B64-10158 | 01<br>03<br>05 | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces offer structural rigidity, low heat loss LEWIS-39 B6:  Rapid billet loader aids extrusion of tory metals LEWIS-50 B6:  Ceramic-coated boat is chemically inerprovides good heat transfer LANGLEY-90 B6:  Apparatus facilitates pressure-testing metal tubing  | 4-10099 03 5-10167 03 ers high 3-10342 01 refrac- 3-10354 05 t,               |
| biological recordings MSC-17  Manual-feed adapter permits microfi continuous oscillograph output NU-0029  RECOVERY Organic reactants rapidly produce p LANGLEY-37  RECOVERY DEVICE Scoop attachment makes helicopter r easier and safer MSC-130  RECTIFIER Emission tester for high-power vacually-628                   | B64-10025  lming of  B65-10249  lastic foam  B65-10288  ecoveries  B65-10229  um tubes  B64-10158 | 01<br>03<br>05 | Refractory oxides evaluated for high-temperature use LANGLEY-121 B6:  REFRACTORY METAL Radiant heater for vacuum furnaces offor structural rigidity, low heat loss LEWIS-39 B6:  Rapid billet loader aids extrusion of story metals LEWIS-50 B6:  Ceramic-coated boat is chemically inerprovides good heat transfer LANGLEY-90 B6:  Apparatus facilitates pressure-testing metal tubing | 4-10099 03 5-10167 03 ers high 3-10342 01 refrac- 3-10354 05 t, 5-10063 05 of |

| REFRIGERATION   |                        |    | Knob linkage permits one-hand contr   | ol of                 |     |
|---|------------------------|----|---|-----------------------|-----|
| New nut and sleeve improve flared co<br>M-FS-194                        | nnections<br>B65-10180 | 05 | several operations<br>MSC-30  | B65-10022             | 05  |
| REGENERATOR Hybrid circuit achieves pulse regene                        | eration.               |    | Remotely operated clamping tool has grip  | positive              |     |
| with low power drain<br>GSFC-382  | B65-10314              | 01 | NU-0020   | B65-10254             | 05  |
| REGULATOR   |                        |    | Quick-hardening problems are elimin   |                       |     |
| Elastic orifice automatically regulaterings                             | ates gas               |    | spray gun modification which mixe<br>accelerator liquids during applic<br>langley 6-A |                       |     |
| JPL-135   | B63-10123              | 05 | M-FS-380  | B65-10318             | 01  |
| High-pressure regulating system pres<br>pressure surges                 |                        |    | Threaded split ring connector separ structural sections                               | ates                  |     |
| JPL-231   | B63-10170              | 05 | LANGLEY-145   | B65-10383             | 05  |
| Zener diode is starter for transisto                                    | ) <b>r</b> —           |    | REPAIR  |                       |     |
| regulated power supply<br>NU-0015                                       | B65-10052              | 01 | Inert gas spraying device aids in r<br>hazardous systems<br>LEWIS-8B                  | epair of<br>865-10115 | 05  |
| REINFORCEMENT   |                        |    |   | B03-10113             | 0.5 |
| Reinforcement core facilitates 0-riz                                    | ng                     |    | REPEATER Pulsed plasma accelerator operates   |                       |     |
| W00-228   | B65-10378              | 05 | repetitively without complex cont<br>LANGLEY-48                                       | rols<br>865-10062     | 01  |
| REINFORCING FIBER  Boron carbide whiskers produced by v                 | (anor                  |    | REPRODUCTION  |                       |     |
| deposition  | •                      |    | Front and back printed circuit layo   | uts                   |     |
| HQ-24   | B65-10261              | 03 | presented on single sheet<br>GSFC-93  | B63-10596             | 01  |
| RELAY   |                        |    |   |                       | 01  |
| Circuit switches latching relay in a signals of different polarity      | esponse to             |    | Plastic films for reflective surfac reproduced from masters                           | es                    |     |
| W00-055   | B63-10508              | 01 | GSFC-188  | B64-10151             | 03  |
| RELEASE DEVICE  |                        |    | PCM magnetic tape system efficiency   | records               |     |
| Simple mechanism combines positive l<br>quick-release features          | Ū                      |    | and reproduces data<br>GSFC-375   | 365-10311             | 01  |
| W00-4   | B63-10420              | 05 | REPRODUCTIVE SYSTEM   |                       |     |
| Instrument adjustment knob locks to                                     | prevent                |    | Modified procedure speeds camera co   | py layout             |     |
| accidental maladjustment<br>M-FS-190                                    | B64-10249              | 05 | for offset printing<br>GSFC-424   | B65-10373             | 02  |
|   |                        | •• |   | B05 10575             | UL  |
| One-shot valve may be remotely actua<br>WOO-195                         | B65-10266              | 05 | RESIN Quick-hardening problems are elimin spray gun modification which mixe           | ated with             |     |
| RELIABILITY   |                        |    | accelerator liquids during applic   |                       |     |
| Increased performance reliability of with dual /redundant/ oscillator s | tained                 |    | LANGLEY—6A  | 863-10318             | 03  |
|   | B63-10027              | 01 | Plastic molds reduce cost of encaps   | ulating               |     |
| Circuit reliability boosted by solde                                    | ring pins              |    | electric cable connectors<br>M-FS-69  | B63-10568             | 05  |
| of disconnect plugs to sockets  | B64-10002              | 01 | Servo system facilitates photoelast   |                       |     |
|   |                        | 01 | measurements on resins  |                       |     |
| Compact coaxial connector for printe adds reliability                   | d circuit              |    | JPL-504   | 864-10280             | 01  |
| MSC-57  | B64-10016              | 01 | Compact assembly generates plastic  | foam,                 |     |
| Circuit improvement produces monosta                                    | ble                    |    | inflates flotation bag<br>LANGLEY-96  | B65-10090             | 05  |
| multivibrator with load-carrying of GSFC-34A                            | apability<br>B65-10011 | 01 | RESISTANCE  |                       |     |
|   | 000 10011              | 01 | Refractory ceramic has wide usage,  | low                   |     |
| RELIABILITY CONTROL Increased performance reliability ob                | tained                 |    | fabrication cost<br>M-FS-67   | B63-10481             | 03  |
| with dual /redundant/ oscillator s                                      | ystem                  |    |   |                       | 0.5 |
|   | B63-10027              | 01 | Adhesive for vacuum environments re<br>and vibration                                  | sists shock           |     |
| Composite, vacuum-jacketed tubing re<br>bellows in cryogenic systems    | places                 |    | MSC-56  | B65-10016             | 03  |
| LEWIS-67  | B63-10368              | 05 | Selenium bond decreases On resistan   | ce of                 |     |
| RELIEF VALVE  |                        |    | light-activated switch<br>JPL-SC-101  | B65-10324             | 01  |
| Sensitive low-pressure relief valve                                     | has                    |    |   |                       |     |
| positive seating against leakage<br>WOO-041                             | B64-10278              | 05 | Pigmented coating resists thermal s<br>JPL-SC-083                                     | hock<br>B65-10354     | 03  |
| REMOTE CONTROL  |                        |    | RESISTANCE HEATING  |                       |     |
| Solenoid permits remote control of a<br>and assures restarting          | top watch              |    | Removable preheater elements improvendents induction furnace                          | e oxide               |     |
|   | B63-10024              | 01 | JPL-288   | B63-10193             | 01  |
| Liquid switch is remotely operated b                                    | y low DC               |    | Apparatus facilitates high-temperat   | ure tensile           |     |
| voltage<br>GSFC-119   | B63-10599              | 01 | testing in vacuum<br>LEWIS-42   | 863-10345             | 03  |

| Electrically heated diaphragm elimin                               | nates use   |    | RIGIDITY   |             |     |
|--|-------------|----|--|-------------|-----|
| of pyrotechnics<br>MSC-241   | B65-10400   | 01 | Extendible column can be stowed on d<br>JPL-686              |             | 05  |
| RESISTOR Highly efficient square-wave oscilla                      | tor oner-   |    | RING Hot-air soldering technique prevents                    | overheat-   |     |
| ator at high power levels  |             |    | ing of electrical components                                 |             |     |
| GSFC-112   | B63-10554   | 01 |  |             | 01  |
| Temperature-sensitive network drives multivibrator                 | a stable    |    | Ring counter may be advanced or reta<br>command signal       | rded by     |     |
| GSFC-137   | B63-10609   | 01 |  | B64-10144   | 01  |
| Efficient circuit triggers high-cur                                | rent. high- |    | RIVET  |             |     |
| voltage pulses   | B64-10024   | 01 | Jig and fixture aid fabrication of t                         | ungsten     |     |
| MSC-14   | 864-10024   | 01 | LEWIS-185  | B65-10101   | 05  |
| Field effect transistors used as vo<br>controlled resistors        | ltage-      |    | RLC CIRCUIT  |             |     |
| M-FS-174   | B64-10163   | 01 | Voltage variable oscillator has high stability               | phase       |     |
| Microparticle impact sensor measure                                | s energy    |    | LANGLEY-123  | B65-10204   | 01  |
| directly<br>GSFC-252   | B65-10048   | 01 | ROCK   |             |     |
| Electropneumatic rheostat regulates                                | high        |    | Rock bit requires no flushing medium maintain drilling speed | ı to        |     |
| current  |             |    | JPL-W00-031  | B65-10109   | 05  |
| ARC-44   | B65-10299   | 01 | ROCKET   |             |     |
| Thin-film resistors used in functio                                | nal         |    | Novel clamps align large rocket case eliminate back-up bars  | :s,         |     |
| electronic blocks<br>GSFC-380                                      | B65-10305   | 01 | M-FS-1   | B63-10376   | 05  |
| RESOLUTION   |             |    | ROCKET CHAMBER   |             |     |
| Modified developer increases line r                                | esolution   |    | New method used to fabricate light-                          | eight heat  |     |
| in photosensitive resist<br>GSFC-386                               | B65-10278   | 01 | exchanger for rocket motor<br>LEWIS-43                       | B63-10346   | 02  |
| RESONANT FREQUENCY   |             |    | ROCKET EXHAUST   |             |     |
| Welded pressure transducer made as                                 | small as    |    | Air-cured ceramic coating insulates                          | against     |     |
| 1/8th-inch in diameter<br>ARC-11                                   | B63-10429   | 03 | high heat fluxes<br>M-FS-150                                 | B65-10357   | 03  |
|  |             |    | ROCKET MOTOR CASE  |             |     |
| RESPIRATION  Device induces lungs to maintain kn                   | own         |    | New method used to fabricate light-                          | reight heat |     |
| constant pressure<br>MSC-50  | B64-10108   | 04 | exchanger for rocket motor<br>LEWIS-43                       | 863-10346   | 02  |
| RESPIRATORY RATE   |             |    | Novel clamps align large rocket case                         | 25.         |     |
| Pneumotachometer counts respiration                                | rate of     |    | eliminate back-up bars                                       | •           |     |
| human subject<br>MSC-92  | B64-10259   | 01 | M-FS-1   | B63-10376   | 05  |
| RESTRAINT  |             |    | ROD Cooling method prolongs life of hot-                     | -uira       |     |
| A technique for making animal restr                                |             |    | transducer   |             |     |
| ARC-25   | B63-10564   | 05 | LEWIS-41   | B63-10344   | 02  |
| Safety restrainer prevents whipping                                | of          |    | Threading hook facilitates safe reco                         | overy of    |     |
| ruptured high-pressure hose<br>LEWIS-99                            | B64-10348   | 05 | MSC-46   | B64-10185   | 05  |
| Lightweight hinged bellows restrain                                | t has       |    | ROLL FORMING   |             |     |
| high load capacity   |             |    | Metal bellows custom-fabricated from                         |             | 0 E |
| WOO-151  | B65-10341   | 03 | LEWIS-192  | B65-10150   | 05  |
| Universal bellows joint restraint p<br>angular and offset movement | ermits      |    | ROLLER BEARING Apparatus of small size can be exte           | nded into   |     |
| W00-102  | B65-10371   | 05 | long, rigid boom   |             | 05  |
| RETAINER   |             |    | JPL-305  | B63-10200   | 03  |
| New package for belleville spring p<br>change, easy disassembly    | ermits rate |    | Control of component differential h increases bearing life   | ardness     |     |
| JPL-392  | B63-10247   | 05 | LEWIS-190  | B65-10251   | 05  |
| Simple mechanism combines positive                                 | locking and |    | ROLLING  |             |     |
| quick-release features<br>WOO-4                                    | B63-10420   | 05 | Apparatus of small size can be exte long, rigid boom         | nded into   |     |
|  | AV160       |    | JPL-305  | B63-10200   | 05  |
| REVERSER Novel clamps align large rocket ca:                       | ses,        |    | ROTARY DRIVE   |             |     |
| eliminate back-up bars<br>M-FS-1                                   | B63-10376   | 05 | Device transmits rotary motion thro<br>ically sealed wall    | ugh hermet- |     |
| RHENIUM COMPOUND   | 20010       | •- | JPL-303  | B63-10198   | 05  |
| Tungsten wire and tubing joined by                                 | nickel      |    | Fine-particle filter prevents damag                          | e to vacuum |     |
| brazing<br>M-FS-394  | B65-10391   | 05 | pumps<br>LEWIS-106   | B63-10489   | 05  |
|  | 1           |    |  |             |     |

| ROTATING BODY   |  |                            | Probe samples components of rocket en-   | ig i ne  |               |
|---|--|----------------------------|--|--|---------------|
| Dispensing system eliminates torsi deployed hoses   | on in  |                            | exhaust<br>M-FS-485 B  | 365-10384 <b>0</b> 3   |               |
| MSC-80  | B65-10185  | 05                         |  | 700 13004 00   |               |
| ROTATING MACHINE Shock absorber protects motive com   | ponents  |                            | SANDWICH CONSTRUCTION Apparatus permits flexure testing of at cryogenic temperatures   | specimens  |               |
| against overloads   | -  |                            |  | 865-10129 OZ   | !             |
| WOD-092   | B65-10008  | 05                         | Fastener distributes stress evenly fr  | •o <b>n</b>  |               |
| Pickup device reads pressures from  | ports in   |                            | sandwich-panel-hung items  |  |               |
| rotating mechanisms<br>LEWIS-158  | B65-10021  | 05                         | MSC-236 B  | 365-10358 05   | •             |
|   |  |                            | SATELLITE COMMUNICATION  |  |               |
| Rotating holder permits accurate g<br>metallurgical microsamples  | •  |                            | Communication system uses modulated 1<br>GSFC-377 B  | laser beam<br>365-10333 01   | l             |
| LEWIS-131   | B65-10262  | 05                         | SCALE  |  |               |
| ROTATING SHAFT  |  |                            | Simple scale interpolator facilitates  | 3  |               |
| Apparatus alters position of objec<br>facilitate demagnetization  | 15 10  |                            | reading of graphs<br>LANGLEY-88 B  | 365-10070 <b>0</b> 5   | 5             |
| GSFC-234  | B64-10277  | 05                         |  |  |               |
| Flexible plastic ring assembly mak  | es durable   |                            | SCALE MODEL  Built-in templates speed up process f   | for making   |               |
| shaft seal<br>WOO-227   | B65-10367  | 05                         | accurate models<br>LANGLEY-23 B  | 363-10526 05   | ,             |
| ROTATION  |  |                            | SCANNING DEVICE  |  |               |
| Bearing transmits rotary and axial  |  |                            | Multiple port pressure scanner valve   | features   |               |
| LANGLEY-27  | B64-10130  | 05                         | greater accuracy, quicker data<br>JPL-555 B  | 364-10031 05   |               |
| ROTOR   |  |                            |  |  |               |
| Rotor position sensor switches cur<br>brushless Dc motors   | rents in   |                            | Distant objects detected visually wit optical filters  | th   |               |
| GSFC-315  | B65-10151  | 01                         |  | 865-10252 02   | 2             |
| Brushless DC motor uses electron b  | ea <b>n</b>  |                            | SCINTILLATION COUNTER  |  |               |
| switching tube as commutator  |  |                            | Cesium iodide crystals fused to vacuu  | ım tube  |               |
| GSFC-345  | B65-10237  | 01                         | faceplates<br>GSFC-67 B  | 863-10476 03   |               |
| RUBBER  |  |                            |  | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,  | •             |
| Frictional wedge shock mount is in has good damping characteristics   |  |                            | SCREEN  Fine-mesh screen made by simplified m  | ethod  |               |
| JPL-1T-1001   | B63-10289  | 05                         |  | 364-10282 03   | 5             |
| DUDYNTIM  |  |                            | Screening technique makes reliable bo  | ond at   |               |
| KUBLUION  |  |                            |  |  |               |
| RUBIDIUM<br>Magnetometer measures orthogonal c  | omponents  |                            | room temperature   |  |               |
|   | omponents<br>B65-10315   | 01                         | room temperature   | 365-10004 03   | 3             |
| Magnetometer measures orthogonal c<br>of magnetic fields<br>GSFC-395  | -  | 01                         | room temperature M-FS-227 B Library of documents compressed into   | 865-10004 03   | 3             |
| Magnetometer measures orthogonal c<br>of magnetic fields<br>GSFC-395<br>RUPTURE   | B65-10315  | 01                         | room temperature<br>M-FS-227 B<br>Library of documents compressed into<br>display kit  | 865-10004 03   |               |
| Magnetometer measures orthogonal c<br>of magnetic fields<br>GSFC-395<br>RUPTURE<br>Safety restrainer prevents whippin<br>ruptured high-pressure hose  | B65-10315  |                            | room temperature M-FS-227 B Library of documents compressed into display kit MSC-125 B   | 865-10004 03<br>lap-held   |               |
| Magnetometer measures orthogonal c<br>of magnetic fields<br>GSFC-395<br>RUPTURE<br>Safety restrainer prevents whippin   | B65-10315  | 01                         | room temperature M-FS-227 B Library of documents compressed into display kit MSC-125 B SEA WATER   | 365-10004 03<br>lap-held<br>865-10030 01   |               |
| Magnetometer measures orthogonal c<br>of magnetic fields<br>GSFC-395  RUPTURE Safety restrainer prevents whippin<br>ruptured high-pressure hose<br>LEWIS-99  Universal bellows joint restraint  | B65-10315  g of  B64-10348   |                            | room temperature M-FS-227 B Library of documents compressed into display kit MSC-125 B SEA WATER Emergency solar still desalts seawate   | 365-10004 03<br>lap-held<br>865-10030 01   | ı             |
| Magnetometer measures orthogonal c<br>of magnetic fields<br>GSFC-395<br>RUPTURE<br>Safety restrainer prevents whippin<br>ruptured high-pressure hose<br>LEWIS-99  | B65-10315  g of  B64-10348   |                            | room temperature M-FS-227 B Library of documents compressed into display kit MSC-125 B SEA WATER Emergency solar still desalts seawate   | 365-10004 03<br>lap-held<br>865-10030 01   | ı             |
| Magnetometer measures orthogonal c<br>of magnetic fields<br>GSFC-395  RUPTURE Safety restrainer prevents whippin<br>ruptured high-pressure hose<br>LEWIS-99  Universal bellows joint restraint<br>angular and offset movement<br>WOD-102  | B65-10315  g of  B64-10348  permits  | 05                         | room temperature M-FS-227 B Library of documents compressed into display kit MSC-125 B SEA WATER Emergency solar still desalts seawate MSC-135 B SEALANT Packless valve with all-metal seal ha   | 365-10004 03<br>lap-held<br>865-10030 01<br>er<br>865-10214 03   | ı             |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement  | B65-10315  g of  B64-10348  permits  | 05                         | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  B  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range  | 365-10004 03<br>lap-held<br>865-10030 01<br>er<br>865-10214 03   | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S SAFETY DEVICE   | B65-10315  g of  B64-10348  permits  B65-10371   | 05                         | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  B  | 365-10004 03 1ap-held 865-10030 01 2r 865-10214 03 andles 863-10228 05   | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOD-102  S SAFETY DEVICE Self-balancing beam permits safe,   | B65-10315  g of  B64-10348  permits  B65-10371   | 05                         | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  B  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range  | 365-10004 03 1ap-held 865-10030 01 2r 865-10214 03 andles 863-10228 05   | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S SAFETY DEVICE   | B65-10315  g of  B64-10348  permits  B65-10371   | 05                         | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces s electrochemical cells  | 365-10004 03 1ap-held 865-10030 01 2r 865-10214 03 andles 863-10228 05   | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOD-102  S  SAFETY DEVICE Self-balancing beam permits safe, handling under overhang  | B65-10315  g of  B64-10348  permits  B65-10371  easy load  B63-10571   | 05<br>05                   | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces s electrochemical cells  | 0365-10004 03<br>lap-held<br>865-10030 01<br>er<br>865-10214 03<br>andles<br>863-10228 05  | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE  Self-balancing beam permits safe, handling under overhang M-FS-64  Comfortable, lightweight safety he radio transmitter, receiver  | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  imet holds  | 05<br>05<br>05             | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces s electrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lea  | 365-10004 03 lap-held 865-10030 01 er 865-10214 03 andles 863-10228 05 seal  | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOD-102  S  SAFETY DEVICE Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he  | B65-10315  g of  B64-10348  permits  B65-10371  easy load  B63-10571   | 05<br>05                   | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces s electrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lea between two chambers   | 365-10004 03 lap-held 865-10030 01 er 865-10214 03 andles 863-10228 05 seal  | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE  Self-balancing beam permits safe, handling under overhang H-FS-64  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin   | B65-10315  g of  B64-10348  permits  B65-10371  easy load  B63-10571  lmet holds  B64-10015  | 05<br>05<br>05             | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  B  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces s electrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lea between two chambers JPL-179  B  Library of documents compressed into display kit MSC-125  B  SEALING Vented piston seal prevents fluid lea between two chambers  | 1ap-held  865-10030 01  Pr  865-10214 03  andles  863-10228 05  seal  864-10113 03  akage  863-10141 05  | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOD-102  S  SAFETY DEVICE Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53   | B65-10315  g of  B64-10348  permits  B65-10371  easy load  B63-10571  lmet holds  B64-10015  | 05<br>05<br>05             | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER  Emergency solar still desalts seawate MSC-135  SEALANT  Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces s electrochemical cells GSFC-168  SEALING  Vented piston seal prevents fluid lea between two chambers JPL-179  Device transmits rotary motion throug ically sealed wall  | 1ap-held  865-10030 01  Pr  865-10214 03  andles  863-10228 05  seal  864-10113 03  akage  863-10141 05  | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE  Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  lmet holds B64-10015 g of B64-10348   | 05<br>05<br>05             | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER  Emergency solar still desalts seawate MSC-135  SEALANT  Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces selectrochemical cells GSFC-168  SEALING  Vented piston seal prevents fluid lead between two chambers JPL-179  Device transmits rotary motion through ically sealed wall   | 1ap-held  865-10030 01  Pr  865-10214 03  andles  863-10228 05  seal  864-10113 03  akage  863-10141 05  | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOD-102  S  SAFETY DEVICE Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose   | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  lmet holds B64-10015 g of B64-10348   | 05<br>05<br>05             | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER  Emergency solar still desalts seawate MSC-135  SEALANT  Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces selectrochemical cells GSFC-168  SEALING  Vented piston seal prevents fluid lead between two chambers JPL-179  Device transmits rotary motion through ically sealed wall   | 1 ap-held 1 ap-h | i<br>3        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE  Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Fluid check valve has fail-safe fe JPL-0019   | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  limet holds B64-10015 g of B64-10348  ature   | 05<br>05<br>05<br>05       | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  B  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces s electrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lea between two chambers JPL-179  Device transmits rotary motion throug ically sealed wall JPL-303  Packless valve with all-metal seal ha wide temperature, pressure range  | 1 ap-held 1 ap-h | i<br>5        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE  Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Fluid check valve has fail-safe fe JPL-0019  SAMPLING DEVICE  Rock bit requires no flushing medi  | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  limet holds B64-10015 g of B64-10348  ature B65-10207                                 | 05<br>05<br>05<br>05       | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  B  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces selectrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lead between two chambers JPL-179  Device transmits rotary motion through ically sealed wall JPL-303  Packless valve with all-metal seal has wide temperature, pressure range  | 1 ap-held 1 ap-h | i<br>5        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE  Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Fluid check valve has fail-safe fe JPL-0019  SAMPLING DEVICE  Rock bit requires no flushing medimaintain drilling speed   | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  lmet holds B64-10015 g of B64-10348  ature B65-10207  um to                           | 05<br>05<br>05<br>05<br>05 | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  B  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces selectrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lead between two chambers JPL-179  Device transmits rotary motion through ically sealed wall JPL-303  Packless valve with all-metal seal has wide temperature, pressure range JPL-361  Design of valve permits sealing even  | 1 ap-held 1 ap-h | i<br>5        |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE  Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Fluid check valve has fail-safe fe JPL-0019  SAMPLING DEVICE  Rock bit requires no flushing medi  | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  limet holds B64-10015 g of B64-10348  ature B65-10207                                 | 05<br>05<br>05<br>05       | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces a electrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lead between two chambers JPL-179  Device transmits rotary motion throug ically sealed wall JPL-303  Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Design of valve permits sealing even stem is misaligned   | 1 ap-held 1 ap-h | i 33 55 55    |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Fluid check valve has fail-safe fe JPL-0019  SAMPLING DEVICE Rock bit requires no flushing medi maintain drilling speed JPL-WOO-031  Plastic bags in evacuated chamber  | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  Imet holds B64-10015 g of B64-10348  ature B65-10207  um to B65-10109                 | 05<br>05<br>05<br>05<br>05 | ibrary of documents compressed into display kit MSC-125 B  SEA WATER Emergency solar still desalts seawate MSC-135 B  SEALANT Packless valve with all-metal seal hawide temperature, pressure range JPL-361 B  Elastomers bonded to metal surfaces selectrochemical cells GSFC-168 B  SEALING Vented piston seal prevents fluid lead between two chambers JPL-179 B  Device transmits rotary motion through ically sealed wall JPL-303 B  Packless valve with all-metal seal hawide temperature, pressure range JPL-361 B  Design of valve permits sealing even stem is misaligned LEWIS-38  | 1ap-held 1ap | i 33 55 55    |
| Magnetometer measures orthogonal coof magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement wOD-102  S  SAFETY DEVICE Self-balancing beam permits safe, handling under overhang H-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Fluid check valve has fail-safe fe JPL-0019  SAMPLING DEVICE Rock bit requires no flushing medimaintain drilling speed JPL-WOO-031  | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  Imet holds B64-10015 g of B64-10348  ature B65-10207  um to B65-10109                 | 05<br>05<br>05<br>05<br>05 | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces a electrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lead between two chambers JPL-179  Device transmits rotary motion throug ically sealed wall JPL-303  Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Design of valve permits sealing even stem is misaligned LEWIS-36  Vacuum-type backup bar speeds weld re   | 1ap-held 1ap | 5 5 5         |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOO-102  S  SAFETY DEVICE Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Fluid check valve has fail-safe fe JPL-0019  SAMPLING DEVICE Rock bit requires no flushing medi maintain drilling speed JPL-WOO-031  Plastic bags in evacuated chamber lightweight gas sampling system FRC-31 | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  imet holds B64-10015 g of B64-10348  ature B65-10207  um to B65-10109  make B65-10264 | 05<br>05<br>05<br>05<br>05 | ibrary of documents compressed into display kit MSC-125 B  SEA WATER Emergency solar still desalts seawate MSC-135 B  SEALANT Packless valve with all-metal seal hawide temperature, pressure range JPL-361 B  Elastomers bonded to metal surfaces selectrochemical cells GSFC-168 B  SEALING Vented piston seal prevents fluid lead between two chambers JPL-179  Device transmits rotary motion through ically sealed wall JPL-303 B  Packless valve with all-metal seal hawide temperature, pressure range JPL-361 B  Design of valve permits sealing even stem is misaligned LEWIS-38 B  Vacuum-type backup bar speeds weld remers-12 B  | 1 ap-held 1 ap-h | 5 5 5         |
| Magnetometer measures orthogonal c of magnetic fields GSFC-395  RUPTURE  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Universal bellows joint restraint angular and offset movement WOD-102  S  SAFETY DEVICE Self-balancing beam permits safe, handling under overhang M-FS-84  Comfortable, lightweight safety he radio transmitter, receiver MSC-53  Safety restrainer prevents whippin ruptured high-pressure hose LEWIS-99  Fluid check valve has fail-safe fe JPL-0019  SAMPLING DEVICE Rock bit requires no flushing medi maintain drilling speed JPL-WOD-031  Plastic bags in evacuated chamber lightweight gas sampling system       | B65-10315  g of B64-10348  permits B65-10371  easy load B63-10571  imet holds B64-10015 g of B64-10348  ature B65-10207  um to B65-10109  make B65-10264 | 05<br>05<br>05<br>05<br>05 | room temperature M-FS-227  Library of documents compressed into display kit MSC-125  SEA WATER Emergency solar still desalts seawate MSC-135  SEALANT Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Elastomers bonded to metal surfaces a electrochemical cells GSFC-168  SEALING Vented piston seal prevents fluid lead between two chambers JPL-179  Device transmits rotary motion throug ically sealed wall JPL-303  Packless valve with all-metal seal ha wide temperature, pressure range JPL-361  Design of valve permits sealing even stem is misaligned LEWIS-38  Vacuum-type backup bar speeds weld re M-FS-12  Tool facilitates sealing of metal file | 1 ap-held 1 ap-h | i 3 5 5 5 5 5 |

