

Index
to
NASA Tech Briefs
1974



February 1975

National Aeronautics and Space Administration

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Introduction

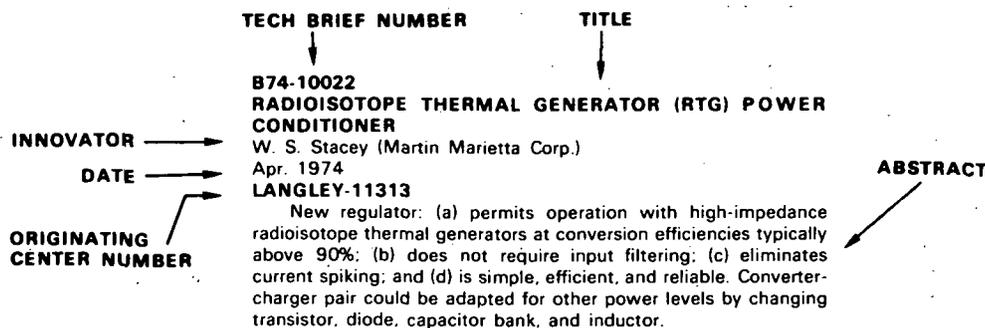
Tech Briefs are short announcements of new technology derived from the research and development activities of the National Aeronautics and Space Administration or the U.S. Atomic Energy Commission. These briefs emphasize information considered likely to be transferrable across industrial, regional, or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

This *Index to NASA Tech Briefs* contains abstracts and four indexes—subject, personal author, originating Center, and Tech Brief number—for 1974 Tech Briefs.

Abstract Section

The abstract section is divided into nine categories: Electronics/Electrical; Electronic/Electrical Systems; Physical Sciences; Materials/Chemistry; Life Sciences; Mechanics; Machinery, Equipment, and Tools; Fabrication Technology; and Computer Programs. Within each category, abstracts are arranged sequentially by Tech Brief number.

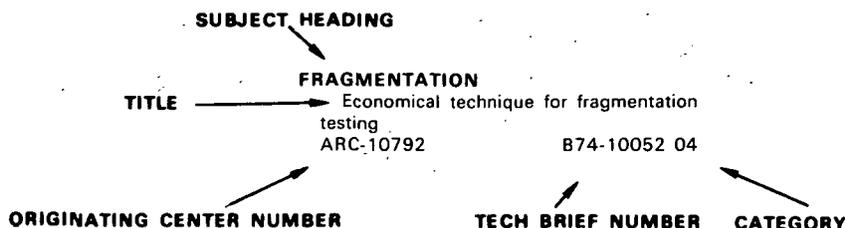
A typical abstract entry has these elements:



The originating Center number in each entry includes an alphabetical prefix that identifies the NASA Center or Atomic Energy Commission office where the Tech Brief originated. A list of prefixes and the corresponding Center names are given on page iii.

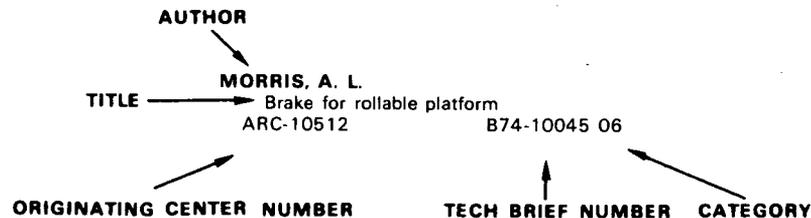
Indexes

Four indexes are provided. The first is a subject index, arranged alphabetically by subject heading. Each entry in the subject index includes a Tech Brief number and a category number to aid the user in locating pertinent entries in the abstract section.



The preliminary edition of the *NASA Thesaurus* (December 1967) (NASA SP-7030) is used as the authority for the indexing vocabulary that appears in the subject index. The *NASA Thesaurus* should be consulted in examining the current indexing vocabulary, including associated cross-reference structure. Only the subject terms that have been selected to describe the documents abstracted in this issue appear in the subject index. Copies of the *NASA Thesaurus* may be obtained from the National Technical Information Service or the U.S. Government Printing Office at \$8.50 for the three-volume set. The first two volumes of this Thesaurus, consisting of the alphabetical listing of subject terms (A-Z), have been superseded by the following single-volume publication: *NASA Thesaurus Alphabetical Update* (September 1971) (NASA SP-7040), available from NTIS for \$6.00. (Volume III of the Preliminary Edition consists of the following ancillary aids to vocabulary selection: hierarchical display of index terms, category term listing, permuted index, and a listing of postable terms only.)

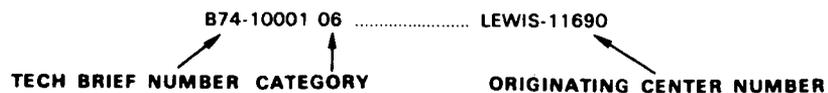
The second index is a personal author index. Entries in this index are arranged alphabetically by author's name. Tech Brief and category numbers are supplied to help the user find the appropriate entries in the abstract section.



The third index relates each originating Center number to the corresponding Tech Brief number and category. Entries in this index are arranged in alphanumeric order by Center number.



The fourth index relates each Tech Brief number to its originating Center number. Entries are arranged in ascending Tech Brief number order.



Originating Center Prefixes

NASA

ARC	Ames Research Center
ERC	Electronics Research Center
GSFC	Goddard Space Flight Center
HQ	NASA Headquarters
KSC	Kennedy Space Center
LANGLEY	Langley Research Center
LEWIS	Lewis Research Center
M-FS	Marshall Space Flight Center
MSC	Johnson Space Center (formerly Manned Spacecraft Center)
NPO	NASA Pasadena Office
XAC	Ames Research Center
XLA	Langley Research Center

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Index to NASA Tech Briefs

February 1975

Abstract Section

01 ELECTRONICS/ELECTRICAL

B74-10006

HIGH VOLTAGE SOLID-STATE RELAY

B. L. Sater, T. J. Riley, and W. A. Janssen (Sterer Eng. and Mfg. Co.)

Mar. 1974 See also NASA-TM-X-68248

LEWIS-12096

Hybrid microelectronics relay has characteristics significantly superior to conventional solid state relays. Relay provides 2500 Vdc input to output isolation and operates from high threshold logic signal to switch load of 400 Vdc at 2 mA. Technology should be of interest to manufacturers of discrete components.

B74-10015

LOW COST INSTRUMENTATION AMPLIFIER

J. C. Sturman

Jun. 1974

LEWIS-12222

Amplifier can be used for many applications requiring high input impedance and common mode rejection, low drift, and gain accuracy on order of one percent. Performance of inexpensive amplifier approaches that of some commercial instrumentation amplifiers in many specifications.

B74-10026

RADIATION HARDENING OF METAL-OXIDE SEMICONDUCTOR (MOS) DEVICES BY BORON

V. Danchenko

Apr. 1974

GSFC-11425

Technique using boron effectively protects metal-oxide semiconductor devices from ionizing radiation without using shielding materials. Boron is introduced into insulating gate oxide layer at semiconductor-insulator interface.

B74-10047

THREE-POINT BRIDGE CALIBRATION WITH ONE RESISTOR

D. R. Harrison and R. M. Brown

May 1974

ARC-10762

Method calibrates transducer bridge curing unbalanced condition and line resistance errors are negligible. Series resistance method can be automated easily and controlled by 2-bit information source which provide 4 states for switches.

B74-10064

ELECTROMETER SYSTEM MEASURES NANOAMPS AT HIGH VOLTAGE

J. C. Sturman, G. R. Sharp, R. R. Robson, N. J. Stevens, D. H. F. Priebe, and R. G. Wetli (Boeing Co.)

Jul. 1974

LEWIS-12267

Floating electrometer eliminates major source of error since any leakage from electrometer case, which is at high voltage, appears only as load on high voltage supply and not as part of current being measured. Commands to and data from floating electrometer are transferred across high voltage interface by means of optical channels.

B74-10068

ROTATING TURBINE BLADE PYROMETER

D. R. Buchele and D. J. Lesco

Aug. 1974 See also NASA-TM-X-68113

LEWIS-12218

Non-contacting pyrometer system optically measures surface temperature distribution on rotating turbine blade, comprising line-by-line scan via fiber optic probe. Each scan line output is converted to digital signals, temporarily stored in buffer memory, and then processed in minicomputer for display as temperature.

B74-10069

SELF-PROTECTING SOLID STATE ISOLATED SWITCH

A. C. Hoffman and S. T. Gooder

Aug. 1974

LEWIS-12268

Solid state switch has following capabilities: (1) Hybrid or IC form compatible with direct mounting on solar array substrate; (2) Continuous signal is not required to hold it in either on or off state; (3) Separate signal lines for on and off control; (4) Electrically isolated from input signals; and (5) Current surges will not cause switch failure.

B74-10079

VERY HIGH VOLTAGE LATCHING RELAY

R. R. Lovell, N. J. Stevens, and D. D. Renz

Aug. 1974

LEWIS-12265

Relay consists of high voltage reed switch actuated by rotating permanent magnet mounted on stepper motor shaft, with actuation assembly isolated from high voltage circuit. Unit can be modified for use as double pole or double pole double throw latching relay and can be used in either air or vacuum.

B74-10089

PIEZOELECTRIC RELAY

D. H. Fryklund (Accumetrics Corp.)

Aug. 1974

GSFC-11627

Bimorph configurations reduce sensitivity to shock and vibration and yet respond to weak electric fields. Two bimorphs provide sum of individual movements, simulating double length.

B74-10090

EFFICIENCY INCREASED IN NEW SOLAR CELL: A CONCEPT

J. A. Hutchby

Aug. 1974

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LANGLEY-11174

Graded band-gap cell should be able to convert solar radiation into electrical energy more efficiently than any solar cell currently available. Thickness of band-gap region should be chosen to maximize both quantity of light absorbed in region and fraction of photogenerated charge carriers collect at junction.

B74-10100

THIN-FILM TEMPERATURE SENSOR

J. Maserjian and J. R. Gatewood

Aug. 1974

NPO-11775

Sensor measures rapid temperature changes in fluid streams. Sensor withstands contacts with various corrosive fluids, high fluid-flow rates, and turbulences caused by rapid changes in flow rates. Capacitor is part of resonant bridge circuit which produces ac voltage that is proportional to temperature.

B74-10107

IMPROVED SOLID-STATE TRIODE CONSTRUCTION

A. Shumka

Aug. 1974

NPO-13064

Triode is constructed from rectangular filament made of near-intrinsic n-type silicon. Collector and emitter are formed on opposite faces of filament and are spaced approximately 0.13 mm apart. Gate electrodes are alloyed to filament and extend longitudinally along midsection of other two opposite sides, approximately 0.06 mm apart.

B74-10110

INTEGRATED STRUCTURE VACUUM TUBE: A CONCEPT

J. Dimeff and W. J. Kerwin (Univ. of Ariz.)

Aug. 1974

ARC-10445

Cathode emission is made to occur by heating entire structure to 600 C, and positive potential is applied to anode with negative potential on grids. Electron flow takes place from ring to circular anode through electric field produced by grids.

B74-10112

BIO-ISOLATED DC OPERATIONAL AMPLIFIER

R. D. Lee

Aug. 1974

ARC-10596

Possibility of shocks from leakage currents can be reduced by use of isolated preamplifiers. Amplifier consists of battery-powered operational amplifier coupled by means of light-emitting diodes to another amplifier which may be grounded and operated from ac power mains or separate battery supply.

B74-10120

DECIMAL DIGIT GENERATOR FOR COMMUTATED DATA: A CONCEPT

S. J. Rusk (Lockheed Missiles and Space Co.)

Aug. 1974

ARC-10856

Perform analog-to-digital conversion on input signal with staircase circuit having 10% resolution, convert digital result to analog voltage, subtract it from original input signal; read out feedback signals as decimal digit representation during one clock phase and servo-error difference between input and feedback as analog portion during following clock phase.

B74-10160

POCKET GAUGE FOR CHECKING INSERT CLOCKING OF MULTIPIN CIRCULAR CONNECTORS

E. Billmeyer

Sep. 1974

NPO-11924

Prototype gauge has been constructed of heavy clear plastic with engraved degree lines, numerals, and alignment lines. With suitable modification, gauge can be mass produced. It could be marketed directly to users or to manufacturers of circular multipin connectors.

B74-10180

MINIATURE BIAxIAL STRAIN TRANSDUCER

I. S. Hoffman

Oct. 1974

LANGLEY-11648

Transducer is completely reusable and permits relocation to alternate points to be accomplished quickly. Size permits measurements to be made simultaneously over small areas and yields outputs directly proportional to strains measured. Transducer verifies elastic modulus, Poisson's ratio, and principal strain axes on materials.

B74-10192

MICROELECTRONICS PACKAGING TECHNIQUE: A CONCEPT

E. J. Stringer (Rockwell Intern. Corp.)

Nov. 1974

MSC-19399

Plug-in flat packs and flat conductor cable (FCC) can be used to make compact, lightweight, external monitoring system requiring minimum of hard wiring. Microelectronic monitoring panel includes replaceable integrated or hybrid circuit flat packs and FCC.

B74-10196

HEART-RATE PULSE-SHIFT DETECTOR

M. Anderson (Northrop Corp./Electronics Div.)

Nov. 1974

ARC-10729

Detector circuit accurately separates and counts phase-shift pulses over wide range of basic pulse-rate frequency, and also provides reasonable representation of full repetitive EKG waveform. Single telemeter implanted in small animal monitors not only body temperature but also animal movement and heart rate.

B74-10197

REFERENCE APPARATUS FOR MEDICAL ULTRASONIC TRANSDUCER

R. D. Lee, R. J. Hudock, and D. I. Shute

Nov. 1974

ARC-10753

Once reference apparatus has been located properly, and its position on chest of patient has been recorded on skin by means of indelible fiducial marks, it is simple matter at later time to reposition probe on chest over heart. In this way, signals from exact same area of heart can be re-examined.

B74-10209

INTERPLEX MODULATION AND A SUPPRESSED-CARRIER TRACKING LOOP FOR COHERENT COMMUNICATIONS SYSTEMS

S. Butman and U. Timor

Nov. 1974

NPO-11572

Simple addition to hardware and new mode of operation of transmitter and receiver in coherent, PCM/PSK/PM configuration greatly improves channel efficiency. Procedure reduces amount of power lost to intermodulation products.

B74-10234

A METHOD FOR POLYCRYSTALLINE SILICON DELINEATION APPLICABLE TO A DOUBLE-DIFFUSED MOS TRANSISTOR

J. L. Halsor (Westinghouse Elec. Corp.) and H. C. Lin (Westinghouse Elec. Corp.)

Dec. 1974

LANGLEY-11536; LANGLEY-11598

Method is simple and eliminates requirement for unreliable special etchants. Structure is graded in resistivity to prevent punch-through and has very narrow channel length to increase frequency response. Contacts are on top to permit planar integrated circuit structure. Polycrystalline shield will prevent creation of inversion layer in isolated region.

B74-10239

IMPROVED CIRCUIT-BOARD INTERCONNECTORS

J. H. Martin (Charles Stark Draper Lab., Inc.)
Dec. 1974
MSC-12661

One component serves three functions, electrical interconnections, thermal control, and mechanical integrity, at same time. Several versions of design: (1) Insulated support plate contains holes; (2) Alternate support plate configuration uses rivets instead of pins; and (3) Another configuration includes leaf-spring contacts instead of pins or rivets.

B74-10242
HIGH-VOLTAGE DISTRIBUTORS

J. F. McChesney, Jr.
Dec. 1974
GSFC-11849

Two distributors reduce high-voltage breakdowns and corona discharges. Both distributors are constructed to prevent air traps and facilitate servicing without soldering. Occurrence of coronas is also minimized due to smooth surfaces of device.

B74-10251
PHASED-ARRAY ANTENNA PHASE CONTROL CIRCUIT USING FREQUENCY MULTIPLICATION

R. J. Mailloux and P. R. Caron
Jan. 1975
ERC-10285

Circuit separates out, from multiplied signals, antenna element signals which have desirable phase angles and feeds them to appropriate antenna elements of phased array. System may be used in either transmitting or receiving mode.

B74-10253
SELF-PROTECTED ELECTRODES LIMIT FIELD-EMISSION CURRENT

W. L. Lees
Jan. 1975
ERC-10015

One cathode includes array of square-shaped conductor columns. Columns are electrically interconnected by conducting plate on bottom. Each column provides field-emission current. Another cathode includes array of rodlike conductors. Layer is covered by control film made of conducting material. Film is isolated from each conductor.

B74-10255
AMPLITUDE-STEERED, PSEUDOPHASED ANTENNA ARRAY

C. C. Johnson, R. J. Martel (Westinghouse), F. J. Dietrich (Philco Ford Corp.), and G. J. Koloboff (Philco Ford Corp.)
Jan. 1975

GSFC-11446

Beam may be smoothly scanned around ring array without instantaneous phase transitions while maintaining constant radiated power by gradually transferring power from receding element to element next to leading edge of driven segment, and by accomplishing antenna element switching during intervals when no power is being applied to elements being switched.

B74-10256
SYNCHRONIZED FREQUENCY TRANSPOSER

J. F. Sutton
Jan. 1975
GSFC-11763

Transposer operates entirely in analog domain. Input analog signal is serially loaded into analog register at rate determined by voltage-controlled oscillator. At same time, signal is serially unloaded from other register at expanded time rate determined by divider output feeding through switch.

B74-10257
BIDIRECTIONAL ZOOM ANTENNA

R. F. Schmidt
Jan. 1975 See also B74-10041
GSFC-11862

Antenna comprises two parabolic cylinders placed orthogonally to each other. One cylinder serves as main reflector, and

the other as subreflector. Cylinders have telescoping sections to vary antenna beamwidth. Beamwidth can be adjusted in elevation, azimuth, or both. Design has no restriction as to choice of polarization.

B74-10258
OPTICAL COMMUNICATION CHANNEL SIMULATOR SYSTEM

M. W. Fitzmaurice and M. Tycz
Jan. 1975
GSFC-11877

Optical transmission link is simulated by positioning linear optical modulator between optical carrier source and receiver for carrier. Optical modulator is driven by analog signal, derived from analog computer circuit, having random variations indicative of characteristics of transmission link.

B74-10259
COLOR-CODED AREA SENSITIVITY MAPS OF PHOTOMULTIPLIERS

O. Youngbluth, Jr.
Jan. 1975
LANGLEY-10320

Technique was devised specifically for testing photomultipliers and other photodetectors, but it could also be used to color code any type of mapping data, such as weather or topographical maps, thermal or pressure distributions on reentry surfaces, or any other three-dimensional data to be displayed in two-dimensional form.

B74-10260
HORN ANTENNA WITH V-SHAPED CORRUGATED SURFACE

F. B. Beck, C. A. Mentzer (Ohio State Univ.), and L. Peters, Jr. (Ohio State Univ.)
Jan. 1975 See also NASA-CR-2317
LANGLEY-11112

Corrugated shape is easily machined for millimeter wave application and is better suited for folding antenna designs. Measured performance showed "V" corrugations and rectangular corrugations have nearly the same pattern beamwidth, gain, and impedance. Also, "V" corrugations have higher relative power loss.

B74-10262
DEPOSITING SPACING LAYERS ON MAGNETIC FILM WITH LIQUID PHASE EPITAXY

J. W. Moody (Monsanto Res. Corp.), R. W. Shaw (Monsanto Res. Corp.), and R. M. Sanford (Monsanto Res. Corp.)
Jan. 1975 See also NASA-CR-2413

LANGLEY-11528

Liquid phase epitaxy spacing layer is compatible with systems which are hard-bubble proofed by use of second magnetic garnet film as capping layer. Composite is superior in that: circuit fabrication time is reduced; adherence is superior; visibility is better; and, good match of thermal expansion coefficients is provided.

B74-10274
DIGITAL SECOND-ORDER PHASE-LOCKED LOOP

J. K. Holmes, C. Carl, and C. R. Tagnelia
Jan. 1975
NPO-11905

Actual tests with second-order digital phase-locked loop at simulated relative Doppler shift of 1×0.0001 produced phase lock with timing error of 6.5 deg and no appreciable Doppler bias. Loop thus appears to achieve subcarrier synchronization and to remove bias due to Doppler shift in range of interest.

B74-10280
RELIABILITY DATA FOR ELECTRONIC AND ELECTRO-MECHANICAL COMPONENTS: A REPORT

W. R. Scott
Jan. 1975
NPO-13153

Ten classes of parts covered in report: capacitors, crystals,

01 ELECTRONICS/ELECTRICAL

diodes, fuses, inductors, microcircuits, relays, fixed resistors, transformers, and transistors. Each class is contained in separate section and includes discussion of inherent failure modes, screening rationale, general screening requirements, derating criteria, and stress-analysis data.

B74-10281

STRAIGHT-LINE IC REMOVAL TOOL

R. A. Marzek and W. S. Read

Jan. 1975

NPO-13157

Tool operates by applying force perpendicularly to socket plane. Tool can be operated in cramped or confined quarters and can effect integrated circuit removal without damage. It may also be useful to hold nut or bolt in confined space while tightening, when it is not possible to use conventional tool.

B74-10282

DC-TO-AC INVERTER RATIO FAILURE DETECTOR

T. J. Ebersole (GE) and R. E. Andrews (GE)

Jan. 1975

NPO-13160

Failure detection technique is based upon input-output ratios, which is independent of inverter loading. Since inverter has fixed relationship between V-in/V-out and I-in/I-out, failure detection criteria are based on this ratio, which is simply inverter transformer turns ratio, K, equal to primary turns divided by secondary turns.

B74-10283

LOW-LOSS, CIRCULARLY-POLARIZED DICHOIC PLATE

R. T. Woo and A. Ludwig

Jan. 1975

NPO-13171

Dichroic plate has orthogonally-disposed, loaded dipole apertures with their orientations arranged so as to cancel cross-coupling effects which would otherwise result in power loss to circularly polarized signal.

B74-10286

MICROMETEOROID VELOCITY-AND-TRAJECTORY ANALYZER

S. O. Auer (Natl. Acad. of Sci.)

Feb. 1975

GSFC-11889

By adding potential energy of charged capacitor to kinetic energy of impacting particle, new technique causes major fraction of atoms in microscopic particle impacting on particle-receiving surface to be ionized. Chemical constituents of impacting particle are represented by generated ion mass spectrum in approximately correct proportions.

B74-10287

MICROMETEOROID COMPOSITION ANALYZER

S. O. Auer (Natl. Acad. of Sci.)

Feb. 1975

GSFC-11892

Technique has been developed to detect moving charged particles and to determine their positions and/or their velocity vectors, relative to three mutually orthogonal axes, without particle impact or any elements of detector and without changing particle charge or motion.

B74-10290

ALINEMENT FIXTURE FOR PRECISION CUTTING OF PRINTED-WIRING BOARDS

M. L. Holliday

Feb. 1975

LANGLEY-11658

Six alinement templates are used to trim-cut majority of boards fabricated. Their use has reduced time required for cutting operation and has also reduced high rejection rate of cut boards to near zero.

B74-10294

IMPROVED FABRICATION OF ELECTROLYTIC CAPACITORS

F. J. Gamari (Sprague Elec. Co.) and J. L. Moresi (Sprague Elec. Co.)

Feb. 1975

M-FS-23133

After processing parts for assembly, insulative cup is fitted to bottom of can, then electrolytic solution consisting of white sulfuric acid gel is inserted into can. Pellet is put in can and is fitted tightly into cup. Finally, bead weld is formed between can and header plug.

B74-10295

STABLE GROUP DELAY CABLE

P. A. Clements

Feb. 1975

NPO-13138

It was found that group delay is function of pressure in air dielectric coaxial cable. For example, 600-ft air dielectric cable will change phase 10 deg at 150 MHz when air pressure in cable changes from zero to 20 psi.

02 ELECTRONIC/ELECTRICAL SYSTEMS

B74-10004

SELF-HEALING FUSE

N. D. Jones (GE), R. E. Kinsinger (GE), and L. P. Harris (GE)

Mar. 1974 See also NASA-CR-121244

LEWIS-11964

Fast-acting current limiting device provides current overload protection for vulnerable circuit elements and then re-establishes conduction path within milliseconds. Fuse can also perform as fast-acting switch to clear transient circuit overloads. Fuse takes advantage of large increase in electrical resistivity that occurs when liquid metal vaporizes.

B74-10021

DATA PROCESSOR WITH CONDITIONALLY SUPPLIED CLOCK SIGNALS

R. J. Lesniewski

Apr. 1974

GSFC-10975

Parallel data processor clock pulses are conditionally supplied to processing unit in response to relative values of binary bit of control source and binary bit derived on single lead. Use of single lead simplifies fabrication of large-scale integrated networks.

B74-10024

TRAFFIC CONTROL SYSTEM AND METHOD

C. R. Laughlin, R. C. Hollenbaugh, and W. K. Allen

Apr. 1974

GSFC-10087

Frequency of carrier received by aircraft is measured and compared with reference to indicate magnitude of Doppler shift. One Doppler frequency range is selected and indicated by digital signal. Difference between frequency is offset of apparent carrier frequency transmitted by aircraft.

B74-10025

LOW-DISTORTION RECEIVER FOR BILEVEL, BASEBAND PCM WAVEFORMS

G. E. Proch (Lockheed Electron. Co.)

Apr. 1974

MSC-14557

Digital receiver improves discrimination between information signals and noise and provides order to magnitude reduction in systematic distortion. Receiver combines advantages of band-limiting prefilter and high-amplitude thresholds to provide asynchronous discrimination between information signals and spurious signals.

B74-10035
HIGH Q BAND-PASS RESONATORS UTILIZING COMPOSITE BAND-STOP RESONATOR PAIRS

H. C. Okean (AIL Div., Cutler-Hammer Corp.)

Jul. 1974

GSFC-10990

Resonator pairs are formed of composite series- or parallel-connected transmission-line elements, which are exclusively quarter-wavelength half-wave-length lines. Resonator elements are constructed with microstriplines in parallel planes separated by dielectric. Striplines of coaxial transmission lines can be used in construction also.

B74-10041
VARIABLE-BEAMWIDTH ANTENNAS

R. F. Schmidt

Jul. 1974

GSFC-11760

Two effective designs have been developed for Cassegrain and Gregorian antenna configurations. Each provides for both high-gain and low-gain operations. Cassegrain system sacrifices some efficiency due to small amount of increased spillover loss. Gregorian system provides for independent spillover control with two feeds.

B74-10050
HIGH-DIRECTIVITY ACOUSTIC ANTENNA

H. M. A. EL-Sum (EL-Sum Consultants)

May 1974 See also NASA-CR-114636

ARC-10789

Acoustic antenna with unique electronic steering control is used to identify and define aerodynamic noise sources in free field, particularly in wind tunnel which is quite reverberant. Provision is made for high directivity as well as improved discrimination against unwanted background noise such as reverberation or echoes.

B74-10078
FAIL-SAFE FIRE DETECTION SYSTEM

E. T. Bloam

Aug. 1974

LEWIS-12238

Fire detection control system continually monitors its own integrity, automatically signals any malfunction, and separately signals fire in any zone being monitored. Should be of interest in fields of chemical and petroleum processing, power generation, equipment testing, and building protection.

B74-10083
ELECTRONIC HIGH PASS FILTER

V. S. Peterson and I. G. Hansen

Aug. 1974

LEWIS-11600

Ultra accurate filter is used with static type pressure transducers where it is desirable to extract low frequency dynamic signals from combined static and dynamic signal. System can be calibrated at any time with dc voltages.

B74-10086
A LOW COST "AIR MASS 2" SOLAR SIMULATOR

K. Yass, H. B. Curtis, and P. Harlamert, Jr.

Sep. 1974 See also NASA-TM-X-3059

LEWIS-12266

Tungsten halogen projection lamps have integral ellipsoidal reflector, and hexagonal shaped plastic Fresnel lenses. Reflector is dichroic coated to reduce infrared content of reflected radiation. Array of lamps and lenses produces uniform collimated beam having near AM2 spectrum and intensity that can be used for testing flat plate solar collectors.

B74-10088
TIME-CONTROL SYSTEM FOR COMMUNICATION BETWEEN DATA-COLLECTION AND ORBITING

C. W. Kurvin (Radiation, Inc.)

Aug. 1974

GSFC-11182

Platform design includes timers which limit data transmission to times when satellites are within radio communication range. As result of reduced power requirement, data-collection platforms now can be equipped with significantly lighter battery packages.

B74-10093
GENERALIZED CURRENT DISTRIBUTION RULE

M. A. Tapia (Ga. Inst. of Tech.)

Aug. 1974

LANGLEY-11565

Method helps determine branch current in parallel-series network in relation to total input current by inspection. Method is particularly useful for circuits with many elements when branch elements are described as admittances. If element values are variables, then these values may be expressed as admittances to find currents readily in desired branches.

B74-10097
POCKET-SIZE MICROWAVE RADIATION HAZARD DETECTOR

R. B. Kolbly

Aug. 1974

NPO-11461

Inexpensive lightweight unit is easily carried in coat pocket or attached to belt, detector sounds alarm in presence of dangerous microwave radiation levels. Unit consists of antenna, detector, level sensor, keyed oscillator, and speaker. Antenna may be single equiangular spiral or set of orthogonal slot dipoles. Signal detector is simple diode in small package.

B74-10098
FREQUENCY DISCRIMINATOR/PHASE DETECTOR

R. B. Crow

Aug. 1974

NPO-11515

Circuit provides dual function of frequency discriminator/phase detector which reduces frequency acquisition time without adding to circuit complexity. Both frequency discriminators, in evaluated frequency discriminator/phase detector circuits, are effective two decades above and below center frequency.

B74-10099
FACILITY FOR TESTING SOLAR CELLS

R. K. Yasui

Aug. 1974

NPO-11761

Primary components of facility are test chamber and external solar simulator. Voltage-current performance characteristics of solar cells at various combinations of temperature and light intensity are plotted on X-Y recorder. Data are fed into computer for calculation of maximum power, curve shape factor, cell efficiency, and averages of each parameter.

B74-10104
THIRD-ORDER PHASE-LOCKED LOOP RECEIVER

R. B. Crow and R. C. Tausworthe

Aug. 1974

NPO-11941

Third-order extension to present second-order systems extends their Doppler tracking capabilities. It widens receiver pull-in range, decreases pull-in time, lowers voltage-controlled oscillator (VCO) noise (determining when no signal is present), and lessens susceptibility to VCO drift.

B74-10106
TEMPERATURE COMPENSATION OF DIGITAL INERTIAL SENSORS

P. J. Hand

Aug. 1974

NPO-13044

Heaters for thermal stabilization are unnecessary when analog dc voltage provided by gyroscope temperature sensor is used to change outputs to compensate for temperature variations. Sensor is normally installed on all precision gyroscopes.

02 ELECTRONIC/ELECTRICAL SYSTEMS

B74-10109

FAST SIGNAL AVERAGER

T. N. Cornsweet (Stanford Res. Inst.)

Aug. 1974

ARC-10090

Electron beam of cathode ray tube with fast phosphor is intensity-modulated by input signal to produce repetitive horizontal trace of luminous intensity proportional to time-varying signal strength. Horizontal trace of cathode ray tube occurs so repetitive portion of signal of interest is encompassed within its length.

B74-10115

ANALYSIS OF ORBITAL HEAT TRANSFER

T. Buna (Martin Marietta Corp.)

Aug. 1974

ARC-10842

Radar mapping of planets can be accomplished at lower cost and with reduced emphasis on propulsion system capability from spacecraft operating in elliptical orbit than from circular orbit.

B74-10137

ANTI-MULTIPATH DIGITAL SIGNAL DETECTOR

J. H. Painter

Sep. 1974

LANGLEY-11379

Detector operates in conjunction with radio frequency portion of receiver to detect digital signals transmitted in known modulation formats. Signal is constructed by assigning known and distinct modulation waveforms to sequence of message symbols. It reconstructs transmitted digital sequence with minimum probability that any reconstructed digit will be in error.

B74-10142

MAGNETOMETER WITH MINIATURE TRANSDUCER AND AUTOMATIC TRANSDUCER SCANNING APPARATUS

R. A. Breckenridge, W. J. Debnam, Jr., C. L. Fales, and A. V. Pohm (Iowa State Univ.)

Sep. 1974

LANGLEY-11617

Magnetometer is simple to operate and has fast response. Transducer is rugged and flat and can measure magnetic fields as close as 0.08 mm from any relatively flat surface. Magnetometer has active region of approximately 0.64 by 0.76 mm and is capable of good spatial resolution of magnetic fields as low as 0.02 Oe (1.6 A/m).

B74-10147

ERROR-CORRECTING CODES FOR HIGH-SPEED DIGITAL COMPUTERS

R. D. Campbell (Sperry Rand Corp.)

Sep. 1974

M-FS-22887

Published document discusses method for correcting errors. According to this method, computer operation becomes fault-tolerant, i.e., its operation is error-free in spite of single hardware element malfunction. Also, method provides for detection and correction of repetitive and spurious processing and transmission errors.

B74-10150

CLOSED-CIRCUIT-TELEVISION WELDING-ELECTRODE GUIDANCE SYSTEM

H. E. Smith, D. L. Stephens, R. A. Taylor, W. A. Wall, R. M. Avery, and H. P. Wunsch (Hayes Intern. Corp.)

Sep. 1974

M-FS-23026

Closed-circuit TV camera is mounted parallel to electrode and moves along with it. Camera is scanned along seam so seam is viewed parallel with scan lines on TV monitor. Two fiber optics illuminators are attached to guidance system; they illuminate seam for TV camera.

B74-10158

IMPROVED THERMAL ISOLATION FOR SUPERCONDUCTING MAGNET SYSTEMS

E. R. Wiebe

Sep. 1974

NPO-11875

Closed-cycle refrigerating system for superconductive magnet and maser is operated in vacuum environment. Each wire leading from external power source passes through cooling station which blocks heat conduction. In connection with these stations, switch with small incandescent light bulb, which generates heat, is used to stop superconduction.

B74-10162

IMPROVED CAPACITANCE MULTIPLIER CIRCUIT

A. J. Kline, Jr. (Motorola, Inc.)

Sep. 1974

NPO-11948

Circuit multiplies capacitance without increasing overall circuit gain. In addition, circuit may be designed to include lag or lead/lag transfer function and independent gain adjustment.

B74-10163

MINICOMPUTER-CONTROLLED FREQUENCY GENERATOR

R. A. Winkelstein

Sep. 1974

NPO-11962

Extremely-accurate and low-phase-noise frequency generator varies oscillator frequency as predetermined function of time. System could be used: (a) to automatically vary transmission frequencies in accordance with seasonal and diurnal changes in ionospheric conditions, (b) as automatic tuner for heterodyne receivers, or (c) as control element for phase-locked telemetry receivers.

B74-10165

ADVANCED-PRIORITY INTERRUPT MODULE

H. L. Jeane

Sep. 1974

NPO-13067

Module contains mask register, line register, primary sync register, secondary sync register, push-pop stacking register, control section, and interrupt address generator. APIM operates in conjunction with logic found in majority of minicomputers to provide fully-vectored interrupt capabilities.

B74-10170

CONTINUOUS FOURIER TRANSFORM SYSTEM

R. M. Munoz

Sep. 1974

ARC-10466

Complex digital computer is not required, only summing amplifiers and attenuators are used for transformation of signal. Continuous transform system may be used for spectrum analysis, filtering, transfer function synthesis, and communications.

B74-10171

G-LOAD INDICATOR AND WARNING DEVICE FOR AIRCRAFT

J. C. Howard

Sep. 1974

ARC-10806

Device facilitates pilot control of g-load maneuvers and provides immediate indication of g-load constraint violations. It may be used in test flights, in aircraft simulators, or in displays of performance of remotely piloted aircraft.

B74-10176

MAGNETIC-HEADING REFERENCE DEVICE

H. D. Garner

Oct. 1974 See also NASA-TN-D-7460

LANGLEY-11387

Inexpensive and reliable device is used in conjunction with fluidic-electronic wing-leveler system. Single magnetometer is placed so pilot can make adjustments in aircraft heading simply by rotating magnetometer itself.

B74-10178**WIDE DEVIATION PHASE MODULATOR**

R. H. Couch, C. P. Hearn, and L. R. Wilson (LTV Aerospace Corp.)

Oct. 1974

LANGLEY-11607

Modulator produces phase-modulated waveform having high modulating linearity. Technique is inherently wideband with respect to carrier frequency and can operate over decade carrier frequency range without adjustments. Circuit performance is both mathematically predictable and highly reproducible.

B74-10191**REDUCTION OF QUANTIZATION ERROR IN MEASUREMENT OF FREQUENCY**

E. J. Nossen (RCA) and E. R. Starner (RCA)

Nov. 1974

MSC-14649

Method reduces quantization errors using new digital circuit. Circuit provides very high resolution (10 to the minus 2nd power to 10 to the minus 3rd power Hz) without high-speed counters. It lends itself to microminaturization and is simple to construct. Unknown frequency is compared to standard frequency by means of zero-crossing coincidence-detecting circuit.

B74-10198**SPACECRAFT ATTITUDE DETERMINATION BY FANSCAN TECHNIQUE**

H. A. Lassen (TRW Systems Group, TRW, Inc.) and J. H. Decanini (TRW Systems Group, TRW, Inc.)

Nov. 1974

ARC-10827

To determine orientation, or attitude, of spacecraft in flight relative to data-receiving antenna on earth use fanbeam antenna which is offset in angle from spin axis of spacecraft and provides fan-like radiation pattern.

B74-10250**IMPROVED CIRCULARLY POLARIZED ANTENNA**

L. C. Van Atta and R. J. Mailloux

Jan. 1975

ERC-10214

Antenna includes two sets of linearly polarized elements. Each set contains slots in parallel array. Sets are mutually orthogonal and are driven in phase quadrature. By changing lengths of slots or their separations, antenna beamwidth can be changed over wide range. Similar results are achieved with dipole configuration.

B74-10276**NEGATIVE ION SPECTROMETRY FOR DETECTING NITRATED EXPLOSIVES**

H. G. Boettger and J. Yinon

Jan. 1975

NPO-13082

Ionization procedure is modified to produce mainly negative ions by electron capture. Peaks of negative ions are monitored conventionally. Nitrated organic materials could be identified directly from sample sniff inlet stream by suitably modified mass spectrometer because of unique electronegativity which nitro group imparts to organic material.

B74-10277**FULL-FLOW FLUID FILTER**

L. R. Toth and R. Hagler, Jr.

Jan. 1975

NPO-13118

Etched-disk filter was developed with fluid passageways in configuration which allows relatively unrestricted flow of fluid and has stagnation areas for collection of impurities. In addition, filter housing without center post was developed to improve flow characteristics.

B74-10284**TELECOMMUNICATIONS SYSTEMS DESIGN TECHNIQUES HANDBOOK**

R. E. Edelson, J. R. Gilder, G. W. Garrison, A. J. Spear, P. M. Kotani, B. D. Trumpis, B. K. Levitt, C. E. Hanna, and B. Dorsch

Jan. 1975

NPO-13245

Handbook presents design and analysis of tracking, telemetry, and command functions utilized in these systems with particular emphasis on deep-space telecommunications. Antenna requirements are also discussed. Handbook provides number of tables outlining various performance criteria. Block diagrams and performance charts are also presented.

B74-10285**LOGARITHMIC-FUNCTION GENERATOR**

P. R. Caron

Feb. 1975

ERC-10267

Solid-state logarithmic-function generator is compact and provides improved accuracy. Generator includes a stable multivibrator feeding into RC circuit. Resulting exponentially decaying voltage is compared with input signal. Generator output is proportional to time required for exponential voltage to decay from preset reference level to level of input signal.

B74-10288**HIGH-EFFICIENCY MULTIFREQUENCY FEED**

J. S. Ajioka (Hughes Aircraft Co.), G. I. Tsuda (Hughes Aircraft Co.), and W. A. Leeper (Hughes Aircraft Co.)

Feb. 1975

GSFC-11909

Mutual blockage and mutual coupling are eliminated with multifrequency feed. Feed provides common aperture for 6-GHz and 4-GHz bands and crossed dipole for 1-GHz band. Design is highly efficient and has good polarization diversity.

B74-10296**HIGH-SPEED FAULT-TOLERANT TELEMETRY/COMPUTER INTERFACE**

G. C. Gilley

Feb. 1975

NPO-13139

Fault-tolerant telemetry/computer interface allows memory sharing by two data processing systems and maintains integrity of fault-tolerant environment of computer.

B74-10299**APPARATUS FOR HEAT TREATING PLASTIC BELTS**

A. Topits, Jr.

Feb. 1975

NPO-13205

Apparatus performs programed rotating, stretching/shrinking and heat treatment necessary to fabrication of high-performance plastic belts. Belts can be treated in lengths varying from 7 to 48 in., in widths up to 1 in., and in thicknesses up to approximately 0.003 in.

B74-10300**LOCATION OF VEHICLES USING AM STATION BROADCASTING SIGNALS**

G. R. Hansen, Jr.

Feb. 1975

NPO-13217

Imaginary hyperbolic grid patterns formed by three local AM broadcasting stations were utilized in study. Each hyperbola is defined by constant phase difference between arbitrary signals integrally related to those coming from two stations. When three stations are used, grid is formed covering area with intersecting hyperbolas.

03 PHYSICAL SCIENCES**B74-10012****ZEROS OF CERTAIN CROSS PRODUCTS OF BESSEL FUNCTIONS OF FRACTIONAL ORDER**

03 PHYSICAL SCIENCES

W. A. Rostafinski
Apr. 1974 See also NASA-TM-X-2698
LEWIS-12221

Interpolation between values given in table of zeros is permitted provided curve is traced between at least three values from table. Zeros have been obtained on digital computer and results were rounded off to the fourth decimal point.

B74-10019 DIRECTORY OF AEROSPACE SAFETY SPECIALIZED INFORMATION SOURCES

E. A. Fullerton (Systems Develop. Corp.), L. S. Rubens (Systems Develop. Corp.), G. Mandel, and P. J. McKenna
Jun. 1974 See also NASA-CR-121206

LEWIS-12223

Directory aids safety specialists in locating information sources and individual experts in engineering-related fields. Lists 170 organizations and approximately 300 individuals who can provide safety-related technical information in form of documentation, data, and consulting expertise. Information on hazard and failure cause identification, accident analysis, and materials characteristics are covered.

B74-10022 RADIOISOTOPE THERMAL GENERATOR (RTG) POWER CONDITIONER

W. S. Stacey (Martin Marietta Corp.)
Apr. 1974

LANGLEY-11313

New regulator: (a) permits operation with high-impedance radioisotope thermal generators at conversion efficiencies typically above 90%; (b) does not require input filtering; (c) eliminates current spiking; and (d) is simple, efficient, and reliable. Converter-charger pair could be adapted for other power levels by changing transistor, diode, capacitor bank, and inductor.

B74-10038 DUALY-MODE-LOCKED ND: YAG LASER

J. Osmundson, E. Rowe, and D. Santaripa
Jul. 1974

GSFC-11746

Mode-locking is stabilized effectively by conventional loss-modulator and phase-modulator, mode-locking elements placed in laser cavity in optical series with one another. Resulting dually-mode-locked system provides pulses with constant phase relative to mode-lock drive signal without presence of relaxation oscillation noise.

B74-10042 RECORDER/PROCESSOR APPARATUS

I. H. Shim (Image Inform. Inc.) and J. J. Stelben (Image Inform. Inc.)

Jul. 1974

GSFC-11553

Laser beam is intensity modulated in response to incoming video signals. Latent image is recorded on rotating drum which generates raster in conjunction with incrementally-driven lens carriage. Image is fed automatically to thermal processor; actual image is developed by controlled application of heat onto medium containing latent image.

B74-10051 RADIOISOTOPE HEATER

T. H. Smith, III (TRW Systems Group, TRW, Inc.), D. B. Evans (TRW Systems Group, TRW, Inc.), and A. J. Steinberger (TRW Systems Group, TRW, Inc.)

May 1974

ARC-10791

One-watt heater unit is about size of flashlight cell and can be safely handled for several minutes without danger. Unit is completely sealed and can withstand buildup of helium pressure from isotope disintegration for up to 30 years. Number of units can be safely grouped together.

B74-10054 EXTENDIBLE PROBE FOR ATMOSPHERE SAMPLING

W. J. Jones (McDonnell-Douglas Corp.), G. D. Mitchell (McDonnell-Douglas Corp.), and G. M. Jones (McDonnell-Douglas Corp.)
May 1974

ARC-10829

Sampling probe is extended through small plug in heat shield by loaded bellows to sample planetary atmosphere for compositional analysis and total pressure during entry of space probe. Assembly prevents contamination of sample by gases from pyrotechnic device and serves as sealed plenum for atmospheric pressure sensor.

B74-10055 TOROIDAL EQUIPMENT PACKAGING

W. J. Jones (McDonnell-Douglas Corp.) and J. W. Sherwood (McDonnell-Douglas Corp.)
May 1974

ARC-10828

For optimal packaging of equipment in shallow-cone vehicle toroidal packaging sets center of gravity of equipment forward. Packages are supported on rings within probe structure to provide low center of gravity. System permits interchanging of units for balance control, so minimum of lateral ballast is required.

B74-10056 BATTERY ACTIVATION SYSTEM

C. Sollo (McDonnell-Douglas Corp.), D. L. Smith (McDonnell-Douglas Corp.), and V. P. King (McDonnell-Douglas Corp.)
May 1974

ARC-10832

Initiator is fired to set off gas generator; gas flows into manifold and as gas pressure increases, chlorotrifluoroethylene diaphragms transfer force to polyethylene bags filled with electrolyte. Small membrane at base of each bag is ruptured, allowing electrolyte to flow into cells.

B74-10060 MEASUREMENT OF TEMPERATURE PROFILES IN HOT GASES AND FLAMES

R. S. Simmons (Univ. of Mich.), H. Y. Yamada (Univ. of Mich.), G. H. Lindquist (Univ. of Mich.), and C. B. Arnold (Univ. of Mich.)