| Connector seals fluid lines at crye                                 | ogenic             |     | SENSOR   |                       |     |
|---|--------------------|-----|--|-----------------------|-----|
| temperatures and high vacuums<br>GSFC-253                           | B64-10327          | 05  | Solar-angle sensor has no moving par<br>JPL-418                          | ts<br>863-10260       | 02  |
| Use of tear ring permits repair of                                  | sealed             |     | Improved sensor counts micrometeoroi                                     | d                     |     |
| module circuitry<br>M-FS-210  | B65-10014          | 05  | penetrations<br>LEWIS-76   | B63-10443             | 01  |
| Seal allows blind assembly and the                                  | rmal expan-        |     | Tiny sensor-transmitter can withstan                                     |                       |     |
| sion of components<br>NU-0005                                       | B65-10053          | 05  | acceleration, gives digital output<br>ARC-22                             | B63-10561             | 01  |
| Low-cost seal compensates for surf<br>irregularities                |                    |     | Simple circuit continuously monitors thermocouple sensor                 | ı                     |     |
| NU-0016   | B65-10160          | 05  | M-FS-61  | B63-10567             | 01  |
| Improved poppet valve provides pos<br>damageproof seal<br>M-FS-293  | itive<br>B65-10346 | 05  | Speed-sensing device aids crane oper<br>WS-4                             | ators<br>B64-10006    | 05  |
|   | B03-10346          | 0.5 | Ohmmeter senses depletion of lubrica                                     | int in                |     |
| SEAT Valve designed with elastic seat JPL-442                       | B65-10040          | 05  | journal bearings<br>LEWIS-37   | B64-10042             | 01  |
| SECONDARY EMISSION  |                    |     | Apparatus measures very small thrust<br>WOO-048                          | s<br>B64-10284        | 05  |
| Lightweight coaxial cable connecto                                  | r reduces          |     |  |                       | 0.5 |
| signal loss<br>JPL-720  | B65-10244          | 01  | Explosives actuate nonmagnetic index<br>GSFC-237                         | B65-10017             | 05  |
| SEISMOMETER Unmanned seismometer levels self,                       | connects           |     | Wide-angle sensor measures radiant h<br>in corrosive atmospheres         | eat energy            |     |
| drift errors  |                    |     | M-FS-228   | B65-10019             | 05  |
| GSFC-100  | B63-10551          | 01  | Microparticle impact sensor measures                                     | energy                |     |
| Seismic transducer measures small displacements                     |                    |     | directly<br>GSFC-252   | B65-10048             | 01  |
| M-FS-81   | B65-10029          | 05  | Sensitive level sensor made with spi                                     | irit                  |     |
| SELENIUM Selenium bond decreases On resista                         | nce of             |     | level, gives electrical output<br>LANGLEY-49                             | 865-10067             | 01  |
| light-activated switch JPL-SC-101                                   | B65-10324          | 01  |  |                       | 01  |
|   | B65-10324          | OI. | Photoelectric sensor output controll eyeball movements                   | -                     |     |
| SELF-SEALING Self sealing disconnect for tubing                     | forms metal        |     | M-FS-274   | 865-10079             | 01  |
| seal after breakaway<br>JPL-354                                     | B63-10226          | 05  | Transducer senses displacements of p<br>subjected to vibration<br>ARC-37 | B65-10085             | 01  |
| SEMICONDUCTOR Radiation detector-optical hanging                    | d :-               |     |  |                       | 01  |
| of simplified construction<br>GSFC-251                              | B64-10299          | 01  | Rotor position sensor switches curre<br>brushless Dc motors<br>GSFC-315  | B65-10151             | 01  |
| Optical arrangement increases usef                                  | ul liaht           |     | Internal cooling increases range of                                      |                       |     |
| output of semiconductor diodes JPL-SC-064                           | B65-10020          | 05  | immersion-type temperature probe   | B65-10157             | 02  |
| Impurity diffusion process for sil semiconductors is fast and preci |                    |     | Pressure sensor responds only to sho<br>M-FS-238                         | ock wave<br>B65-10184 | 01  |
| GSFC-397  | B65-10300          | 01  | Frequency correction device uses dig                                     |                       |     |
| SEMICONDUCTOR DEVICE Thermocompression bonding produces             | efficient          |     | circuitry GSFC-268   | B65-10307             | 01  |
| surface-barrier diode<br>JPL-SC-066                                 | B65-10007          | 05  | Photosensors used to maintain weldin                                     | ng                    |     |
| Photoelectric semiconductor switch                                  |                    |     | electrode-to-joint alignment<br>MSC-243                                  | 865-10401             | 05  |
| with low level inputs<br>JPL-SC-068                                 | B65-10033          | 01  | SEPARATION   |                       |     |
| SENSING   |                    |     | Self sealing disconnect for tubing f<br>seal after breakaway             | orms metal            |     |
| Transistor voltage comparator perf<br>sensing                       | orms own           |     | JPL-354  | 863-10226             | 05  |
| GSFC-228  | B65-10028          | 01  | Splice plate design assures structur<br>separation by mild explosive     | al                    |     |
| Averaging probe reduces static-pre<br>sensing errors                | ssure              |     | MSC-137  | B65-10166             | 05  |
| LANGLEY-36  | B65-10114          | 05  | Threaded split ring connector separa                                     | ites                  |     |
| SENSITIVITY   |                    |     | structural sections<br>LANGLEY-145                                       | B65-10383             | 05  |
| Ultra-sensitive transducer advance<br>measurement range             | s micro-           |     | SEPARATOR  |                       |     |
| ARC-26  | B64-10004          | 01  | Centrifugal device separates liquid<br>MSC-282                           | from gas<br>B65-10394 | 05  |
| Noncontacting vibration transducer constant sensitivity             | has                |     | SEQUENTIAL CONTROL   |                       |     |
| LANGLEY-99  | B65-10392          | 01  | Ring counter may be advanced or reta                                     | arded by              |     |
|   |                    |     | GSFC-101   | B64-10144             | 01  |

| SERVOAMPLIFIER   |                 | 2    | SHIELDING  |                       |    |
|--|-----------------|------|--|-----------------------|----|
| Apparatus measures very small thrusts<br>WOO-048 B64-                                  | 10284 0         | 5    | Small foamed polystyrene shield pro-<br>frequency microphones from wind no<br>M-FS-123 |                       | 01 |
| Tension is servo controlled in film adva   |                 | -    | Flexible curtain shields equipment   |                       |    |
|  |                 | 5    | intense heat fluxes<br>M-FS-48   | B65-10044             | 03 |
| Servo calorimeter measures material heat<br>rate<br>NU-0024 B65-                       | ing<br>10247 0: | 1    | Infrared shield facilitates optical measurements                                       | pyrometer             |    |
|  | IULIT U         | •    | LANGLEY-133  | B65-10272             | 02 |
| SERVOCONTROL  Crystal measures short-term, large-magni forces                          | tude            |      | Superconductor shields test chamber ambient magnetic fields                            | from                  |    |
|  | 10187 0         | 1    | JPL-627  | B65-10297             | 02 |
| SERVOMECHANISM Optics used to measure torque at high                                   |                 | !    | SHIFT REGISTER Ring counter may be advanced or reta                                    | arded by              |    |
| rotational speeds LEWIS-13 B63-  | 10338 0         | 1    | command signal<br>GSFC-101   | B64-10144             | 01 |
| Servo system facilitates photoelastic st<br>measurements on resins                     | rain            |      | Magnetic-shift-register circuit con-<br>motor operations                               | trols step            |    |
|  | 10280 0         | 1    | GSFC-340   | B65-10226             | 01 |
| High-gain amplifier has excellent stabil and low power consumption                     | ity             | :    | SHOCK<br>Frictional wedge shock mount is ine   | rnensiva.             |    |
|  | 10138 0         | 1    | has good damping characteristics<br>JPL-IT-1001  | B63-10289             | 05 |
| SERVOMOTOR Hydraulic device provides accurate  |                 |      | Adhesive for vacuum environments re  | aiete ehnek           |    |
| displacements to microinches   |                 | _    | and vibration  |                       |    |
| MSC-112 B65-   | 10230 0         | 5    | MSC-56   | B65-10016             | 03 |
| SHAFT Device transmits rotary motion through hically sealed wall                       | ermet-          | :    | SHOCK ABSORBER Thermally conductive metal wool-sil rubber material can be used as sho  |                       |    |
|  | 10198 0         | 5    | vibration damper  JPL-321  | 863-10207             | 03 |
| Bearing transmits rotary and axial motion LANGLEY-27 B64-                              | n<br>10130 0:   | 5    | Frictional wedge shock mount is inc  | rnensive.             |    |
| Shock absorber protects motive component   |                 |      | has good damping characteristics<br>JPL-IT-1001  | B63-10289             | 05 |
| against overloads  |                 | -    |  |                       |    |
| New coupling compensates for shaft   | 10008 0         | J    | Break-up of metal tube makes one-til<br>absorber, bars rebound<br>LANGLEY-1A           | B63-10304             | 05 |
| misalignment<br>NU-0013 B65-   | 10077 0         | 5    | Novel shock absorber features varying strengths  | ng yield              |    |
| SHEATH Metal sheath improves thermocouple using  |                 |      | MSC-63A  | B64-10138             | 03 |
| graphite in one leg<br>NU-0011 B65-  | 10051 0         | .1   | Shock absorber protects motive compagainst overloads                                   | onents                |    |
|  | 10051 0         | 1    | W00-092  | B65-10008             | 05 |
| SHEET  Vacuum forming of thermoplastic sheet re in low-cost investment casting pattern |                 |      | Shock mount isolates pressure transc   | ducers from           |    |
|  |                 | 5    | JPL-631  | B65-10113             | 05 |
| Machine tests crease durability of sheet   |                 |      | Wire mesh isolator protects sensiti  | ve elec-              |    |
| materials<br>JPL-604 B64-  | 10178 0         | 15   | tronic components<br>GSFC-347  | B65-10216             | 05 |
|  |                 |      |  |                       |    |
| SHEET METAL  Apparatus of small size can be extended long, rigid boom                  | into            | :    | SHOCK WAVE Pressure sensor responds only to sho M-FS-238                               | ock wave<br>B65-10184 | 01 |
| JPL-305 B63-   | 10200 0         | 5    | SHUTTER  |                       |    |
| Built-in templates speed up process for<br>accurate models                             | making          | •    | Nulling pyrometer uses KERR cell sh<br>fast responses                                  | utter for             |    |
| LANGLEY-23 B63-  | 10526 0         | 5    | NU-0010  | B65-10050             | 01 |
| Collar positions strip stock used to for on mandrel                                    |                 |      | SIDELOBE REDUCTION  Novel horn antenna reduces side lobe                               | es,                   |    |
| JPL-198 B65-   | 10130 0         | 15   | improves radiation pattern<br>JPL-425  | B63-10264             | 01 |
| Metal bellows custom-fabricated from tub<br>LEWIS-192 B65-                             |                 | 15 : | SIEVE  |                       |    |
| Infrared shield facilitates optical pyro measurements                                  | meter           |      | Strainer fits inside flared-tube fi<br>LANGLEY-180                                     | ttings<br>B65-10388   | 05 |
|  | 10272 0         | 2 :  | SIGHT LINE<br>Mirror device aligns machine surfac                                      | e perpen-             |    |
| SHELL A technique for making animal restraints   |                 |      | dicular to sight lines   | B63-10421             | 02 |
| ARC-25 B63-  | 10564 0         | 15   |  |                       |    |

| SIGNAL  Modified filter prevents conduction of wave signals along high-voltage por |            |            | changes in heartbeat rate<br>MSC-133                                    | B65-10143 | 01  |
|--|------------|------------|---|-----------|-----|
| leads  | B63-10091  | 01         | Simple circuit reduces transistor sw                                    | itching   |     |
|  |            | VI         |   | B65-10234 | 01  |
| Circuit switches latching relay in re<br>signals of different polarity             |            |            | Compact SCR trigger circuit for igni                                    | tron      |     |
| WOO-055  | B63-10508  | 01         | switch operates efficiently<br>M-FS-371                                 | B65-10347 | 01  |
| Computer determines high-frequency pl<br>stability                                 | hase       |            | SILICON JUNCTION  |           |     |
| GSFC-113   | B63-10555  | 01         | Impurity diffusion process for silic semiconductors is fast and precise |           |     |
| Ring counter may be advanced or retain   | rded by    |            |   | B65-10300 | 01  |
| command signal<br>GSFC-101   | B64-10144  | 01         | SILICON OXIDE   |           |     |
| SIGNAL DETECTION   |            |            | Refractory ceramic has wide usage, l fabrication cost                   |           |     |
| Gapped toroid provides infinite reso of delay-line pickup                          | lution     |            | M-FS-67   | B63-10481 | 03  |
| GSFC-370   | B65-10258  | 01         | Lead oxide ceramic makes excellent h<br>temperature lubricant           | igh-      |     |
| SIGNAL DETECTOR  Detector circuit compensates for vid                              | icon boom  |            | LEWIS-144   | B64-10116 | 03  |
| current variations   |            |            | SILICON TRANSISTOR  |           |     |
|  | 865-10212  | 01         | Zener diode is starter for transisto<br>regulated power supply          | r-        |     |
| SIGNAL DISCRIMINATOR Frequency discriminator with binary                           | output     |            | NU-0015   | 865-10052 | 01  |
| eliminates tuned circuits  | B65-10349  | 01         | Temperature transducer has high outp<br>time stable                     | ut, is    |     |
| SIGNAL DISTORTION  | 200 100.5  | <b>01</b>  | GSFC-446  | B65-10362 | 01  |
| Frequency offset in linear FM/CW tra   | nsponder   |            | SILICONE  |           |     |
| eliminates clutter<br>M-FS-249   | B65-10146  | 01         | Lightweight load support serves as we damper                            | ibration  |     |
| Detector circuit compensates for vid   | icon beam  |            | JPL-661   | B65-10144 | 05  |
| current variations   | B65-10212  | 01         | SILICONE RUBBER Thermally conductive metal wool-sili                    | CORE      |     |
| SIGNAL ENCODING  | J00 1011   | <b>0.1</b> | rubber material can be used as sho                                      |           |     |
| Optical output enhances flowmeter ac   |            |            | vibration damper<br>JPL-321   | B63-10207 | 03  |
|  | B65-10395  | 02         | Pressure molding of powdered materia                                    | ils       |     |
| SIGNAL FADEOUT Lightweight coaxial cable connector                                 | reduces    |            | improved by rubber mold insert<br>WOO-100                               | B64-10270 | 03  |
| signal loss<br>JPL-720   | B65-10244  | 01         | Flexible curtain shields equipment 1                                    | 'rom      |     |
| SIGNAL NOISE   |            |            | intense heat fluxes<br>M-FS-48  | B65-10044 | 03  |
| Variable word length encoder reduces   | TV         |            |   |           | 03  |
| bandwidth requirements<br>LANGLEY-87   | B65-10345  | 01         | Shock mount isolates pressure transc<br>vibration                       |           |     |
| SIGNAL TRANSMISSION  |            |            | JPL-631   | В65-10113 | 05  |
| Modified filter prevents conduction wave signals along high-voltage po             |            |            | SILVER Improved molybdenum disulfide-silver                             | motor     |     |
| leads  | B63-10091  | 01         | brushes have extended life<br>M-FS-64                                   | B63-10479 | 03  |
|  |            | 01         |   |           | 0.5 |
| Digital system accurately controls v   | =          |            | Connector for thermocouple leads saw<br>wire, makes reliable connectors | •         |     |
| GSFC-287   | B65-10096  | 01         | LANGLEY-26  | B63-10529 | 01  |
| Added diodes increase output of bala mixer circuit                                 | nced       |            | Improved electrode gives high-qualit<br>biological recordings           | ty        |     |
| GSFC-354   | B65-10276  | 01         | MSC-17  | 864-10025 | 04  |
| SILICON  Computer circuit will fit on single                                       |            |            | SILVER ALLOY  |           |     |
| chip   |            |            | New brazing alloy eliminates metal—<br>cracking                         |           |     |
|  | B63-10514  | 01         | W00-249   | B65-10397 | 03  |
| Solid-state switching used to speed<br>capacitive integrator                       | up         |            | SILVER CHLORIDE  Cesium iodide crystals fused to vac                    | uum tube  |     |
|  | B65-10159  | 01         | faceplates<br>GSFC-67   | B63-10476 | 03  |
| SILICON COMPOUND Refractory ceramic has wide usage, 1                              |            |            | SILVER-ZINC BATTERY   | POO 104/0 | U.S |
| fabrication cost   |            |            | Auxiliary silver electrode eliminate                                    |           |     |
|  | B63-10481  | 03         | voltage discharge characteristic o<br>zinc cells                        |           |     |
| SILICON CONTROL RECTIFIER /SCR/<br>Circuit controls transients in SCR i            | nverters   |            | GSFC-169  | B64-10114 | 01  |
|  | B63-10600  | 01         | SIMULATOR  Electronic device simulates respira                          | tion reto |     |
| Digital-output cardiotachometer meas   | ures ranid |            | and depth   |           |     |