Jul. 1974 See also NASA-CR-120894; NASA-CR-72491

LEWIS-12055

Computer program was written for calculation of molecular radiative transfer from hot gases. Shape of temperature profile was approximated in terms of simple geometric forms so profile could be characterized in terms of few parameters. Parameters were adjusted in calculations using appropriate radiative-transfer expression until best fit was obtained with observed spectra.

B74-10063 LONG LIFE NEUTRON GENERATOR TARGET USING DEUTERIUM PASS-THROUGH STRUCTURE

D. L. Alger

Jul. 1974

LEWIS-11866

Target structure permits all deuterons, except the one-in-a-million that interacts with tritium atom to produce a neutron, to pass completely through target structure and be returned to vacuum system. Since tritium atoms are not displaced as in conventional targets, tritium population will remain unchanged while under deuteron bombardment.

B74-10065 METHOD OF MEASURING THE THICKNESS OF RADIOAC- TIVE THIN FILMS

D. L. Alger, R. Steinberg, and M. D. Makinen

Jul. 1974 See also NASA-TM-X-68170

LEWIS-11971

Thickness monitor consists of proportional X-ray counter coupled to pulse counting system, copper filter over face of counter, rotatable collimator containing radioactive source, and rotatable shutter. Monitor can be used as integral part of neutron generator. It has been used to measure titanium tritide film thicknesses from 0.1 to 30 micrometers.

B74-10066**A HIGH YIELD NEUTRON TARGET**

D. L. Alger, R. Steinberg, and P. Weisenbach

Aug. 1974 See also B74-10065; NASA-TM-X-68179

LEWIS-12058

Target, in cylinder form, rotates rapidly in front of beam. Titanium tritide film is much thicker than range of accelerated deuteron. Sputtering electrode permits full use of thick film. Stream of high-velocity coolant provides efficient transfer of heat from target.

B74-10071**MODULATED HYDROGEN-ION FLAME DETECTOR: A CONCEPT**

J. Dimeff

Jun. 1974

ARC-10322

To improve sensitivity of flame ionization detectors chop flow of sample into flame so resulting ionization will be modulated and therefore readily amplified independently of steady-state background ionization, thermoelectric effects, contact potentials, etc. Detector should discriminate sharply between desired signal and undesired signals.

B74-10072**PROBE FOR MEASURING TURBULENT REAL-TIME SHEAR-STRESS WAVES**

D. Y. Cheng

Jun. 1974

ARC-10755

To measure spectrum, magnitude, and time-average value of turbulent shear stress in flow of gas use small, hollow sphere suspended in flow to measure drag fluctuations in two 90 deg-directions as function of time.

B74-10081**COBALT BASE SUPERALLOY HAS OUTSTANDING PROPERTIES UP TO 1478 K (2200 F)**

R. A. Harlow (Philco-Ford Corp.), F. H. Harf, and J. C. Freche

Aug. 1974 See also NASA-CR-121189; NASA-CR-72726

LEWIS-12089

Alloy VM-103 is especially promising for use in applications requiring short time exposure to very high temperatures. Its properties over broad range of temperatures are superior to those of comparable commercial wrought cobalt-base superalloys. L-605 and HS-188.

B74-10094**VIEWGRAPH PREPARATION MADE EASIER**

H. W. Broskie, E. E. Burcher, F. K. Gough, Jr., S. J. Katzberg, and H. B. Pate, Jr.

Aug. 1974

LANGLEY-11612

Rolls of color-reversal film permit exposure of over 200 viewgraphs on one film loading. Time is saved in film development as roll film lends itself readily to automatic processing.

B74-10101**SHORT-RANGE LASER OBSTACLE DETECTOR**

W. L. Kuriger

Aug. 1974

NPO-11856

Detector, designed for slow-moving vehicle to explore surface of Mars, will automatically divert vehicle from obstacles as small as 0.5 m in its path. Detector comprises injection laser operating in pulse time-delay measurement, or radar, mode. It is capable of scanning area extending from few meters to approximately 30 m.

B74-10102**LASER-SCANNING TECHNIQUES FOR RAPID BALLISTICS IDENTIFICATION**

R. C. Woodbury and R. B. Nakich (Time Zero Corp.)

Aug. 1974

NPO-11861

Two different laser-scanning methods may be utilized. In

each case scanned cylindrical bullet surface is displayed "unwrapped" on oscilloscope screen. Bullets are compared by photographing each display and superimposing negatives of two images. With some modifications bullets can be scanned and compared by superimposing images on screen of dual-beam oscilloscope.

B74-10108**IMPROVED DISPENSING TARGETS FOR ION BEAM PARTICLE GENERATORS**

C. G. Miller

Aug. 1974

NPO-13112

Beam impinges on palladium-silver tube, which is target, and heats impinged surface causing local hot spot. Contained gas diffuses through hot spot to meet incoming beam and produce desired particles. When beam is turned off, target spot cools and stops dispensing contained gas.

B74-10116**ANALYSIS OF ORBITAL HEAT TRANSFER**

T. Buna (Martin Marietta Corp.)

Aug. 1974

ARC-10844

Graphical representation of orbital heat balance in form of polar diagrams is obtained from integral expressions of orbital heat transfer whereby quantities of heat are represented as areas swept by "thermal radii."

B74-10117**VALVE DEGRADATION DETECTOR**

N. H. Doshi (TRW Systems Group, TRW, Inc.)

Aug. 1974

ARC-10850

To determine corrosive degradation of valve while it is in service, detect changes in surface roughness or presence of corrosive layers at junction of poppet and seat by measuring temperature gradients created across junction by small heat source.

B74-10118**SURFACE ROUGHNESS MEASURED BY OPTICAL SIGNATURES**

R. J. Salvinski (TRW Systems Group, TRW, Inc.) and T. V. Roszhart (TRW Systems Group, TRW, Inc.)

Aug. 1974

ARC-10853

To measure roughness of metal surfaces by nondestructive means direct laser beam at surface and record distribution pattern of intensity of reflected light to obtain optical signature for comparison with calibrated surface. Signature of machined surface with scratch compared to that of regularly-patterned machined surface may also detect imperfections.

B74-10134**WAVELENGTH-SELECTIVE, SEQUENTIAL Q-SWITCHING LASER CAVITY**

F. Allario and R. A. Lucht

Sep. 1974

LANGLEY-11045

Single-frequency continuous output of laser is converted into series of high-power laser pulses at high repetition rates. Applications include pollutant detection by absorption, laser gain measurements at discrete wavelengths, laser propagation measurement, and laser plasma diagnostics.

B74-10136**GRAPHITE IONIZATION VACUUM GAUGE**

G. A. Beitel (Midwest Res. Inst.) and D. K. Benson (Midwest Res. Inst.)

Sep. 1974 See also NASA-CR-2101

LANGLEY-11338

Triode gauge with electron source, electron collector, and positive ion collector made from either graphite or carbon material extends low-pressure ranges of existing gauges by changing only materials used in construction. Advantages of graphite gauge stem from physical properties of graphite (or carbon).

03 PHYSICAL SCIENCES

B74-10139 OPTICAL DISCRIMINATOR SYSTEM

D. B. Robelen
Sep. 1974
LANGLEY-11580

System includes lightweight, inexpensive movie camera to record simultaneously views from three different angles on same filmstrip. This is noncritical system as it is adaptable to many applications requiring similar, but diverse, viewing areas.

B74-10143 RADIO-CONTROLLED, SOUND-OPERATED SWITCH

T. D. Bryant and D. W. Soloman, Jr.
Sep. 1974
LANGLEY-11641

Switch presently provides remote control switching, by radio signals, or pollution sampling devices. Can be used for remote weather station interrogation, firing of pyrotechnics, control of dangerous equipment, or control of device in location where it is impractical to run metallic conductors because of time limitations, distance, or terrain.

B74-10149 REMOTE SUNFALL MONITOR: A CONCEPT

R. B. Lollar (IBM) and R. R. Mandt (IBM)
Sep. 1974
M-FS-22943

Monitor is proposed as spectral monitor system designed to record digital data simultaneously from two types of sensors, mounted on both stationary assembly and tracking assembly. Both direct and total values of solar radiation are recorded. System may measure solar energy collector efficiencies for three main conversion technologies.

B74-10152 AUTOMATIC MARKER FOR PHOTOGRAPHIC FILM

N. M. Gabbard and W. M. Surrency
Sep. 1974
MSC-14705

Commercially-produced wire-marking machine is modified to title or mark film rolls automatically. Machine is used with film drive mechanism which is powered with variable-speed, 28-volt dc motor. Up to 40 frames per minute can be marked, reducing time and cost of process.

B74-10161 ELECTROSTATICALLY CONTROLLED HEAT SHUTTER

L. J. Derr
Sep. 1974
NPO-11942

Electrically controlled chamber filled with inert gas efficiently removes heat from heat-generating components. System can be reversed to bring heat from external source to component.

B74-10166 LASER-ACTUATED MECHANICAL DEVICE

A. J. Murphy and L. C. Yang
Sep. 1974
NPO-13105

Actuator is portable and can be used in high-temperature (over 500 C) environments by incorporating tungsten metal film and quartz window. Actuator can be triggered when it is not directly in laser beam path by utilizing fiber optics. It is advantageous for remotely switching ultra-high voltage systems.

B74-10167 IMPROVED CONTROL FOR NUCLEAR/THERMIONIC POWER SOURCE: A CONCEPT

C. D. Sawyer
Sep. 1974
NPO-13114

Variable-gain power regulator is used to maintain constant load voltage. There are two feedback loops. One is tied directly with regulator to feed error voltage, which is sum of reference and load voltages. Second loop is tied with reactor, where output current of thermionic fuel elements is fed back to signal generator.

B74-10168 METHOD FOR REMOTELY SENSING TURBULENCE OF PLANETARY ATMOSPHERES

R. T. Woo and A. Ishimaru
Sep. 1974

NPO-13154

Based on variances of log-amplitude and phase fluctuations of radio occultation data received from orbital and fly-by missions, structure constant for Venusian planetary atmosphere has been estimated with high-confidence factor. Analysis indicates that effects of inhomogeneity, finite size, and superrefractivity of atmospheric turbulence cannot be ignored.

B74-10173 THROTTLEABLE HEAT PIPE

B. D. Marcus (TRW Systems Group, TRW, Inc.)
Sep. 1974
ARC-10848

Variable thermal conductance is provided by throttling or interrupting vapor flow between evaporator and condenser sections of heat pipe. Potential advantage of throttling technique is that no bulky gas reservoirs are required. Entire condenser is maintained at nearly uniform temperature so there is better thermal interface with surrounding equipment.

B74-10181 SPECTROMETER

D. H. Menzel (Geophysics Corp. of Am.)
Nov. 1974
GSFC-11694

Ultraviolet spectrometer measures pure monochromatic wavelengths in predetermined narrow wave bands. Two stages are incorporated: stationary dispersed beam is intercepted by array of slits cut into plate at discrete wavelength locations; second stage is inverted spectrometer which recombines dispersed spectrum at single exit slit.

B74-10182 DYNAMIC POLARIZATION COMPENSATING SYSTEM FOR OPTICAL COMMUNICATIONS RECEIVER

M. W. Fitzmaurice and J. B. Abshire
Nov. 1974
GSFC-11782

Electro-optic cell is located in optical path of input light beam. Cell includes crystal for controlling phase between two polarization states. Cell axes are rotated 45 deg to receiver axes defined by vertical and horizontal polarization states. Voltage across cell compensates for bias by introducing different phase retardation along crystal axes.

B74-10184 CALORIMETRIC DETECTION OF NEUTRAL-ATOM CON- TENT OF ION BEAM

A. S. Roberts, Jr. (Old Dominion Univ.)
Nov. 1974
LANGLEY-11505

Energy deposition technique deduces neutral-beam flux or dose from measured values of incremental resistance increases in platinum wire passed through beam. Steady-state heat balance analysis led to equivalent neutral-beam current. Method was used to detect neutral-atom content of 60-keV argon ion beam.

B74-10187 FLIGHT TESTS OF VORTEX-ATTENUATING SPLINES

J. C. Patterson, Jr.
Nov. 1974
LANGLEY-11645

Visual data on formation and motion of lift-induced wingtip vortex were obtained by stationary, airflow visualization method. Visual data indicated that vortex cannot be eliminated by merely reshaping wingtip. Configuration change will likely have only small effect on far-field flow.

B74-10194 LASER SYSTEM TO DETONATE EXPLOSIVE DEVICES

V. J. Menichelli and L. C. Yang

Nov. 1974
NPO-11743

Detonating system is not affected by electromagnetic interference. System includes laser source, Q-switch, and optical fiber connected to explosive device. Fiber can be branched out and connected to several devices for simultaneous detonation.

B74-10195
IMPROVED XENON LAMP FOR SOLAR SIMULATORS: A CONCEPT

L. F. Schmidt
 Nov. 1974
NPO-13128

Short-arc xenon lamp proposes to produce more uniform solar output. With this lamp, both axes of sensors can be tested with same setup. Lamp includes cathode with conical tip and annular anode. Annulus is supported by angled projection to avoid interference with passage of light generated by arc.

B74-10200
DIGITAL MULTICHANNEL PHOTOMETER

E. A. Beaver (Univ. of Ca.) and C. E. McIlwain (Univ. of Ca.)
 Nov. 1974
HQ-10791

System was developed for use in astronomy and other research areas concerned with detection of faint-light images. Photometer system is comparable in performance to good photomultiplier tube array except that digital electronics are used instead of analog.

B74-10202
IGNITION OF SOUNDING ROCKET MOTORS WITH HAND-PUMPED AIR

E. L. Rakowsky (Singer Co.) and V. P. Marchese (Singer Co.)
 Nov. 1974 See also NASA-CR-2418
LANGLEY-11152

Method demonstrates inexpensive, safe, and foolproof concept for solid propellant rocket motors, using simple handpump to deliver air. Fluoric ignition was accomplished using system without stored energy and with complete absence of electrical energy and wiring.

B74-10211
FLUID DYNAMICS TEST METHOD

W. H. Gayman
 Nov. 1974
NPO-11895

Test method and apparatus determine fluid effective mass and damping in frequency range where effective mass may be considered as total mass less sum of slosh masses. Apparatus is designed so test tank and its mounting yoke are supported from structural test wall by series of flexures.

B74-10212
ULTRASONIC SCANNER FOR FOOTPRINT IDENTIFICATION

L. J. Derr
 Nov. 1974
NPO-13055

Scanner includes transducer, acoustical drive, acoustical receiver, X and Y position indicators, and cathode-ray tube. Transducer sends ultrasonic pulses into shoe sole or shoeprint. Reflected signals are picked up by acoustic receiver and fed to cathode-ray tube. Resulting display intensity is directly proportional to reflected signal magnitude.

B74-10216
HEAT PIPE WITH HOT GAS RESERVOIR

B. D. Marcus (TRW Systems Group, TRW, Inc.)
 Nov. 1974 See also NASA-CR-114530
ARC-10847

Heat pipe can reverse itself with gas reservoir acting as evaporator, leading to rapid recovery from liquid in reservoir. Single layer of fine-mesh screen is included inside reservoir to assure uniform liquid distribution over hottest parts of internal surface until liquid is completely removed.

B74-10217
SYSTEM FOR MEASURING TRANSIENTS IN FLUID FLOW

D. J. Pearson (TRW Systems Group, TRW Inc.)
 Nov. 1974
ARC-10852

When test valve is actuated, piston is moved by pressurized fluid, and displacement is monitored by electro-optical tracking system and recorded by oscilloscope camera. Electro-optical monitor produces output voltage proportional to displacement of piston.

B74-10223
FIELD-SEQUENTIAL STEREO TELEVISION

W. E. Perry
 Nov. 1974
MSC-12616

System includes viewing devices that provide low interference to normal vision. It provides stereo display observable from broader area. Left and right video cameras are focused on object. Output signals from cameras are time provided by each camera. Multiplexed signal, fed to standard television monitor, displays left and right images of object.

B74-10224
INSPECTION OF TRANSPARENT SURFACES USING PHOTSENSITIVE PAPER

F. R. Minton and U. O. Graham
 Nov. 1974
MSC-19442

Window surface is laid flat on top of photosensitive paper. Opposite side of glass is covered by black cloth. Window edges are then illuminated by light flash through fiber optics. Exposed paper is processed and inspected. Paper shows scratches, bubbles, dust particles, and fingerprints on glass surface.

B74-10229
COAXIAL ANODE IMPROVES SENSITIVITY OF GAS RADIATION COUNTERS

W. L. Kraushaar (Univ. of Wisc.)
 Dec. 1974 See also B73-10282
GSFC-11492

Anode wire itself is enclosed by three segments. Two on ends are rejector segments, and middle one is primary charge-detecting segment. Anode wire is made from tungsten and is surrounded by enamel insulation. Enamel is covered by segments of vapor-deposited gold. At one point in center segment, gold layer makes direct contact with anode wire.

B74-10230
PARTICLE IMPACT LOCATION DETECTOR

S. O. Auer
 Dec. 1974 See also B73-10282
GSFC-11829

Detector includes delay lines connected to each detector surface strip. When several particles strike different strips simultaneously, pulses generated by each strip are time delayed by certain intervals. Delay time for each strip is known. By observing time delay in pulse, it is possible to locate strip that is struck by particle.

B74-10232
COMPACT SOURCE OF SOFT X-RAYS

P. Gorenstein (Am. Sci. and Eng., Inc.) and B. Harris (Am. Sci. and Eng., Inc.)
 Dec. 1974
HQ-10732

Sources of soft X-rays uses alpha particles to fluoresce light elements such as boron, carbon, and magnesium. X-ray wavelengths are varied by changing target. Technique supplies broad range of monoenergetic X-rays whose energy can be adjusted very easily.

B74-10243
IMPROVED NONDISPERSIVE INFRARED ANALYZER

J. Dimeff
 Dec. 1974 See also B72-10198

03 PHYSICAL SCIENCES

ARC-10802

Light from radiant energy source passes through filter, sample, and reference gas chambers to detector. Chamber with amount of gas to be measured is sealed. Filter may be gelatinous, interference, dispersive, or negative-gas, as required.

B74-10246

COMBINED EFFECTS OF A CONVERGING BEAM OF LIGHT AND MIRROR MISALIGNMENT IN MICHELSON INTERFEROMETRY

L. W. Kunz and D. Goorvitch
Dec. 1974

ARC-10889

Expressions have been derived and calculations have been made which show that combined effects lead to asymmetric interferograms and reduction in power at zero path difference. Criteria are given for estimating maximum allowable mirror misalignment.

B74-10254

IMPROVED MAGNETIC SUSPENSION TECHNIQUE

P. A. Studer
Jan. 1975

GSFC-11079

Technique combines electromagnetic coil with polarized permanent magnets. This reduces power consumption of electromagnetic units and improves response of magnetic suspension systems, by increasing their sensitivity to changes in current controlling electromagnet.

B74-10261

NOISE SUPPRESSOR

W. E. Zorunski
Jan. 1975 See also NASA-TR-R-419

LANGLEY-11141

Suppressor reduces noise propagated through ducts. It provides high attenuation in given duct length. Entire device forms acoustic trap which utilizes reflective elements on ends to direct sound energy into sound-dissipating element in center. Device achieves large suppression by utilizing interactive effects of different suppression devices.

B74-10271

VOLUME MEASURING SYSTEM

J. S. Oele (Lockheed Missiles and Space Co.)
Jan. 1975

MSC-13972

Chamber is designed to be airtight; it includes face mask for person to breathe outside air so that he does not disturb chamber environment. Chamber includes piston to vary air volume inside. Also included are two microphone transducers which record pressure information inside chamber.

B74-10275

IMPROVED CHANNEL MULTIPLIER FOR RADIATION-AND-PARTICLE DETECTORS

K. C. Schmidt (Bendix Corp.)
Jan. 1975

NPO-12128

Multiplier is formed of glass and includes cylindrically-shaped main channel element having length-to-diameter ratio of 50 to 1. Element has open slot along its length. Attached to slot edges are two glass plates set at an angle to each other. Inside surfaces are coated with secondary electron emissive coating.

B74-10291

FLAT DEVICE FOR HEAT CONCENTRATION OR DISPERSION

R. V. Jenkins and A. P. Sabol
Feb. 1975

LANGLEY-11699

Device provides low-cost unit for efficiently transferring heat between, either to or from, flat surface and central point or region. It is based upon vapor heat transfer principle and therefore, extends applicability of heat pipe.

B74-10293

ACOUSTIC-OPTIC DEFLECTOR TELESCOPE

W. C. Stewart (RCA)
Feb. 1975

M-FS-23107

In construction of page-organized holographic memories, it is necessary to provide collimated laser beam which can be deflected parallel to itself. This is used for selecting stored holograms from two-dimensional array. Three-lens system significantly reduces optical path length.

B74-10301

THERMOELASTIC ANALYSIS OF SOLAR CELL ARRAYS AND THEIR MATERIAL PROPERTIES

M. A. Salama, W. J. Rowe, and R. K. Yasui
Feb. 1975 See also NASA-CR-135713

NPO-13458

Announced report discusses experimental test program in which five different solar cell array designs were evaluated by subjecting them to 60 thermal cycles from minus 190 deg to 0.0 deg. Results indicate that solder-coated cells combined with Kovar n-interconnectors and p-interconnectors are more durable under thermal loading than other configurations.

04 MATERIALS/CHEMISTRY

B74-10002

A NEW NICKEL-BASE WROUGHT SUPERALLOY FOR APPLICATIONS UP TO 1033 K (1400 F)

W. B. Kent (Universal-Cyclops Corp.), H. L. Black (Universal-Cyclops Corp.), F. H. Harf, and S. G. Young
Mar. 1974 See also B74-10003; NASA-CR-120934

LEWIS-11827

Alloy was melted from high purity raw materials and cast ingots extruded at 1422 K. Material was hot rolled to 0.013 m diameter bar stock. Partial solution heat-treatment followed by aging produced structure of fine gamma prime precipitate reinforcing gamma matrix containing coarser blocky gamma prime particles. Alloy can be processed by powder metallurgy.

B74-10003

NEW NICKEL-BASE WROUGHT SUPERALLOY WITH APPLICATIONS UP TO 1253 K (1800 F)

W. B. Kent (Universal-Cyclops Corp.), H. L. Black (Universal-Cyclops Corp.), R. V. Miner, Jr., F. H. Harf, and S. G. Young
Mar. 1974 See also B74-10002; NASA-CR-120934

LEWIS-11828

Alloy possesses combination of high tensile strength at low and intermediate temperatures to 1033 K with good rupture strength at high temperatures to 1255 K. Alloy has promise for turbine disk application in future gas turbine engines and for wrought integrally bladed turbine wheel; thickness and weight of disk portion of wheel could be reduced.

B74-10005

CRITERIA FOR SELECTING RESIN MATRICES FOR IMPROVED COMPOSITE STRENGTH

C. C. Chamis, M. P. Hanson, and T. T. Serafini
Mar. 1974 See also NASA-TM-X-68166

LEWIS-12057

Area under matrix of typical stress-strain diagram bounded by one percent strain is good index for priority assessment of matrix contribution to composite strength. Initial tangent modulus to stress-strain curve is useful parameter in translating matrix properties to composite properties.

B74-10007

ADDITION OF SILICON IMPROVES OXIDATION RESISTANCE OF NICKEL BASED SUPERALLOYS

C. E. Lowell and R. V. Miner, Jr.

Mar. 1974 See also NASA-TM-X-68191; NASA-TN-D-6838
LEWIS-12138

Specific weight changes of nickel-base superalloy B-1900 and B-1900 + 1% Si specimens were tested at 1273 K. B-1900 was losing weight at an increasing rate due to spalling of oxide scale while B-1900 + 1% Si was still gaining weight at low, nearly constant rate. Similar comparison in weight change was observed for specimens tested at 1373 K.

B74-10011
CASTING COPPER TO TUNGSTEN FOR HIGH-POWER ARC LAMP CATHODES

H. A. Will
Apr. 1974 See also NASA-TM-X-2865
LEWIS-12169

Voids forming at interface when copper is cast onto tungsten can be eliminated by adding wetting agent during casting process. Small amount of copper and nickel are cast onto thoriated tungsten insert, insert is recast with more copper to form electrode. Good thermal conductance results in long-lived cathode.

B74-10016
PLASMA-SPRAYED METAL-GLASS FLUORIDE COATINGS FOR LUBRICATION TO 1170 K (1650 F)

H. E. Sliney
Jun. 1974 See also NASA-TN-D-7556
LEWIS-11930

Plasma spray of Nichrome matrix composite contains dispersed glass for oxidation protection and calcium fluoride for lubrication. Coatings can be applied to bearing journals and bearing bores. Coating was easily machinable and had excellent bond strength on substrate metal.

B74-10017
IMPROVED EPITAXIAL PROCESS FOR FABRICATING SILICON CARBIDE SEMICONDUCTOR DEVICES

H. A. Will and J. A. Powell
Jun. 1974 See also NASA-TN-D-7558
LEWIS-12094

Process of growing epitaxial silicon carbide (SiC) layers on SiC substrates so that epitaxial growth is perpendicular to c-axis by chemical vapor deposition process at temperatures of 1590 to 1660 K minimizes variations in stacking sequence and problems associated with high temperatures.

B74-10027
GLASS FIBER ADDITION STRENGTHENS LOW-DENSITY ABLATIVE COMPOSITIONS

H. H. Chandler (Martin Marietta Corp.)
Apr. 1974
LANGLEY-11288

Approximately 15% of E-glass fibers was added to compositions under test and greatly improved char stability. Use of these fibers also reduced thermal strains which, in turn, minimized char shrinkage and associated cracks, subsurface voids, and disbands. Increased strength allows honeycomb core reinforcement to be replaced by equivalent amount of glass fibers.

B74-10032
METHODS FOR IMPROVED RESOLUTION OF FLOW ELECTROPHORESIS CELLS

L. R. McCreight (GE) and G. L. Fogal (GE)
May 1974
M-FS-22223

First method involves remote adjusting of zeta potential. Second approach sandwiches two conducting metal plates between opposite cell walls and thin insulating layer. Third method forces buffer to flow in direction opposite particle streams.

B74-10036
COMBUSTION PRODUCTS GENERATING AND METERING DEVICE

R. E. Wiberg and J. A. Klich
Jul. 1974

GSFC-11095

Device simulates incipient fire conditions in closely-controlled

adjustable manner, to give predetermined degree of intensity at selected locations throughout area, and to verify that detection system will respond. Device can be used with and for cross calibration and experimentation in conjunction with commercially available products of combustion analyzing meters.

B74-10052
ECONOMICAL TECHNIQUE FOR FRAGMENTATION TESTING

T. H. Smith, III (TRW Systems Group, TRW, Inc.) and B. A. Snoke (TRW Systems Group, TRW, Inc.)
May 1974

ARC-10792

Automatic rifle was modified for remote, single-shot use. To simulate statistically-determined fragment size from rocket-motor casing blunt-nosed bullet was made of same alloy. Cartridge was loaded with enough powder to make bullet reach target at same estimated velocity as shrapnel from rocket casing.

B74-10053
SILVER OXIDE SORBENT FOR CARBON DIOXIDE

G. V. Colombo (McDonnell-Douglas Corp.)
May 1974 See also NASA-CR-114632

ARC-10797

Material can be regenerated at least 20 times by heating at 250 C. Sorbent is compatible with environment of high humidity; up to 20% by weight of carbon dioxide can be absorbed. Material is prepared from silver carbonate, potassium hydroxide or carbonate, and sodium silicate.

B74-10057
ENZYMATIC REGENERATION OF ADENOSINE TRIPHOSPHATE COFACTOR

D. L. Marshall (Battelle Mem. Inst.-Columbus Labs.)
May 1974

ARC-10837

Regenerating adenosine triphosphate (ATP) from adenosine diphosphate (ADP) by enzymatic process which utilizes carbamyl phosphate as phosphoryl donor is technique used to regenerate expensive cofactors. Process allows complex enzymatic reactions to be considered as candidates for large-scale continuous processes.

B74-10073
CUSHION MODULE FOR STOWING ELECTRONIC EQUIPMENT

J. R. Rogers and R. M. Elam, Jr.
Jun. 1974

ARC-10779

To provide vibration-resistance composition adjust processing techniques, which produces essentially void-free materials and provides for clean removal of finished material from mold. Microsphere filler imparts strength to polymer and sodium carbonate imparts flame-resistance.

B74-10074
VOLUME-REFLECTING DIELECTRIC HEAT SHIELD

P. R. Nachtsheim, D. L. Peterson, and J. T. Howe
Jun. 1974

ARC-10803

White, volume-reflecting dielectric material absorbs essentially none of the incident radiant energy, and continues to reflect even though in severe environment its surface is melted and is being vaporized. Process of overall reflectance in dielectric material, involving internal refractions and reflections, is similar to process of reflection in paints.

B74-10077
NEW POLYMER SYSTEMS: CHAIN EXTENSION BY DIANHYDRIDES

R. A. Rhein and J. D. Ingham
Jul. 1974

NPO-13046

Three anhydrides provide effective chain extension of hydroxy-terminated polyalkylene oxides and polybutadienes. Novel feature of these anhydride reactants is that they are difunctional

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as anhydrides, but they are tetrafunctional if conditions are selected that lead to total esterification or reaction of all carboxyl groups.

B74-10082 HIGH STRENGTH NICKEL BASE ALLOY, WAZ-16, FOR APPLICATIONS UP TO 2200 F

W. J. Waters and J. C. Freche
Aug. 1974 See also NASA-TN-D-7648

LEWIS-12270

Alloy product is high strength, high temperature nickel base material with higher incipient melting temperature than all known nickel base alloys. It is microstructurally stable and has high impact resistance both before and after prolonged thermal exposure. It contains relatively few alloying constituents and low content of expensive and rare metals.

B74-10085 RAPID METHOD FOR DETERMINING NITROGEN IN TANTALUM AND NIOBIUM ALLOYS

E. J. Merkle, J. W. Graab, and W. F. Davis
Sep. 1974 See also NASA-TM-X-3067

LEWIS-12237

Adaptation of commercial instrument which measures nitrogen and oxygen in steel gave results in less than four minutes. Sample is heated in helium atmosphere in single-use graphite crucible. Platinum flux facilitates melting of sample. Released gases are separated chromatographically and measured in thermal-conductivity cell.

B74-10095 DETECTION OF CRACKS IN SURFACE INSULATION

L. J. Leger
Aug. 1974

MSC-14187

Volatile organic liquid surface penetrants used with appropriate detector paper leave tested surfaces uncontaminated. Method can be used to detect minute cracks in materials such as metal, glass, plastics, ceramics, etc.

B74-10096 IN-PROCESS OXIDATION PROTECTION IN FLUXLESS BRAZING OR DIFFUSION BONDING OF ALUMINUM ALLOYS

K. P. O'Kelly (LTV Aerospace Corp.) and A. B. Featherston (LTV Aerospace Corp.)

Aug. 1974 See also NASA-CR-128805

MSC-14435

Aluminum is cleaned of its oxide coating and is sealed immediately with polymeric material which makes it suitable for fluxless brazing or diffusion bonding. Time involved between cleaning and brazing is no longer critical factor.

B74-10111 ACCURATE THICKNESS MEASUREMENT OF EASILY COMPRESSED MATERIALS

L. W. Carlson (Rocketdyne/N. Am. Rockwell Corp.)
Aug. 1974

ARC-10551

Sheet of material is placed between two thin, uniform, and flat sheets of glass of known thickness; light pressure is applied by means of weights. Micrometer aids thickness measurement of sandwich. Thickness of two sheets of glass is then subtracted.

B74-10121 COMMERCIALY AVAILABLE BLACK CHROME IS AN EFFECTIVE SOLAR COLLECTOR COATING

G. E. McDonald
Sep. 1974 See also NASA-TM-X-71596

LEWIS-12159

Black chrome, electroplated decorative finish, which absorbs and retains solar energy is readily available, easily applied, and low cost. It is indistinguishable from black nickel and is equally feasible on aluminum or steel.

B74-10122 GUIDEBOOK OF NONDESTRUCTIVE EVALUATION

TECHNIQUES FOR MATERIALS AND STRUCTURES

A. Vary

Nov. 1974 See also NASA-SP-3079

LEWIS-12272

Seventy nondestructive techniques for evaluating material and structures are described in guidebook. Standardized format facilitates comparison of their merits and limitations for solving various problems. Guide includes index of flaw types and tabulated guide to use of nondestructive evaluation techniques. Alternative technique names are cross-referenced.

B74-10124 FABRICATION OF COMPLEX STRUCTURES OR ASSEMBLIES BY HOT ISOSTATIC PRESSURE (HIP) WELDING

A. N. Ashurst (Battelle Mem. Inst.), M. Goldstein (Battelle Mem. Inst.), M. J. Ryan (Battelle Mem. Inst.), G. G. Lessmann (Westinghouse Astronuc. Lab.), and W. A. Bryant (Westinghouse Astronuc. Lab.)

Nov. 1974 See also NASA-CR-120923; NASA-CR-72795

LEWIS-11490

HIP welding is effective method for fabricating complex structures or assemblies such as alternator rotors, regeneratively-cooled rocket-motor thrust chambers, and jet engine turbine blades. It can be applied to fabrication of many assemblies which require that component parts be welded together along complex interfaces.

B74-10132 SOFT, THERMALLY CONDUCTIVE MATERIAL

A. J. Anderson (Martin Marietta Corp.)
Sep. 1974

LANGLEY-10850

Silicon rubber filled with high percentage of silver-plated copper microspheres provides soft, thermally conductive seat for thermal switch. Material also could be used in thin sheet form to prevent corrosion between dissimilar metals while maintaining good thermal communication. It could be used as thermal gasketing.

B74-10133 TWO-PHASE, PASSIVE SEPARATOR-AND-FILTER ASSEMBLY

A. C. Erickson (GE) and F. J. Porter, Jr. (GE)
Sep. 1974

LANGLEY-10976

Assembly separates liquid from gas by passive hydrophilic/hydrophobic material approach. Apparatus is comprised of porous glass hydrophilic tubes. Quantity, lateral size, and pore size of glass tubes are determined by particular design requirements with regard to water rate, water quality contamination level, application endurance life, and operating differential pressure level.

B74-10154 POLYMER COMPOSITIONS SUITABLE FOR USE IN ENRICHED OXYGEN ATMOSPHERES

E. C. Schule (Allied Chem. Corp.), P. P. Salatiello (Allied Chem. Corp.), and S. Chandrasekaran (Allied Chem. Corp.)

Sep. 1974 See also NASA-CR-134062

MSC-14618

Three organic polymer systems are based on copolymer of chlorotrifluoroethylene, ethylene, and tin-based flame retardants. Fourth system is copolymer of chlorotrifluoroethylene and tetrafluoroethylene. This system contains no stabilizers of flame retardant additives.

B74-10157 FLAME RESISTANT ELASTIC ELASTOMERIC FIBER

J. T. Howarth (Little/Arthur D./Inc.), S. Sheth (Little/Arthur D./Inc.), A. A. Massucco (Little/Arthur D./Inc.), and K. R. Sidman (Little/Arthur D./Inc.)

Sep. 1974 See also NASA-CR-128505

MSC-14331

Compositions exhibit elastomeric properties and possess various degrees of flame resistance. First material polyurethane, incorporates halogen containing polyol and is flame resistant in air; second contains spandex elastomer with flame retardant

additives; and third material is prepared from fluorelastomer composition of copolymer of vinylidene fluoride and hexafluoropropylene.

B74-10159
POLYELECTROLYTES WITH HIGH CHARGE DENSITY

A. Rembaum and S.-P. S. Yen
Sep. 1974
NPO-11918

Polymers can be used as flocculants to clarify residential and industrial water supplies and as bactericidal and fungicidal agents. They can be used in preparation of electroconductive photocopy papers, to improve living cell adhesion to glass or plastic, and as anticancer agents.

B74-10175
SEMI-PERMANENT SEALING OF LEAKS IN HIGH VACUUM SYSTEMS

J. D. Christian and W. P. Gilbreath
Sep. 1974
ARC-10881

Silicone-rubber adhesive is applied externally to seal hair-line cracks in sections of high vacuum system while system is partially evacuated. No pretreatment of surface is required since adhesive will be drawn into crack while diffusion or ion pump is off.

B74-10177
DOMESTIC WASH WATER RECLAMATION

J. B. Hall, Jr., C. E. Batten, and J. R. Wilkins
Oct. 1974 See also NASA-TN-D-7600
LANGLEY-11606

System consists of filtration unit, reverse-osmosis module, tanks, pumps, plumbing, and various gauges, meters, and valves. After water is used in washing machine or shower, it is collected in holding tank. Water is pumped through series of five particulate filters. Pressure tank supplies processed water to commode water closet.

B74-10201
APPARATUS FOR MONITORING LINEAR EXPLOSIVE PERFORMANCE

L. J. Bement
Nov. 1974
LANGLEY-10800

Techniques provide performance monitoring standard for acceptance, lot qualification, and comparison testing of devices. Exhibit high degree of simplicity, accuracy, and reproducibility. Apparatus simultaneously measures explosive pressure stimulus energy, explosive cutting, or rupturing, ability, and detonation propagation rate.

B74-10208
VISUALIZATION OF SMOKE STACK PLUME

R. J. Exton
Nov. 1974
LANGLEY-11675

System consists of ultraviolet vidicon tube, interference and color filters, ultraviolet telephoto lens, monitor, and waveform analyzer to extract information from video scene, stack plume viewed against sky. System will view SO₂ and any other element which absorbs light at wavelength used.

B74-10218
METALLIZED POLYMERIC FOAM MATERIAL

B. A. Birnbaum (Hughes Aircraft Co.) and N. Bilow (Hughes Aircraft Co.)
Nov. 1974
ARC-10860

Open-celled polyurethane foams can be coated uniformly with thin film of metal by vapor deposition of aluminum or by sensitization of foam followed by electroless deposition of nickel or copper. Foam can be further processed to increase thickness of metal overcoat to impart rigidity or to provide inert surface with only modest increase in weight.

B74-10219
MOISTURE-RESISTANT BAFFLE MATERIAL FOR FUEL TANKS

N. Bilow (Hughes Aircraft Co.)
Nov. 1974
ARC-10861

Test results indicated superiority of certain polyether-based polyurethanes as protective coatings and suggested that baffle-materials with one of these coatings should have useful life approximately twice that of uncoated foams now in use.

B74-10222
EVALUATION OF TEST PROCEDURES FOR HYDROGEN ENVIRONMENT EMBRITTLEMENT

H. G. Nelson
Nov. 1974
ARC-10919

Report presents discussion of three common and primary influences on embrittlement process. Application of theoretical considerations to design of test coupons and methods is illustrated for both internal and external hydrogen embrittlement. Acceptable designs and methods are indicated.

B74-10244
HIGH-TEMPERATURE TENSILE TESTER FOR CERAMICS

M. Smith
Dec. 1974
ARC-10822

Apparatus measures tensile strength of rigid, low-density ceramic materials at temperatures up to 1375 K. Tensile grips mate with tensile specimen and form top and bottom of lightweight furnace. Apparatus can only be used with rigid materials and grips must be stronger than material under test.

B74-10247
ADVANCED FIBER-COMPOSITE HYBRIDS--A NEW STRUCTURAL MATERIAL

C. C. Chamis, R. F. Lark, and T. L. Sullivan
Dec. 1974 See also NASA-TM-X-71580
LEWIS-12118

Introduction of metal foil as part of matrix and fiber composite, or "sandwich", improves strength and stiffness for multidirectional loading, improves resistance to cyclic loading, and improves impact and erosion resistance of resultant fiber-composite hybrid structure.

B74-10248
ADVANCED TUNGSTEN FIBER-REINFORCED NICKEL SUPERALLOY

D. W. Petrusek and R. A. Signorelli
Dec. 1974 See also B66-10551; B73-10003; NASA-CR-120925; NASA-TN-D-6881; NASA-TN-D-7773
LEWIS-12394

Matrix composition, fabrication technique, and fiber diameter were selected to minimize fiber-matrix reaction and preserve composite strength. Composites may be used in place of superalloys where higher strength or greater strength-to-density ratios are advantageous, and will permit higher operating temperatures in particular applications.

B74-10264
CONTROLLED INTERMITTENT INTERFACIAL BOND CONCEPT FOR COMPOSITE MATERIALS

T. U. Marston (Univ. of Mich.) and A. G. Atkins (Univ. of Mich.)
Jan. 1975
LANGLEY-11628

Concept will enhance fracture resistance of high-strength filamentary composite without degrading its tensile strength or elastic modulus. Concept provides more economical composite systems, tailored for specific applications, and composite materials with mechanical properties, such as tensile strength, fracture strain, and fracture toughness, that can be optimized.

B74-10265
HIGH-STRENGTH ALLOY WITH RESISTANCE TO HYDROGEN-ENVIRONMENT EMBRITTLEMENT

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T. G. McNamara (Rockwell Intern. Corp.)

Jan. 1975

M-FS-19234

Alloy is precipitation-hardened, high-strength, and low-thermal-expansion materials. It is iron-based and contains nickel and chromium at lower levels than high-strength alloys. It is readily welded and brazed and has good oxidation resistance. Tests indicated there was no reduction of notched or smooth strength.

B74-10268

CARBON MONOXIDE DETECTOR

J. L. Bradspies (Tyco Labs., Inc.), S. B. Brummer (Tyco Labs., Inc.), G. L. Holleck (Tyco Labs., Inc.), and L. L. Nelsen (Tyco Labs., Inc.)

Jan. 1975

M-FS-23090

Electrochemical sensor continuously monitors levels of carbon monoxide in air. Device is based on electrochemical oxidation of carbon monoxide in detector cell. Detector can operate on 115-Vac external power source, 28-Vdc external power source, or for 200 hours on internal 12-V NiCd batteries.

05 LIFE SCIENCES

B74-10029

AUTOMATED MONITORING OF RECOVERED WATER QUALITY

J. E. Misselhorn (Aerojet Med. And Biol. Systems), W. H. Hartung (Aerojet Med. and Biol. Systems), and S. W. Witz (Aerojet Med. and Biol. Systems)

May 1974

LANGLEY-11203

Laboratory prototype water quality monitoring system provides automatic system for online monitoring of chemical, physical, and bacteriological properties of recovered water and for signaling malfunction in water recovery system. Monitor incorporates whenever possible commercially available sensors suitably modified.

B74-10075

PROGRAMMED-PRESSURE AIR SUPPLY FOR POSITIVE-PRESSURE BREATHING SYSTEM

S. J. Troutman, Jr. (Webb Associates) and J. F. Annis (Webb Associates)

Jun. 1974

ARC-10845

Motor-driven cam varies height of mercury column connected to loading diaphragm of pressure-regulating valve. Air supplied to open-loop, positive pressure breathing system is controlled so repetitive pressure-time profiles can be obtained during every insufflation-exhaust cycle.

B74-10080

IMPROVED HIGH VOLUME AIR SAMPLER

R. B. King

Aug. 1974

LEWIS-11644

Sampler permits size separations of particles by directing sampled air through cross-sectional area sufficiently large that air velocity is reduced to point where particles or larger size will settle out. Sampler conducts air downward and through slots around periphery of unit into relatively open interior of house.

B74-10103

COMPACT TELEMETRY PACKAGE FOR REMOTE MONITORING OF NEUTRON RESPONSES IN ANIMALS

C. D. Baker

Aug. 1974

NPO-11887

Battery-powered telemeter includes FM transmitter and is light enough to be mounted on animal's head. Animal has complete freedom of movement while its neuron responses are transmitted to receiver in laboratory. Construction may also be applied to monitor blood pressure, body temperature, and different muscular signals.

B74-10119

THERMISTOR HOLDER FOR SKIN-TEMPERATURE MEASUREMENTS

J. E. Greenleaf and B. A. Williams

Aug. 1974

ARC-10855

Sensing head of thermistor probe is supported in center area of plastic ring which has tabs so that it can be anchored in-place by rubber bands or adhesive tapes. Device attaches probes to human subjects practically, reliably, and without affecting characteristics of skin segment being measured.

B74-10140

THERAPEUTIC HAND-EXERCISING DEVICE WITH CYCLING PRESSURE VALUE

D. E. Barthlome

Sep. 1974

LANGLEY-11579; LANGLEY-11595

Device exercises hands of persons whose fingers are generally straight and need to be flexed inward toward palms of hands. Device is extremely simple in design, which reduces costs, and fits all hand sizes. Patient can instantly free hand from device by pulling flap free from wrist of straps.

B74-10153

IODINE GENERATOR FOR DISINFECTING RECLAIMED WATER

R. A. Wynveen (Life Systems, Inc.), J. D. Powell (Life Systems, Inc.), and F. H. Schubert (Life Systems, Inc.)

Sep. 1974 See also NASA-CR-134219

MSC-14632

System dispenses iodine into water tank automatically in quantities varying from 0.5 to 20 ppm. It stores 180-day supply of iodine crystals, sufficient to support six people consuming water at rate of 4.5 to 13.6 kg per person per day.

B74-10155

INEXPENSIVE LIGHTWEIGHT MIRROR

G. D. Badhwar and L. G. Fehrenkamp

Sep. 1974

MSC-14615

Aluminized Mylar film is bonded to polyurethane foam mold; Mylar is then removed, leaving highly reflective coating of aluminum on foam. Mold may be used repeatedly to make mirrors for several optical instruments. Large mirrors of almost any shape may be made singularly or in quantity.

B74-10172

FINGER RECORDING ELECTRODE SYSTEM FOR ELECTRICAL IMPEDANCE PLETHYSMOGRAPH

L. D. Montgomery and D. L. Moody, Jr.

Sep. 1974

ARC-10816

System facilitates location of recording electrodes of impedance plethysmograph that is used for measuring flow of blood in finger segment; electrodes can be relocated accurately and volume of finger segment under study can be determined precisely. System minimizes movement artifacts in plethysmograph trace because finger segment is held firmly.