|      | MSC-89  | B64-10255            | 01   | SULAR RADIATION                                     |               |    |
|------|---|----------------------|------|---|---------------|----|
|      | 01 1 4  | _                    |      | Simple control device senses solar                  |               |    |
|      | Simulator produces physiological wa<br>MSC-94           | Neforms<br>B65-10091 | 01   | JPL-638   | B65~10061     | 01 |
|      | N3C-34  | B03~10091            | 01   | Multiple element soft X-ray source :                | nandunan      |    |
| SIM  | ULATOR TRAINING   |                      |      | wide range of radiation                             | produces      |    |
|      | Technique simulates effect of reduc                     | ed gravity           |      | GSFC-286  | B65-10082     | 02 |
|      | LANGLEY-44  | B64-10146            | 04   |   | _             |    |
|      |   |                      |      | SOLAR SENSOR  |               |    |
|      | E WAVE  |                      |      | Solar-angle sensor has no moving par                |               |    |
|      | Field effect transistor presents hi                     | gn input             |      | JPL-418   | B63-10260     | 02 |
|      | impedance in AC amplifier<br>JPL-500                    | B65-10232            | 01   | SOLDER  |               |    |
|      |   | 200 1000             |      | Cesium iodide crystals fused to vaca                | uum tube      |    |
| SIN  | TERING  |                      |      | (aceplates  |               |    |
|      | Improved molybdenum disulfide-silve                     | r motor              |      | GSFC-67   | B63-10476     | 03 |
|      | brushes have extended life                              |                      |      |   |               |    |
|      | H-FS-64   | B63-10479            | 03   | Hot-air soldering technique prevents                | s overheat-   |    |
|      | N   | At                   |      | ing of electrical components                        | 202 40524     |    |
|      | New sintering process adjusts magne<br>of ferrite cores | tic value            |      | GSFC-91   | B63-10536     | 01 |
|      | GSFC-129  | B63-10606            | 01   | Improved solderless connector is eas                | -ilu          |    |
|      |   | 200 10000            |      | disconnected  | 3118          |    |
| SKI  |   |                      |      | JPL-SC-060  | B65-10197     | 01 |
|      | Flexible fastener allows thermal ex                     | pansion              |      |   |               | _  |
|      | LANGLEY-40  | B64-10145            | 05   | SOLDERED JOINT                                      |               |    |
|      |   |                      |      | Circuit reliability boosted by solde                | ering pins    |    |
|      | N /BIOL/  |                      |      | of disconnect plugs to sockets                      |               |    |
|      | Improved electrode gives high-quali                     | ty                   |      | JPL-447   | B64-10002     | 01 |
|      | biological recordings<br>MSC-17                         | B64-10025            | 04   | SOLDERING   |               |    |
|      | 1.00 17   | 201 10020            | ••   | Hot-air soldering technique prevents                | - overheat-   |    |
|      | Improved conductive paste secures b                     | iomedical            |      | ing of electrical components                        | o over neut   |    |
|      | electrodes  |                      |      | GSFC-91   | B63-10536     | 01 |
|      | MSC-107   | B65-10015            | 03   |   |               |    |
|      |   |                      |      | Compact coaxial connector for printe                | ed circuit    |    |
| SLE  |   |                      |      | adds reliability                                    |               |    |
|      | Self sealing disconnect for tubing seal after breakaway | IOPES metal          |      | MSC-57  | B64-10016     | 01 |
|      | JPL-354   | B63-10226            | 05   | Solder flux leaves corrosion-resista                | -n+           |    |
|      | ***   | 200 1000             | ••   | coating on metal                                    |               |    |
|      | Sleeve and cutter simplify disconne                     | cting                |      | JPL-611   | B64-10206     | 03 |
|      | welded joint in tubing                                  | •                    |      |   |               |    |
|      | JPL-384   | B63-10240            | 05   | feed-through has polyterminal featur                | re            |    |
|      |   |                      |      | M-FS-25   | B65-10057     | 01 |
|      | New coupling compensates for shaft                      |                      |      |   |               |    |
|      | misalignment<br>NU-0013                                 | BCE 10022            | A.E. | High permeability semiconductors per                | rmit          |    |
|      | NU-0013   | B65-10077            | 05   | close-tolerance soldering<br>GSFC-319               | B65-10134     | 05 |
|      | New nut and sleeve improve flared o                     | onnections           |      | GSF C-319   | B03-10134     | UJ |
|      | M-FS-194  | B65-10180            | 05   | SOLEMOID  |               |    |
|      |   |                      |      | Solenoid permits remote control of s                | stop watch    |    |
|      | Shrinkable sleeve eliminates shield                     | ing gap              |      | and assures restarting                              | -             |    |
|      | in RF cable   |                      |      | FRC-17  | B63-10024     | 01 |
|      | ₩00-207   | B65-10387            | 01   |   |               |    |
| 61.7 | D DAND  |                      |      | Electromechanically operated camera                 | shutter       |    |
|      | P BAND<br>Contact stresses calculated for min           |                      |      | provides uniform exposure<br>JPL-357                | B63-10227     | 01 |
|      | rings   | iature siip          |      | 4FF-30/   | 10201-000     | 01 |
|      | H-FS-280  | B65-10098            | 05   | Camera shutter is actuated by electi                | ric signal    |    |
|      |   | 200 2000             | •    | ARC-20  | B63-10560     | 05 |
| SLO  |   |                      |      |   | •             |    |
|      | V-slotted screw head and matching d                     |                      |      | Improved magnetometer uses toroidal                 | gating        |    |
|      | facilitate insertion and removal                        | of screw             |      | coil  | ner           |    |
|      | fasteners   | 200 1000             |      | GSFC-249  | B65-10103     | 01 |
|      | FRC-16  | B63-10023            | 05   | force controlled solenoid drives mid                | anoual d      |    |
| SOA  | P   |                      |      | tester  | CLOREIG       |    |
|      | r<br>Instrument calibrates low gas-rate                 | flowmeters           |      | W00-125   | B65-10182     | 01 |
|      | MSC-134   | B65-10137            | 01   |   |               |    |
|      |   | _                    |      | SOLID LUBRICANT                                     |               |    |
|      | AR CELL   |                      |      | Lead oxide ceramic makes excellent !                | hig <b>h-</b> |    |
|      | New method used to fabricate galliu                     | m arsenide           |      | temperature lubricant                               | De4 10111     |    |
|      | photovoltaic device<br>WOO-062                          | DC410010             | 01   | LEWIS-144   | B64-10116     | 03 |
|      |   | B64-10019            | 01   | SOLID SOLUTION                                      |               |    |
| SOL  | AR ENERGY   |                      |      | Brazing method produces solid-soluti                | ion bond      |    |
|      | Wide-aperture solar energy collecto                     | r is light           |      | between refractory metals                           |               |    |
|      | in weight   |                      |      | LEWIS-212   | B65-10370     | 05 |
|      | JPL-SC-055  | B65-10046            | 92   |   |               |    |
|      | Madulan II  | _                    |      | SOLID STATE DEVICE                                  | _             |    |
|      | Modular thermoelectric cell is easi                     | ly packaged          |      | Digital cardiometer computes and dis                | splays        |    |
|      | in various arrays<br>GSFC-339                           | B65-10199            | 01   | heartbeat rate<br>MSC-93                            | B64-10258     | 01 |
|      |   | DO0-10133            | O.T. | nav-30  | ~02-10€20     | 71 |
|      |   |                      |      |   |               |    |
|      | Emergency solar still desalts seawa                     | ter                  |      | Logarithmic amplifier uses field eff                | fect .        |    |
|      | Emergency solar still desalts seawa<br>MSC-135          | ter<br>B65-10214     | 03   | Logarithmic amplifier uses field eff<br>transistors | rect          |    |

| Analog-to-digital converter has incr<br>reliability and reduced power cons<br>GSFC-246 |            | 01 | NEO-13<br>SPHERE   | B65-10239   | 02  |
|--|------------|----|--|-------------|-----|
| Thin-film resistors used in function   | nal        |    | Reference black body is compact, co-                                     |             |     |
| electronic blocks<br>GSFC-380  | B65-10305  | 01 | ARC-3  | B63-10004   | 03  |
|  |            |    | Modified gas bearing is adjustable                                       | to optimum  |     |
| Threshold detector produces narrow partition rates                                     | oulses at  |    | stiffness ratio<br>M-FS-145  | B64-10050   | 05  |
| GSFC-383   | B65-10310  | 01 |  |             |     |
| SOLVENT  |            |    | Pneumatic power is transmitted thro<br>bearing                           | ugh air     |     |
| Method of welding joint in closed ve   | essel      |    | MSC-8  | B64-10141   | 05  |
| improves quality of seam<br>JPL-170  | B63-10139  | 05 | SPIN FORGING   |             |     |
|  |            | •• | Stainless-steel elbows formed by sp                                      |             |     |
| Soluble undercoating facilitates re<br>foamed-in-place insulation                      | emoval of  |    | M-FS-122   | B63-10590   | 05  |
| LEWIS-193  | B65-10344  | 03 | SPLINE FUNCTION  |             |     |
| SPACE ENVIRONMENT  |            |    | New coupling compensates for shaft misalignment                          |             |     |
| Unique gear design provides self-lu  |            |    | NU-0013  | B65-10077   | 05  |
| JPL-SC-079   | B65-10366  | 03 | Indexing device ensures proper mati                                      | na of       |     |
| SPACE SYSTEMS ENGINEERING  |            |    | electrical connectors  | _           |     |
| Pressure transducer system is force-<br>has digital output                             | -balanced, |    | MSC-155  | B65-10263   | 01  |
| M-FS-154   | B65-10174  | 05 | SPOT WELDING   |             |     |
| SPACE VEHICLE CONTROL  |            |    | Welded pressure transducer made as 1/8th-inch in diameter                | small as    |     |
| Plated nickel wire mesh makes super  | ior        |    | ARC-11   | B63-10429   | 03  |
| catalyst bed<br>MSC-216  | B65-10321  | 03 | Welding procedure improves quality                                       | of welds.   |     |
|  |            |    | offers other advantages  |             |     |
| SPACECRAFT High purity electroforming yields s   | uperior    |    | M-FS-32  | B64-10309   | 01  |
| metal models   |            |    | SPRAY  |             |     |
| ARC-6  | B63-10007  | 05 | Quick-hardening problems are elimin<br>spray gun modification which mixe |             |     |
| Kinetic-energy absorber employs fri  | ctional    |    | accelerator liquids during applic  | ation       | 0.7 |
| force between mating cylinders<br>LEWIS-75   | B63-10442  | 05 | LANGLEY-6A   | B63-10318   | 03  |
| 113 A  | -1         |    | SPRAYING APPARATUS   | anni n af   |     |
| Ultra-sensitive transducer advances<br>measurement range                               | micro-     |    | Inert gas spraying device aids in r<br>hazardous systems                 | epair or    |     |
| ARC-26   | B64-10004  | 01 | LEWIS-8B   | B65-10115   | 05  |
| Special coatings control temperatur  | e of       |    | SPRING   |             |     |
| structures<br>GSFC-444   | B65-10337  | 03 | Solenoid permits remote control of<br>and assures restarting             | stop watch  |     |
|  |            |    | FRC-17   | B63-10024   | 01  |
| SPACECRAFT COMPONENT Apparatus alters position of object                               | s to       |    | New package for belleville spring p                                      | ermits rate |     |
| facilitate demagnetization   |            |    | change, easy disassembly   |             |     |
| GSFC-234   | B64-10277  | 05 | JPL-392  | B63~10247   | 05  |
| SPACECRAFT ORBIT   |            |    | Apparatus measures very small thrus                                      |             | 0.5 |
| Oceanborne transponder platform has<br>stability                                       | good       |    | ₩00-048  | B64-10284   | 05  |
| M-FS-171   | B65-10035  | 05 | Gage measures electrical connector                                       | pin         |     |
| SPACECRAFT SENSOR  |            |    | retention force<br>JPL-SC-071  | B65~10034   | 03  |
| Improved sensor counts micrometeoro penetrations                                       | id         |    | Leaf-spring suspension provides acc                                      | unata       |     |
| LEWIS-76   | B63-10443  | 01 | parallel displacements   |             |     |
| SPACECRAFT TRACKING  |            |    | JPL-480  | 865-10104   | 05  |
| Oceanborne transponder platform has  | good       |    | Collapsible truss structure is auto                                      | matically   |     |
| stability<br>M-FS-171  | B65-10035  | 05 | expandable<br>GSFC-265   | B65-10126   | 05  |
|  |            |    | 6 13 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -                                 |             |     |
| Frequency offset in linear FM/CW tr<br>eliminates clutter                              | ansponder  |    | Coiled spring makes self-locking de<br>threaded fasteners                |             |     |
| M-FS-249   | B65-10146  | 01 | MSC-149  | B65-10135   | 05  |
| SPECTROGRAPH   |            |    | Lightweight load support serves as                                       | vibration   |     |
| Simple optical system used to align<br>spectrograph                                    | ı          |    | damper<br>JPL-661  | B65-10144   | 05  |
| LANGLEY-92   | 865-10071  | 02 |  |             | _   |
| SPECTROGRAPHY  |            |    | Bidirectional torque filter elimina<br>backlash                          | ites        |     |
| System selects framing rate for spe  | ctrograph  |    | GSFC-335   | B65-10148   | 05  |
| camera<br>LANGLEY-55   | B65-10086  | 01 | Spiral heater coils hand-formed wit                                      | th fixture  |     |
| SPECTROMETER   |            |    | LEWIS-208  | 865-10192   | 05  |
| Ion pump provides increased vacuum   | pumping    |    | STABILITY  |             |     |
| speed  | -          |    | Computer determines high-frequency                                       | phase       |     |
|  |            |    |  |             |     |

| stability<br>GSFC-113   | B63-10555                | 01 | JPL-375  | B63-10236               | 05 |
|---|--------------------------|----|--|-------------------------|----|
| Monostable circuit with tunnel di recovery                                | ode has fast             |    | STEEL STRUCTURE Flexible magnetic planning boards a                            | re easily               |    |
| GSFC-132  | B63-10603                | 01 | transported<br>M-FS-340  | B65-10219               | 05 |
| Irradiation improves properties o<br>aromatic polyester                   |                          |    | STEP FUNCTION Stepping switch with simple actuate                              | or provides             |    |
| LANGLEY-115   | B65-10164                | 03 | many contacts in small space<br>JPL-122  | B63-10118               | 01 |
| Refractory oxides evaluated for<br>high-temperature use<br>LANGLEY-121    | B65-10167                | 03 | STIMULUS Subminiature biotelemetry unit perm physiological investigations      | its remote              |    |
| STABILIZER  New inflatable liferaft is nontip  MSC-4A                     | pable<br>B64-10001       | 05 | ARC-39 STOPWATCH CONTROL   | B64-10171               | 01 |
| STAINLESS STEEL Apparatus facilitates high-temper                         | ature tensile            |    | Solemoid permits remote control of and assures restarting FRC-17               | stop watch<br>B63-10024 | 01 |
| testing in vacuum<br>LEWIS-42   | B63-10345                | 03 | STORAGE  |                         |    |
| Ellipsoidal optical reflectors re<br>electroforming                       |                          |    | Stepping switch with simple actuato<br>many contacts in small space<br>JPL-122 | B63-10118               | 01 |
| GSFC-92 Stainless-steel elbows formed by                                  |                          | 05 | Metal strip forms 21 foot boom, rol<br>compact storage                         | -                       |    |
| M-FS-122  | B63-10590                | 05 | GSFC-151   | B64-10011               | 05 |
| Screening technique makes reliabl<br>room temperature<br>M-FS-227         | B65-10004                | 03 | STORAGE DEVICE Metal strip forms 21 foot boom, rol compact storage             | -                       |    |
| New alloy brazes titanium to stai<br>MSC-102                              | nless steel<br>B65-10060 | 05 | GSFC-151 STORAGE TANK  | B64-10011               | 05 |
| New nut and sleeve improve flared<br>M-FS-194                             | connections<br>B65-10180 | 05 | Helical tube separates nitrogen gas<br>liquid nitrogen<br>JPL-398              | B63-10251               | 05 |
| Coating method enables low-temper brazing of stainless steel              |                          |    | STORAGE UNIT Compact cartridge drives coded tape                               | e at                    |    |
| NU-0030   | B65-10250                | 03 | constant readout speed<br>JPL-472  | B64-10222               | 01 |
| Plastic plus stainless-steel fibe resilient, impermeable material WOO-246 |                          | 03 | STORE Dispensing system eliminates torsio                                      | on in                   |    |
| New brazing alloy eliminates meta   | l-stress                 |    | deployed hoses<br>MSC-80   | B65-10185               | 05 |
| cracking<br>WOO-249   | B65-10397                | 03 | STRAIN Dispensing system eliminates torsio                                     | n in                    |    |
| STARTER Zener diode is starter for transi                                 | stor-                    |    | deployed hoses<br>MSC-80   | B65-10185               | 05 |
| regulated power supply<br>NU-0015   | B65-10052                | 01 | STRAIN GAUGE   |                         |    |
| Compact SCR trigger circuit for i<br>switch operates efficiently          | gnitron                  |    | Rapid helium-air analyzer can measu<br>binary gas mixtures<br>LANGLEY-16       | B63-10557               | 03 |
| M-FS-371  | B65-10347                | 01 | Forming blocks speed production of   | strain gage             |    |
| STARTING Circuit controls transients in SC GSFC-120                       |                          | 01 | grids<br>LEWIS-182   | B65-10009               | 05 |
| STATIC LOADING Pressure responsive seal handles                           |                          |    | Differential pressure gauge has fas<br>M-FS-358                                | t response<br>B65-10285 | 05 |
| dynamic loads GSFC-441  | B65-10327                | 05 | STRESS Radiant heater for vacuum furnaces                                      |                         |    |
| STATIC PRESSURE Averaging probe reduces static-pr                         |                          |    | structural rigidity, low heat los<br>LEWIS-39                                  | B63-10342               | 01 |
| sensing errors<br>LANGLEY-36  | B65-10114                | 05 | Stringent cleaning technique assure epoxy bond                                 |                         |    |
| STATOR Brushless DC motor uses electron                                   | h                        |    | GSFC-161   | B64-10142               | 03 |
| switching tube as commutator<br>GSFC-345                                  | B65-10237                | 01 | New brazing alloy eliminates metal-<br>cracking<br>WOO-249                     | B65-10397               | 03 |
| STEADY STATE Improved variable-reluctance tran                            | sducer meas-             |    | STRESS AND LOAD Contact stresses calculated for min                            | iature slip             |    |
| ures transient pressures<br>LANGLEY-10                                    | B63-10321                | 01 | rings<br>M-FS-280  | B65-10098               | 05 |
| STEEL Lightweight universal joint trans torque and thrust                 | mits both                |    | STRESS CORROSION Aluminum alloys protected against s corrosion cracking        | tress-                  |    |