B74-10183

ARTIFICIAL LIMB CONNECTION

L. J. Owens

Nov. 1974

KSC-10833

Connection simplifies and eases donning and removing artificial limb; eliminates harnesses and clamps; and reduces skin pressures by allowing bone to carry all tensile and part of

compressive loads between prosthesis and stump. Because connection is modular, it is easily modified to suit individual needs.

B74-10188

AUTOMATED SINGLE-SLIDE STAINING SYSTEM

S. M. Mills and J. R. Wilkins
Nov. 1974

LANGLEY-11649

Apparatus developed to Gram-stain single slides automatically is flexible enough to accommodate other types of staining procedures. Method frees operator and eliminates necessity for subjective evaluations as to length of staining or decolorizing time.

B74-10199

NEW TOOTH ENAMEL FROM BRUSHITE CRYSTALS

B. Rubin and J. D. Childress
Nov. 1974

ERC-10338

Appropriate nutrient gel solution could be used to precipitate brushite, which becomes hydroxyapatite, mineral found in bones and teeth. Gel can be made from sodium metasilicate and phosphoric acid, or gelatin, or other organic materials that polymerize in presence of acid to get gelatinous medium.

B74-10210

POLYMERS USED TO ABSORB FATS AND OILS: A CONCEPT

H. E. Marsh, Jr.
Nov. 1974

NPO-11609

One approach to problem of excessive oils and fats is to develop method by which oil is absorbed into solid mixture for elimination as solid waste. Materials proposed for these purposes are cross-linked (network) polymers that have high affinity for aliphatic substances, i. e., petroleum, animal, and vegetable oils.

B74-10213

AUTOMATED DRUG IDENTIFICATION SYSTEM

C. F. Campen, Jr.
Nov. 1974

NPO-13063

System speeds up analysis of blood and urine and is capable of identifying 100 commonly abused drugs. System includes computer that controls entire analytical process by ordering various steps in specific sequences. Computer processes data output and has readout of identified drugs.

B74-10220

SPACECRAFT OXYGEN RECOVERY SYSTEM

P. D. Quattrone

Nov. 1974 See also B71-10203; B72-10051; B72-10074; B72-10194; B72-10195; B72-10219; B72-10246

ARC-10868

Recovery system is comprised of three integrated subsystems: electrochemical carbon dioxide concentrator which removes carbon dioxide from atmosphere, Sabatier reactor in which carbon dioxide is reduced with hydrogen to form methane and water, and static-feed water electrolysis cell to recover oxygen from water.

B74-10226

EMERGENCY DESCENT DEVICE

R. R. Belew

Nov. 1974 See also B73-10369

M-FS-23074

Device includes cable wound on reel; special assembly enclosed in fluid medium controls unwinding speed of cable during descent. Device is compact and reliable. It can be rewound quickly because reel disengages from latches when it is turned in opposite direction.

B74-10231

IMPROVED METHODS FOR COUNTING BACTERIA IN PHYSIOLOGICAL FLUIDS

G. L. Picciolo

Dec. 1974 See also B71-10051

GSFC-11917

Bacterial population detection is based on detection of adenosine triphosphate (ATP), chemical present in all living matter. Amount of ATP in sample, after chemically removing all nonbacterial ATP, is directly related to bacterial population. Sensitivity is improved by concentration step; specificity is improved by lowering pH of solution.

B74-10245

IN VIVO MEASUREMENT OF MECHANICAL IMPEDANCE OF BONE

D. R. Young and G. Thompson (M. B. Associates)
Dec. 1974

ARC-10857

System of measurement provides indications of ulnar properties independent of characteristics of surrounding soft tissue and other bones. Mechanical modal approximated ulnar response so average bending rigidity could be determined to provide direct index of bone resistance to bending loading.

B74-10249

LIQUID-COOLED LINER FOR HELMETS

B. A. Williams and W. Elkins (Aerotherm Corp.)
Dec. 1974

ARC-10534

Liner acts as coolant tubing, manifold, and supporting structures. Fabric of waffle-design is made of several integrated channels (or capillaries) through which coolant liquid can flow. Thin and light-weight liner can be incorporated into any type of helmet or head gear.

B74-10278

LIQUID SAMPLE PROCESSOR

V. J. Jahnsen and C. F. Campen, Jr.
Jan. 1975 See also B74-10213

NPO-13136

Processor is automatic and includes series of extraction tubes packed with fibrous absorbent material of large surface area. When introduced into these tubes, liquid test samples become completely absorbed by packing material as thin film.

B74-10289

MICRO-ORGANISM DISTRIBUTION SAMPLING FOR BIOASSAYS

B. A. Nelson (Martin Marietta Corp.)
Feb. 1975

LANGLEY-10789

Purpose of sampling distribution is to characterize sample-to-sample variation so statistical tests may be applied, to estimate error due to sampling (confidence limits) and to evaluate observed differences between samples. Distribution could be used for bioassays taken in hospitals, breweries, food-processing plants, and pharmaceutical plants.

06 MECHANICS

B74-10001

MECHANICAL COUPLING FOR HIGH CYCLIC LOADING

M. O. Dustin and O. Mehmed

Mar. 1974 See also NASA-TM-X-2812

LEWIS-11690

One-piece cylindrical coupling with "necked-down" regions at each end form flexures allowing small misalignments between actuator and load. Coupling has zero backlash, low mass, close spacing between actuator and load, high stiffness in direction of motion, and allowance for misalignments and deflections without causing high side loading on components.

06 MECHANICS

B74-10013 LIGHTWEIGHT, HIGH SPEED BEARING BALLS: A CONCEPT

R. J. Parker
Apr. 1974 See also B70-10331
LEWIS-11087

Low mass bearing balls with hardened iron-plated surfaces can eliminate problems of low fatigue strength and flexure fatigue, and lead to increased life and reliability of high speed ball bearings. Low mass balls exert lower centrifugal forces on outer race of bearing thus eliminating detrimental effect of high speed operation.

B74-10028 WIRELESS TELEMETRY SYSTEM FOR FLOATING BODIES

L. T. Fain and H. E. Cribb
Jul. 1974
KSC-10855

Unit includes rugged waterproof cables and equipment containers, low power, sturdy antenna construction, and easy equipment setup and serviceability. Accuracy and reliability of entire measurement system were not sacrificed.

B74-10030 IMPROVED GENEVA MECHANISM

C. H. Debenham (TRW, Inc.)
May 1974
LANGLEY-11443

Locking disk (flange) is stepped and lug is added to each arm of star wheel. These changes allow much longer cutout in star wheel stations, essentially eliminating chatter and wear. Jamming problem can be solved by extending star wheel arms and flaring slots.

B74-10045 BRAKE FOR ROLLABLE PLATFORM

A. L. Morris
May 1974
ARC-10512

Frame-mounted brake is independent of wheels and consists of simple lever-actuated foot. Brake makes good contact with surface even though foot pad is at higher or lower level than wheels, this is particularly important when a rollable platform is used on irregular surface.

B74-10046 REVERSED COWL-FLAP THRUST AUGMENTOR

D. Y. Cheng
May 1974
ARC-10754

Inlet mouthpiece with variable geometry improves low-speed performance of inlet (or ejector) of jet engines by use of reversed cowl-flap mechanism. Flaps can be adjusted mechanically or system can be operated with pressure taps set so pressure on inlet face is always smaller than pressure on back of inlet.

B74-10048 SOLAR ARRAY DEPLOYMENT FROM A SPINNING SPACECRAFT

A. H. Carlin (TRW Systems Group, TRW, Inc.), J. B. Gardner (TRW Systems Group, TRW, Inc.), and H. A. Lassen (TRW Systems Group, TRW, Inc.)
May 1974
ARC-10787

Cylindrical drum, wrapped with flexible solar array of solar cells mounted on Mylar sheet, is held by two end-fittings with cable (under tension) passing through axle of drum. Drum is held to end-fittings by axial cable through drum axle; drum is released for deployment when cable is cut at each end and end-fittings spring outward.

B74-10049 THRUST VECTOR CONTROL FOR V/STOL AIRCRAFT

E. W. Toney (McDonnell-Douglas Corp.)
May 1974
ARC-10788

To deflect exhaust of V/STOL aircraft fan deploy set of rectangular flaps so exhaust stream can be turned as required, and then directed through exit nozzles which generate thrust in appropriate direction; lateral deflection of exhaust is provided by yaw vanes.

B74-10058 VENTED VECTORING-NOZZLE FOR STOL AND V/STOL AIRCRAFT

D. W. Esker (McDonnell-Douglas Corp.)
May 1974
ARC-10839

Vented vectoring-nozzle has superior thrust coefficient and is lighter in weight because it does not require completely enclosed elbow duct ordinarily used to deflect nozzle flow. Improved nozzle has primary nozzle and three-sided elbow deflector.

B74-10059 PROPELLANT ACQUISITION DEVICE FOR USE WITH A SPINNING TOROIDAL TANK

J. E. Anderson (Martin Marietta Corp.)
May 1974
ARC-10840

System consists of four radially disposed communication channels attached to propellant-retaining ring situated at bottom of toroidal tank. Ring-and-channel acquisition system design provides uniform propellant distribution within spinning tank during all mission phases.

B74-10061 DESIGN CRITERIA MONOGRAPH FOR ACTUATORS AND OPERATORS

Innovator not given Jul. 1974 See also NASA-SP-8090
LEWIS-12264

Instrumentation for actuators and operators includes electrical position-indicating switches, potentiometers, and transducers and pressure-indicating switches and transducers. Monograph is based on critical evaluation of experiences and practices in design, test, and use of these control devices and instruments in operational space vehicles.

B74-10070 SUPPRESSION OF BENDING MOTION IN ELASTIC BODIES

J. C. Howard
Jun. 1974
XAC-05632

Sensor may be located on aircraft at such point that there can be extracted output signal which is function of aircraft acceleration. Signals are supplied to summing device where they are combined to produce output signal which controls application of suppression forces.

B74-10076 DYNAMIC TRANSFORMATION METHOD

J. R. Admire, E. J. Kuhar, Jr. (GE), and C. V. Stahle, Jr. (GE)
Jul. 1974
M-FS-22848

Eigenvalue problem associated with modal-synthesis vibration analysis of complex structures requires simplifying assumptions for solution. Computer program, Dynamic-transformation Adapted to Modal-synthesis Using Stiffness-coupling, improves computational economy for vibration analysis of complex structures while still considering substructure modes.

B74-10087 DESIGN CRITERIA MONOGRAPH FOR VALVE COMPO- NENTS

Innovator not given Sep. 1974 See also NASA-SP-8094
LEWIS-12327

Monograph treats valve design technology problems as they were solved in successful development of lightweight operational valves for liquid rocket systems. General practices for cleaning and contamination prevention are summarized. Balance of information is arranged by topic, since detail design requirements apply to most types of valves.

B74-10091**PREDICTION OF UNSTEADY AERODYNAMIC LOADINGS CAUSED BY TRAILING-EDGE CONTROL-SURFACE MOTIONS IN SUBSONIC COMPRESSIBLE FLOW**

M. C. Redman (Boeing Co.), W. S. Rowe (Boeing Co.), and B. A. Winther (Boeing Co.)

Aug. 1974

LANGLEY-11175

Program determines direct surface loadings, using pressure terms that correctly represent known singularity functions around boundaries or wing with control surface. Program provides numerical prediction of unsteady loadings caused by control-surface motions.

B74-10092**HEAT-TRANSFER THERMAL SWITCH**

M. V. Friedell (Martin Marietta Corp.) and A. J. Anderson (Martin Marietta Corp.)

Aug. 1974

LANGLEY-11232

Thermal switch maintains temperature of planetary lander, within definite range, by transferring heat. Switch produces relatively large stroke and force, uses minimum electrical power, is lightweight, is vapor pressure actuated, and withstands sterilization temperatures without damage.

B74-10131**MAGNETIC BEARINGS WITH COMBINED RADIAL AND AXIAL CONTROL**

L. Veillette

Sep. 1974

GSFC-11551

Bearings reduce friction by allowing air of vacuum gaps between rotating members through properly-applied magnetic fields. Advantages: There is no physical contact between rotor and support structure; bearings operate directly in vacuum environment without lubrication; and there is unlimited operating lifetime, independent of speed.

B74-10135**THERMALLY-STABLE, SYNTACTIC PYRRONE FOAMS**

B. G. Kimmel (Hughes Aircraft Co.)

Sep. 1974 See also NASA-CR-2222

LANGLEY-11325

Foam formulations may be readily emplaced in honeycomb structures after heating to soft, doughlike consistency and forcing heated mixture into honeycomb cells. Final cure can be accomplished by simple oven cure, with no need for containment or restriction of foam formulation during cure.

B74-10138**CONTROL VANE FOR ENGINE EXHAUST FLOW**

C. S. Shaw (USAAMRD-Langley Directorate) and J. C. Wilson (USAAMRD-Langley Directorate)

Sep. 1974 See also NASA-TM-X-3016

LANGLEY-11570

Vane solves problem of hot-gas exhaust impingement on curved-duct exteriors, shielding, and other nearby structure components. To eliminate secondary egress of exhaust, curved vane is placed upstream of engine exhaust duct and in close proximity to exhaust exit to induce free-stream flow more in line with exit.

B74-10144**SELF-LEVELING LOAD TABLE**

J. L. Burch

Sep. 1974

M-FS-22039

Table floats in tank of water and has air compartments underneath. Table height and level are controlled by automatic adjustment or air pressure within these compartments.

B74-10146**ANTISKID BRAKING SYSTEM**

J. S. Pazdera (Univ. of Mo.)

Sep. 1974

M-FS-22807

Published report describes analytical development and simulation of braking system. System prevents wheels from skidding when brakes are applied, significantly reducing stopping distance. Report also presents computer simulation study on system as applied to aircraft.

B74-10151**SEPARATION DYNAMICS OF S-II DERIVATIVE LAUNCH VEHICLE**

L. A. Schmidt (Rockwell Intern. Corp.) and W. D. Vinson, Jr. (Rockwell Intern. Corp.)

Sep. 1974

M-FS-24325

Computer program analyzes separation dynamics between two vehicles from time prior to separation to later time when separation may be considered complete. Program also may be used in evaluating various separation schemes and synthesizing separation systems by manipulation of data and various program options.

B74-10156**HOLOGRAPHIC EVALUATION OF FATIGUE CRACKS BY A COMPRESSIVE STRESS (HYSTERESIS) TECHNIQUE**

S. A. Freska (Martin Marietta Corp.) and W. D. Rummel (Martin Marietta Corp.)

Sep. 1974 See also NASA-CR-2369

MSC-14555

Holographic interferometry compares unknown field of optical waves with known one. Differences are displayed as interference bands or fringes. Technique was evaluated on fatigue-cracked 2219-T87 aluminum-alloy panels. Small cracks were detected when specimen was incrementally unloaded.

B74-10174**SWASHPLATE FEEDBACK CONTROL FOR TILT-ROTOR AIRCRAFT**

H. R. Alexander (Boeing Vertol Co.), J. P. Magee (Boeing Vertol Co.), and J. J. Morris (Boeing Vertol Co.)

Sep. 1974 See also NASA-CR-114600; NASA-CR-114664

ARC-10854

Changes in angle of attack in system were sensed indirectly by gages which responded to strains induced in wing structure. Output signals were amplified, filtered, and used to activate swashplate actuators. System provided significant reduction in blade loads and desirable changes in hub forces and moments.

B74-10179**PULSE-WIDTH-MODULATED SERVO VALVE FOR AUTO-PILOT SYSTEM**

H. D. Garner

Oct. 1974

LANGLEY-11643

Valve was developed for autopilot wing-lever system and is to be used in light, single-engine aircraft. Valve is controlled by electronic circuit which feeds pulse-width-modulated correction signals to two solenoids. Valve housing is cast from plastic, making it very economical to fabricate.

B74-10193**AUTOMATIC SOLDERING MACHINE**

J. A. Stein (Rockwell Intern. Corp.)

Nov. 1974

MSC-19401

Fully-automatic tube-joint soldering machine can be used to make leakproof joints in aluminum tubes of 3/16 to 2 in. in diameter. Machine consists of temperature-control unit, heater transformer and heater head, vibrator, and associated circuitry controls, and indicators.

B74-10227**DESIGN CRITERIA MONOGRAPH FOR VALVE ASSEMBLIES**

Innovator not given Dec. 1974 See also NASA-SP-8097

LEWIS-12332

Monograph is limited to valve selection factors for trade-off

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studies, configuration analyses, actuator selection, and integration of components. Material is organized along lines of valve design sequence.

B74-10228
DESIGN CRITERIA MONOGRAPH ON CENTRIFUGAL FLOW TURBOPUMPS
Innovator not given Dec. 1974 See also NASA-SP-8109
LEWIS-12346

Monograph reviews and assesses current design practices, and from them establishes firm guidance for achieving greater consistency in design, increased reliability in end product, and greater efficiency in design effort. Review should be of interest to manufacturers and users of pumps, power drives, turbine drives, and rotary equipment in general.

B74-10233
LAMINATING CORED, STRESSED-FACE, SANDWICH STRUCTURES
W. C. Heier
Dec. 1974
XLA-11028

Structure assemblies of fragile and flexible components are rigidly supported from aggregate exterior during bonding operation. Support assures conformance to desired profiles and duplication of assembly results. It minimizes exterior surface identification with core character, improving structure rigidity while adding desirable aerodynamic qualities and finished appearance.

B74-10235
ENVIRONMENTAL CONTROL AND WASTE MANAGEMENT SYSTEM DESIGN CONCEPT
A. R. Gandy
Dec. 1974
LANGLEY-11588

Passive device contains both solid and liquid animal waste matter for extended period without being cleaned and without contaminating animal. Constant airflow dries solid waste and evaporates liquid matter. Technique will maintain controlled atmospheric conditions and cage cleanliness during periods of 6 months to 1 year.

B74-10238
NONDESTRUCTIVE TESTING OF RAILROAD WHEELS AND RAILS BY ULTRASONICS
W. N. Clotfelter and E. R. Risch
Dec. 1974
M-FS-23086

Quality control of wheels and rails can be improved by using ultrasonic technique developed for measuring stresses in metallic materials. In addition, parts already in use can be tested and replaced if they are found to be unsafe. Test equipment includes two transducers.

B74-10241
IMPLEMENTATION OF A SELF-CONTROLLING HEATER: A CONCEPT
M. G. Strange
Dec. 1974 See also NASA-TN-D-7248
GSFC-11752

Proposed heater uses its own temperature coefficient for sensing function. Heating power is supplied from current source, heater voltage containing temperature information. Dynamic stability is very high since there is no thermal lag as would exist with separate heater and sensor.

B74-10252
EXPANDABLE SPACE FRAMES
A. H. Schoen
Jan. 1975
ERC-10365

Frame consists of struts connected by hinge joint assemblies. Because struts are hinged, entire frame can be collapsed during transportation and expanded at construction site. Frame has two types of hinge joint assemblies: one for three-dimensional space frame expansion and another for two-dimensional expansion.

B74-10267
LEAD-OXYGEN CLOSED-LOOP BATTERY SYSTEM
W. J. Britz, W. A. Boshers, and J. J. Kaufmann
Jan. 1975
M-FS-23059

Calculations show that battery can deliver up to 35 watt-hours per pound, conventional lead-acid batteries deliver 10 to 15 watt-hours per pound. Weight reduction is due to replacement of solid lead-peroxide electrodes with metal current-collector screen, catalyst, and Teflon membrane.

B74-10273
FLANGE DESIGN FOR LARGE-SCALE MODULAR ASSEMBLY JIGS
M. M. Gilman (Rockwell Intern. Corp.)
Jan. 1975
MSC-19372

Technique incorporates weld-free method for securing flanges to projecting ends of unmachined box-beam framework so flanged structure may be reused without modification. One such framework may be readily assembled to another by simply matching flanges together and passing connecting members between preformed holes in structures.

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B74-10008
DESIGN CRITERIA MONOGRAPH FOR LIQUID PROPELLANT GAS GENERATORS
Innovator not given Mar. 1974 See also NASA-SP-8081
LEWIS-12139

Monograph reviews and assesses current design practices, and from them establishes firm guidance for achieving greater consistency in design, increased reliability in end product, and greater efficiency in design effort. Main emphasis of monograph is on bipropellant gas generators using hydrogen peroxide and hydrazine monopropellants.

B74-10009
VERTICAL COPY CAMERA SYSTEM PROVIDES PHOTOGRAPHS FROM ERTS-1 IMAGERY
R. J. Schertler and R. E. Texler
Apr. 1974
LEWIS-12140

Versatility of commercially-available camera system permits wide range of enlargement (up to 10X) and reduction (down to 1/8) to be achieved with standard lenses. Use of easily interchangeable camera backs permits photographic formats from 35 mm to 10.2 X 12.7 cm (4 x 5 in) and permits easy use of black and white and color films and Polaroid materials.

B74-10010
DESIGN CRITERIA MONOGRAPH FOR PRESSURE REGULATORS, RELIEF VALVES, CHECK VALVES, BURST DISKS, AND EXPLOSIVE VALVES
Innovator not given Apr. 1974 See also NASA-SP-8080
LEWIS-12168

Monograph reviews and assesses current design practices, and from them establishes firm guidance for achieving greater consistency in design, increased reliability in end product, and greater efficiency in design effort. Five devices are treated separately. Guides to aid in configuration selection are outlined.

B74-10014
DESIGN CRITERIA MONOGRAPH ON TURBOPUMP SHAFTS AND COUPLINGS
Innovator not given May 1974 See also NASA-SP-8101
LEWIS-12204

Monograph reviews and assesses current design practices, and considers all aspects of turbopump system shaft dynamics peculiar to and necessary to shaft and coupling design. Associated components (bearings, housing, etc.) that influence shaft or coupling design are treated to extent necessary to define that influence.

B74-10020
PROCESS TO RESTORE OBLITERATED SERIAL NUMBERS ON METAL SURFACES

S. G. Young, B. Parker (Sacramento State Univ.), and W. J. Chisum (Calif. State Dept. of Justice)
Jun. 1974 See also B71-10099; NASA-TM-X-52929; NASA-TM-X-68257

LEWIS-12085

Metal smeared into grooves of serial numbers by grinding or filing can be cleaned out by process called cavitation. Ultrasonic vibrator generates very high frequency vibrations in water which create millions of microscopic bubbles. Cavitation bubbles impact metal surface at thousands of pounds per square inch pressure. Metal particles filling grooves are broken away.

B74-10023
MODULAR SUPPORT BLOCKS FOR FLUID LINES

J. M. Dimino (Rockwell Intern. Corp.) and R. D. Deskin (Rockwell Intern. Corp.)
Apr. 1974

MSC-19335

Modular line block comprises matched modular elements machined to accept fluid lines of different diameters. Modules can support different fluid-line configurations. Top and bottom surfaces are machined to accept dovetail strip used for holding modules together. End modules have holes drilled through to accept fastening screws.