| M-FS-235   | B65-10172  | 03                               | Shaped superconductor cylinder retai<br>magnetic field<br>JPL-381  | ns intense<br>863-10238  | 01                               |
|--|--|----------------------------------|--|--|----------------------------------|
| STRESS DISTRIBUTION  Lightweight hinged bellows restrai  | nt has   |                                  | JPL-381  | 863~10238  | 01                               |
| high load capacity   |  |                                  | Superconductor shields test chamber  | from   |                                  |
| W00-151  | B65-10341  | 03                               | ambient magnetic fields<br>JPL-627   | B65-10297  | 02                               |
| STRESS MEASUREMENT   |  |                                  |  |  |                                  |
| Miniature stress transducer has di<br>capability   | rectional  |                                  | SUPERCOOLING Supercold technique duplicates magne  | tic field  |                                  |
| JPL-591  | B65-10023  | 01                               | in second superconductor   |  |                                  |
| STRESS RATIO   |  |                                  | JPL-376  | B63-10237  | 05                               |
| Testing device subjects elastic ma   | iterials to  |                                  | SUPERFLUIDITY  |  |                                  |
| biaxial deformations<br>JPL-616  | B65-10189  | 03                               | Cryogenic filter method produces sup<br>helium and helium isotopes   | er-pure  |                                  |
| JFL-010  | poo 10103  | •••                              | JPL-374  | B63-10235  | 03                               |
| STRESS RUPTURE Apparatus facilitates pressure-tes  | sting of   |                                  | SUPPORT  |  |                                  |
| metal tubing   |  |                                  | Mounting for diodes provides efficie   | ent heat   |                                  |
| LEWIS-174  | B65-10131  | 05                               | sink<br>M-FS-197   | 864-10283  | 01                               |
| STRESSED-SKIN CONSTRUCTION   | _  |                                  |  |  |                                  |
| Flexible fastener allows thermal e<br>LANGLEY-40   | expansion<br>B64-10145   | 05                               | SUPPORT SYSTEM  Nonresonant support facilitates vibi   | ration   |                                  |
|  |  | -                                | testing of structures  |  |                                  |
| STRIP  New method used to fabricate light  | t-weight heat  |                                  | M-FS-224   | B65-10039  | 05                               |
| exchanger for rocket motor   |  |                                  | Flexure support system protects the  | rmally and   |                                  |
| LEWIS-43   | B63-10346  | 02                               | dynamically loaded models<br>LANGLEY-39  | B65-10042  | 05                               |
| Test strips detect different CO2   |  |                                  |  |  | _                                |
| concentrations in closed compart<br>MSC-210  | tments<br>B65-10390  | 03                               | Lightweight load support serves as v<br>damper   | vioration  |                                  |
|  |  |                                  | JPL-661  | B65-10144  | 05                               |
| STRUCTURAL STABILITY  New method used to fabricate light   | t-weight heat  |                                  | SURFACE  |  |                                  |
| exchanger for rocket motor   | -  | 00                               | Portable flooring protects finished  | surfaces,  |                                  |
| LEWIS-43   | B63-10346  | 02                               | is easily moved<br>M-FS-15   | 863-10387  | 05                               |
| STRUCTURAL VIBRATION   | 41   |                                  | Vinetia-oneso, chamber employe fri   | ational  |                                  |
| Viscous-pendulum damper suppresses vibrations  | s structural   |                                  | Kinetic-energy absorber employs frice force between mating cylinders   | ctional  |                                  |
|  |  |                                  |  |  |                                  |
| LANGLEY-45   | B64-10272  | 05                               | LEWIS-75   | B63-10442  | 05                               |
| LANGLEY-45 Seismic transducer measures small   |  | 05                               | LEWIS-75  Pressure transducer 3/8-inch in size   |  | 05                               |
| LANGLEY-45   |  | 05                               | LEWIS-75   |  | 05<br>05                         |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  | horizontal   |                                  | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065   | e can be<br>B64-10021  |                                  |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE Variable-transparency wall regula   | horizontal<br>B65-10029  |                                  | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface W00-065  Stringent cleaning technique assure epoxy bond   | e can be<br>B64-10021<br>s reliable  | 05                               |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE Variable-transparency wall regula tures of structures   | horizontal<br>B65-10029<br>tes tempera-  | 05                               | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface W00-065  Stringent cleaning technique assure  | e can be<br>B64-10021  |                                  |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE Variable-transparency wall regula tures of structures LANGLEY-25  | horizontal<br>B65-10029<br>tes tempera-<br>B63-10528   |                                  | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface W00-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryo   | e can be<br>B64-10021<br>s reliable<br>B64-10142   | 05                               |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v   | horizontal<br>B65-10029<br>tes tempera-<br>B63-10528   | 05                               | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  | e can be<br>B64-10021<br>s reliable<br>B64-10142   | 05                               |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE Variable-transparency wall regula tures of structures LANGLEY-25  | horizontal<br>B65-10029<br>tes tempera-<br>B63-10528   | 05                               | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface W00-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253   | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327   | 05                               |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  | 05                               | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface W00-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pres  | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327   | 05                               |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes   | horizontal B65-10029 tes tempera- B63-10528 ibration B65-10039 es against  | 05<br>03<br>05                   | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface W00-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253   | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327   | 05                               |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat  | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  | 05                               | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubi  | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327 sure  B65-10114   | 05<br>03<br>05                   |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357   | 05<br>03<br>05                   | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface W00-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36   | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327 sure  B65-10114   | 05<br>03<br>05                   |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357   | 05<br>03<br>05                   | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubi  | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327 sure  B65-10114   | 05<br>03<br>05                   |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro  | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357   | 05<br>03<br>05                   | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive   | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327 sure  B65-10114 ng  B65-10375 chemical  | 05<br>03<br>05                   |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-W00-021  Thin transparent films formed fro   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  | 05<br>03<br>05                   | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WDD-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY  | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327 sure  B65-10114 ng  B65-10375 chemical  | 05<br>03<br>05                   |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-WOO-021  Thin transparent films formed fro glass   | horizontal B65-10029 tes tempera- B63-10528 ibration B65-10039 es against B65-10357 n-beam B65-10175 m powdered  | 05<br>03<br>05<br>03             | Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  | B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical   | 05<br>03<br>05<br>05             |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-W00-021  Thin transparent films formed froglass GSFC-352   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  | 05<br>03<br>05                   | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WDD-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base   | B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317   | 05<br>03<br>05<br>05             |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-WOO-021  Thin transparent films formed fro glass   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217   | 05<br>03<br>05<br>03             | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING   | B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317   | 05<br>03<br>05<br>05             |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-W00-021  Thin transparent films formed froglass GSFC-352  SUBSURFACE Oceanborne transponder platform h stability   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  | 05<br>03<br>05<br>03             | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WDD-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23   | B64-10021 s reliable B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317  | 05<br>03<br>05<br>05             |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-WOO-021  Thin transparent films formed fro glass GSFC-352  SUBSURFACE Oceanborne transponder platform h stability M-FS-171   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217   | 05<br>03<br>05<br>03             | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld   | B64-10021 s reliable B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317 operates B63-10562   | 05<br>03<br>05<br>05             |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-W00-021  Thin transparent films formed froglass GSFC-352  SUBSURFACE  Oceanborne transponder platform h stability M-FS-171   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  B65-10035   | 05<br>03<br>05<br>03             | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WDD-065  Stringent cleaning technique assure: epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld distortions from aluminum tanks  | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327 sure  B65-10114 ng  B65-10375 chemical  B65-10317 operates  B63-10562                               | 05<br>03<br>05<br>05<br>05       |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-WOO-021  Thin transparent films formed fro glass GSFC-352  SUBSURFACE Oceanborne transponder platform h stability M-FS-171   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  B65-10035   | 05<br>03<br>05<br>03             | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  | B64-10021 s reliable B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317 operates B63-10562   | 05<br>03<br>05<br>05             |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-W00-021  Thin transparent films formed froglass GSFC-352  SUBSURFACE  Oceanborne transponder platform h stability M-FS-171  SUNLIGHT  Pigmented coating resists thermal JPL-SC-083   | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  B65-10035   | 05<br>03<br>05<br>03<br>03       | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WDD-065  Stringent cleaning technique assure: epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  SURFACE FINISH   | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327 sure  B65-10114 ng  B65-10375 chemical  B65-10317 operates  B63-10562                               | 05<br>03<br>05<br>05<br>05       |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-WOO-021  Thin transparent films formed fro glass GSFC-352  SUBSURFACE Oceanborne transponder platform h stability M-FS-171  SUNLIGHT Pigmented coating resists thermal JPL-SC-083  SUPERCONDUCTING MAGNET Superconductor magnets used for services and superconductor magnets used for services. | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  B65-10035  shock  B65-10354                           | 05<br>03<br>05<br>03<br>03       | LEWIS-75  Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  SURFACE FINISH Portable flooring protects finished is easily moved  | B64-10021 s reliable B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317 operates B63-10562 B65-10342 surfaces,                           | 05<br>03<br>05<br>05<br>05<br>01 |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-W00-021  Thin transparent films formed froglass GSFC-352  SUBSURFACE  Oceanborne transponder platform h stability M-FS-171  SUNLIGHT  Pigmented coating resists thermal JPL-SC-083  SUPERCONDUCTING MAGNET  Superconductor magnets used for s traveling-wave maser                               | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  B65-10035  shock  B65-10354  tagger-tuning            | 05<br>03<br>05<br>03<br>03<br>05 | Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  SURFACE FINISH Portable flooring protects finished  | e can be  B64-10021 s reliable  B64-10142 genic  B64-10327 sure  B65-10114 ng  B65-10375 chemical  B65-10317 operates  B63-10562                               | 05<br>03<br>05<br>05<br>05       |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-WOO-021  Thin transparent films formed fro glass GSFC-352  SUBSURFACE  Oceanborne transponder platform h stability M-FS-171  SUNLIGHT  Pigmented coating resists thermal JPL-SC-083  SUPERCONDUCTING MAGNET Superconductor magnets used for straveling-wave maser GSFC-292                       | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  B65-10035  shock  B65-10354                           | 05<br>03<br>05<br>03<br>03       | Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubition MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  SURFACE FINISH Portable flooring protects finished is easily moved M-FS-15  Device measures curved surface fini    | B64-10021 s reliable B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317 operates B63-10562 B65-10342 surfaces, B63-10387                 | 05<br>03<br>05<br>05<br>05<br>01 |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-W00-021  Thin transparent films formed froglass GSFC-352  SUBSURFACE  Oceanborne transponder platform h stability M-FS-171  SUNLIGHT  Pigmented coating resists thermal JPL-SC-083  SUPERCONDUCTING MAGNET  Superconductor magnets used for s traveling-wave maser GSFC-292                      | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  B65-10035  shock  B65-10354  tagger-tuning  B65-10165 | 05<br>03<br>05<br>03<br>03<br>05 | Pressure transducer 3/8-inch in size faired into surface WDD-065  Stringent cleaning technique assure: epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubit MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  SURFACE FINISH Portable flooring protects finished is easily moved M-FS-15  Device measures curved surface finities. | B64-10021 s reliable B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317 operates B63-10562 B65-10342 surfaces, B63-10387                 | 05<br>03<br>05<br>05<br>05<br>01 |
| LANGLEY-45  Seismic transducer measures small displacements M-FS-81  STRUCTURE  Variable-transparency wall regula tures of structures LANGLEY-25  Nonresonant support facilitates v testing of structures M-FS-224  Air-cured ceramic coating insulat high heat fluxes M-FS-150  SUBSTRATE  Tantalum cathode improves electro evaporation of tantalum JPL-WOO-021  Thin transparent films formed fro glass GSFC-352  SUBSURFACE  Oceanborne transponder platform h stability M-FS-171  SUNLIGHT  Pigmented coating resists thermal JPL-SC-083  SUPERCONDUCTING MAGNET Superconductor magnets used for straveling-wave maser GSFC-292                       | horizontal  B65-10029  tes tempera-  B63-10528  ibration  B65-10039  es against  B65-10357  n-beam  B65-10175  m powdered  B65-10217  as good  B65-10035  shock  B65-10354  tagger-tuning  B65-10165 | 05<br>03<br>05<br>03<br>03<br>05 | Pressure transducer 3/8-inch in size faired into surface WOO-065  Stringent cleaning technique assure epoxy bond GSFC-161  Connector seals fluid lines at cryotemperatures and high vacuums GSFC-253  Averaging probe reduces static-pressensing errors LANGLEY-36  Portable tool cleans pipes and tubition MSC-238  SURFACE CHEMISTRY Instrument performs nondestructive analysis, data can be telemetered JPL-SC-078  SURFACE COATING Gate valve with ceramic-coated base at high temperatures ARC-23  SURFACE DISTORTION Electromagnetic hammer removes weld distortions from aluminum tanks M-FS-287  SURFACE FINISH Portable flooring protects finished is easily moved M-FS-15  Device measures curved surface fini    | B64-10021 s reliable B64-10142 genic B64-10327 sure B65-10114 ng B65-10375 chemical B65-10317 operates B63-10562 B65-10342 surfaces, B63-10387 sh on B65-10064 | 05<br>03<br>05<br>05<br>05<br>01 |

| metallurgical microsamples<br>LEWIS-131                                  | B65-10262   | 05  | lines quickly<br>JPL-410  | B63-10258              | 01  |
|--|-------------|-----|---|------------------------|-----|
| SURFACE ROUGHNESS Rough surface improves stability of                    | air-        |     | Solid-state switching used to speed capacitive integrator         | ·                      |     |
| sounding ballooms<br>M-FS-320  | B65-10326   | 05  | LANGLEY-104   | 365-10159              | 01  |
| SURFACE VEHICLE  |             |     | Simple circuit reduces transistor so time                         | #itching               |     |
| Vehicle walks on varied terrain, car<br>handicapped persons              | n assist    |     | GSFC-314  | B65-10234              | 01  |
| W00-005  | B64-10274   | 05  | Improved circuit minimizes generation                             | on of                  |     |
| SURGE  |             |     | pseudonoise check bits<br>JPL-698                                 | B65-10275              | 01  |
| High-pressure regulating system pre-<br>pressure surges                  | vents       |     | Cam-operated limit switch features                                | esto fuen              |     |
| JPL-231  | B63-10170   | 05  | replacement MSC-218   | 865-10322              | 01  |
| SURGICAL INSTRUMENT  | _           |     |   | 1002                   | 0.1 |
| Encapsulation process sterilizes and<br>surgical instruments             | i preserves |     | SWITCHING ELEMENT  DC to AC converter operates efficient          | ncy at                 |     |
| JPL-484  | B64-10066   | 05  | low input voltages GSFC-130                                       | B65-10178              | 01  |
| SUSPENSION   | _           |     |   | 003-10176              | 01  |
| Device enables measurement of momen<br>inertia about three axes          | ts of       |     | SWITCHING FUNCTION  Knob linkage permits one-hand control         | ol of                  |     |
| GSFC-49  | B65-10176   | 05  | several operations  |                        |     |
| Vacuum chamber provides improved in:                                     | sulation    |     | MSC~30  | B65-10022              | 05  |
| and support for cryostat<br>M~FS-415                                     | B65-10368   | 02  | SYMMETRY  Modified interelement spacing impro-                    | una Vasi               |     |
|  | 000-10000   | 02  | antenna array   | ves ragi               |     |
| SUSPENSION SYSTEM Leaf-spring suspension provides accompany              | urate       |     | LANGLEY-130   | B65-10183              | 01  |
| parallel displacements   |             |     | SYNCHRONOUS DETECTOR  |                        |     |
| JPL-480  | B65-10104   | 05  | Phase detector circuit synthesizes or reference signal            | own                    |     |
| SWITCH   |             |     | M-FS-247  | 665-10080              | 01  |
| Stepping switch with simple actuator many contacts in small space        | •           |     | Ŧ   |                        |     |
| JPL-122  | B63-10118   | 01  | TAKEOFF AND LANDING   |                        |     |
| Coincident switch closing reduces e                                      | rror in     |     | New anemometer has fast response, m                               | easures                |     |
| motor-driven timer<br>JPL-182  | B63-10143   | 05  | dynamic pressure directly<br>LANGLEY-28                           | B63-10530              | 05  |
| Liquid switch is remotely operated                                       | by low DC   |     | TANK  |                        |     |
| voltage<br>GSFC—119  | B63-10599   | 01  | Two-part valve acts as quick coupli<br>JPL-478                    | ng<br>B64-10223        | 05  |
| Digital logic elements provide addi:                                     | tional      |     | Magnets position X-ray film for wel-                              | d                      |     |
| functions from analog input  |             |     | inspection  |                        |     |
| MSC-64   | B64-10064   | 01  | M-FS-253  | B65-10110              | 05  |
| Bandwidth switching is transient-front loss of loop lock                 | ee, avoids  |     | Oscillator circuit measures liquid tanks                          | level in               |     |
| W00-054  | B64-10349   | 01  | M-FS-245  | B65-10209              | 01  |
| Photoelectric semiconductor switch                                       | pperates    |     | Weld leaks rapidly and safely detec                               | ted                    |     |
| with low level inputs  | -           |     | M-FS-362  | B65-10265              | 01  |
| JPL-SC-068   | B65-10033   | 01  | TANTALUM  |                        |     |
| Automatic thermal switch accelerate:<br>cooling-down of cryogenic system | 3           |     | Apparatus facilitates high-temperat testing in vacuum             | ure tensile            |     |
| JPL-655  | B65-10068   | 01  | LEWIS-42  | B63-10345              | 03  |
| Rotor position sensor switches curre                                     | ents in     |     | Tantalum cathode improves electron-                               | beam                   |     |
| brushless Dc motors<br>GSFC-315  | B65-10151   | 01  | evaporation of tantalum   | B65-10175              | 03  |
|  |             | U1  |   |                        | 03  |
| Inflatable bladder provides accurate calibration of pressure switch      | 2           |     | Thermoelectric elements diffusion-b<br>tungsten electrodes        | onded to               |     |
| M-FS-367   | B65-10279   | 01  | GSFC-346  | B65-10309              | 01  |
| Selenium bond decreases On resistan                                      | ce of       |     | TAPERED COLUMN  |                        |     |
| light-activated switch<br>JPL-SC-101                                     | B65-10324   | 01  | Tool facilitates sealing of metal f                               | ill tubes<br>B63-10519 | 05  |
|  |             | O I | <del>-</del> -  | 200 10313              | 00  |
| Three-position rocker switch actuate positive centering                  | or has      |     | TELEMETER  Device measures fluid drag on test                     | vehicles               |     |
| MSC-261  | B65-10376   | 01  | LANGLEY-34  | B65-10195              | 01  |
| SWITCHING  |             |     | TELEMETRY   |                        |     |
| Zener diode controls switching of la<br>direct currents                  | arge        |     | Circuit converts AM signals to FM f<br>magnetic recording         | or                     |     |
| MSC-188  | B65-10350   | 01  | GSFC-227  | B65-10001              | 01  |
| SWITCHING CIRCUIT Double-throw microwave device switch                   | hes two     |     | Simple circuit functions as frequen discriminator for PFM signals | cy                     |     |

| GSFC-267  | B65-10102                   | 01  | Simple circuit provides adjustable voltage with linear temperature variation                 |      |
|---|-----------------------------|-----|--|------|
| Variable frequency transistor mutiple core transformers         | inverters use               |     | JPL-W00-029 B63-10537  | 01   |
| GSFC-183  | B65-10119                   | 01  | Simple transducer measures low heat-transfer rates   |      |
| Circuit reduces distortion of GSFC-257                          | FM modulator<br>B65-10152   | 01  | JPL-466 B64-10122  | 01   |
| Instrument performs nondestruc                                  |                             | 01  | Seal allows blind assembly and thermal expan-<br>sion of components                          |      |
| analysis, data can be telemed                                   |                             | 0.1 | NU~0005 B65-10053  | 05   |
|   | 60-10317                    | 01  | TEMPERATURE MEASUREMENT Thermistor connector assembly increases                              |      |
| TELESCOPE Attachment converts microscope                        | e to point source           |     | accuracy of measurements LANGLEY-62 B65-10045  | 6 01 |
| autocollimator<br>JPL-499                                       | B64-10124                   | 05  | Infrared shield facilitates optical pyrometer  |      |
| TELEVISION CAMERA   |                             |     | measurements LANGLEY-133 B65-10272   |      |
| Raster linearity of video came with precision tester            | eras calibrated             |     | TEMPERATURE PROBE  | . 02 |
| GSFC-200  | B64-10209                   | 01  | Internal cooling increases range of<br>immersion-type temperature probe                      |      |
| TELEVISION EQUIPMENT Unijunction frequency divider              | is free of                  |     | LEWIS-171 B65-10157  | 02   |
| backward loading<br>JPL-WOO-010                                 | B65-10112                   | 01  | TEMPERATURE PROFILE  Density trace made with computer printout  GSFC-322  B65-10200          | 0 01 |
| TELEVISION TRANSMISSION  Variable word length encoder           | reduces TV                  |     | TEMPERATURE TRANSDUCER   |      |
| bandwidth requirements LANGLEY-87                               | B65-10345                   | 01  | Transducer measures temperature differentials<br>in presence of strong electromagnetic field | ls   |
|   | 200 10040                   | ••  | ARC-27 B65-10089   | 01   |
| TELLURIUM COMPOUND IR-transmission glasses former               | d from oxides of            |     | Temperature transducer has high output, is time stable                                       |      |
| bismuth and tellurium<br>M-FS-279                               | B65-10190                   | 03  | GSFC-446 B65-10362   | 2 01 |
| TEMPERATURE   |                             |     | TEMPLATE  Lathe converted for grinding aspheric surface                                      |      |
| Two-stage emitter follower is stabilized                        | _                           |     | GSFC-115 B63-10556   | 05   |
| MSC-20 TEMPERATURE COMPENSATION                                 | B63-10493                   | 01  | TENSILE TESTING MACHINE Apparatus facilitates high-temperature tensil                        | e    |
| New low-level A-C amplifier parties able noise cancellation and |                             | _   | testing in vacuum<br>LEWIS-42 B63-10345  | 03   |
| ture compensation ARC-2   | B63-10003                   | 04  | Peel resistance of adhesive bonds accurately measured  |      |
| Simple circuit provides adjus                                   |                             | 04  | GSFC-320 B65-10173   | 03   |
| with linear temperature var<br>JPL-W00-029                      |                             | 01  | Testing device subjects elastic materials to biaxial deformations                            |      |
| TEMPERATURE CONTROL   | 200 1100,                   | • • | JPL-616 B65-10189  | 03   |
| Variable-transparency wall retures of structures                | gulates tempera-            |     | TENSION<br>Buckle joins web straps quickly, adjusts  |      |
| LANGLEY-25  | B63-10528                   | 03  | easily LANGLEY-21 B64-10119  | 9 05 |
| Simple control device senses<br>JPL-638                         | solar position<br>B65-10061 | 01  | Cantilever springs maintain tension in   |      |
| Closed fluid system without m                                   |                             |     | thermally expanded wires LEWIS-136 B65-10149   | 05   |
| controls temperature<br>LEWIS-222                               | B65-10331                   | 02  | TERMINAL   |      |
| Special coatings control temp                                   |                             |     | Feed-through has polyterminal feature<br>M-FS-25 B65-10057                                   | 7 01 |
| structures<br>GSFC-444  | B65-10337                   | 03  | Standoff tool speeds placement of friction-fi  |      |
| TEMPERATURE DIFFERENCE  |                             |     | electrical terminals<br>WOO-029 B65-10348  |      |
| Temperature-compensation circ<br>performance of vidicons        | uit stabilizes              |     | Adhesive-backed terminal board eliminates  |      |
| JPL-486   | B64-10226                   | 01  | mounting screws MSC-173 B65-10396  | 5 01 |
| Feed-through connector withst<br>temperatures in vacuum envi    | ands high<br>ronment        |     | TEST CHAMBER   |      |
| GSFC-442 TEMPERATURE EFFECT                                     | B65-10328                   | 01  | Test device prevents molecular bounce-back<br>GSFC-82 B63-10546                              | 5 03 |
| Hot-air soldering technique p<br>ing of electrical component    |                             |     | Multiple test chamber exposes materials to<br>various environments                           |      |
| GSFC-91   | B63-10536                   | 01  | MSC-179 865-10268  | B 01 |
| TEMPERATURE GRADIENT Packless valve with all-metal              | seal handles                |     | Superconductor shields test chamber from ambient magnetic fields                             |      |
| wide temperature, pressure<br>JPL-361                           |                             | 05  | JPL-627 B65-10297  | 7 02 |
|   |                             |     |  |      |

| TEST EQUIPMENT  Test device prevents molecular bounce  GSFC-82  B                   |          | 03 | sion of components<br>NU-0005  | 865-10053  | 05      |
|---|----------|----|--|------------|---------|
| Machine tests crease durability of sh   | eet      |    | Cantilever springs maintain tension thermally expanded wires                               |            |         |
| materials<br>JPL-604 B  | 64-10178 | 05 | LEWIS-136  | B65-10149  | 05      |
| Circuit converts AM signals to FM for   |          |    | THERMAL INSULATION Variable-transparency wall regulates                                    | s tempera- |         |
| magnetic recording<br>GSFC-227 B  | 65-10001 | 01 | tures of structures<br>LANGLEY-25  | B63-10528  | 03      |
| Fluid pressure used to test turbopump<br>NU-0001 B                                  |          | 03 | THERMAL PROPERTY Indium foil with beryllia washer importantial transistor heat dissipation | Proves     |         |
| Circuit detects errors in address cur<br>magnetic core arrays                       |          |    | GSFC-42  | B63-10033  | 01      |
| H-FS-234 B Piezoresistive gage tests pin-connect                                    |          | 01 | THERMAL PROTECTION  Flexible curtain shields equipment intense heat fluxes                 | î rom      |         |
| sockets   |          | 01 | M-FS-48  | B65-10044  | 03      |
| Force controlled solenoid drives micr   |          |    | THERMAL RADIATION  Variable-transparency wall regulates                                    |            |         |
| tester  |          | 01 | tures of structures LANGLEY-25   | B63-10528  | 03      |
| Testing device subjects elastic mater   | ials to  |    | Refractory metal shielding /insulati   |            |         |
| biaxíal deformations<br>JPL-616 B   | 65-10189 | 03 | increases operating range of induc<br>LEWIS-202  |            | e<br>02 |
| Novel probe simplifies electronic com   | ponent   |    | THERHAL SHOCK  |            |         |
| testing<br>GSFC-342 B   | 65-10243 | 01 | Refractory ceramic has wide usage, l<br>fabrication cost                                   |            |         |
| TEST METHOD  Continuity tester screens out faulty                                   |          |    |  | B63-10481  | 03      |
| connections   |          | 01 | Pigmented coating resists thermal st<br>JPL-SC-083   | B65-10354  | 03      |
| -   | 04~10000 |    | THERMAL STRESS   | _          |         |
| Improved insertion-loss tester<br>JPL-358 B   | 64-10080 | 01 | Flexible fastener allows thermal exp<br>LANGLEY-40   | B64-10145  | 05      |
| Electronic device simulates respiration and depth                                   | on rate  |    | THERNISTOR Temperature-compensation circuit sta  | . b. 1 1   |         |
|   | 64-10255 | 01 | performance of vidicons  | B64-10226  | 01      |
| Apparatus facilitates pressure-testing metal tubing                                 | g of     |    |  |            | 01      |
|   | 65-10131 | 05 | Electronic device simulates respirat<br>and depth<br>MSC-89                                | B64-10255  | 01      |
| Weld leaks rapidly and safely detecte<br>M-FS-362                                   |          | 01 | PTC thermistor protects multiloaded  |            | •-      |
| Test strips detect different CO2  |          | -  | supplies<br>GSFC-236   | B64-10281  | 01      |
| concentrations in closed compartmen   |          | 03 | Thermistor connector assembly increa   |            | 01      |
| THERMAL CONDUCTOR   |          |    | accuracy of measurements LANGLEY-62  | B65-10045  | 01      |
| Cooling method prolongs life of hot-w<br>transducer                                 | ire      |    |  |            | 01      |
|   | 63-10344 | 20 | Wedge immersed thermistor bolometer infrared radiation GSFC-443                            | B65-10330  | 02      |
| Simple transducer measures low heat-to  | ransfer  |    | THERMOCOUPLE   | D03-10330  | 02      |
| ****  | 64-10122 | 01 | Connector for thermocouple leads saw<br>wire, makes reliable connectors                    | es costly  |         |
| THERMAL EFFECT Magnetic field test coils are tempera                                | ****     |    | LANGLEY-26   | B63-10529  | 01      |
| compensated   |          | 02 | Simple circuit continuously monitors thermocouple sensor                                   | ;          |         |
| Light ray modulation controls optical   | system   |    | M-FS-61  | B63-10567  | 01      |
| alignment<br>GSFC-171 Bo  | 65-10211 | 02 | Wide-angle sensor measures radiant h<br>in corrosive atmospheres<br>M-FS-228               | B65-10019  | 05      |
| THERMAL EXPANSION  Flexible fastener allows thermal expan                           | nsion    |    | Metal sheath improves thermocouple u   |            |         |
|   |          | 05 | graphite in one leg  | B65-10051  | 01      |
| Fastener provides cooling and compensation  | ates for |    | Transducer measures temperature diff   |            |         |
| NU-0003 BO  |          | 05 | in presence of strong electromagne<br>ARC-27   |            | 01      |
| Flexure support system protects therm<br>dynamically loaded models<br>LANGLEY-39 Bo |          | 05 | Thermocouple-to-instrumentation conn<br>features quick assembly                            | ector      |         |
| Seal allows blind assembly and therma   |          |    | NU-0022  | B65-10246  | 05      |
|   |          |    |  |            |         |