B74-10031
PRECISION GLASSCUTTER

D. S. Coombs
May 1974

LANGLEY-11604

Glass is positioned against preset stops; and glasscutter, which is permanently mounted in carrier support by cutter guide rails, is used to scribe glass at predetermined length. Glass is placed against predetermined groove at opposite end to correspond with setting of cutter carrier support and it is broken on end of cutter base.

B74-10039
CONTROL OF ELASTICITY IN CAST ELASTOMERIC SHOCK/VIBRATION ISOLATORS

L. Owens and C. Bright
Jul. 1974

KSC-10850

Elasticity is determined by isolators physical dimensions and by type of elastomer used. Once elastomer is selected and cast between two concentric tubes of device, isolator elasticity will remain fixed. Isolators having same dimensions can be built to different elasticity requirements using same elastomer.

B74-10062
IMPROVED CIRCUMFERENTIAL SHAFT SEAL

L. P. Ludwig and T. N. Strom
Jul. 1974 See also NASA-TN-D-7130

LEWIS-11873

Comparative tests of modified and unmodified carbon ring seals showed that addition of helical grooves to conventional segmented carbon ring seals reduced leakage significantly. Modified seal was insensitive to shaft runout and to flooding by lubricant.

B74-10105
SHUTOFF AND THROTTLING VALVE

L. G. Hays
Aug. 1974

NPO-11951

Leaktight shutoff, precise flow control, and very low pressure

drop are incorporated in all-metal valve designed for operation under extreme temperatures. Valve constructed with refractory metal is intended for control of high-temperature liquid cesium, but has applications related to control of high- and low-temperature liquids and gases.

B74-10148
DYNAMOMETER FOR MEASURING MACHINING FORCES IN TWO PERPENDICULAR DIRECTIONS

I. A. Sutherland
Sep. 1974

M-FS-22899

Published report discusses development of two-component force dynamometer which is used for dynamic measurement of machining forces in cutting and thrust directions. Resulting data suggest that faster metal-cutting machines may be developed that have reduced vibrations.

B74-10164
BOLT INSTALLATION TOOL FOR TIGHTENING LARGE NUTS AND BOLTS

A. R. McDougal and R. M. Norman
Sep. 1974

NPO-13059

Large bolts and nuts are accurately tightened to structures without damaging torque stresses. There are two models of bolt installation tool. One is rigidly mounted and one is hand held. Each model includes torque-multiplier unit.

B74-10237
MECHANICAL ROD PEENING

E. J. Minter and V. P. Caruso
Dec. 1974

M-FS-23047

Tool is inexpensive and gives repeatable results. It is modified commercially-available rod-type weld slag removal gun and is pneumatically operated by regulated compressed air supply.

B74-10240
A BAND CLAMP WITH A SPRING TOGGLE LEVER

M. Simmonds (ATO, Inc.)
Dec. 1974

MSC-14736

Clamp could have several applications, as it provides tolerance for both expansion and contraction. It might be useful with firemen's breathing apparatus and luggage racks and other freight-carrying equipment. Also, using same piece as handle and spring reduces production costs by reducing number of parts.

B74-10266
SELF-REGENERATING DESICCANT SYSTEM

K. G. Anthony and E. P. Herndon
Jan. 1975

M-FS-23057

Compact system uses inherent diurnal cyclic airflow in system and energy of sun as drying heat. System requires no power for operation, has no moving parts to wear out, requires no blowers or manifolds, and is relatively inexpensive to produce.

B74-10269
NEW INSULATION ATTACHMENT METHOD ELIMINATES COMPATIBILITY BONDLINE STRESSES

W. C. Schneider
Jan. 1975

MSC-12615

Auger-shaped single-point fastener attaches rigid surface insulation tiles to orbiter shuttle spacecraft. Method can be used to bond wide variety of materials, including insulation, elastomers, and fibrous materials. Since insulation is attached at only one point, insulation and structure are free to form without inducing bond separation.

B74-10292
MECHANICAL SOLAR MOTOR: A CONCEPT

L. A. Hein and W. N. Myers
Feb. 1975

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M-FS-23062

Motor is proposed to convert radiation from sun directly into mechanical energy. Motor utilizes thermal expansion of liquid, heated by sun, as driving force. Unlike most thermally powered systems, it does not require that liquid be converted into vapor.

B74-10297

STRAIN GAUGE SENSITIVITY IMPROVED BY USING A COMPOSITE BEAM

R. H. Silver and S. H. Kalfayan
Feb. 1975

NPO-13170

Composite beam connected to strain gauge and mounted on test specimen is capable of amplifying small strains by factor of 10. Tests indicate that resulting output can be 10 times greater than standard method.

B74-10298

REMOTELY OPERATED GAS-PRESSURE REGULATOR AND SHUTTLE VALVE

E. F. Koch
Feb. 1975

NPO-13201

Valve features precise gas-pressure regulation and shuts off flow by remote control. Valve is made up of regulator valve cavity and spring-compression adjusts cavity. Elements in regulator cavity are conventional and include high-pressure inlet, ball which mates with seat, push rod, and pressure-sensing diaphragm.

08 FABRICATION TECHNOLOGY

B74-10018

HIGH STRENGTH, WIRE-REINFORCED ELECTROFORMED STRUCTURES

J. M. Kazaroff, R. A. Duscha, and L. C. McCandless (Gen. Technologies Corp.)

Jun. 1974 See also NASA-CR-134480

LEWIS-12087

Using half-round reinforcing wires, electrodeposited matrix metal readily fills spaces between wires in intimate contact with wires and without voids. Procedure combines advantages of electroforming with high-strength of commonly available wire to produce non-welded shell structures for high pressure uses.

B74-10114

LIGHT-WEIGHT SPHERICAL SUBMERGENCE VESSEL

I. Baker (Hughes Aircraft Co.)

Aug. 1974

ARC-10838

Design vessel with very low thickness-to-radius ratio to obtain low weight, and fabricate it with aid of precision tracer-lathe to limit and control imperfections in spherical shape. Vessel is thin-walled, spherical, monocoque shell constructed from hemispheres joined with sealed and bolted meridional flange.

B74-10125

BINARY ALLOYS FOR REFRACTORY-METAL BRAZING

J. F. Morris

Nov. 1974 See also NASA-TM-X-68190

LEWIS-12184

Data on binary-metal eutectics and melting-point minimums have been assembled for use in selecting brazing filler compositions for refractory metals. Data are presented in four tables for ready reference. Brief discussion of problems and potentials of metallides is included in appendix.

B74-10126

FABRICATION OF THICK STRUCTURES BY SPUTTERING

J. M. Kazaroff, E. D. McClanahan (Battelle Pacific Northwest Labs.), R. Busch (Battelle Pacific Northwest Labs.), and R. W.

Moss (Battelle Pacific Northwest Labs.)

Dec. 1974 See also NASA-CR-134542; NASA-SP-5111

LEWIS-12331

Deposit, 5500-gram of Cu-0.15 wt % Zr alloy, sputtered onto copper cylinder to average thickness of 12.29 mm. Structure was achieved with high-rate sputter deposition for about 100 hours total sputtering time. Material had twice the strength of unspattered material at temperatures to 723 K and equivalent strength at nearly 873 K.

B74-10141

PRESSURE APPLICATION TECHNIQUE FOR HIGH-TEMPERATURE COMPOSITE FABRICATION

R. M. Baucom and J. F. Powers

Sep. 1974

LANGLEY-11601

Technique utilizes characteristic of room-temperature vulcanizing rubber (RTV) which expands readily when heated. RTV expansion can exert uniform pressure on filament-reinforced polymer materials during curing. Technology accommodates high-temperature pressure application for P13-N polyimide composite consolidation during cure.

B74-10185

PROCESS FOR FABRICATION OF STABILIZED ALUMINUM PHOSPHATE FIBERS

T. J. Ormiston (GE) and R. A. Tanzilli (GE)

Nov. 1974 See also NASA-CR-132331

LANGLEY-11526

Ceramic possesses ideal property combination of high refractoriness and low thermal expansion. Fiber exceeds performance of fused silica fibers at high temperatures. It shrinks less, does not devitrify into unstable cristobalite structure, and is potentially less sensitive to impurities. Might be used for high-temperature insulation, fire protection, composites, and refractories.

B74-10214

SIDE WIRE FEED FOR WELDING APPARATUS

J. C. Arnett

Nov. 1974

NPO-13148

Coaxial electrode arrangement has solid central electrode, insulated outer electrode, and transverse channel for feeding wire through tip of electrode assembly. Polymeric insulation is thrust aside by pressure, which is provided by separately operated mechanism acting through central electrode.

B74-10263

LOW-TEMPERATURE ELECTROSTATIC SILICON-TO-SILICON SEALS USING SPUTTERED BOROSILICATE GLASS

C. A. Hardesty, A. D. Brooks (Res. Triangle Inst.), and R. P. Donovan (Res. Triangle Inst.)

Jan. 1975

LANGLEY-11589

Silicon members are hermetically sealed to each other. Process produces no measurable deformation of silicon surfaces and is compatible with package designs of tight tolerance. Seals have been made with glass coatings in 10-mm to 20-mm thickness range without any prior annealing of coated silicon substrates.

B74-10270

PLASTIC COVERING ON AIRFOIL STRUCTURE PROVIDES SMOOTH UNINTERRUPTED SURFACE

J. A. Kinzler, L. G. Fehrenkamp, J. T. Heffernan, and W. S. Lee

Jan. 1975

MSC-12631

Primed surface is covered with adhesive. Sheet of plastic film is stretched over adhesive and mechanical holder is used to apply tension to ends of sheet to make it conform to surface of airfoil. After adhesive cures, plastic can be trimmed with sharp cutting tool.

B74-10272

EXPLOSIVE WELDING TECHNIQUE FOR JOINING ALUMI-

NUM AND STEEL TUBES

M. E. Wakefield (Martin Marietta Corp.)
Jan. 1975

MSC-14721

Silver sheet is wrapped around aluminum portion of joint. Mylar powder box is wrapped over silver sheet. Explosion welds silver to aluminum. Stainless-steel tube is placed over silver-aluminum interface. Mylar powder box, covered with Mylar tape, is wrapped around steel member. Explosion welds steel to silver-aluminum interface.

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B74-10033

DESIGN STANDARDS FOR LOW-PROFILE FLANGES

W. P. Prasthofer

May 1974

M-FS-22708

Analysis of low-profile flange is based on thin shell theory and simple ring theory. Program produces comprehensive design procedure with subsequent stress and deformation analysis. Program was written in FORTRAN IV for UNIVAC 1108 computer.

B74-10034

MODULAR DIGITAL COMPUTER SYSTEM DESIGN

Innovator not given (Hughes Aircraft Corp.) Jul. 1974

M-FS-22935

Automatically-Reconfigurable Modular Multiprocessor System (ARMMS) provides redundant processing with dynamic mode switching in real time. Design will provide higher computer capability than that presently available for same amount of hardware and will furnish modular system which is responsive to diverse problems effectively.

B74-10037

COMPUTER PROGRAM FOR SPACECRAFT-BOOSTER SEPARATION SPRING SELECTION, SET COMPOSITION, AND LOCATION DETERMINATION

Innovator not given (Space Div. of GE) Jul. 1974

GSFC-11616

Program combines all calculation and determination requirements into one comprehensible technique. Program automatically performs selection of separation springs, composition of spring sets, and correct spring location with improved accuracy and reliability.

B74-10040

GRAPHICS SHADOWING ANALYSIS

S. R. Hayes (McDonnell-Douglas Astronautics Co.)

Jul. 1974

M-FS-21406

Visual image is generated on cathode-ray tube screen to scale and is constructed according to dimensions of specified craft. Once displayed, image may be manipulated by several different means.

B74-10043

MARSHALL INFORMATION RETRIEVAL AND DISPLAY SYSTEM (MIRADS)

J. L. Groover (Computer Sci. Corp.), S. C. Jones (Computer Sci. Corp.), and W. L. King (Computer Sci. Corp.)

Jul. 1974

M-FS-22536

Program for data management system allows sophisticated inquiries while utilizing simplified language. Online system is composed of several programs. System is written primarily in COBOL with routines in ASSEMBLER and FORTRAN V.

B74-10044

GENERALIZED CURVE FIT AND PLOTTING (GECAP) PROGRAM

B. D. Beadle, II, B. D. Dolerhie, Jr., J. W. Owen, and R. A. Schlagheck

Jul. 1974

M-FS-22728

Program generates graphs on 8 1/2 by 11 inch paper and is designed to be used by engineers and scientists who are not necessarily professional programmers. It provides fast and efficient method for display of plotted data without having to generate any additional FORTRAN instructions.

B74-10067

COMPUTER PROGRAM FOR PREDICTING OFF-DESIGN PERFORMANCE OF CENTRIFUGAL COMPRESSORS

M. R. Galvas (U. S. Army Air Mobility R and D Lab.)

Aug. 1974

LEWIS-12186

Complete knowledge of compressor overall geometry and working fluid total inlet conditions is required for program's use. *On given speed line, compressor performance is calculated for range of inlet velocity levels. Working fluid state conditions and flow properties are calculated using mean stream line one-dimensional analysis.*

B74-10084

COMPUTER PROGRAM FOR FLEXIBLE ROTOR DYNAMICS ANALYSIS

F. A. Shen (Rockwell Intern. Corp.)

Aug. 1974

LEWIS-12153

Program analyzes general nonaxisymmetric and nonsynchronous transient and steady-state rotor dynamic performance of bending- and shear-wise flexible rotor-bearing system under various operating conditions. Program can be used as analytical study tool for general transient spin-speed and/or non-axisymmetric rotor motion.

B74-10113

COMPUTATION OF AERODYNAMIC INTERFERENCE BETWEEN LIFTING SURFACES AND LIFT- AND CRUISE-FANS

M. F. E. Dillenius (Nielsen Eng. and Res., Inc.), M. R. Mendenhall (Nielsen Eng. and Res., Inc.), and S. B. Spangler (Nielsen Eng. and Res., Inc.)

Aug. 1974

ARC-10833

Sequence of three computer programs predicts aerodynamic interference on lifting surfaces of transport-type aircraft which are equipped with lift and cruise fans; for example, high-bypass-ratio engine and wing-pylon tail configuration or fuselage-mounted lift-fan and wing-tail configuration.

B74-10123

COMPUTER PROGRAM FOR CALCULATING WATER AND STEAM PROPERTIES

R. C. Hendricks, I. C. Peller, and A. K. Baron

Nov. 1974

LEWIS-12206

Computer subprogram, WASP, accepts any two of pressure, temperature, and density as input conditions. Pressure and either entropy or enthalpy are also allowable input variables. This flexibility is especially useful in cycle analysis. Metastable calculations can also be made using WASP.

B74-10127

DATA SUMMARY AND COMPUTER PROGRAM FOR AXIAL-FLOW PUMP ROTOR PERFORMANCE

M. J. Miller (Iowa State Univ.), T. H. Okiishi (Iowa State Univ.), G. K. Serovy (Iowa State Univ.), D. M. Sandercock, and W. R. Britsch

Dec. 1974

LEWIS-11920

Assembly of noncavitating blade element performance data for axial-flow pump rotor configurations has been collected and organized. Program facilitates handling large amounts of experimental data involved and may be used as data reduction

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program to process flow and performance measurements from other axial-flow pump configurations.

B74-10128 COMPUTER PROGRAM FOR CALCULATING CRITICAL SPEEDS OF ROTATING SHAFTS

R. J. Trivisonno
Dec. 1974

LEWIS-11910

Shaft may include bearings, couplings, extra masses, and disks for gyroscopic effect. Shaft deflection is taken into account and provision is made in program for sections of shaft that are tapered. Plotter produces drawing of shaft with superimposed deflection curves at critical speeds together with all pertinent information related to shaft.

B74-10129 COMPUTER PROGRAM FOR CALCULATING LAMINAR, TRANSITIONAL, AND TURBULENT BOUNDARY LAYERS FOR A COMPRESSIBLE AXISYMMETRIC FLOW

J. A. Albers and J. L. Gregg
Dec. 1974

LEWIS-12178

Finite-difference computer program calculates viscous compressible boundary layer flow over either planar or axisymmetric surfaces. Flow may be initially laminar and progress through transitional zone to fully turbulent flow, or it may remain laminar, depending on imposed boundary conditions, laws of viscosity, and numerical solution of momentum and energy equations.

B74-10130 COMPUTER PROGRAM FOR CALCULATING VELOCITIES AND STREAMLINES ON MID-CHANNEL FLOW SURFACE OF AXIAL OR MIXED-FLOW TURBOMACHINE

T. Katsanis and W. D. McNally
Dec. 1974

LEWIS-12129

Program uses finite-difference and stream filament methods, input consists of blade and flow-channel geometry, upstream and downstream flow conditions from hub to shroud, and mass flow. Output includes streamline coordinates, flow angles, and velocities on mid-channel flow surface.

B74-10145 SPACE ULTRARELIABLE MODULAR COMPUTER (SUMC) INSTRUCTION SIMULATOR

R. T. Curran (Computer Sci. Corp.) and W. A. Hornfeck (Computer Sci. Corp.)
Sep. 1974

M-FS-22697

Simulator has been constructed as set of quasi-independent modules, regulated by one control module. All machine-dependent functions have been resolved such that simulation package is as machine independent as possible.

B74-10169 EIGENFUNCTION SOLUTION OF DAMPED STRUCTURAL SYSTEMS: DAMP

K. K. Gupta
Sep. 1974

NPO-13480

Program uses combination of procedures to determine eigenfunction solutions of discrete damped structures, including spinning ones, while fully exploiting banded configuration of associated matrices.

B74-10186 COMPUTER PROGRAM FOR STRUCTURAL ANALYSIS OF LAYERED ORTHOTROPIC RING-STIFFENED SHELLS OF REVOLUTION (SALORS): LINEAR STRESS ANALYSIS OPTION

M. S. Anderson, W. L. Heard, Jr., and M. M. Chen (Boston Univ.)
Nov. 1974

LANGLEY-11569

Program handles segmented, laminar, orthotropic shells with

discrete rings. Meridional variations are handled in material properties, temperatures, and wall thickness. Allows for linear variations of temperature through each layer of shell wall.

B74-10189 MODEL OPTIMIZATION USING STATISTICAL ESTIMATION

J. D. Collins (J. H. Wiggins Co.), G. C. Hart (J. H. Wiggins Co.), T. K. Hasselman (J. H. Wiggins Co.), B. Kennedy (J. H. Wiggins Co.), and H. Pack, Jr. (J. H. Wiggins Co.)
Nov. 1974

M-FS-22873

Program revises initial or prior estimate of stiffness and mass parameters to parameters yielding frequency and mode characteristics in agreement with test data. Variances are also calculated and consequently define uncertainties of final estimates.

B74-10190 FORTRAN AUTOMATIC CODE EVALUATION SYSTEM (FACES)

J. C. Browne (Inform. Res. Associates), T. Davis (Inform. Res. Associates), A. Haller (Inform. Res. Associates), M. Henneman (Inform. Res. Associates), R. Kleir (Inform. Res. Associates), and G. L. Lasseter (Inform. Res. Associates)
Nov. 1974

M-FS-22910

Software package takes as input FORTRAN program which may contain many modules (subroutines and functions). Main parts: (1) FORTRAN front end gathers information about input program and (2) set of routines organized as diagnostic package evaluates information and prints warning messages concerning actual or potential errors.

B74-10203 COMPUTER PROGRAM FOR BUCKLING LOADS OF ORTHOTROPIC LAMINATED STIFFENED PANELS SUBJECTED TO BIAXIAL IN-PLACE LOADS (BUCLASP 2)

A. V. Viswanathan (Boeing Co.) and M. Tamekuni (Boeing Co.)
Nov. 1974

LANGLEY-11199

General-purpose program performs exact instability analyses for structures such as unidirectionally-stiffened, rectangular composite panels. Program was written in FORTRAN IV and COMPASS for CDC-series computers.

B74-10204 COMPUTER PROGRAM FOR STRESSES AND BUCKLING OF HEATED COMPOSITE STIFFENED PANELS AND OTHER STRUCTURES (BUCLASP 3)

A. V. Viswanathan (Boeing Co.), M. Tamekuni (Boeing Co.), and L. L. Tripp (Boeing Co.)
Nov. 1974

LANGLEY-11533

General-purpose program is intended for thermal stress and instability analyses of structures such as axially-stiffened curved panels. Two types of instability analyses can be effected by program: (1) thermal buckling with temperature variation as specified and (2) buckling due to in-plane biaxial loading.

B74-10205 COMPUTER PROGRAM FOR STRESS, STABILITY, AND VIBRATION OF COMPLEX BRANCHED SHELLS OF REVOLUTION: BOSOR 4

D. Bushnell (Lockheed Missiles and Space Co.)
Nov. 1974

LANGLEY-11209

Code is easy to use yet is general with respect to: (a) type of analysis to be performed; (b) geometry of shell meridian; (c) type of wall construction; (d) type of boundary conditions, ring supports, and branching configuration; and (e) type of loading.

B74-10206 COMPUTER PROGRAM FOR STEAMTUBE CURVATURE ANALYSIS: ANALYTICAL METHOD

D. R. Ferguson (GE), P. H. Heck (GE), J. S. Keith (GE), D. J. Lahti (GE), and C. L. Merkle (GE)
Nov. 1974

LANGLEY-11535

Program provides design information for low-drag, high-drag-divergence, Mach number isolated nacelles suitable for use with advanced high-bypass-ratio, turbofan engines. One element is development of method to predict inviscid pressure distribution and flow field about arbitrary axisymmetric ducted body at transonic speeds.

B74-10207
INVESTIGATION OF EXIT-VELOCITY STRATIFICATION
EFFECTS ON JETS IN A CROSSFLOW (STRJET)

H. Ziegler (Northrop Corp.)
 Nov. 1974

LANGLEY-11581

Program determines flow field about jets with velocity stratification exhausting into crossflow. Jets with three different types of exit-velocity stratification have been considered: (a) jets with relatively high-velocity core, (b) jets with relatively low-velocity core, and (c) jets originating from vaned nozzle.

B74-10215
EIGENVALUE ALGORITHM BASED ON A COMBINED
STURM SEQUENCE AND INVERSE ITERATION
TECHNIQUE (EASI)

K. K. Gupta
 Nov. 1974

NPO-13368

Desired roots are first isolated by Sturm sequence procedure. Then special variant of inverse iteration technique is applied for individual determination of each root along with its vector. Program was written in FORTRAN V for UNIVAC 1100-series computers.

B74-10221
CALCULATION OF AERODYNAMIC CHARACTERISTICS OF
STOL AIRCRAFT

M. F. E. Dillenius (Nielson Eng. and Res., Inc.), M. R. Mendenhall (Nielson Eng. and Res., Inc.), and S. B. Spangler (Nielson Eng. and Res., Inc.)

Nov. 1974

ARC-10882

Method predicts lift and pitching moment characteristics of STOL aircraft with externally-blown, jet-augmented wing-flap combinations using potential-flow approach which involves combination of two flow models. Method can accommodate multiple engines per wing panel and part-span flaps.