| Hollow plastic hoops protect thermo<br>in storage and handling   | couple            |     | catalyst bed<br>MSC-216                               | B65-10321               | 03  |
|--|-------------------|-----|---|-------------------------|-----|
| NU-0023  | B65-10256         | 05  |   |                         |     |
| THERMODYNAMIC PROPERTY   |                   |     | TIME DELAY Simple circuit functions as frequen        | cy                      |     |
| Closed fluid system without moving   | parts             |     | discriminator for PFM signals<br>GSFC-267             | B65-10102               | 01  |
| controls temperature<br>LEWIS-222  | B65-10331         | 20  | •   | DOG 10102               | 01  |
| THERMOELECTRIC CONVERSION SYSTEM   |                   |     | TIME FACTOR  Computer modification reduces time       | of                      |     |
| Modular thermoelectric cell is easi  | ly packaged       |     | performing iterative division                         |                         |     |
| in various arrays<br>GSFC-339  | B65-10199         | 01  | M-FS-166  | B65-10005               | 01  |
| THERMOELECTRIC MATERIAL  |                   |     | Temperature transducer has high out time stable       | put, is                 |     |
| Thermoelectric elements diffusion-b  | onded to          |     | GSFC-446  | B65-10362               | 01  |
| tungsten electrodes<br>GSFC-346  | B65-10309         | 01  | Binary counter accumulates time by                    |                         |     |
|  | 200 2000          |     | complementary preset                                  | DCF 18500               |     |
| THERMOMETRY Apparatus measures concentration of  | suspended         |     | MSC-242   | B65-10399               | 01  |
| droplets in gas streams  | B64-10237         | 01  | TIMING APPARATUS  Coincident switch closing reduces e |                         |     |
| LANGLEY-31   | 804-10257         | 01  | motor-driven timer                                    |                         |     |
| THERMOPLASTIC  Vacuum forming of thermoplastic she   | et results        |     | JPL-182   | B63-10143               | 05  |
| in low-cost investment casting pa  | tterns            | 0.5 | Unijunction frequency divider is fr                   | ee of                   |     |
| ARC-7  | B63-10008         | 05  | backward loading<br>JPL-WOO-010                       | B65-10112               | 01  |
| THERMOPLASTIC FILM  Vacuum forming of thermoplastic she  | ot modulto        |     | TIN   |                         |     |
| in low-cost investment casting pa  | itterns           |     | Nickel/tin coating protects threade                   |                         |     |
| ARC-7  | B63-10008         | 05  | fasteners in corrosive environmen<br>MSC-253          | t<br>865-10398          | 03  |
| THIN FILM  | A -1              |     | TIN TELLURIDE   |                         |     |
| Efficient thin film heating element minimum space  | takes             |     | Thermoelectric elements diffusion-b                   | onded to                |     |
| GSFC-289   | B65-10123         | 01  | tungsten electrodes<br>GSFC-346                       | B65-10309               | 01  |
| High permeability semiconductors pe  | ermit             |     |   |                         | -   |
| close-tolerance soldering<br>GSFC-319  | B65-10134         | 05  | TITANIUM  New alloy brazes titanium to stainl         | ess steel               |     |
| Modified developer increases line 1  | engal ution       |     | MSC-102   | B65-10060               | 05  |
| in photosensitive resist   |                   |     | Titanium treatment improves brazed                    |                         |     |
| GSFC-386   | B65-10278         | 01  | MSC-127   | B65-10153               | 05  |
| Improved wire memory matrix uses ve  | ry little         |     | Titanium diaphragm makes excellent<br>cathode support | amplitron               |     |
| power<br>JPL-SC-167  | B65-10359         | 01  | GSFC-394  | B65-10298               | 01  |
| THORIUM OXIDE  |                   |     | TITANIUM ALLOY  |                         |     |
| Thoriated nickel bonded by solid-sol | tate              |     | Galvanic corrosion reduced in alumi fabrications      | num                     |     |
| LANGLEY-116  | B65-10220         | 03  | M-FS-272  | B65-10140               | 03  |
| THRESHOLD  |                   |     | TONOMETRY   |                         |     |
| New sintering process adjusts magne  | etic value        |     | Direct force-measuring transducer w                   | ised in                 |     |
| of ferrite cores<br>GSFC-129   | B63-10606         | 01  | blood pressure research<br>ARC-53                     | 865-10325               | 01  |
| Blocking oscillator uses low trigge  | enina             |     | TOOL  |                         |     |
| voltage  |                   |     | V-slotted screw head and matching d                   |                         |     |
| MSC-58   | B64-10017         | 01  | facilitate insertion and removal fasteners            | of screw                |     |
| THRESHOLD DETECTOR Circuit maintains digital decision  | 4 h m a a b a l d |     | FRC-16  | B63-10023               | 05  |
| at preset level  |                   |     | Special pliers connect hose contain                   | ning liquid             |     |
| M~FS-331   | B65-10281         | 01  | under pressure<br>JPL-IT-1003                         | B63-10291               | 05  |
| Constant-current regulator improve   |                   |     | Heavy-duty staple remover operated                    | hu band                 |     |
| diode threshold-detector perform<br>GSFC-239   | B65-10282         | 01  | JPL-IT-1004   | B63-10292               | 05  |
| Threshold detector produces narrow   | nulses at         |     | Miniature oxygen-hydrogen cutting                     | torch                   |     |
| high repetition rates  | _                 |     | constructed from hypodermic need!<br>JPL-545          | le                      | 0.5 |
| GSFC-383   | B65-10310         | 01  |   | B63-10517               | 05  |
| THRUST Lightweight universal joint transm  | its both          |     | Tool facilitates sealing of metal :<br>MSC-24         | fill tubes<br>863-10519 | 05  |
| torque and thrust JPL-375  |                   | 0.5 | Forming blocks speed production of                    |                         |     |
|  | B63-10236         | 05  | grids   |                         |     |
| THRUST MEASUREMENT Apparatus measures very small thru  | sts               |     | LEWIS-182   | B65-10009               | 05  |
| W00-048  | B64-10284         | 05  | Spring loaded beaded cable makes e                    | fficient                |     |
| THRUSTOR   |                   |     | wire puller<br>WOO-108                                | B65-10031               | 05  |
| Plated nickel wire mesh makes supe   | rior              |     |   |                         |     |

| Screw locking cups quickly and nea<br>NU-0009                         | atly crimped<br>B65-10049 | 05  | Device enables measurement of momen<br>inertia about three axes<br>GSFC-49 |                        |    |
|---|---------------------------|-----|--|------------------------|----|
| Cutter and stripper reduces coaxis                                    | al cable                  |     | GSFC-49  | B65-10176              | 05 |
| connection time ARC-40  | B65-10094                 | 05  | Air brake-dynamometer accurately me:<br>torque                             | asures                 |    |
|   | _                         |     | LEWIS-163  | B65-10312              | 05 |
| Low-cost tool minimizes damage to during installation                 | O-rings                   |     |  |                        |    |
| MSC-140   | B65-10116                 | 05  | Miniature servo accelerometer is for<br>balanced                           | rce-                   |    |
| 1100 140  | DOD 10110                 | 0.5 | JPL-155  | B65-10340              | 01 |
| Lathe attachment used to machine                                      | elliptical                |     | •• = 100   | 200 10040              | •  |
| cones   |                           |     | TORQUE MOTOR   |                        |    |
| MSC-100   | B65-10168                 | 05  | Hydraulic drive system prevents back                                       |                        |    |
| Spiral heater coils hand-formed wi                                    | th firture                |     | JPL-371  | B65-10351              | 05 |
| LEWIS-208   | B65-10192                 | 05  | TORSION  |                        |    |
|   |                           |     | Dispensing system eliminates torsion                                       | n in                   |    |
| Self-aligning fixture used in lati                                    | ne chuck jaw              |     | deployed hoses   |                        |    |
| refacing<br>FRC-21  | B65-10198                 | 05  | MSC-80   | B65-10185              | 05 |
| 1.00 2.1  | 000 10130                 | ••• | TRAILER  |                        |    |
| Handtool facilitates extraction of                                    | circuit                   |     | Compressed gas system operates semi  | trailer                |    |
| modules   |                           |     | brakes during winching operation   |                        |    |
| LANGLEY-38  | B65-10231                 | 05  | JPL-0036   | B64-10306              | 05 |
| Standoff tool speeds placement of                                     | friction-fit              |     | TRANSDUCER   |                        |    |
| electrical terminals  |                           |     | Improved variable-reluctance transd  | ucer meas-             |    |
| ₩00-029   | B65-10348                 | 05  | ures transient pressures   |                        |    |
|   |                           |     | LANGLEY-10   | B63-10321              | 01 |
| Portable tool removes burrs from p                                    | oipe and                  |     | Canlina makkad1 1188 k-4   |                        |    |
| MSC-237   | B65-10360                 | 05  | Cooling method prolongs life of hot-<br>transducer                         | -Wire                  |    |
|   |                           |     | LEWIS-41   | B63-10344              | 02 |
| Portable tool cleans pipes and tub                                    |                           |     |  |                        |    |
| MSC-238   | B65-10375                 | 05  | Device calibrates vibration transduc                                       | cers at                |    |
| Drill bit design assures clean hol                                    | es in                     |     | amplitudes up to 20 G.<br>M-FS-86  | B63-10572              | 01 |
| laminated materials   |                           |     | 11 15 00   | DOG 10072              | 01 |
| W00-098   | B65-10386                 | 05  | Ultra-sensitive transducer advances  | micro-                 |    |
| TOOLING   |                           |     | measurement range  |                        |    |
| Insulated weld tooling permits uni                                    | form high-                |     | ARC-26   | B64-10004              | 01 |
| quality weld  | Torm, Right               |     | Simple transducer measures low heat-                                       | -transfer              |    |
| MSC-42  | B64-10058                 | 05  | rates  |                        |    |
| 6461 44 4   |                           |     | JPL-466  | B64-10122              | 01 |
| Fiberglass dies speed forming of l<br>sheets                          | arge metal                |     | Miniature stress transducer has dire                                       |                        |    |
| H-FS-214  | B65-10210                 | 05  | capability   | sciionai               |    |
|   |                           |     | JPL-591  | B65-10023              | 01 |
| TORCH   | 4                         |     |  |                        |    |
| Miniature oxygen-hydrogen cutting<br>constructed from hypodermic need |                           |     | Seismic transducer measures small he displacements                         | Pizontai               |    |
| JPL-545   | B63-10517                 | 05  | M-FS-81  | B65-10029              | 05 |
|   |                           |     |  |                        |    |
| TOROID  |                           |     | Vibrating-membrane electrometer has  | high                   |    |
| Improved magnetometer uses toroids coil                               | i gating                  |     | conversion gain<br>ARC-38  | B65-10056              | 01 |
| GSFC-249  | B65-10103                 | 01  | ARC 30   | B00-10000              | OI |
|   |                           |     | Noncontacting vibration transducer   | has                    |    |
| Gapped toroid provides infinite re                                    | solution                  |     | constant sensitivity   |                        |    |
| of delay-line pickup<br>GSFC-370                                      | B65-10258                 | 01  | LANGLEY-99   | B65-10392              | 01 |
|   | POO 10230                 | 01  | TRANSFER VEHICLE   |                        |    |
| TORQUE  |                           |     | Dispensing system eliminates torsion                                       | n in                   |    |
| Device transmits rotary motion thr                                    | ough hermet-              |     | deployed hoses   |                        |    |
| ically sealed wall<br>JPL-303   | bez_10100                 | AF  | MSC-80   | B65-10185              | 05 |
| 91.F-000  | B63-10198                 | 05  | TRANSFORMER  |                        |    |
| Lightweight universal joint transm                                    | its both                  |     | Improved insertion-loss tester   |                        |    |
| torque and thrust   |                           |     | JPL-358  | B64-10080              | 01 |
| JPL-375   | B63-10236                 | 05  | Unitable Community Assets to   |                        |    |
| Shock absorber protects motive com                                    | nonente                   |     | Variable frequency transistor inver-<br>mutiple core transformers          | ters use               |    |
| against overloads   |                           |     | GSFC-183   | B65-10119              | 01 |
| W00-092   | B65-10008                 | 05  |  |                        | 72 |
| Slit feeds reduce unbalanced torqu                                    |                           |     | TRANSIENT LOAD   |                        |    |
| gas-lubricated bearings   | es Iu                     |     | Circuit controls transients in SCR :<br>GSFC-120                           | inverters<br>B63-10600 |    |
| JPL-264   | B65-10099                 | 05  | VOI. 0 120   | P09-10000              | 01 |
| <b></b>   |                           |     | TRANSIENT PRESSURE   |                        |    |
| Bidirectional torque filter elimin backlash                           | ates                      |     | Improved variable-reluctance transde                                       | icer meas-             |    |
| GSFC-335  | B65-10148                 | 05  | ures transient pressures<br>LANGLEY-10                                     | 863-10321              |    |
|   | 200 IVI70                 | ••  |  |                        | 01 |
| TORQUE MEASURING APPARATUS  |                           |     | Burst diaphragm protects vacuum vess                                       | sel from               |    |
| Optics used to measure torque at h rotational speeds                  | 1gh                       |     | internal pressure transients   |                        |    |
| LEWIS-13  | B63-10338                 | 01  |  |                        |    |
|   |                           |     |  |                        |    |

| JPL-687  | B65-10236    | 05 | Highly efficient square-wave oscill   | ator oper-           |     |
|--|--------------|----|---|----------------------|-----|
| TRANSISTOR<br>Indium foil with beryllia washer i                       |              |    | ator at high power levels<br>GSFC-112   | B63-10554            | 0   |
| transistor heat dissipation<br>GSFC-42                                 | B63-10033    | 01 | Low-power transistorized circuit pr<br>staircase waveform                         |                      |     |
| Two-stage emitter follower is temp                                     | erature      |    | GSFC-48   | B64-10007            | 0:  |
| stabilized<br>MSC-20   | B63-10493    | 01 | Inexpensive, stable circuit measure rate  | s heart              |     |
|  |              | 01 | MSC-95  | 865-10010            | 0   |
| Transistorized trigger circuit is controllable                         | frequency-   |    | Transistor voltage comparator perfo   | rms own              |     |
| GSFC-111   | B63-10553    | 01 | sensing<br>GSFC-228   | B65-10028            | 01  |
| Highly efficient square-wave oscil ator at high power levels           | lator oper-  |    |   |                      | ٠.  |
| GSFC-112   | B63-10554    | 01 | Pulse height analyzer operates at h<br>repetition rates, low power<br>WOO-046     | B65-10041            | 0 1 |
| Low-power transistorized circuit p<br>staircase waveform               | rovides      |    | Variable voltage supply uses zener  | diode as             |     |
| GSFC-48  | B64-10007    | 01 | reference<br>GSFC-262   | B65-10097            | 01  |
| Temperature-compensation circuit s                                     | tabilizes    |    |   |                      | 0.  |
| performance of vidicons<br>JPL-486                                     | B64~10226    | 01 | Transistorized circuit clamps volta<br>0.1 percent error<br>GSFC-196              | ge with<br>B65-10118 | 01  |
| Transistorized converter provides tive regulation                      | nondissipa-  |    | Sensitive electrometer features dig   |                      | •   |
| GSFC-238   | B64-10305    | 01 | output  |                      |     |
| Pulse generator permits nondestruc                                     | tive         |    | GSFC-288  | B65-10206            | 01  |
| testing of component breakdown v<br>MSC-122                            | B65-10054    | 01 | High-speed square-wave current limi<br>operates efficiently<br>JPL-SC-073         | ter<br>B65-10233     | 0:  |
| Feedback oscillator functions as l<br>pulse stretcher                  | ow-level     |    | Simple circuit reduces transistor s   | witching             |     |
| GSFC-261   | B65-10069    | 01 | time<br>GSFC-314  | B65-10234            | 0:  |
| Unijunction frequency divider is f                                     | ree of       |    |   |                      | U.  |
| backward loading<br>JPL-WOO-010  | B65-10112    | 01 | Increased junction lead inductance<br>high-frequency transistors<br>GSFC-387      | B65-10259            | •   |
| Digital-output cardiotachometer me                                     | asures rapid |    |   |                      | 01  |
| changes in heartbeat rate<br>MSC-133                                   | B65-10143    | 01 | Hybrid circuit achieves pulse regen<br>with low power drain<br>GSFC-382           | eration<br>B65-10314 | 0 1 |
| Constant-current regulator improve diode threshold-detector perform    | s tunnel     |    |   |                      | ٠.  |
| GSFC-239   | B65-10282    | 01 | High-intensity flashing beacon powe<br>mercury cells<br>LANGLEY-80                | B65-10361            | 0:  |
| Boron nitride housing cools transi<br>WOO-079                          | 865-10289    | 01 | TRANSIT TIME  |                      |     |
| Insulator-holder protects transist                                     | ors in dense |    | Instrument calibrates low gas-rate MSC-134  | B65-10137            | 0   |
| electronic assemblies<br>MSC-214                                       | B65-10389    | 01 | TRANSMISSION  |                      |     |
| TRANSISTOR AMPLIFIER   |              |    | Lightweight universal joint transmi<br>torque and thrust                          | ts both              |     |
| New low-level A-C amplifier provid<br>able noise cancellation and auto |              |    | JPL-375   | B63-10236            | 0   |
| ture compensation  | •            |    | IR-transmission glasses formed from   | oxides of            |     |
| ARC-2  | B63-10003    | 04 | bismuth and tellurium<br>M-FS-279   | B65-10190            | 0:  |
| High-gain amplifier has excellent and low power consumption            | stability    |    | TRANSMISSION LINE   |                      |     |
| GSFC-272   | B65-10138    | 01 | Double-throw microwave device switc<br>lines quickly                              | hes two              |     |
| Tiny biomedical amplifier combines performance, low power drain        | high         |    | JPL-410   | B63-10258            | .0  |
| ARC-41   | B65-10203    | 01 | Plastic molds reduce cost of encaps electric cable connectors                     | ulating              |     |
| Field effect transistor presents h                                     | igh input    |    | M-FS-69   | B63-10568            | 0   |
| impedance in AC amplifier<br>JPL-500                                   | B65-10232    | 01 | High-pass RF coaxial filter rejects   | DC and low           |     |
| TRANSISTOR CIRCUIT   |              |    | frequency signals<br>GSFC-73  | B64-10173            | 0   |
| Igniting system for mercury vapor tects transistorized sustaining      | supply       |    | Electrical cable connector-clamp ha   | s smooth             |     |
| JPL-421  | B63-10262    | 01 | exterior surface<br>MSC-154   | B65-10201            | 0   |
| Two-stage emitter follower is temp<br>stabilized                       | erature      |    | Oscillator circuit measures liquid  |                      |     |
| MSC-20   | B63-10493    | 01 | tanks<br>M-FS-245   |                      | •   |
| Transistorized trigger circuit is                                      | frequency-   |    |   | B65-10209            | 0   |
| controllable<br>GSFC-111   | B63-10553    | 01 | TRANSMITTER Tiny sensor-transmitter can withsta acceleration, gives digital outpu |                      |     |

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| ARC-22  | B63-10561   | 01  | Connector for vacuum-jacketed lines co  | uts                   |
|---|-------------|-----|---|-----------------------|
| Subminiature biotelemetry unit perm                         | its remote  |     | tubing system cost<br>LEWIS-66 BG   | 63-10367 05           |
| physiological investigations<br>ARC-39                      | B64-10171   | 01  | Composite, vacuum—jacketed tubing rep   | laces                 |
| Helical coaxial-resonator makes exc                         | ellent      |     | bellows in cryogenic systems LEWIS-67 BG                                      | 63-10368 05           |
| RF filter<br>GSFC-243                                       | B65-10012   | 0.1 |   |                       |
|   |             | 01  | Apparatus facilitates pressure-testing metal tubing                           | _                     |
| Solid-state laser transmitter is am modulated               | biiidae     |     | LEWIS-174 Bo  | 65-10131 05           |
| MSC-121   | B65-10238   | 01  | Metal bellows custom-fabricated from B<br>LEWIS-192                           | tubing<br>65-10150 05 |
| TRANSPARENCY Variable-transparency wall regulate            | e tempera-  |     | Dispensing system eliminates torsion  | in                    |
| tures of structures   |             |     | deployed hoses  |                       |
| LANGLEY-25  | B63-10528   | 03  | MSC-80 Be   | 65-10185 05           |
| TRANSPONDER Oceanborne transponder platform has             | good        |     | Angular glass tubing drawn from round<br>HQ-20                                | tubing<br>65-10235 05 |
| stability<br>M-FS-171                                       | B65-10035   | 05  | Portable tool removes burrs from pipe   | and                   |
| Frequency offset in linear FM/CW tr                         | ansponder   |     | tubing  | 65-10360 05           |
| eliminates clutter  |             |     |   |                       |
| M-FS-249  | B65-10146   | 01  | Tungsten wire and tubing joined by ni-<br>brazing                             | ckel                  |
| TRAVELING WAVE MASER  |             |     | M-FS-394 B  | 65-10391 05           |
| Superconductor magnets used for sta<br>traveling-wave maser | gger-tuning |     | TUNGSTEN  |                       |
| GSFC-292  | B65-10165   | 01  | Apparatus facilitates high-temperatur   | e tensile             |
| TRAVELING WAVE TUBE   |             |     | testing in vacuum<br>LEWIS-42 B   | 63-10345 03           |
| Traveling-wave tube circuit simplif                         | ies         |     |   |                       |
| microwave relay<br>GSFC-299                                 | B65-10127   | 01  | Novel clamps align large rocket cases<br>eliminate back-up bars               | •                     |
|   |             |     |   | 63-10376 05           |
| TRICHLOROETHANE Organic reactants rapidly produce p         | lastic foam |     | Pressure molding of powdered material   | 5                     |
| LANGLEY-37  | B65-10288   | 03  | improved by rubber mold insert  |                       |
| TRUSS   |             |     | WOO-100 B   | 64-10270 03           |
| Collapsible truss structure is auto                         | matically   |     | Jig and fixture aid fabrication of tu   | ngsten                |
| expandable<br>GSFC-265                                      | B65-10126   | 05  | rivets<br>LEWIS-185 B   | 65-10101 05           |
| TUBE  |             |     | Tantalum cathode improves electron-be   |                       |
| Self sealing disconnect for tubing                          | forms metal |     | evaporation of tantalum   | om.                   |
| seal after breakaway<br>JPL-354                             | B63-10226   | 05  | JPL-W00-021 B   | 65-10175 03           |
| JFL-354   | B63-10226   | 03  | Thermoelectric elements diffusion-bon   | ded to                |
| Filter for high-pressure gases has                          | easy take-  |     | tungsten electrodes<br>GSFC-346 B   | 65-10309 01           |
| down, assembly<br>JPL-373                                   | B63-10234   | 03  | 631 C-340   | 10003 01              |
| Helical tube separates nitrogen gas                         | from        |     | Tungsten wire and tubing joined by ni<br>brazing                              | ckel                  |
| liquid nitrogen   |             |     |   | 65-10391 <b>0</b> 5   |
| JPL-398   | B63-10251   | 05  | TUNGSTEN INERT GAS /TIG/ WELDING  |                       |
| Break-up of metal tube makes one-ti                         | me shock    |     | Refractory metals welded or brazed wi   | th                    |
| absorber, bars rebound<br>LANGLEY-1A                        | B63-10304   | 05  | tungsten inert gas equipment<br>LEWIS-219 B                                   | 65-10319 05           |
| Tool facilitates sealing of metal f                         | :11 Aub     |     | Tungsten wire and tubing joined by ni   | akal                  |
| MSC-24  | B63-10519   | 05  | brazing   |                       |
| Metal strip forms 21 foot boom, rol                         | le un for   |     | M-FS-394 B  | 65-10391 05           |
| compact storage   | is up for   |     | TUNNEL DIODE  |                       |
| GSFC-151  | B64-10011   | 05  | Monostable circuit with tunnel diode recovery                                 | has fast              |
| New nut and sleeve improve flared c                         |             |     |   | 63-10603 01           |
| M-FS-194  | B65-10180   | 05  | Tunnel-diode circuit features zero-le   | evel                  |
| Strainer fits inside flared-tube fi                         |             |     | clipping  |                       |
| LANGLEY-180   | B65-10388   | 05  | GSFC-241 B  | 365-10002 <b>0</b> 1  |
| TUBING  |             |     | Simple circuit produces high-speed, f   | ixed                  |
| Sleeve and cutter simplify disconne welded joint in tubing  | cting       |     | duration pulses<br>GSFC-285   | 65-10228 01           |
| JPL-384   | B63-10240   | 05  |   |                       |
| Helical tube separates nitrogen gas                         | from        |     | Constant-current regulator improves t<br>diode threshold-detector performance | e                     |
| liquid nitrogen<br>JPL-398                                  |             | ٥E  | GSFC-239  | 365-102B2 01          |
| ALT_920   | B63-10251   | 05  | TURBINE WHEEL   |                       |
| Special pliers connect hose contain under pressure          | ing liquid  |     | Ball bearing used in design of rugged meter                                   | i flow-               |
| JPL-IT-1003   | B63-10291   | 05  |   | 364-10170 <b>0</b> 5  |

| TURBOPUMP Fluid pressure used to test turbopum                           | np bearings<br>B65-10024 | 03  | VACUUM EQUIPMENT Connector for vacuum-jacketed lines                       | cuts      |     |
|--|--------------------------|-----|--|-----------|-----|
| NU-0001  | B05-10024                |     | tubing system cost<br>LEWIS-66   | B63-10367 | 05  |
| U  |                          |     | Spherical electrode eliminates high-                                       | vol tage  |     |
| ULTRAHIGH VACUUM  Precision gage measures ultrahigh va                   | acuum                    |     | breakdown<br>LEWIS-155   | B65-10139 | 01  |
| levels<br>GSFC-114   | B63-10597                | 01  | Heater decomposes oil backstreaming  | from      |     |
| Ion pump provides increased vacuum p                                     | numning                  |     | high-vacuum pumps<br>GSFC-356  | B65-10224 | 02  |
| speed  | - ·                      | 40  |  |           | 02  |
| NEO-13   | B65-10239                | 02  | Burst diaphragm protects vacuum vess<br>internal pressure transients       |           |     |
| Baking enables McLeod gauge to measuultrahigh vacuum range               | ire in                   |     | JPL-687  | B65-10236 | 05  |
| GSFC-440   | B65-10329                | 01  | Feed-through connector withstands hi<br>temperatures in vacuum environment |           |     |
| ULTRASONIC AGITATION   |                          |     | GSFC-442   |           | 01  |
| High purity electroforming yields sometal models                         | -                        |     | VACUUM FURNACE   |           |     |
| ARC-6  | B63-10007                | 05  | Radiant heater for vacuum furnaces of structural rigidity, low heat loss   |           |     |
| ULTRASONIC MACHINING High purity electroforming yields so                | inerior                  |     | LEWIS-39   |           | 01  |
| metal models   |                          | 05  | New cobalt alloys have high-temperat                                       |           |     |
| ARC-6  | B63-10007                | US  | strength and long life in vacuum e<br>LEWIS-47                             |           | 03  |
| ULTRAVIOLET LIGHT Oil-smeared models aid wind tunnel                     |                          |     | VACUUM GAUGE   |           |     |
| measurements<br>LANGLEY-4  | B63-10311                | 03  | Ionization vacuum gage starts quick!<br>unaffected by spurious currents    | ly, is    |     |
|  |                          | ••  | JPL-304  | B65-10036 | 02  |
| UNDERWATER VEHICLE Device measures fluid drag on test                    |                          |     | Instrument accurately measures extre                                       | emely low |     |
| LANGLEY-34   | B65-10195                | 01  | air densities<br>M-FS-193  | B65-10221 | 01  |
| UNMANNED SPACECRAFT Rotor position sensor switches curre                 | ents in                  |     | VACUUM MELTING   |           |     |
| brushless Dc motors  |                          |     | Vacuum forming of thermoplastic shee                                       |           |     |
| GSFC-315   | B65-10151                | 01  | in low-cost investment casting par<br>ARC-7                                | B63-10008 | 05  |
| V  |                          |     | VACUUM PUMP  |           |     |
| VACUUM  New cobalt alloys have high-tempera                              | ture                     |     | Fine-particle filter prevents damage pumps                                 | to vacuum |     |
| strength and long life in vacuum of LEWIS-47                             |                          | 03  | LEWIS-106  | B63-10489 | 05  |
|  |                          | 03  | Ion pump provides increased vacuum p                                       | oumping   |     |
| Connector seals fluid lines at cryo<br>temperatures and high vacuums     | genic                    |     | speed<br>NEO-13  | B65-10239 | 02  |
| GSFC-253   | B64-10327                | 05  | VACUUM SYSTEM  |           |     |
| VACUUM CHAMBER Cryopumping of hydrogen in vacuum cl                      | hambona ia               |     | Instrument accurately measures extra<br>air densities                      | emely low |     |
| aided by catalytic oxidation of h  | ydrogen                  |     | M-FS-193   | B65-10221 | 01  |
| LEWIS-15   | B63-10340                | 05  | VACUUM TUBE  |           |     |
| Apparatus facilitates high-temperate testing in vacuum                   | ure tensile              |     | Composite, vacuum-jacketed tubing re<br>bellows in cryogenic systems       | eplaces   |     |
| LEWIS-42   | B63-10345                | 03  | LEWIS-67   | B63-10368 | 05  |
| Modified rf coaxial connector ends                                       | vacuum                   |     | Cesium iodide crystals fused to vac  | ium tube  |     |
| chamber wiring problem<br>GSFC-150                                       | B64-10010                | 01  | faceplates<br>GSFC-67  | B63-10476 | 03  |
| Vapor pressure measured with inflat.                                     | able                     |     | Emission tester for high-power vacua                                       | um tubes  |     |
| plastic bag<br>GSFC-281  | B65-10136                | 03  | JPL-628  | B64-10158 | 01  |
| Heater decomposes oil backstreaming                                      |                          | ••• | VACUUM ULTRAVIOLET   |           |     |
| high-vacuum pumps  |                          |     | Fresnel zone plate forms images at a below 1000 angstroms                  | •         |     |
| GSFC-356   | B65-10224                | 02  | GSFC-231   | B65-10171 | 02  |
| Electron bombardment improves vacuu efficiency                           | m chamber                |     | VALUE High-pressure regulating system pre-                                 | vents     |     |
| LEWIS-160  | B65-10280                | 02  | pressure surges JPL-231  |           | ۰.  |
| VACUUM DEPOSITION  |                          |     |  | B63-10170 | 05  |
| Vacuum forming of thermoplastic she<br>in low-cost investment casting pa | et results<br>tterns     |     | Packless valve with all-metal seal   wide temperature, pressure range      | handles   |     |
| ARC-7  | B63-10008                | 05  | JPL-361  | B63-10228 | 0.5 |
| Efficient thin film heating element minimum space                        | takes                    |     | Design of valve permits sealing even                                       | n if the  |     |
| GSFC-289   | B65-10123                | 01  | LEWIS-38   | B63-10341 | 05  |
|  |                          |     | High-temperature, high-pressure sph  | erical    |     |

| segment valve provides quick oper ARC-13                            | ning<br>B63-10431 | 05  | VIBRATION  Adhesive for vacuum environments resists                                | shock       |
|---|-------------------|-----|--|-------------|
| Gate valve with ceramic-coated base                                 | e operates        |     | and vibration MSC-56 B65-  | 10016 03    |
| at high temperatures<br>ARC-23                                      | B63-10562         | 03  |  |             |
|   |                   | Ų3  | Nonresonant support facilitates vibratio testing of structures                     |             |
| Multiple port pressure scanner valugreater accuracy, quicker data   |                   |     | M-FS-224 B65-  | 10039 05    |
| JPL-555   | B64-10031         | 05  | Rack mount device quickly inserts or ext chassis units                             | racts       |
| Blade valve isolates compartment is opens to allow free flow        | n pipe,           |     | NSC-244 B65-   | 10385 05    |
| JPL-585   | B64-10188         | 05  | VIBRATION ABSORBER Thermally conductive metal wool-silicone                        |             |
| Two-part valve acts as quick coupl                                  |                   |     | rubber material can be used as shock a   |             |
| JPL-478   | B64-10223         | 05  | vibration damper<br>JPL-321 B63-   | 10207 03    |
| Valve designed with elastic seat JPL-442                            | B65-10040         | 05  | VIBRATION DAMPER   |             |
| Averaging probe reduces static-pre                                  | ssure             |     | Shock mount isolates pressure transducer vibration                                 | s from      |
| sensing errors<br>LANGLEY-36  | B65-10114         | 05  |  | 10113 05    |
|   |                   | ••• | VIBRATION DAMPING  |             |
| Pressure responsive seal handles si<br>dynamic loads                |                   |     | Thermally conductive metal wool-silicone<br>rubber material can be used as shock a |             |
| GSFC-441  | B65-10327         | 05  | vibration damper<br>JPL-321 B63-   | 10207 03    |
| Improved poppet valve provides post<br>damageproof seal             | itive             |     | Frictional wedge shock mount is inexpens   | ive,        |
| M-FS-293  | B65-10346         | 05  | has good damping characteristics<br>JPL-IT-1001 B63-                               | -10289 05   |
| Respiratory transfer value has fai. feature                         | l-safe            |     | Lightweight load support serves as vibra   | tion        |
| ARC-1   | B65-10369         | 01  | damper   | -10144 05   |
| VAPOR DEPOSITION  |                   |     |  | 10144 03    |
| Economical fabrication process pro-<br>quality junction transistors | -                 |     | Gil-damped mercury pool makes precise<br>optical alignment tool                    |             |
| JPL-SC-065  | B64-10330         | 01  | GSFC-353 865-  | -10253 02   |
| Tantalum cathode improves electron-<br>evaporation of tantalum      | -beam             |     | VIBRATION MEASUREMENT Transducer senses displacements of panel                     | . 5         |
| JPL-W00-021   | B65-10175         | 03  | subjected to vibration   | -10085 01   |
| Boron carbide whiskers produced by deposition                       | vapor             |     | VIBRATION MEASURING APPARATUS  | 10000       |
| HQ-24   | B65-10261         | 03  | Device calibrates vibration transducers  | at          |
| VAPOR PRESSURE  |                   |     | amplitudes up to 20 G.<br>M-FS-86 B63-   | 10572 01    |
| Vapor pressure measured with infla-<br>plastic bag                  | table             |     | Noncontacting vibration transducer has   |             |
|   | B65-10136         | 03  | constant sensitivity   | -10392 01   |
| VARIATION METHOD  | •                 |     | VIBRATION PROTECTION   | 10030 01    |
| Transistorized trigger circuit is controllable                      | • -               |     | Improved holder protects crystal during  | high        |
| GSFC-111  | B63-10553         | 01  | acceleration and impact JPL-463 B65-   | -10037 05   |
| VEITCH DIAGRAM  Veitch diagram plotter simplifies                   | boolean           |     | Wire mesh isolator protects sensitive el   | ec-         |
| functions<br>JPL-385  | B63-10241         | 05  | tronic components GSFC-347 B65-  | -10216 05   |
| unt natev   |                   |     |  |             |
| VELOCITY  Low-cost tape system measures velocity                    | city of           |     | VIBRATION TESTING MACHINE System transmits mechanical vibration in                 | ito         |
| acceleration<br>GSFC-85   | B63-10512         | 01  | hazardous environment<br>NU-0025 B65-  | -10248 05   |
| Digital system accurately controls                                  |                   | -   | VIDICON  |             |
| of electromechanical drive<br>GSFC-287                              |                   |     | Raster linearity of video cameras calibrates with precision tester                 | rated       |
|   | B65-10096         | 01  |  | -10209 01   |
| VELOCITY MEASUREMENT Low-cost tape system measures velo             | city of           |     | Temperature-compensation circuit stabili   | zes         |
| acceleration<br>GSFC-85   | B63-10512         | 01  | performance of vidicons JPL-486 B64-   | -10226 01   |
| VENT  |                   |     | Detector circuit compensates for vidicor   | ı beam      |
| Vented piston seal prevents fluid between two chambers              | leakage           |     | current variations   | -10212 01   |
| JPL-179   | B63-10141         | 05  |  | <b>-</b> •• |
| VESSEL  |                   |     | VISCOUS DAMPING Viscous-pendulum damper suppresses struc                           | ctural      |
| Method of welding joint in closed                                   | vessel            |     | vibrations   |             |
| improves quality of seam JPL-170                                    | B63-10139         | 05  | LANGLEY~45 B64-  | -10272 05   |
|   |                   |     | Monagement suppose facilitates "ilti   | 310         |

| testing of structures<br>M-FS-224                                 | B65-10039                 | 05         | Modular thermoelectric cell is easily in various arrays                               | • •        |    |
|---|---------------------------|------------|---|------------|----|
| VISUAL DISPLAY  |                           |            |   | B65-10199  | 01 |
| Digital cardiometer computes and dis<br>heartbeat rate<br>MSC-93  | B64-10258                 | 01         | VOLTAGE BREAKDOWN  Spherical electrode eliminates high- breakdown                     | voltage    |    |
| Pneumotachometer counts respiration                               | rate of                   |            | LEWIS-155   | B65-10139  | 01 |
| human subject<br>MSC-92   | B64-10259                 | 01         | VOLTAGE GENERATOR Pressure sensor responds only to sho M-FS-238                       |            | 01 |
| VISUAL OBSERVATION Use of photographs speeds inspection           | of                        |            | VOLTAGE REGULATOR   |            |    |
| printed-circuit boards<br>MSC-72                                  | B64-10118                 | 01         | Field effect transistors used as vol<br>controlled resistors<br>M-FS-174              | -          | 01 |
| VISUAL PERCEPTION Distant objects detected visually wi            | + h                       |            |   |            | •  |
| optical filters   |                           |            | Transistorized converter provides no tive regulation                                  | -          |    |
|   | B65-10252                 | 02         |   |            | 01 |
| VOLATILITY  New cobalt alloys have high-temperat                  |                           |            | Inductor flyback characteristic give<br>regulator fast response                       |            |    |
| strength and long life in vacuum e<br>LEWIS-47                    | environments<br>B63-10351 | 03         |   |            | 01 |
| VOLT-AMPERE CHARACTERISTICS Didymium compound improves nickel-ca  | admium                    |            | Constant-current regulator improves<br>diode threshold-detector performan<br>GSFC-239 | ce         | 01 |
|   | B65-10083                 | 03         | VOLTMETER Digital-output cardiotachometer meas  | ures rapid |    |
| VOLTAGE Igniting system for mercury vapor la                      | amne nro-                 |            | changes in heartbeat rate   | _          | 01 |
| tects transistorized sustaining su<br>JPL-421                     |                           | 01         |   | 200 10140  | 01 |
| Two-stage emitter follower is temper                              |                           | 01         | VOLUME Volumetric system calibrates meters flow rates                                 | for large  |    |
| stabilized<br>MSC-20  | B63-10493                 | 01         |   | B65-10323  | 05 |
| Simple circuit provides adjustable v                              |                           |            | W   |            |    |
| with linear temperature variation<br>JPL-WOO-029                  |                           | 01         | WALL Device transmits rotary motion throu   | ah hormot- |    |
| Transistorized trigger circuit is fi                              |                           | <b>V</b> 2 | ically sealed wall  | B63-10198  | 05 |
| controllable GSFC-111   | B63-10553                 | 01         | Shaped superconductor cylinder retai  |            | US |
| Liquid switch is remotely operated b                              |                           |            | magnetic field  | B63-10238  | 01 |
| voltage   | B63-10599                 | 01         | Test device prevents molecular bounc  |            |    |
| Temperature-sensitive network drives                              | s astable                 |            |   | B63-10546  | 03 |
| multivibrator<br>GSFC-137   | B63-10609                 | 01         | WALL TEMPERATURE DISTRIBUTION  Variable-transparency wall regulates                   | tempera-   |    |
| Efficient circuit triggers high-cur                               | rent, high-               |            | tures of structures<br>Langley-25   | B63-10528  | 03 |
| voltage pulses<br>MSC-14  | B64-10024                 | 01         | WASHER  |            |    |
| Auxiliary silver electrode eliminate                              |                           |            | New package for belleville spring pe<br>change, easy disassembly                      |            |    |
| voltage discharge characteristic o                                |                           |            |   | B63-10247  | 05 |
|   | B64-10114                 | 01         | Composite seal reduces alkaline batt<br>leakage                                       | -          |    |
| Voltage generator sweeps oscillator linearly with time            | -                         |            |   | B65-10271  | 01 |
| M-FS-219  | B64-10320                 | 01         | WATER PURIFICATION  Emergency solar still desalts seawat                              |            |    |
| Bandwidth switching is transient-fre<br>loss of loop lock         |                           |            |   | B65-10214  | 03 |
| WOO-054   | B64-10349                 | 01         | WAVE Auxiliary circuit enables automatic  | monitoring |    |
| Transistor voltage comparator performance sensing                 | rms own                   |            | of EKG<br>MSC-106   | B65~10142  | 01 |
| GSFC-228  | B65-10028                 | 01         | WAVE ATTENUATION  |            |    |
| Variable voltage supply uses zener of<br>reference<br>GSFC-262    |                           | •          | Modified filter prevents conduction wave signals along high-voltage po                |            |    |
|   | B65-10097                 | 01         | leads<br>JPL-63   | B63-10091  | 01 |
| Variable load automatically tests de<br>supplies                  |                           |            | WAVE GENERATION   |            |    |
| GSFC-291  | B65-10105                 | 01         | Variable frequency magnetic multivib<br>generates stable square-wave outpu            |            |    |
| Digital-output cardiotachometer mea:<br>changes in heartbeat rate | sures rapid               |            |   | B65-10124  | 01 |
| MSC-133   | B65-10143                 | 01         |   |            |    |