B74-10225
COMPUTERIZED LOGIC DESIGN OF DIGITAL CIRCUITS

S. Gussow (Sperry Rand Corp.) and R. Oglesby (Sperry Rand Corp.)

Nov. 1974

M-FS-22401

Procedure performs all work required for logic design of digital counters or sequential circuits and simplification of Boolean expressions. Program provides simple, accurate, and comprehensive logic design capability to users both experienced and totally inexperienced in logic design

B74-10236
NUMERICAL PROGRAM FOR ANALYSIS OF THREE-
DIMENSIONAL SUPERSONIC EXHAUST FLOW FIELDS
(CHAR 3D)

S. Dash (Advanced Technol. Labs., Inc.), P. Del Guidice (Advanced Technol. Labs., Inc.), A. Ferri (Advanced Technol. Labs., Inc.), and G. Roffe (Advanced Technol. Labs., Inc.)

Dec. 1974

LANGLEY-11596

Choice of reference plane orientation depends on specific nozzle geometry, with different configurations requiring different reference plane systems. In addition, for given configuration several reference systems may be used in different regions of flow field, so each system is locally aligned with flow.

B74-10279
AUTOMATED MAINTENANCE FOR COMPLEX HYBRID
SYSTEMS

G. C. Gilley
 Jan. 1975
NPO-13143

Digital computer, Control Computer Subsystem (CCS), possess high degree of fault tolerance. CCS embodies concepts of self-test and repair. It is capable of monitoring its own performance and of identifying and replacing with standby spare any of its units that fail.

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GSFC-11862 B74-10257 01

Horn antenna with v-shaped corrugated surface
LANGLEY-11112 B74-10260 01

Low-loss, circularly-polarized dichroic plate
NPO-13171 B74-10283 01

High-efficiency multifrequency feed
GSFC-11909 B74-10288 02

ANTENNA RADIATION PATTERNS

Spacecraft attitude determination by fanscan technique
ARC-10827 B74-10198 02

ANTENNAS

Wireless telemetry system for floating bodies
KSC-10855 B74-10028 06

ANTIFRICTION BEARINGS

Magnetic bearings with combined radial and axial control
GSFC-11551 B74-10131 06

ANTISEPTICS

Iodine generator for disinfecting reclaimed water
MSC-14632 B74-10153 05

ANTISKID DEVICES

Antiskid braking system
M-FS-22807 B74-10146 06

ARC DISCHARGES

Self-protected electrodes limit field-emission current
ERC-10015 B74-10253 01

ARC LAMPS

Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04

ARGON

Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04

ARMOR

Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04

ARRAYS

Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 B74-10301 03

ASSEMBLING

Expandable space frames
ERC-10365 B74-10252 06
Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06

ASSEMBLY LANGUAGE

Graphics shadowing analysis
M-FS-21406 B74-10040 09
Marshall information retrieval and display system (MIRADS)
M-FS-22536 B74-10043 09
Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09

ASTRONOMY

Digital multichannel photometer
HQ-10791 B74-10200 03

ASTROPHYSICS

Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03

ATMOSPHERIC COMPOSITION

Extendible probe for atmosphere sampling
ARC-10829 B74-10054 03

ATMOSPHERIC ENTRY

Volume-reflecting dielectric heat shield
ARC-10803 B74-10074 04

ATMOSPHERIC TURBULENCE

Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03

ATMOSPHERICS

Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01

ATOM CONCENTRATION

Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03

ATOMIC MOBILITIES

Long life neutron generator target using deuterium pass-through structure
LEWIS-11866 B74-10063 03

ATTENUATORS

Flight tests of vortex-attenuating splines
LANGLEY-11645 B74-10187 03

ATTITUDE (INCLINATION)

Spacecraft attitude determination by fanscan technique
ARC-10827 B74-10198 02

ATTITUDE CONTROL

Magnetic bearings with combined radial and axial control
GSFC-11551 B74-10131 06
Magnetic-heading reference device
LANGLEY-11387 B74-10176 02
Pulse-width-modulated servo valve for autopilot system
LANGLEY-11643 B74-10179 06

AUDIO EQUIPMENT

Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03

AUDITORY SIGNALS

Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03

AUTOCLAVING

Fabrication of complex structures or assemblies by hot isostatic pressure (HIP) welding
LEWIS-11490 B74-10124 04

AUTOMATIC CONTROL

Throttleable heat pipe
ARC-10848 B74-10173 03
Swashplate feedback control for tilt-rotor aircraft
ARC-10854 B74-10174 06
Automatic soldering machine
MSC-19401 B74-10193 06
Automated maintenance for complex hybrid systems
NPO-13143 B74-10279 09

AUTOMATIC CONTROL VALVES

Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 B74-10075 05

AUTOMATIC FREQUENCY CONTROL

Minicomputer-controlled frequency generator
NPO-11962 B74-10163 02

AUTOMATIC PILOTS

Magnetic-heading reference device
LANGLEY-11387 B74-10176 02
Pulse-width-modulated servo valve for autopilot system
LANGLEY-11643 B74-10179 06

AUTOMOBILES

Short-range laser obstacle detector
NPO-11856 B74-10101 03
Location of vehicles using AM station broadcasting signals
NPO-13217 B74-10300 02

AXIAL FLOW PUMPS

Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09

AXIAL STRAIN

Miniature biaxial strain transducer
LANGLEY-11648 B74-10180 01

AXISYMMETRIC BODIES

Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09

AXISYMMETRIC FLOW

Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09

B**BACKGROUND NOISE**

Coaxial anode improves sensitivity of gas radiation counters
GSFC-11492 B74-10229 03

BACTERIA

Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05

BACTERICIDES

Polyelectrolytes with high charge density
NPO-11918 B74-10159 04

BACTERIOLOGY

Automated single-slide staining system
LANGLEY-11649 B74-10188 05

BAFFLES

Moisture-resistant baffle material for fuel tanks
ARC-10861 B74-10219 04

BALL BEARINGS

Lightweight, high speed bearing balls: A concept
LEWIS-11087 B74-10013 06

BALLISTICS

Laser-scanning techniques for rapid ballistics identification
NPO-11861 B74-10102 03

BANDPASS FILTERS

High q band-pass resonators utilizing composite band-stop resonator pairs
GSFC-10990 B74-10035 02

BANDWIDTH

Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01

BATTERY CHARGERS

Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03
Solar array deployment from a spinning spacecraft
ARC-10787 B74-10048 06
Battery activation system
ARC-10832 B74-10056 03

BEARING (DIRECTION)

Bidirectional zoom antenna
GSFC-11862 B74-10257 01

BEARINGS

Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04
Computer program for flexible rotor dynamics analysis
LEWIS-12153 B74-10084 09
Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
Magnetic bearings with combined radial and axial control
GSFC-11551 B74-10131 06

- Improved magnetic suspension technique
GSFC-11079 B74-10254 03
- BENDING**
Suppression of bending motion in elastic bodies
XAC-05632 B74-10070 06
- BESSEL FUNCTIONS**
Zeros of certain cross products of Bessel functions of fractional order
LEWIS-12221 B74-10012 03
- BINARY MIXTURES**
Binary alloys for refractory-metal brazing
LEWIS-12184 B74-10125 08
- BIOASSAY**
Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04
Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05
Micro-organism distribution sampling for bioassays
LANGLEY-10789 B74-10289 05
- BIOCHEMISTRY**
Enzymatic regeneration of adenosine triphosphate cofactor
ARC-10837 B74-10057 04
Polyelectrolytes with high charge density
NPO-11918 B74-10159 04
- BIOINSTRUMENTATION**
Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05
Bio-isolated DC operational amplifier
ARC-10596 B74-10112 01
Thermistor holder for skin-temperature measurements
ARC-10855 B74-10119 05
Finger recording electrode system for electrical impedance plethysmograph
ARC-10816 B74-10172 05
Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01
In vivo measurement of mechanical impedance of bone
ARC-10857 B74-10245 05
- BIOLOGICAL EFFECTS**
In vivo measurement of mechanical impedance of bone
ARC-10857 B74-10245 05
- BIOLUMINESCENCE**
Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05
- BIOTELEMETRY**
Time-control system for communication between data-collection and orbiting
GSFC-11182 B74-10088 02
Compact telemetry package for remote monitoring of neutron responses in animals
NPO-11887 B74-10103 05
Heart-rate pulse-shift detector
ARC-10729 B74-10196 01
- BLADES**
Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09
- BLOOD**
Automated drug identification system
NPO-13063 B74-10213 05
- Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05
- BLOOD PRESSURE**
Compact telemetry package for remote monitoring of neutron responses in animals
NPO-11887 B74-10103 05
- BLOWERS**
Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09
- BOARDS (PAPER)**
Alinement fixture for precision cutting of printed-wiring boards
LANGLEY-11658 B74-10290 01
- BODY FLUIDS**
Liquid sample processor
NPO-13136 B74-10278 05
- BODY TEMPERATURE**
Compact telemetry package for remote monitoring of neutron responses in animals
NPO-11887 B74-10103 05
- BONDING**
Glass fiber addition strengthens low-density ablative compositions
LANGLEY-11288 B74-10027 04
Fabrication of complex structures or assemblies by hot isostatic pressure (HIP) welding
LEWIS-11490 B74-10124 04
Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04
New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07
- BONES**
In vivo measurement of mechanical impedance of bone
ARC-10857 B74-10245 05
- BORON**
Radiation hardening of metal-oxide semiconductor (MOS) devices by boron
GSFC-11425 B74-10026 01
- BOROSILICATE GLASS**
Glass fiber addition strengthens low-density ablative compositions
LANGLEY-11288 B74-10027 04
Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
LANGLEY-11589 B74-10263 08
- BOUNDARY LAYER FLOW**
Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09
- BOUNDARY LAYER SEPARATION**
Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09
- BRAKES (FOR ARRESTING MOTION)**
Brake for rollable platform
ARC-10512 B74-10045 06
Antiskid braking system
M-FS-22807 B74-10146 06
- BRAZING**
In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04
Binary alloys for refractory-metal brazing
LEWIS-12184 B74-10125 08
- BREATHING APPARATUS**
Silver oxide sorbent for carbon dioxide
ARC-10797 B74-10053 04
Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 B74-10075 05
- BRITTLE MATERIALS**
Fabrication of complex structures or assemblies by hot isostatic pressure (HIP) welding
LEWIS-11490 B74-10124 04
- BRITTLENESS**
High-strength alloy with resistance to hydrogen-environment embrittlement
M-FS-19234 B74-10265 04
- BUCKLING**
Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09
Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09

C

CALIBRATING

- Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01
Compact source of soft X-rays
HQ-10732 B74-10232 03

CAMERAS

- Vertical copy camera system provides photographs from erts-1 imagery
LEWIS-12140 B74-10009 07
Viewgraph preparation made easier
LANGLEY-11612 B74-10094 03
Optical discriminator system
LANGLEY-11580 B74-10139 03

CAMS

- Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 B74-10075 05

CANCER

- A high yield neutron target
LEWIS-12058 B74-10066 03
Polyelectrolytes with high charge density
NPO-11918 B74-10159 04

CAPACITANCE

- Improved capacitance multiplier circuit
NPO-11948 B74-10162 02

CAPACITORS

- Thin-film temperature sensor
NPO-11775 B74-10100 01
Improved fabrication of electrolytic capacitors
M-FS-23133 B74-10294 01

CAPILLARY FLOW

- Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

CARBON

- Graphite ionization vacuum gauge
LANGLEY-11338 B74-10136 03

CARBON DIOXIDE REMOVAL

- Silver oxide sorbent for carbon dioxide
ARC-10797 B74-10053 04

CARBON MONOXIDE

- Carbon monoxide detector
M-FS-23090 B74-10268 04

CARBON STEELS

Lightweight, high speed bearing balls:
A concept
LEWIS-11087 B74-10013 06

CASSEGRAIN ANTENNAS

Variable-beamwidth antennas
GSFC-11760 B74-10041 02

CASTING

Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04

Control of elasticity in cast elastomeric shock/vibration isolators
KSC-10850 B74-10039 07

CATHODE RAY TUBES

Graphics shadowing analysis
M-FS-21406 B74-10040 09

CATHODES

Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04

Self-protected electrodes limit field-emission current
ERC-10015 B74-10253 01

CAVITATION FLOW

Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 B74-10020 07

CDC COMPUTERS

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09

CDC 3600 COMPUTER

Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09

CDC 6000 SERIES COMPUTERS

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 B74-10091 06

Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 B74-10186 09

Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
LANGLEY-11533 B74-10204 09

Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09

Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09

Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09

Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
LANGLEY-11596 B74-10236 09

CDC 6600 COMPUTER

Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09

CENTRAL PROCESSING UNITS

Modular digital computer system design
M-FS-22935 B74-10034 09

CENTRIFUGAL COMPRESSORS

Computer program for predicting off-design performance of centrifugal compressors
LEWIS-12186 B74-10067 09

CENTRIFUGAL PUMPS

Design criteria monograph on centrifugal flow turbopumps
LEWIS-12346 B74-10228 06

CENTRIFUGING

Two-phase, passive separator-and-filter assembly
LANGLEY-10976 B74-10133 04

CERAMICS

Process for fabrication of stabilized aluminum phosphate fibers
LANGLEY-11526 B74-10185 08

High-temperature tensile tester for ceramics
ARC-10822 B74-10244 04

CHARGED PARTICLES

Particle impact location detector
GSFC-11829 B74-10230 03

Improved channel multiplier for radiation-and-particle detectors
NPO-12128 B74-10275 03

CHECKOUT

FORTRAN automatic code evaluation system (FACES)
M-FS-22910 B74-10190 09

CHEMICAL ANALYSIS

Liquid sample processor
NPO-13136 B74-10278 05

CHEMICAL CLEANING

In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04

CHEMICAL STERILIZATION

Iodine generator for disinfecting reclaimed water
MSC-14632 B74-10153 05

CHEMICAL TESTS

Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05

CHEMILUMINESCENCE

Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05

CHROMATOGRAPHY

Automated drug identification system
NPO-13063 B74-10213 05

CHROMIUM

Commercially available black chrome is an effective solar collector coating
LEWIS-12159 B74-10121 04

CIRCUIT BOARDS

Improved circuit-board interconnectors
MSC-12661 B74-10239 01

CIRCUIT PROTECTION

Self-healing fuse
LEWIS-11964 B74-10004 02

Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01

CIRCUITS

Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01

Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 B74-10025 02

Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01

Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01

Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01

Electronic high pass filter
LEWIS-11600 B74-10083 02

Generalized current distribution rule
LANGLEY-11565 B74-10093 02

Pocket-size microwave radiation hazard detector
NPO-11461 B74-10097 02

Frequency discriminator/phase detector
NPO-11515 B74-10098 02

Decimal digit generator for commutated data: A Concept
ARC-10856 B74-10120 01

Improved capacitance multiplier circuit
NPO-11948 B74-10162 02

Advanced-priority interrupt module
NPO-13067 B74-10165 02

Wide deviation phase modulator
LANGLEY-11607 B74-10178 02

Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02

Heart-rate pulse-shift detector
ARC-10729 B74-10196 01

Digital multichannel photometer
HQ-10791 B74-10200 03

Phased-array antenna phase control circuit using frequency multiplication
ERC-10285 B74-10251 01

Digital second-order phase-locked loop
NPO-11905 B74-10274 01

Reliability data for electronic and electromechanical components: A report
NPO-13153 B74-10280 01

CIRCULAR POLARIZATION

Improved circularly polarized antenna
ERC-10214 B74-10250 02

Low-loss, circularly-polarized dichroic plate
NPO-13171 B74-10283 01

CLAMPS

A band clamp with a spring toggle lever
MSC-14736 B74-10240 07

CLINICAL MEDICINE

Automated single-slide staining system
LANGLEY-11649 B74-10188 05

Automated drug identification system
NPO-13063 B74-10213 05

CLOSED CIRCUIT TELEVISION

Closed-circuit-television welding-electrode guidance system
M-FS-23026 B74-10150 02

CLOSED CYCLES

Digital second-order phase-locked loop
NPO-11905 B74-10274 01

CLOTHING

Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

COATINGS

Commercially available black chrome is an effective solar collector coating
LEWIS-12159 B74-10121 04

Metallized polymeric foam material
ARC-10860 B74-10218 04

COAXIAL CABLES

Stable group delay cable
NPO-13138 B74-10295 01

COBALT ALLOYS

Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03

COBOL

- Marshall information retrieval and display system (MIRADS)
M-FS-22536 B74-10043 09
- COLLIMATORS**
Variable-beamwidth antennas
GSFC-11760 B74-10041 02
Acoustic-optic deflector telescope
M-FS-23107 B74-10293 03
- COLLISION AVOIDANCE**
Short-range laser obstacle detector
NPO-11856 B74-10101 03
- COLOR**
Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01
- COMBUSTION PRODUCTS**
Combustion products generating and metering device
GSFC-11095 B74-10036 04
- COMBUSTION STABILITY**
Polymer compositions suitable for use in enriched oxygen atmospheres
MSC-14618 B74-10154 04
Flame resistant elastic elastomeric fiber
MSC-14331 B74-10157 04
- COMMUNICATION EQUIPMENT**
Traffic control system and method
GSFC-10087 B74-10024 02
Variable-beamwidth antennas
GSFC-11760 B74-10041 02
Very high voltage latching relay
LEWIS-12265 B74-10079 01
Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02
- COMMUTATION**
Decimal digit generator for commutated data: A Concept
ARC-10856 B74-10120 01
- COMPARATOR CIRCUITS**
Synchronized frequency transposer
GSFC-11763 B74-10256 01
- COMPARATORS**
Improved nondispersive infrared analyzer
ARC-10802 B74-10243 03
- COMPASS (PROGRAMMING LANGUAGE)**
Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 B74-10091 06
Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09
- COMPENSATORS**
Temperature compensation of digital inertial sensors
NPO-13044 B74-10106 02
Dynamic polarization compensating system for optical communications receiver
GSFC-11782 B74-10182 03
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
- COMPONENTS**
Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06
- COMPOSITE MATERIALS**
Criteria for selecting resin matrices for improved composite strength
LEWIS-12057 B74-10005 04
- Soft, thermally conductive material
LANGLEY-10850 B74-10132 04
Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 B74-10141 08
Advanced fiber-composite hybrids--A new structural material
LEWIS-12118 B74-10247 04
Advanced tungsten fiber-reinforced nickel superalloy
LEWIS-12394 B74-10248 04
Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01
Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04
- COMPOSITE STRUCTURES**
High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08
- COMPOSITION (PROPERTY)**
Micrometeoroid velocity-and-trajectory analyzer
GSFC-11889 B74-10286 01
- COMPRESSED AIR**
Therapeutic hand-exercising device with cycling pressure valve
LANGLEY-11579 B74-10140 05
Ignition of sounding rocket motors with hand-pumped air
LANGLEY-11152 B74-10202 03
- COMPRESSIBLE FLOW**
Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 B74-10091 06
Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09
- COMPRESSING**
Accurate thickness measurement of easily compressed materials
ARC-10551 B74-10111 04
Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 B74-10141 08
- COMPRESSOR EFFICIENCY**
Computer program for predicting off-design performance of centrifugal compressors
LEWIS-12186 B74-10067 09
- COMPRESSOR ROTORS**
Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09
- COMPRESSORS**
A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
- COMPUTER DESIGN**
Modular digital computer system design
M-FS-22935 B74-10034 09
- COMPUTER GRAPHICS**
Graphics shadowing analysis
M-FS-21406 B74-10040 09
Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09
- COMPUTER PROGRAMS**
Design standards for low-profile flanges
M-FS-22708 B74-10033 09
- Computer program for spacecraft-booster separation spring selection; set composition, and location determination
GSFC-11616 B74-10037 09
Graphics shadowing analysis
M-FS-21406 B74-10040 09
Marshall information retrieval and display system (MIRADS)
M-FS-22536 B74-10043 09
Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09
Measurement of temperature profiles in hot gases and flames
LEWIS-12055 B74-10060 03
Computer program for predicting off-design performance of centrifugal compressors
LEWIS-12186 B74-10067 09
Computer program for flexible rotor dynamics analysis
LEWIS-12153 B74-10084 09
Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 B74-10091 06
Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans
ARC-10833 B74-10113 09
Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09
Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09
Computer program for calculating critical speeds of rotating shafts
LEWIS-11910 B74-10128 09
Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09
Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09
Space ultrareliable modular computer (SUMC) instruction simulator
M-FS-22697 B74-10145 09
Separation dynamics of S-II derivative launch vehicle
M-FS-24325 B74-10151 06
Eigenfunction solution of damped structural systems: DAMP
NPO-13480 B74-10169 09
Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 B74-10186 09
Model optimization using statistical estimation
M-FS-22873 B74-10189 09
Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09
Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
LANGLEY-11533 B74-10204 09

- Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09
- Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09
- Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09
- Eigenvalue algorithm based on a combined sturm sequence and inverse iteration technique (EASI)
NPO-13368 B74-10215 09
- Calculation of aerodynamic characteristics of STOL aircraft
ARC-10882 B74-10221 09
- Computerized logic design of digital circuits
M-FS-22401 B74-10225 09
- Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
LANGLEY-11596 B74-10236 09
- Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 B74-10301 03
- COMPUTER STORAGE DEVICES**
- Modular digital computer system design
M-FS-22935 B74-10034 09
- High-speed fault-tolerant telemetry/computer interface
NPO-13139 B74-10296 02
- COMPUTER TECHNIQUES**
- Facility for testing solar cells
NPO-11761 B74-10099 02
- COMPUTERIZED DESIGN**
- Design standards for low-profile flanges
M-FS-22708 B74-10033 09
- Computerized logic design of digital circuits
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- COMPUTERIZED SIMULATION**
- Antiskid braking system
M-FS-22807 B74-10146 06
- COMPUTERS**
- Space ultrareliable modular computer (SUMC) instruction simulator
M-FS-22697 B74-10145 09
- CONDENSATES**
- Heat pipe with hot gas reservoir
ARC-10847 B74-10216 03
- CONDUCTION BANDS**
- Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01
- CONNECTORS**
- Mechanical coupling for high cyclic loading
LEWIS-11690 B74-10001 06
- Pocket gauge for checking insert clocking of multipin circular connectors
NPO-11924 B74-10160 01
- Artificial limb connection
KSC-10833 B74-10183 05
- CONSTRUCTION**
- Bolt installation tool for tightening large nuts and bolts
NPO-13059 B74-10164 07
- Expandable space frames
ERC-10365 B74-10252 06
- New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07
- CONSTRUCTION MATERIALS**
- Thermally-stable, syntactic pyrrone foams
LANGLEY-11325 B74-10135 06
- Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06
- CONTAMINATION**
- Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05
- CONTROL SURFACES**
- Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06
- CONTROL VALVES**
- Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07
- Shutoff and throttling valve
NPO-11951 B74-10105 07
- CONTROLLED ATMOSPHERES**
- Spacecraft oxygen recovery system
ARC-10868 B74-10220 05
- Environmental control and waste management system design concept
LANGLEY-11588 B74-10235 06
- CONTROLLERS**
- Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06
- CONVERGENCE**
- Combined effects of a converging beam of light and mirror misalignment in michelson interferometry
ARC-10889 B74-10246 03
- COOLING SYSTEMS**
- Improved thermal isolation for superconducting magnet systems
NPO-11875 B74-10158 02
- Electrostatically controlled heat shutter
NPO-11942 B74-10161 03
- Metallized polymeric foam material
ARC-10860 B74-10218 04
- Liquid-cooled liner for helmets
ARC-10534 B74-10249 05
- Self-regenerating desiccant system
M-FS-23057 B74-10266 07
- COORDINATION**
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NPO-13139 B74-10296 02
- COPOLYMERIZATION**
- Polyelectrolytes with high charge density
NPO-11918 B74-10159 04
- COPPER**
- Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04
- CORROSION**
- Valve degradation detector
ARC-10850 B74-10117 03
- CORRUGATING**
- Horn antenna with v-shaped corrugated surface
LANGLEY-11112 B74-10260 01
- COUNTERFLOW**
- Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04
- COUNTING**
- Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05
- COUNTING CIRCUITS**
- Computerized logic design of digital circuits
M-FS-22401 B74-10225 09
- COUPLINGS**
- Mechanical coupling for high cyclic loading
LEWIS-11690 B74-10001 06
- Design criteria monograph on turbopump shafts and couplings
LEWIS-12204 B74-10014 07
- COVERINGS**
- Plastic covering on airfoil structure provides smooth uninterrupted surface
MSC-12631 B74-10270 08
- COWLINGS**
- Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06
- CRACKS**
- Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06
- Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04
- CRITERIA**
- Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
- Design criteria monograph for valve assemblies
LEWIS-12332 B74-10227 06
- Design criteria monograph on centrifugal flow turbopumps
LEWIS-12346 B74-10228 06
- CRITICAL VELOCITY**
- Computer program for calculating critical speeds of rotating shafts
LEWIS-11910 B74-10128 09
- CROSS COUPLING**
- Low-loss, circularly-polarized dichroic plate
NPO-13171 B74-10283 01
- CROSS FLOW**
- Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09
- CRYOGENIC FLUIDS**
- Improved thermal isolation for superconducting magnet systems
NPO-11875 B74-10158 02
- CRYSTAL GROWTH**
- Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
- CRYSTAL STRUCTURE**
- Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
- CURRENT AMPLIFIERS**
- Bio-isolated DC operational amplifier
ARC-10596 B74-10112 01
- CURRENT DISTRIBUTION**
- Generalized current distribution rule
LANGLEY-11565 B74-10093 02
- CURRENT REGULATORS**
- Self-healing fuse
LEWIS-11964 B74-10004 02
- Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03
- CURVE FITTING**
- Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09