| WAVE INCIDENCE CONTROL Reference black body is compact, | convenient to      |     | M-FS-287 B65-  | -10342 05      |
|---|--------------------|-----|--|----------------|
| use<br>arc-3  | B63-10004          | 03  | WELDING  Method of welding joint in closed vessel                                  | 1              |
| WAVEFORM  |                    |     | improves quality of seam  JPL-170  B63-  | -10139 05      |
| Low-power transistorized circuit                        | provides           |     |  |                |
| staircase waveform<br>GSFC-48                           | B64-10007          | 01  | Sleeve and cutter simplify disconnecting<br>welded joint in tubing<br>JPL-384 B63- | g<br>-10240 05 |
| Improved electrode gives high-qua                       | lity               |     | 912 304 pus-   | -10240 03      |
| biological recordings<br>MSC-17                         | B64-10025          | 04  | Novel clamps align large rocket cases,<br>eliminate back-up bars                   |                |
|   |                    |     |  | -10376 05      |
| Analog device simulates physiolog                       | ical               |     | C  |                |
| MSC-51  | B64-10109          | 01  | Compact coaxial connector for printed ci<br>adds reliability                       | ircuit         |
| WAVEGUIDE   |                    |     | MSC-57 B64-  | -10016 01      |
| Cryogenic waveguide window is sea                       | led with           |     | Welding procedure improves quality of we   | elds.          |
| plastic foam<br>JPL-559                                 | B63-10613          | 0.1 | offers other advantages  |                |
| JPL-559   | D63-10613          | 01  | M-FS-32 B64-   | -10309 01      |
| WEAR  |                    |     | Inert-gas welding and brazing enclosure  |                |
| Improved fluid control valve exte                       | nds dlaphraga      |     | fabricated from sheet plastic<br>LEWIS-220 B65-                                    | -10338 05      |
| JPL-345   | B65-10147          | 05  |  | 11000          |
| Dispensing system eliminates tors                       | ion in             |     | WELDING MACHINE Refractory metals welded or brazed with                            |                |
| deployed hoses  |                    |     | tungsten inert gas equipment   |                |
| MSC-80  | 865-10185          | 05  | LEWIS-219 B65-   | -10319 05      |
| WEB   |                    |     | WHEATSTONE BRIDGE  |                |
| Novel shock absorber features var<br>strengths          | ying yield         |     | Electronic ohmmeter provides direct digi output                                    | ital           |
| MSC-63A   | B64-10138          | 03  |  | -10274 01      |
| VEDGE   |                    |     | Photoresistance analog multiplier has wi   |                |
| Frictional wedge shock mount is i                       |                    |     | range  | iue            |
| has good damping characteristic<br>JPL-IT-1001          | :s<br>863-10289    | 05  | GSFC-360 B65-  | -10287 01      |
|   | poo 10203          | •0  | Improved strain-wire flowmeter has fast  |                |
| WEIGHT Regenerative fuel cell combines h                | iah                |     | response time<br>LEWIS-241 865-  | -10304 01      |
| efficiency with low cost                                | . i yn             |     | LE#13-241 B65-   | -10304 01      |
| W80-090   | B65-10363          | 01  | WHISKER Boron carbide whiskers produced by vapor                                   | _              |
| WELD STRENGTH   |                    |     | deposition   | г              |
| Probe tests microweld strength WOO-118                  | B65-10111          | 05  | HQ-24 B65-   | -10261 03      |
| #00-110   | p03-10111          | 03  | WIND PROFILE   |                |
| WELDED JOINT  Method of welding joint in closed         |                    |     | New anemometer has fast response, measur   | res            |
| improves quality of seam                                | vessel             |     | dynamic pressure directly LANGLEY-28 B63-  | -10530 05      |
| JPL-170   | B63-10139          | 05  | Daniel confirm to the bilitary of the  |                |
| Sleeve and cutter simplify discon                       | necting            |     | Rough surface improves stability of air-<br>sounding balloons                      | -              |
| welded joint in tubing<br>JPL-384                       | 967 10040          | 05  | M-FS-320 B65-  | -10326 05      |
| JPL-304   | B63-10240          | 05  | WIND TUNNEL  |                |
| Force controlled solenoid drives                        | microweld          |     | Flexible fastener allows thermal expansi   |                |
| tester<br>WOD-125                                       | B65-10182          | 01  | LANGLEY-40 B64-  | -10145 05      |
| Unid lasks wastalu                                      |                    |     | WIND TUNNEL MODEL  |                |
| Weld leaks rapidly and safely det<br>M-FS-362           | ected<br>B65-10265 | 01  | Oil-smeared models aid wind tunnel measurements                                    |                |
| WELDED STRUCTURE  |                    |     |  | -10311 03      |
| Vacuum-type backup bar speeds wel                       | d repairs          |     | Welded pressure transducer made as small   | l as           |
| M-FS-12   | B63-10384          | 05  | 1/8th-inch in diameter   |                |
| Compact coaxial connector for pri                       | nted circuit       |     | ARC-11 B63-  | -10429 03      |
| adds reliability  |                    |     | Flexible fastener allows thermal expansi   |                |
| MSC-57  | B64-10016          | 01  | LANGLEY-40 B64-  | -10145 05      |
| Insulated weld tooling permits un quality weld          | iform, high-       |     | WINDOV   | • •            |
| MSC-42  | B64-10058          | 05  | Cryogenic waveguide window is sealed with plastic foam                             | t R            |
| Unentting butt  |                    |     | JPL-559 B63-   | -10613 01      |
| Upsetting butt edge increases wel strength              | a-loius            |     | WIRE   |                |
| M-FS-175  | B64-10164          | 05  | Cooling method prolongs life of hot-wire   | e              |
| Magnets position X-ray film for w                       | eld                |     | transducer<br>LEWIS-41 B63-  | -10344 02      |
| inspection  |                    |     |  |                |
| M-FS-253  | B65-10110          | 05  | Connector for thermocouple leads saves of wire, makes reliable connectors          | costly         |
| Electromagnetic hammer removes we                       |                    |     |  | -10529 01      |
| distortions from aluminum tanks                         | •                  |     |  |                |

| Cantilever springs maintain tension  | in   |                      | Variable voltage supply uses zener                      | diode as    |    |
|--|--|----------------------|---|-------------|----|
| thermally expanded wires   | ncs 10140  | 05                   | reference<br>GSFC-262                                   | DCE 10002   | 01 |
| LEWIS-136  | B65-10149  | 0.5                  | 63FC-202  | B65-10097   | 01 |
| Improved solderless connector is ea  | sily   |                      | Zener diode controls switching of                       | large       |    |
| disconnected<br>JPL-SC-060   | B65-10197  | 01                   | direct currents<br>MSC-188                              | B65-10350   | 01 |
| 3FE-3C-060   | D03-10197  | 01                   | 1150 200  | DOG 10000   | 01 |
| Improved wire memory matrix uses ve  | ry little  |                      | ZERO GRAVITY  |             |    |
| power<br>JPL-SC-167  | B65~10359  | 01                   | Magnetic fluid readily controlled gravity environment   | in žero     |    |
| 01 L 30 107  | DOC 10005  | <b>-</b>             | LEWIS-126   | 865-10335   | 03 |
| Vacuum chamber provides improved in  | sulation   |                      | TTNA  |             |    |
| and support for cryostat<br>M-FS-415   | R65-10368  | 02                   | ZINC  New method used to fabricate galli                | um arsenide |    |
| 11 10 410  | 200 14000  |                      | photovoltaic device                                     |             |    |
| Wire bundle formed into grids with   | minute   |                      | WDO-062   | B64-10019   | 01 |
| interstices<br>WOO-089   | B65-10372  | 03                   | Adherent protective coatings plate                      | d on        |    |
|  |  |                      | magnesium-lithium alloy                                 |             |    |
| Tungsten wire and tubing joined by   | nickel   |                      | M-FS-365  | B65-10294   | 03 |
| brazing<br>M–FS-394  | B65-10391  | 05                   | ZINC ALLOY  |             |    |
|  |  |                      | New brazing alloy eliminates metal                      | -stress     |    |
| Wire mesh isolator protects sensiti  | ve elec-   |                      | cracking<br>WOO-249                                     | B65-10397   | 03 |
| tronic components  | Ae elec-   |                      | WUU-249   | DO3-10397   | 03 |
| GSFC-347   | B65-10216  | 05                   | ZIRÇONIUM OXIDE   |             |    |
| Three-dimensional wire-mask as   | on queto-  |                      | Refractory oxides evaluated for<br>high-temperature use |             |    |
| Three-dimensional wire-mesh capacit measures fluid density   | or agatem  |                      | high-temperature use<br>LANGLEY-121                     | B65-10167   | 03 |
| W00-194  | B65-10379  | 01                   |   |             |    |
| CA 8:A- iid- 81d Aub. 8:   | **!  |                      |   |             |    |
| Strainer fits inside flared-tube fi<br>LANGLEY-180   | B65-10388  | 05                   |   |             |    |
|  |  |                      |   |             |    |
| WIRE WINDING   |  |                      |   |             |    |
| Fiberglass parts cured during filam eliminates oven, saves time  | ent winding  |                      |   |             |    |
| M-FS-14  | B65-10088  | 03                   |   |             |    |
| WIRING SYSTEM  |  |                      |   |             |    |
| Modified rf coaxial connector ends   | vacuum   |                      |   |             |    |
|  |  |                      |   |             |    |
| chamber wiring problem   |  |                      |   |             |    |
|  | B64-10010  | 01                   |   |             |    |
| chamber wiring problem<br>GSFC-150   | B64-10010  | 01                   |   |             |    |
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| chamber wiring problem GSFC-150  |  | 01                   |   |             |    |
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| chamber wiring problem GSFC-150  X X-RAY Multiple element soft X-ray source wide range of radiation GSFC-286   | produces   |                      |   |             |    |
| chamber wiring problem GSFC-150  X X-RAY Multiple element soft X-ray source wide range of radiation GSFC-286 X-RAY DIFFRACTION Spherical model provides visual aid   | produces<br>B65-10082  |                      |   |             |    |
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| FRC-31   | B65-10264          | 01 |
|          |                    |    |
| GSFC-34A | B65-10011          | 01 |
| GSFC-36  | B63-10027          | 01 |
| GSFC-42  | B63-10033          | 01 |
| GSFC-48  | B64-10007          | 01 |
| GSFC-49  | B65-10176          | 05 |
| GSFC-59  | B64-10121          | 05 |
| GSFC-67  | B63-10476          | 03 |
| GSFC-73  | B64-10173          | 01 |
| GSFC-80  | B63-10511          | 01 |
| GSFC-82  | B63-10546          | 03 |
| GSFC-85  | B63-10512          | 01 |
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|          |                    |    |

| GSFC-91              |  | B63-10536 | 01 |
|----------------------|--|-----------|----|
| GSFC-92              |  | B63-10547 | 05 |
| GSFC-93              |  | B63-10596 | 01 |
|                      |  |           | 01 |
| GSFC-100             |  | B63-10551 |    |
| GSFC-101             | ***************************************  | B64-10144 | 01 |
| GSFC-111<br>GSFC-112 | *****************                        | B63-10553 | 01 |
| GSFC-112             | ••••••                                   | B63-10554 | 01 |
| GSFC-113             | ••••••                                   | B63-10555 | 01 |
| GSFC-114             | •••••                                    | B63-10597 | 01 |
| GSFC-115             | ******************                       | B63-10556 | 05 |
| GSFC-119             |  | B63-10599 | 01 |
| GSFC-120             | *******************                      |           |    |
|                      | ***************************************  | B63-10600 | 01 |
| GSFC-129             | ** | B63-10606 | 01 |
| GSFC-130             | ****************                         | B65-10178 | 01 |
| GSFC-132             | ********************                     | 863~10603 | 01 |
| GSFC-137             | ** | B63-10609 | 01 |
| GSFC-143             | ***************************************  | B64-10028 | 05 |
| GSFC-150             |  | B64-10010 | 01 |
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| GSFC-151             | ********************                     | B64-10011 | 05 |
| GSFC-161             | *******                                  | B64-10142 | 03 |
| GSFC-168             | ** | B64-10113 | 03 |
| GSFC-169             | *******************                      | B64-10114 | 01 |
| GSFC-171             | •••••                                    | B65-10211 | 02 |
| GSFC-183             | ***************************************  | B65-10119 | 01 |
| GSFC-187             |  | B64-10150 | 01 |
|                      |  |           |    |
| GSFC-188             | •••••                                    | B64-10151 | 03 |
| GSFC-190             | *****************                        | B64-10200 | 01 |
| GSFC-196             | *****************                        | B65-10118 | 01 |
| GSFC-198             | ******************                       | B65-10026 | 01 |
| GSFC-200             | ***************************************  | B64-10209 | 01 |
| GSFC-203             |  | B65-10308 | 01 |
| GSFC-206             | ***************************************  | B64-10211 | 05 |
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| GSFC-227             | •••••                                    | B65-10001 |    |
| GSFC-228             | •••••                                    | B65-10028 | 01 |
| GSFC-231             | ••••••                                   | B65-10171 | 02 |
| GSFC-234             | ******************                       | B64-10277 | 05 |
| GSFC-236             |  | B64-10281 | 01 |
| GSFC-237             |  | B65-10017 | 05 |
| GSFC-238             |  | B64-10305 | 01 |
| GSFC-239             | ***************************************  | 865-10282 | 01 |
|                      |  | B65-10076 | 01 |
| GSFC-240             |  | BCS 10070 |    |
| GSFC-241             | ***************************************  | B65-10002 | 01 |
| GSFC-243             | •••••                                    | B65-10012 | 01 |
| GSFC-246             | ••••••                                   | B65-10194 | 01 |
| GSFC-249             |  | B65-10103 | 01 |
| GSFC-251             |  | B64-10299 | 01 |
| GSFC-252             | ***************************************  | B65-10048 | 01 |
| GSFC-253             | ***************************************  | B64-10327 | 05 |
| GSFC-257             |  | B65-10152 | 01 |
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| GSFC-261             | ***************************************  | B65-10069 |    |
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| GSFC-265             |  | B65-10126 | 05 |
| GSFC-267             |  | B65-10102 | 01 |
| GSFC-268             | ***************************************  | B65-10307 | 01 |
| GSFC-272             |  | B65-10138 | 01 |
| GSFC-274             | •••••••                                  | B65-10072 | 01 |
| GSFC-280             |  | B65-10087 | 01 |
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| GSFC-281             | ••••••                                   | B65-10136 | 03 |
| GSFC-284             | ******************                       | ₿65-10162 | 03 |
| GSFC-285             | *******************                      | B65-10228 | 01 |
| GSFC-286             |  | B65-10082 | 02 |
| GSFC-287             |  | B65-10096 | 01 |
| GSFC-288             |  | B65-10206 | 01 |
| GSFC-289             |  | B65-10123 | 01 |
|                      |  | B65-10125 | 01 |
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| GSFC-292             | *******************                      | B65-10165 | 01 |
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| GSFC-295             | ***************************************  | B65-10083 | 03 |
| GSFC-299             | •••••                                    | B65-10127 | 01 |
| GSFC-306             | •••••                                    | B65-10093 | 01 |
| GSFC-308             | ***************************************  | B65-10334 | 01 |
|                      |  | B65-10212 | 01 |
| GSFC-310             | ••••••                                   | DCE-10224 | 01 |
| GSFC-314             | ******************                       | B65-10234 | 01 |
|                      |  |           |    |

| GSFC-315   |   |   |  |   |  |
|--|---|---|--|---|--|
| GSFC-317   | B65-10151   | 01  | JPL-358  | B64-10080   | 01   |
|  | B65-10225   | 01  | JPL-361  | B63-10228   | 05   |
| GSFC-319   | B65-10134   | 05  | JPL-362  | B63-10229   | 01   |
|  | B65-10173   | 03  | JPL-371  | B65-10351   | 05   |
| GSFC-320   |   |   |  |   |  |
| GSFC-322   | B65-10200   | 01  | JPL-373  | B63-10234   | 03   |
| GSFC-329   | B65-10213   | 01  | JPL-374  | B63-10235   | 03   |
| GSFC-335   | B65-10148   | 05  | JPL-375  | B63-10236   | 05   |
|  | B65-10271   | 01  | JPL-376  | B63-10237   | 05   |
| GSFC-337   |   |   |  |   |  |
| GSFC-339   | B65-10199   | 01  | JPL-381  | B63-10238   | 01   |
| GSFC-340   | B65-10226   | 01  | JPL-384  | B63-10240   | 05   |
| GSFC-342   | B65-10243   | 01  | JPL-385  | B63-10241   | 05   |
|  | B65-10237   | 01  | JPL-392  | B63-10247   | 05   |
| GSFC-345   |   |   |  |   |  |
| GSFC-346   | B65-10309   | 01  | JPL-397  | B63-10250   | 01   |
| GSFC-347   | 865-10216   | 05  | JPL-398  | B63-10251   | 05   |
| GSFC-350   | B65-10242   | 01  | JPL-406  | B63-10255   | 01   |
| GSFC-351   | B65-10284   | 01  | JPL-410  | B63-10258   | 01   |
|  |   | 03  | JPL-413  | B65-10125   | 01   |
| GSFC-352   | B65-10217   |   |  |   |  |
| GSFC-353   | B65-10253   | 02  | JPL-418  | B63-10260   | 02   |
| GSFC-354   | B65-10276   | 01  | JPL-421  | B63-10262   | 01   |
| GSFC-356   | B65-10224   | 02  | JPL-424  | B63-10263   | 03   |
|  | B65-10273   | 01  |  | 863-10264   | 01   |
| GSFC-357   |   |   |  |   |  |
| GSFC-360   | B65-10287   | 01  | JPL-442  | B65-10040   | 05   |
| GSFC-361   | B65-10257   | 01  | JPL-447  | B64-10002   | 01   |
| GSFC-363   | B65-10274   | 01  | JPL-463  | B65-10037   | 05   |
| GSFC-366   | B65-10156   | 03  | JPL-466  | B64-10122   | 01   |
|  |   |   |  | B64-10222   | 01   |
| GSFC-370   | B65-10258   | 01  | JPL-472  |   |  |
| GSFC-375   | B65-10311   | 01  | JPL-478  | B64-10223   | 05   |
| GSFC-377   | B65-10333   | 01  | JPL-480  | B65-10104   | 05   |
| GSFC-380   | B65-10305   | 01  | JPL-484  | B64-10066   | 05   |
|  |   |   |  | B64-10226   | 01   |
| GSFC-382   | B65-10314   | 01  | JPL-486  |   |  |
| GSFC-383   | B65-10310   | 01  | JPL-499  | B64-10124   | 05   |
| GSFC-385   | B65-10283   | 02  | JPL-500  | B65-10232   | 01   |
| GSFC-386   | B65-10278   | 01  | JPL-504  | B64-10280   | 01   |
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| GSFC-387   | B65-10259   |   |  |   |  |
| GSFC-388   | B65-10364   | 03  | JPL-509  | B65-10145   | 01   |
| GSFC-391   | B65-10260   | 01  | JPL-510  | B65-10223   | 01   |
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|  | B65-10315   | 01  | JPL-544  | B63-10612   | 03   |
|  |   |   |  |   | 05   |
| GSFC-397   | B65-10300   | 01  | JPL-545  | B63-10517   |  |
| GSFC-398   | B65-10343   | 01  | JPL-555  | B64-10031   | 05   |
| GSFC-399   | B65-10355   | 01  | JPL-559  | B63-10613   | 01   |
| GSFC-409   | B65-10339   | 05  | JPL-584  | B64-10084   | 05   |
|  |   |   |  | B64-10188   | 05   |
| GSFC-424   | B65-10373   | 02  | JPL-585  |   |  |
| GSFC-440   | B65-10329   | 01  | JPL-591  | в65-10023   | 01   |
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| GSFC-442   | B65-10328   | 01  | JPL-604  | B64-10178   | 05   |
|  | B65-10330   | 02  | l  | B64-10206   | 03   |
| GSFC-443   |   |   |  |   |  |
| GSFC-444   | B65-10337   | 03  | JPL-616  | B65-10189   | 03   |
| GSFC-446   | B65-10362   | 01  | JPL-627  | B65-10297   | 02   |
|  |   |   | JPL-628  | B64-10158   | 01   |
| GSFC-AE-21   | B65-10124   | 01  | JPL-631  | B65-10113   | 05   |
| ODIC RE EI   | DOO 10124   | ٠.  | l  | B65-10061   | 01   |
|  |   |   |  |   |  |
| HQ-1   | B65-10313   | 01  | JPL-655  | B65-10068   | 01   |
| HQ-5   | B65-10313   | 01  | JPL-658  | B65-10205   | 05   |
| HQ-7   | B65-10306   | 01  | JPL-661  | B65-10144   | 05   |
| HQ-12  | B65-10286   | 01  | JPL-675  | B65-10128   | 0.1  |
|  |   |   | l  |   |  |
| HQ-18  | B65-10332   | 04  | JPL-686  |   | 01   |
|  | B65-10235   | 05  |  | B65-10191   | 05   |
| HQ-20  |   | 0.0   | JPL-687  | B65-10236   | 05<br>05   |
| HQ-20  | B65-10261   | 03  |  |   | 05   |
|  | B65-10261   |   | JPL-687  | B65-10236   | 05<br>05   |
| HQ-20<br>HQ-24   |   | 03  | JPL-687<br>JPL-694<br>JPL-698  | B65-10236<br>B65-10291<br>B65-10275   | 05<br>05<br>02<br>01   |
| HQ-20<br>HQ-24<br>JPL-2A   | B65-10222   | 03<br>05  | JPL-687<br>JPL-694<br>JPL-698<br>JPL-704   | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292  | 05<br>05<br>02<br>01<br>02   |
| HQ-20<br>HQ-24<br>JPL-2A<br>JPL-0019   | B65-10222<br>B65-10207  | 03<br>05<br>05  | JPL-687<br>JPL-694<br>JPL-698<br>JPL-704<br>JPL-720  | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292<br>B65-10244   | 05<br>05<br>02<br>01<br>02<br>01   |
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| HQ-20<br>HQ-24<br>JPL-2A<br>JPL-0019   | B65-10222<br>B65-10207  | 03<br>05<br>05  | JPL-687<br>JPL-694<br>JPL-698<br>JPL-704<br>JPL-720  | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292<br>B65-10244   | 05<br>05<br>02<br>01<br>02<br>01   |
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| HQ-20<br>HQ-24<br>JPL-24<br>JPL-0019<br>JPL-0021<br>JPL-0029<br>JPL-33<br>JPL-0036<br>JPL-63   | B65-10222<br>B65-10207<br>B63-10280<br>B63-10284<br>B65-10013<br>B64-10306<br>B63-10091   | 03<br>05<br>05<br>01<br>01<br>01<br>05<br>01                            | JPL-687 JPL-694 JPL-698 JPL-704 JPL-720 JPL-725 JPL-771  JPL-IT-1001 JPL-IT-1003   | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292<br>B65-10292<br>B65-10295<br>B65-10293<br>B63-10289<br>B63-10291   | 05<br>05<br>02<br>01<br>02<br>01<br>02<br>01   |
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| HQ-20<br>HQ-24<br>JPL-2A<br>JPL-0019<br>JPL-0021<br>JPL-033<br>JPL-036<br>JPL-63<br>JPL-63<br>JPL-77<br>JPL-82   | B65-10222<br>B65-10207<br>B63-10280<br>B63-10284<br>B65-10013<br>B64-10306<br>B63-10091<br>B65-10187<br>B65-10055   | 03<br>05<br>05<br>01<br>01<br>01<br>05<br>01                            | JPL-687 JPL-694 JPL-698 JPL-704 JPL-720 JPL-725 JPL-771  JPL-IT-1001 JPL-IT-1003 JPL-IT-1004   | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292<br>B65-10295<br>B65-10293<br>B63-10293<br>B63-10291<br>B63-10292   | 05<br>05<br>02<br>01<br>02<br>01<br>02<br>01   |
| HQ-20<br>HQ-24<br>JPL-24<br>JPL-0019<br>JPL-0021<br>JPL-0029<br>JPL-33<br>JPL-63<br>JPL-63<br>JPL-77<br>JPL-82<br>JPL-122  | B65-10222<br>B65-10207<br>B63-10280<br>B63-10284<br>B65-10013<br>B64-10306<br>B63-10091<br>B65-1018<br>B65-10185<br>B63-10118   | 03<br>05<br>05<br>01<br>01<br>01<br>05<br>01<br>01<br>01                | JPL-687 JPL-694 JPL-698 JPL-704 JPL-720 JPL-725 JPL-771  JPL-IT-1001 JPL-IT-1003 JPL-IT-1004  JPL-SC-055   | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292<br>B65-10294<br>B65-10295<br>B65-10293<br>B63-10299<br>B63-10291<br>B63-10292<br>B65-10046   | 05<br>05<br>02<br>01<br>02<br>01<br>02<br>01<br>05<br>05   |
| HQ-20<br>HQ-24<br>JPL-2A<br>JPL-0019<br>JPL-0021<br>JPL-0029<br>JPL-33<br>JPL-63<br>JPL-63<br>JPL-77<br>JPL-82<br>JPL-122<br>JPL-135   | B65-10222<br>B65-10207<br>B63-10280<br>B63-10284<br>B65-10013<br>B64-10306<br>B63-10091<br>B65-10187<br>B65-10187<br>B65-10123  | 03<br>05<br>05<br>01<br>01<br>01<br>05<br>01<br>01<br>01                | JPL-687 JPL-694 JPL-698 JPL-704 JPL-720 JPL-725 JPL-771  JPL-IT-1001 JPL-IT-1003 JPL-IT-1004  JPL-SC-055 JPL-SC-060  | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292<br>B65-10294<br>B65-10295<br>B65-10293<br>B63-10299<br>B63-10299<br>B63-10292<br>B65-10046<br>B65-10197  | 05<br>05<br>02<br>01<br>02<br>01<br>02<br>01<br>05<br>05   |
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| HQ-20 HQ-24  JPL-2A JPL-0019 JPL-0021 JPL-0029 JPL-33 JPL-63 JPL-63 JPL-77 JPL-82 JPL-122 JPL-122 JPL-155 JPL-170 JPL-179 JPL-182 JPL-179 JPL-182 JPL-198 JPL-236 JPL-236 JPL-236 JPL-236 JPL-286 JPL-288 JPL-288 JPL-303 JPL-303 JPL-304 JPL-305                                    | B65-10222<br>B65-10207<br>B63-10284<br>B65-10013<br>B64-10306<br>B63-10091<br>B65-10187<br>B65-10187<br>B65-10183<br>B65-10340<br>B63-10123<br>B65-10143<br>B65-10143<br>B65-10163<br>B63-10174<br>B63-10174<br>B65-10099<br>B63-10193<br>B63-10193<br>B63-10193<br>B63-10193<br>B63-10200<br>B63-10207<br>B63-10207  | 03 05 05 01 01 01 05 01 01 05 05 05 05 05 05 05 05 05 05 05 05 05       | JPL-687 JPL-694 JPL-698 JPL-704 JPL-720 JPL-720 JPL-725 JPL-771  JPL-IT-1001 JPL-IT-1003 JPL-IT-1004  JPL-SC-055 JPL-SC-060 JPL-SC-066 JPL-SC-066 JPL-SC-068 JPL-SC-068 JPL-SC-069 JPL-SC-072 JPL-SC-072 JPL-SC-073 JPL-SC-074 JPL-SC-078 JPL-SC-079 JPL-SC-083 JPL-SC-083 JPL-SC-011                          | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292<br>B65-10294<br>B65-10293<br>B63-10299<br>B63-10291<br>B63-10292<br>B65-10046<br>B65-10020<br>B64-10330<br>B65-10007<br>B65-10033<br>B65-10034<br>B65-10034<br>B65-10334<br>B65-1034<br>B65-1034<br>B65-10354<br>B65-10354<br>B65-10354              | 05<br>05<br>02<br>01<br>02<br>01<br>05<br>05<br>05<br>01<br>05<br>01<br>01<br>01<br>01<br>01<br>01<br>01       |
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| HQ-20 HQ-24  JPL-2A JPL-0019 JPL-0021 JPL-0029 JPL-33 JPL-63 JPL-63 JPL-77 JPL-82 JPL-122 JPL-122 JPL-155 JPL-170 JPL-179 JPL-182 JPL-179 JPL-182 JPL-198 JPL-236 JPL-236 JPL-236 JPL-236 JPL-286 JPL-288 JPL-288 JPL-303 JPL-303 JPL-304 JPL-305                                    | B65-10222<br>B65-10207<br>B63-10284<br>B65-10013<br>B64-10306<br>B63-10091<br>B65-10187<br>B65-10187<br>B65-10183<br>B65-10340<br>B63-10123<br>B65-10143<br>B65-10143<br>B65-10163<br>B63-10174<br>B63-10174<br>B65-10099<br>B63-10193<br>B63-10193<br>B63-10193<br>B63-10193<br>B63-10200<br>B63-10207<br>B63-10207  | 03 05 05 01 01 01 05 01 01 05 05 05 05 05 05 05 05 05 05 05 05 05       | JPL-687 JPL-694 JPL-698 JPL-704 JPL-720 JPL-725 JPL-771  JPL-IT-1001 JPL-IT-1003 JPL-IT-1004  JPL-SC-055 JPL-SC-064 JPL-SC-066 JPL-SC-066 JPL-SC-068 JPL-SC-069 JPL-SC-071 JPL-SC-072 JPL-SC-073 JPL-SC-074 JPL-SC-078 JPL-SC-079 JPL-SC-135 | B65-10236<br>B65-10291<br>B65-10275<br>B65-10292<br>B65-10294<br>B65-10293<br>B63-10293<br>B63-10291<br>B63-10292<br>B65-10020<br>B64-10330<br>B65-10020<br>B64-10330<br>B65-10025<br>B65-10033<br>B65-10033<br>B65-10036<br>B65-10334<br>B65-10334<br>B65-10334<br>B65-10348<br>B65-10324            | 05<br>05<br>02<br>01<br>02<br>01<br>05<br>05<br>05<br>01<br>01<br>01<br>01<br>01<br>01<br>03<br>03             |

| JPL-W00-010             | B65-10112              | 01        | LEWIS-158              | B65-10021              | 05       |
|-------------------------|------------------------|-----------|------------------------|------------------------|----------|
| JPL-W00-021             | B65-10175              | 03        | LEWIS-159              | B64-10170              | 05       |
| JPL-W00-029             | B63-10537              | 01        | LEWIS-160              | B65-10280              | 02       |
| JPL-W00-031             | B65-10109              | 05        | LEWIS-163              | 865-10312              | 05       |
| JPL-W00-039             | B65-10121              | 05        | LEVIS-170<br>LEVIS-171 | B65-10154              | 05       |
| LANGLEY-1A              | B63-10304              | 05        | LEWIS-171              | B65-10157<br>B65-10131 | 02<br>05 |
| LANGLEY-4               | B63-10311              | 03        | LEWIS-178              | B65-10255              | 01       |
| LANGLEY-6A              | B63-10318              | 03        | LEWIS-182              | B65-10009              | 05       |
| LANGLEY-10              | B63-10321              | 01        | LEWIS-185              | B65-10101              | 05       |
| LANGLEY-16              | B63-10557              | 03        | LEWIS-190              | B65-10251              | 05       |
| LANGLEY-20              | B63-10558              | 05        | LEWIS-192              | B65-10150              | 05       |
| LANGLEY-21              | B64-10119              | 05        | LEWIS-193              | B65-10344              | 03       |
| LANGLEY-25              | B63-10526<br>B63-10528 | 05<br>03  | LEWIS-208              | B65-10188<br>B65-10192 | 02<br>05 |
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| LANGLEY-27              | B64-10130              | 05        | LEWIS-212              | B65-10370              | 05       |
| LANGLEY-28              | B63-10530              | 05        | LEWIS-217              | B65-10302              | 03       |
| LANGLEY-31              | B64-10237              | 01        | LEWIS-219              | B65-10319              | 05       |
| LANGLEY-32              | B65-10074              | 05        | LEWIS-220              | B65-10338              | 05       |
| LANGLEY-33              | B65-10100              | 02        | LEVIS-222              | B65-10331              | 02       |
| LANGLEY-34              | B65-10195              | 01        | LEWIS-225              | B65-10270              | 03       |
| LANGLEY-36              | B65-10114<br>B65-10288 | 05<br>03  | LEWIS-232LEWIS-241     | B65-10296<br>B65-10304 | 02<br>01 |
| LANGLEY-38              | B65-10231              | 05        | 22410 241              | 200 10004              | 0.1      |
| LANGLEY-39              | B65-10042              | 05        | M-FS-1                 | B63-10376              | 05       |
| LANGLEY-40              | B64-10145              | 05        | M-FS-3                 | B63-10378              | 03       |
| LANGLEY-44              | B64-10146              | 04        | M-FS-12                | B63-10384              | 05       |
| LANGLEY-45              | B64-10272              | 05        | H-FS-13                | B63-10385              | 05       |
| LANGLEY-46              | B65-10073              | 01        | M-FS-14                | B65-10088              | 03       |
| LANGLEY-47              | B65-10043<br>B65-10062 | 03<br>01  | M-FS-15<br>M-FS-17     | B63-10387<br>B63-10389 | 05<br>03 |
| LANGLEY-49              | B65-10067              | 01        | H-FS-25                | B65-10057              | 01       |
| LANGLEY-54              | B65-10075              | 05        | M-FS-32                | B64-10309              | 01       |
| LANGLEY-55              | B65-10086              | 01        | M-FS-37                | B64-10406              | 05       |
| LANGLEY-62              | B65-10045              | 01        | H-FS-48                | B65-10044              | 03       |
| LANGLEY-80              | B65-10361              | 01        | H-FS-54                | B63-10453              | 03       |
| LANGLEY-87              | B65-10345              | 01        | M-FS-61                | B63-10567              | 01       |
| LANGLEY-90              | B65-10070<br>B65-10063 | 05<br>05  | M-FS-64                | B63-10479              | 03<br>03 |
| LANGLEY-92              | B65-10071              | 02        | M-FS-69                | B63-10481<br>B63-10568 | 05<br>05 |
| LANGLEY-93              | B65-10084              | 02        | M-FS-81                | B65-10029              | 05       |
| LANGLEY-95              | B65-10356              | 02        | M-FS-84                | B63-10571              | 05       |
| LANGLEY-96              | B65-10090              | 05        | M-FS-86                | B63-10572              | 01       |
| LANGLEY-99              | B65-10392              | 01        | M-FS-91                | B63-10497              | 05       |
| LANGLEY-104             | B65-10159              | 01        | M-FS-98                | B63-10502              | 05       |
| LANGLEY-115LANGLEY-116  | B65-10164<br>B65-10220 | 03<br>03  | M-FS-105               | B65-10218<br>B63-10590 | 01<br>05 |
| LANGLEY-116             | B65-10167              | 03        | M-FS-122               | B63-10579              | 01       |
| LANGLEY-123             | B65-10204              | 01        | M-FS-145               | B64-10050              | 05       |
| LANGLEY-129             | B65-10193              | 01        | M-FS-150               | B65-10357              | 03       |
| LANGLEY-130             | B65-10183              | 01        | M-FS-154               | B65-10174              | 05       |
| LANGLEY-133             | B65-10272              | 92        | M-FS-160               | B64-10099              | 03       |
| LANGLEY-134             | B65-10122              | 20        | M-FS-166               | B65-10005              | 01       |
| LANGLEY-145 LANGLEY-166 | B65-10383              | 05        | M-FS-171               | B65-10035              | 05       |
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| LEWIS-8B                | B65-10115              | 05        | M-FS-192               | B65-10006              | 01       |
| LEWIS-12                | B63-10337              | 03        | M-FS-193               | B65-10221              | 01       |
| LEWIS-13                | B63-10338              | 01        | M-FS-194               | B65-10180              | 05       |
| LEWIS-15                | B63-10340              | 05        | M-FS-197               | B64-10283              | 01       |
| LEWIS-28LEWIS-37        | B65-10027              | <b>05</b> | M-FS-202               | B65-10106              | 03<br>01 |
| LEWIS-37 LEWIS-38       | B64-10042<br>B63-10341 | 01<br>05  | M-FS-207               | B65-10059<br>B65-10014 | 05       |
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| B64-10016              | 01 MSC-57     | B65-10005 | 01 M-FS-166            |
| B64-10017              | 01 MSC-58     | B65-10006 | 01 M-FS-192            |
| B64-10019              | 01 WDD-062    | B65-10007 | 05 JPL-SC-066          |
| B64-10021              | 05 W00-065    | B65-10008 | 05 W00-092             |
| B64-10024              | 01 MSC-14     | B65-10009 | 05 LEWIS-182           |
| B64-10025              | 04 MSC-17     | B65-10010 | 01 MSC-95              |
| B64-10028              | 05 GSFC-143   | B65-10011 | 01 GSFC-34A            |
| B64-10031              | 05 JPL-555    | B65-10012 | 01 GSFC-243            |
| B64-10042              | 01 LEWIS-37   | B65-10013 | 01 JPL-33              |
| B64-10050              | 05 M-FS-145   | B65-10014 | 05 M-FS-210            |
|                        | 05 MSC-42     | B65-10015 | 03 MSC-107             |
| B64-10058              |               | B65-10016 | 03 MSC-56              |
| B64-10064              |               | B65-10017 | 05 GSFC-237            |
| B64-10065              |               |           |                        |
| B64-10066              | 05 JPL-484    | B65-10018 |                        |
| B64-10068              | 03 ARC-28     | B65-10019 |                        |
| B64-10069              | 05 ARC-29     | B65-10020 | 05 JPL-SC-064          |
| B64-10080              | 01 JPL-358    | B65-10021 | 05 LEWIS-158           |
| B64-10084              | 05 JPL-584    | B65-10022 | 05 MSC-30              |
| B64-10099              | 03 M-FS-160   | B65-10023 | 01 JPL-591             |
| B64-10108              | 04 MSC-50     | B65-10024 | 03 NU-0001             |
| B64-10109              | 01 MSC-51     | B65-10025 | 01 JPL-SC-069          |
| B64-10113              | 03 GSFC-168   | B65-10026 | 01 GSFC-198            |
| B64-10114              | 01 GSFC-169   | B65-10027 | 05 LEWIS-28            |
| B64-10116              | 03 LEWIS-144  | B65-10028 | 01 GSFC-228            |
| B64-10118              | 01 MSC-72     | B65-10029 | 05 M-FS-81             |
| B64-10119              | 05 LANGLEY-21 | B65-10030 | 01 MSC-125             |
| B64-10121              | 05 GSFC-59    | B65-10031 | 05 W00-108             |
| B64-10122              | 01 JPL-466    | B65-10032 | 03 LEWIS-154           |
| B64-10124              | 05 JPL-499    | B65-10033 | 01 JPL-SC-068          |
| B64-10130              | 05 LANGLEY-27 | B65-10034 | 03 JPL-SC-071          |
| B64-10138              | 03 MSC-63A    | B65-10035 | 05 M-FS-171            |
| B64-10141              | 05 MSC-8      | B65-10036 | 02 JPL-304             |
| B64-10142              | 03 GSFC-161   | B65-10037 | 05 JPL-463             |
| B64-10143              | 01 ARC-36     | B65-10038 | 05 NU-0003             |
| B64-10144              | 01 GSFC-101   | 865-10039 | 05 M-FS-224            |
| B64-10145              | 05 LANGLEY-40 | B65-10040 | 05 JPL-442             |
| B64-10146              | 04 LANGLEY-44 | B65-10041 | 01 WOO-046             |
| B64-10150              | 01 GSFC-187   | B65-10042 | 05 LANGLEY-39          |
| B64-10151              | 03 GSFC-188   | B65-10043 | 03 LANGLEY-47          |
| B64-10158              | 01 JPL-628    | B65-10044 | 03 M-FS-48             |
| B64-10163              | 01 M-FS-174   | B65-10045 | 01 LANGLEY-62          |
| B64-10164              | 05 M-FS-175   | B65-10046 | 02 JPL-SC-055          |
| B64-10166              | 03 MSC-85     | B65-10047 | 01 M-FS-234            |
| B64-10170              | 05 LEWIS-159  | B65-10048 | 01 GSFC-252            |
|                        | 01 ARC-39     | B65-10049 | 05 NU-0009             |
| B64-10171<br>B64-10173 |               | B65-10050 | 01 NU-0010             |
|                        |               | B65-10051 | 01 NU-0011             |
| B64-10178              |               | B65-10052 | 01 NU-0015             |
| B64-10185              | 05 MSC-46     |           |                        |
| B64-10188              | 05            | B65-10053 |                        |
| B64-10200              | 01 GSFC-190   | B65-10054 | **                     |
| B64-10206              | 03 JPL-611    | B65-10055 | 01 JPL-82<br>01 ARC-38 |
| B64-10209              | 01 GSFC-200   | B65-10056 |                        |
| B64-10211              | 05 GSFC-206   | B65-10057 | 01 M-FS-25             |
| B64-10222              | 01 JPL-472    | B65-10059 | 01 M-FS-207            |
| B64-10223              | 05 JPL-478    | B65-10060 | 05 MSC-102             |
| B64-10226              | 01 JPL-486    | B65-10061 | 01 JPL-638             |
| B64-10237              | 01 LANGLEY-31 | B65-10062 | 01 LANGLEY-48          |
| B64-10249              | 05 M-FS-190   | B65-10063 | 05 LANGLEY-90          |
| B64-10255              | 01 MSC-89     | B65-10064 | 05 W00-112             |
| B64-10258              | 01 MSC-93     | B65-10065 | 03 LEWIS-108           |
| B64-10259              | 01 MSC-92     | B65-10066 | 01 JPL-SC-072          |
| B64-10270              | 03 WOO-100    | B65-10067 | 01 LANGLEY-49          |
| B64-10271              | 01 WOG-101    | B65-10068 | 01 JPL-655             |
| B64-10272              | 05 LANGLEY-45 | B65-10069 | 01 GSFC-261            |
| B64-10274              | 05 WOO-005    | B65-10070 | 05 LANGLEY-88          |
| B64-10277              | 05 GSFC-234   | B65-10071 | 02 LANGLEY-92          |
| B64-10278              | 05 WOO-041    | B65-10072 | 01 GSFC-274            |
| B64-10280              | 01 JPL-504    | B65-10073 | 01 LANGLFY-46          |
| B64-10281              | 01 GSFC-236   | B65-10074 | 05 LANGLEY-32          |
| B64-10282              | 03 WOO-104    | B65-10075 | 05 LANGLEY-54          |
| B64-10283              | 01 M-FS-197   | B65-10076 | 01 GSFC-240            |
| B64-10284              | 05 WOO-048    | B65-10077 | 05 NU-0013             |
| B64-10299              | 01 GSFC-251   | B65-10078 | 05 M-FS-216            |
| B64-10305              | 01 GSFC-238   | B65-10079 | 01 M-FS-274            |
| B64-10306              | 05 JPL-0036   | B65-10080 | 01 M-FS-247            |
|                        |               | B65-10081 | 02 GSFC-294            |
|                        |               |           |                        |

| B65-10082   |   |   |  |
|---|---|---|--|
|   | 02 GSFC-286                             | B65-10171   | 02 GSFC-231  |
| B65-10083   | 03 GSFC-295                             | 865-10172   | 03 M-FS-235  |
| B65-10084   | 02 LANGLEY-93                           | B65-10173   | 03 GSFC-320  |
| B65-10085   | 01 ARC-37                               | B65-10174   | 05 M-FS-154  |
| B65-10086   | 01 LANGLEY-55                           | B65-10175   | 03 JPL-WOO-021   |
| B65-10087   | 01 GSFC-280                             | B65-10176   | 05 GSFC-49   |
| B65-10088   | 03 M-FS-14                              | B65-10177   | 05 M-FS-303  |
| B65-10089   | 01 ARC-27                               | B65-10178   | 01 GSFC-130  |
| B65-10090   | 05 LANGLEY-96                           | B65-10179   | 03 W00-071   |
| B65-10091   | 01 MSC-94                               | B65-10180   | 05 M-FS-194  |
| B65-10092   | 03 M-FS-267                             | B65-10181   | 05 M-FS-308  |
| B65-10093   | 01 GSFC-306                             | B65-10182   | 01 W00-125   |
| B65-10094   | 05 ARC-40                               | B65-10183   | 01 LANGLEY-130   |
| B65-10095   | 03 MSC-144                              | B65-10184   | 01 M-FS-238  |
| B65-10096   | 01                                      | B65-10185   | 05 MSC-80  |
| B65-10097   | 01 GSFC-262                             | B65-10186   | 02 MSC-142   |
| B65-10098   | 05 M-FS-280                             | B65-10187   | 01 JPL-77  |
| B65-10099   | 05JPL-264                               | B65-10188   | 02 LEWIS-202   |
| B65-10100   | 02 LANGLEY-33                           | B65-10189   |  |
| B65-10101   | 05 LEWIS-185                            | B65-10190   | 03 JPL-616<br>03 M-FS-279  |
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| B65-10102   |   | B65-10191   | 05 JPL-686   |
| B65-10103   | 01 GSFC-249                             | B65-10192   | 05 LEWIS-208   |
| B65-10104   | 05 JPL-480                              | B65-10193   | 01 LANGLEY-129   |
| B65-10105   | 01 GSFC-291                             | B65-10194   | 01 GSFC-246  |
| B65-10106   | 03 M-FS-202                             | B65-10195   | 01 LANGLEY-34  |
| B65-10107   | 03 M-FS-236                             | B65-10196   | 01 MSC-164   |
| B65-10108   | 01 MSC-139                              | B65-10197   | 01 JPL-SC-060  |
| B65-10109   | 05 JPL-W00-031                          | B65-10198   | 05 FRC-21  |
| B65-10110   | 05 M-FS-253                             | B65-10199   | 01 GSFC-339  |
| B65-10111   | 05 WOO-118                              | B65-10200   | 01 GSFC-322  |
| B65-10112   | 01 JPL-WOO-010                          | B65-10201   | 05 MSC-154   |
| B65-10113   | 05 JPL-631                              | B65-10202   | 01 LEWIS-125   |
| B65-10114   | 05 LANGLEY-36                           | B65-10203   | 01 ARC-41  |
| B65-10115   | 05 LEWIS-8B                             | B65-10204   | 01 LANGLEY-123   |
| B65-10116   | 05 MSC-140                              | B65-10205   | 05 JPL-658   |
| B65-10117   | 03 LEWIS-211                            | B65-10206   | 01 GSFC-288  |
| B65-10118   | 01 GSFC-196                             | B65-10207   | 05 JPL-0019  |
| B65-10119   | 01 GSFC-183                             | B65-10208   | 01 ARC-34  |
| B65-10120   | 01 ARC-42                               | B65-10209   | 01 M-FS-245  |
| B65-10121   | 05JPL-W00-039                           | B65-10210   | 05 M-FS-214  |
| B65-10122   | 02 LANGLEY-134                          | B65-10211   | 02 GSFC-171  |
| B65-10123   | 01 GSFC-289                             | B65-10212   | 01 GSFC-310  |
| B65-10124   | 01 GSFC-AE-21                           | B65-10213   | 01 GSFC-329  |
| B65-10125   | 01                                      | B65-10214   | 03 MSC-135   |
| B65-10126   | 05 GSFC-265                             | B65-10215   | 01 M-FS-315  |
| B65-10127   |   | B65-10216   |  |
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| B65-10128<br>B65-10129  |   | B65-10217<br>B65-10218  |  |
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| B65-10131   | 05 LEWIS-174                            | B65-10220   | 03 LANGLEY-116   |
| B65-10132   | 02 JPL-508                              | B65-10221   | 01 M-FS-193  |
| B65-10133   | 02 M-FS-240                             | B65-10222   | 05 JPL-2A  |
| B65-10134   | 05 GSFC-319                             | B65-10223   | 01 JPL-510   |
| B65-10135   | 05 MSC-149                              | B65-10224   | 02 GSFC-356  |
| B65-10136   | 03 GSFC-281                             | B65-10225   | 01 GSFC-317  |
| B65-10137   | 01 MSC-134                              | B65-10226   | 01 GSFC-340  |
| B65-10138   | 01 GSFC-272                             | B65-10227   | 05 W00-142   |
| B65-10139   | 01 LEWIS-155                            |   |  |
| B65-10140   |   | B65-10228   | 01 GSFC-285  |
| DCC 10111   | 03 M-FS-272                             | B65-10229   | 01 GSFC-285<br>05 MSC-130  |
| B65-10141   | 05 M-FS-230                             | B65-10229<br>B65-10230  | 01   |
| B65-10142   | 05 M-FS-230<br>01 MSC-106               | B65-10229<br>B65-10230<br>B65-10231   | 01   |
| B65-10142<br>B65-10143  | 05 M-FS-230<br>01 MSC-106<br>01 MSC-133 | B65-10229<br>B65-10230<br>B65-10231<br>B65-10232  | 01   |
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