CURVED PANELS

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
 LANGLEY-11199 B74-10203 09
 Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
 LANGLEY-11533 B74-10204 09

CUSHIONS

Cushion module for stowing electronic equipment
 ARC-10779 B74-10073 04

CUTTERS

Precision glasscutter
 LANGLEY-11604 B74-10031 07

CUTTING

Alignment fixture for precision cutting of printed-wiring boards
 LANGLEY-11658 B74-10290 01

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Mechanical coupling for high cyclic loading
 LEWIS-11690 B74-10001 06

D**DAMPING**

Eigenfunction solution of damped structural systems: DAMP
 NPO-13480 B74-10169 09

DAMPING TESTS

Fluid dynamics test method
 NPO-11895 B74-10211 03

DATA MANAGEMENT

Marshall information retrieval and display system (MIRADS)
 M-FS-22536 B74-10043 09

Remote sunfall monitor: A concept
 M-FS-22943 B74-10149 03

DATA PROCESSING EQUIPMENT

Data processor with conditionally supplied clock signals
 GSFC-10975 B74-10021 02

Modular digital computer system design
 M-FS-22935 B74-10034 09

Automated maintenance for complex hybrid systems
 NPO-13143 B74-10279 09

High-speed fault-tolerant telemetry/computer interface
 NPO-13139 B74-10296 02

DATA SAMPLING

Anti-multipath digital signal detector
 LANGLEY-11379 B74-10137 02

DATA TRANSMISSION

Time-control system for communication between data-collection and orbiting
 GSFC-11182 B74-10088 02

DECONTAMINATION

Polymers used to absorb fats and oils: A concept
 NPO-11609 B74-10210 05

DEFECTS

Guidebook of nondestructive evaluation techniques for materials and structures
 LEWIS-12272 B74-10122 04

DEFLECTORS

Acoustic-optic deflector telescope
 M-FS-23107 B74-10293 03

DEFORMATION

Design standards for low-profile flanges
 M-FS-22708 B74-10033 09

DEGASSING

Two-phase, passive separator-and-filter assembly
 LANGLEY-10976 B74-10133 04

DENTISTRY

New tooth enamel from brushite crystals
 ERC-10338 B74-10199 05

DEPOSITION

Fabrication of thick structures by sputtering
 LEWIS-12331 B74-10126 08

Depositing spacing layers on magnetic film with liquid phase epitaxy
 LANGLEY-11528 B74-10262 01

DESCENT

Emergency descent device
 M-FS-23074 B74-10226 05

DESICCATORS

Self-regenerating desiccant system
 M-FS-23057 B74-10266 07

DESTRUCTIVE TESTS

Economical technique for fragmentation testing
 ARC-10792 B74-10052 04

Apparatus for monitoring linear explosive performance
 LANGLEY-10800 B74-10201 04

High-temperature tensile tester for ceramics
 ARC-10822 B74-10244 04

DETECTION

Detection of cracks in surface insulation
 MSC-14187 B74-10095 04

Wavelength-selective, sequential Q-switching laser cavity
 LANGLEY-11045 B74-10134 03

Negative ion spectrometry for detecting nitrated explosives
 NPO-13082 B74-10276 02

DC-to-AC inverter ratio failure detector
 NPO-13160 B74-10282 01

Micrometeoroid composition analyzer
 GSFC-11892 B74-10287 01

DETECTORS

Pocket-size microwave radiation hazard detector
 NPO-11461 B74-10097 02

Short-range laser obstacle detector
 NPO-11856 B74-10101 03

DETONATION

Laser system to detonate explosive devices
 NPO-11743 B74-10194 03

DETONATORS

Apparatus for monitoring linear explosive performance
 LANGLEY-10800 B74-10201 04

DEUTERONS

Long life neutron generator target using deuterium pass-through structure
 LEWIS-11866 B74-10063 03

A high yield neutron target
 LEWIS-12058 B74-10066 03

DIAGNOSIS

Automated single-slide staining system
 LANGLEY-11649 B74-10188 05

Automated drug identification system
 NPO-13063 B74-10213 05

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Low-loss, circularly-polarized dichroic plate
 NPO-13171 B74-10283 01

DIELECTRIC POLARIZATION

Piezoelectric relay
 GSFC-11627 B74-10089 01

DIELECTRICS

High voltage solid-state relay
 LEWIS-12096 B74-10006 01
 Volume-reflecting dielectric heat shield
 ARC-10803 B74-10074 04

DIFFUSION

In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
 MSC-14435 B74-10096 04

DIGITAL COMPUTERS

Error-correcting codes for high-speed digital computers
 M-FS-22887 B74-10147 02

DIGITAL DATA

Data summary and computer program for axial-flow pump rotor performance
 LEWIS-11920 B74-10127 09

Anti-multipath digital signal detector
 LANGLEY-11379 B74-10137 02

DIGITAL FILTERS

Low-distortion receiver for bilevel, baseband PCM waveforms
 MSC-14557 B74-10025 02

DIGITAL SYSTEMS

Modular digital computer system design
 M-FS-22935 B74-10034 09

Dynamic polarization compensating system for optical communications receiver
 GSFC-11782 B74-10182 03

Digital multichannel photometer
 HQ-10791 B74-10200 03

Computerized logic design of digital circuits
 M-FS-22401 B74-10225 09

Digital second-order phase-locked loop
 NPO-11905 B74-10274 01

DIGITAL TECHNIQUES

Micrometeoroid composition analyzer
 GSFC-11892 B74-10287 01

DIMENSIONAL MEASUREMENT

Accurate thickness measurement of easily compressed materials
 ARC-10551 B74-10111 04

DIODES

Digital multichannel photometer
 HQ-10791 B74-10200 03

DIPOLE ANTENNAS

Improved circularly polarized antenna
 ERC-10214 B74-10250 02

Low-loss, circularly-polarized dichroic plate
 NPO-13171 B74-10283 01

DIRECTIONAL ANTENNAS

Bidirectional zoom antenna
 GSFC-11862 B74-10257 01

DIRECTIONAL CONTROL

Vented vectoring-nozzle for STOL and V/STOL aircraft
 ARC-10839 B74-10058 06

DISCRIMINATORS

Frequency discriminator/phase detector
 NPO-11515 B74-10098 02

DISEASES

Polymers used to absorb fats and oils: A concept
 NPO-11609 B74-10210 05

DISKS (SHAPES)

Full-flow fluid filter
 NPO-13118 B74-10277 02

DISPENSERS

Iodine generator for disinfecting reclaimed water
 MSC-14632 B74-10153 05

DISPLACEMENT

Volume measuring system
MSC-13972 B74-10271 03

DISPLAY DEVICES

Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04

Graphics shadowing analysis
M-FS-21406 B74-10040 09

Recorder/processor apparatus
GSFC-11553 B74-10042 03

Marshall information retrieval and display system (MIRADS)
M-FS-22536 B74-10043 09

Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09

G-load indicator and warning device for aircraft
ARC-10806 B74-10171 02

Visualization of smoke stack plume
LANGLEY-11675 B74-10208 04

Ultrasonic scanner for footprint identification
NPO-13055 B74-10212 03

DISTRIBUTORS

High-voltage distributors
GSFC-11849 B74-10242 01

DOPLER EFFECT

Traffic control system and method
GSFC-10087 B74-10024 02

Digital second-order phase-locked loop
NPO-11905 B74-10274 01

DOSIMETERS

Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03

DRAG MEASUREMENT

Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03

DRUGS

Automated drug identification system
NPO-13063 B74-10213 05

Liquid sample processor
NPO-13136 B74-10278 05

DUCTED BODIES

Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09

DUCTED FAN ENGINES

Noise suppressor
LANGLEY-11141 B74-10261 03

DYNAMIC CHARACTERISTICS

Computer program for flexible rotor dynamics analysis
LEWIS-12153 B74-10084 09

Separation dynamics of S-II derivative launch vehicle
M-FS-24325 B74-10151 06

Eigenfunction solution of damped structural systems: DAMP
NPO-13480 B74-10169 09

DYNAMIC RESPONSE

Improved capacitance multiplier circuit
NPO-11948 B74-10162 02

DYNAMIC STABILITY

Implementation of a self-controlling heater: A concept
GSFC-11752 B74-10241 06

DYNAMIC STRUCTURAL ANALYSIS

Dynamic transformation method
M-FS-22848 B74-10076 06

Model optimization using statistical estimation
M-FS-22873 B74-10189 09

DYNAMOMETERS

Dynamometer for measuring machining forces in two perpendicular directions
M-FS-22899 B74-10148 07

E**EFFLUENTS**

Visualization of smoke stack plume
LANGLEY-11675 B74-10208 04

EIGENVALUES

Eigenvalue algorithm based on a combined Sturm sequence and inverse iteration technique (EASI)
NPO-13368 B74-10215 09

EIGENVECTORS

Eigenfunction solution of damped structural systems: DAMP
NPO-13480 B74-10169 09

ELASTIC BENDING

Suppression of bending motion in elastic bodies
XAC-05632 B74-10070 06

ELASTIC DAMPING

Control of elasticity in cast elastomeric shock/vibration isolators
KSC-10850 B74-10039 07

ELASTIC SHELLS

Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 B74-10186 09

ELASTOMERS

Control of elasticity in cast elastomeric shock/vibration isolators
KSC-10850 B74-10039 07

Flame resistant elastic elastomeric fiber
MSC-14331 B74-10157 04

New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07

ELECTRIC BATTERIES

Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03

Battery activation system
ARC-10832 B74-10056 03

Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01

Facility for testing solar cells
NPO-11761 B74-10099 02

Lead-oxygen closed-loop battery system
M-FS-23059 B74-10267 06

ELECTRIC BRIDGES

Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01

ELECTRIC CHARGE

Micrometeoroid composition analyzer
GSFC-11892 B74-10287 01

ELECTRIC CONNECTORS

Improved circuit-board interconnectors
MSC-12661 B74-10239 01

ELECTRIC CONTROL

Electrostatically controlled heat shutter
NPO-11942 B74-10161 03

ELECTRIC CURRENT

Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01

ELECTRIC FILTERS

Electronic high pass filter
LEWIS-11600 B74-10083 02

ELECTRIC GENERATORS

Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03

Magnetic bearings with combined radial and axial control
GSFC-11551 B74-10131 06

ELECTRIC MOTORS

Magnetic bearings with combined radial and axial control
GSFC-11551 B74-10131 06

Improved magnetic suspension technique
GSFC-11079 B74-10254 03

ELECTRIC POWER TRANSMISSION

High-voltage distributors
GSFC-11849 B74-10242 01

ELECTRIC RELAYS

Self-healing fuse
LEWIS-11964 B74-10004 02

High voltage solid-state relay
LEWIS-12096 B74-10006 01

Very high voltage latching relay
LEWIS-12265 B74-10079 01

Piezoelectric relay
GSFC-11627 B74-10089 01

ELECTRIC SWITCHES

Self-healing fuse
LEWIS-11964 B74-10004 02

Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01

Very high voltage latching relay
LEWIS-12265 B74-10079 01

Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03

ELECTRICAL FAULTS

Self-protected electrodes limit field-emission current
ERC-10015 B74-10253 01

ELECTRICAL GROUNDING

Bio-isolated DC operational amplifier
ARC-10596 B74-10112 01

ELECTRICAL IMPEDANCE

Generalized current distribution rule
LANGLEY-11565 B74-10093 02

ELECTRICAL MEASUREMENT

Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01

DC-to-AC inverter ratio failure detector
NPO-13160 B74-10282 01

ELECTRICAL RESISTANCE

Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01

ELECTRO-OPTICS

System for measuring transients in fluid flow
ARC-10852 B74-10217 03

ELECTROCARDIOGRAPHY

Heart-rate pulse-shift detector
ARC-10729 B74-10196 01

ELECTROCHEMICAL CELLS

Carbon monoxide detector
M-FS-23090 B74-10268 04

ELECTRODEPOSITION

High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08

ELECTRODES

Finger recording electrode system for electrical impedance plethysmograph
ARC-10816 B74-10172 05

- ELECTROFORMING**
High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08
- ELECTROLYTES**
Battery activation system
ARC-10832 B74-10056 03
Polyelectrolytes with high charge density
NPO-11918 B74-10159 04
- ELECTROLYTIC CELLS**
Improved fabrication of electrolytic capacitors
M-FS-23133 B74-10294 01
- ELECTROMAGNETIC RADIATION**
Pocket-size microwave radiation hazard detector
NPO-11461 B74-10097 02
- ELECTROMAGNETS**
Improved magnetic suspension technique
GSFC-11079 B74-10254 03
- ELECTROMETERS**
Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01
- ELECTRON BEAM WELDING**
Closed-circuit-television welding-electrode guidance system
M-FS-23026 B74-10150 02
- ELECTRON BOMBARDMENT**
Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03
- ELECTRON CAPTURE**
Negative ion spectrometry for detecting nitrated explosives
NPO-13082 B74-10276 02
- ELECTRON EMISSION**
Integrated structure vacuum tube: A Concept
ARC-10445 B74-10110 01
Improved channel multiplier for radiation-and-particle detectors
NPO-12128 B74-10275 03
- ELECTRONIC CONTROL**
Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01
- ELECTRONIC EQUIPMENT**
Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01
Cushion module for stowing electronic equipment
ARC-10779 B74-10073 04
Reliability data for electronic and electromechanical components: A report
NPO-13153 B74-10280 01
Improved fabrication of electrolytic capacitors
M-FS-23133 B74-10294 01
- ELECTRONIC MODULES**
Advanced-priority interrupt module
NPO-13067 B74-10165 02
Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01
- ELECTRONIC PACKAGING**
Toroidal equipment packaging
ARC-10828 B74-10055 03
Cushion module for stowing electronic equipment
ARC-10779 B74-10073 04
Microelectronics packaging technique: A Concept
MSC-19399 B74-10192 01
- Improved circuit-board interconnectors
MSC-12661 B74-10239 01
Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
LANGLEY-11589 B74-10263 08
- ELECTRONIC TRANSDUCERS**
Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
- ELECTROPHORESIS**
Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04
- ELECTROPLATING**
Commercially available black chrome is an effective solar collector coating
LEWIS-12159 B74-10121 04
- ELECTROPLETHYSMOGRAPHY**
Finger recording electrode system for electrical impedance plethysmograph
ARC-10816 B74-10172 05
- ELECTROSTATIC PROBES**
Electrostatically controlled heat shutter
NPO-11942 B74-10161 03
- ELECTROSTATICS**
Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
LANGLEY-11589 B74-10263 08
- ELLIPTICAL ORBITS**
Analysis of orbital heat transfer
ARC-10842 B74-10115 02
- EMBRITTLMENT**
Evaluation of test procedures for hydrogen environment embrittlement
ARC-10919 B74-10222 04
- EMERGENCY LIFE SUSTAINING SYSTEMS**
Emergency descent device
M-FS-23074 B74-10226 05
- ENAMELS**
New tooth enamel from brushite crystals
ERC-10338 B74-10199 05
- ENERGY ABSORPTION**
Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01
Commercially available black chrome is an effective solar collector coating
LEWIS-12159 B74-10121 04
- ENERGY CONVERSION**
Mechanical solar motor: A concept
M-FS-23062 B74-10292 07
- ENERGY STORAGE**
Solar array deployment from a spinning spacecraft
ARC-10787 B74-10048 06
Radioisotope heater
ARC-10791 B74-10051 03
Battery activation system
ARC-10832 B74-10056 03
Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01
Facility for testing solar cells
NPO-11761 B74-10099 02
- ENGINE DESIGN**
Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07
Design criteria monograph on turbopump shafts and couplings
LEWIS-12204 B74-10014 07
- Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06
- ENGINE PARTS**
A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
Design criteria monograph on turbopump shafts and couplings
LEWIS-12204 B74-10014 07
Design criteria monograph for actuators and operators
LEWIS-12264 B74-10061 06
Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03
High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04
- ENVIRONMENTAL CONTROL**
Silver oxide sorbent for carbon dioxide
ARC-10797 B74-10053 04
Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06
- ENVIRONMENTAL TESTS**
Combustion products generating and metering device
GSFC-11095 B74-10036 04
- ENZYMES**
Enzymatic regeneration of adenosine triphosphate cofactor
ARC-10837 B74-10057 04
- EPITAXY**
Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01
- EPOXY RESINS**
Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 B74-10141 08
Inexpensive lightweight mirror
MSC-14615 B74-10155 05
- EQUIPMENT SPECIFICATIONS**
Design criteria monograph for actuators and operators
LEWIS-12264 B74-10061 06
- ERROR CORRECTING DEVICES**
Error-correcting codes for high-speed digital computers
M-FS-22887 B74-10147 02
- ERRORS**
Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02
- ESCAPE SYSTEMS**
Emergency descent device
M-FS-23074 B74-10226 05
- ETCHING**
Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 B74-10020 07
A method for polycrystalline silicon delineation applicable to a double-diffused MOS transistor
LANGLEY-11536 B74-10234 01
- EUTECTIC ALLOYS**
Binary alloys for refractory-metal brazing
LEWIS-12184 B74-10125 08
- EVACUATING (TRANSPORTATION)**
Emergency descent device
M-FS-23074 B74-10226 05

EVALUATION

Space ultrareliable modular computer (SUMC) instruction simulator
M-FS-22697 B74-10145 09
Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03
FORTRAN automatic code evaluation system (FACES)
M-FS-22910 B74-10190 09
Apparatus for monitoring linear explosive performance
LANGLEY-10800 B74-10201 04
System for measuring transients in fluid flow
ARC-10852 B74-10217 03
Evaluation of test procedures for hydrogen environment embrittlement
ARC-10919 B74-10222 04
Horn antenna with v-shaped corrugated surface
LANGLEY-11112 B74-10260 01
Automated maintenance for complex hybrid systems
NPO-13143 B74-10279 09

EVAPORATORS
Heat pipe with hot gas reservoir
ARC-10847 B74-10216 03

EXERCISE (PHYSIOLOGY)
Therapeutic hand-exercising device with cycling pressure value
LANGLEY-11579 B74-10140 05

EXHAUST NOZZLES
Thrust vector control for V/STOL aircraft
ARC-10788 B74-10049 06

EXHAUST SYSTEMS
Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06

EXPLOSIVE DEVICES
Laser-actuated mechanical device
NPO-13105 B74-10166 03
Laser system to detonate explosive devices
NPO-11743 B74-10194 03

EXPLOSIVE WELDING
Explosive welding technique for joining aluminum and steel tubes
MSC-14721 B74-10272 08

EXPLOSIVES
Apparatus for monitoring linear explosive performance
LANGLEY-10800 B74-10201 04
Negative ion spectrometry for detecting nitrated explosives
NPO-13082 B74-10276 02

EXTRACTION
Liquid sample processor
NPO-13136 B74-10278 05
Straight-line IC removal tool
NPO-13157 B74-10281 01

F**FABRICATION**

Fabrication of complex structures or assemblies by hot isostatic pressure (HIP) welding
LEWIS-11490 B74-10124 04
Fabrication of thick structures by sputtering
LEWIS-12331 B74-10126 08
Laminating cored, stressed-face, sandwich structures
XLA-11028 B74-10233 06

Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01
Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04
Improved fabrication of electrolytic capacitors
M-FS-23133 B74-10294 01

FAIL-SAFE SYSTEMS

Fail-safe fire detection system
LEWIS-12238 B74-10078 02

FAILURE

DC-to-AC inverter ratio failure detector
NPO-13160 B74-10282 01

FASTENERS

Modular support blocks for fluid lines
MSC-19335 B74-10023 07
New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07

FATIGUE (BIOLOGY)

Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

FATIGUE (MATERIALS)

Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06

FEEDBACK CONTROL

Antiskid braking system
M-FS-22807 B74-10146 06
Improved control for nuclear/thermionic power source: A concept
NPO-13114 B74-10167 03
Swashplate feedback control for tilt-rotor aircraft
ARC-10854 B74-10174 06
Implementation of a self-controlling heater: A concept
GSFC-11752 B74-10241 06
Lead-oxygen closed-loop battery system
M-FS-23059 B74-10267 06

FIBER OPTICS

Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01
Laser-actuated mechanical device
NPO-13105 B74-10166 03
Laser system to detonate explosive devices
NPO-11743 B74-10194 03
Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03

FIBERS

Polymer compositions suitable for use in enriched oxygen atmospheres
MSC-14618 B74-10154 04
Flame resistant elastic elastomeric fiber
MSC-14331 B74-10157 04
Process for fabrication of stabilized aluminum phosphate fibers
LANGLEY-11526 B74-10185 08
New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07

FIELD EMISSION

Self-protected electrodes limit field-emission current
ERC-10015 B74-10253 01

FILLERS

Binary alloys for refractory-metal brazing
LEWIS-12184 B74-10125 08

FILM THICKNESS

Method of measuring the thickness of radioactive thin films
LEWIS-11971 B74-10065 03
A high yield neutron target
LEWIS-12058 B74-10066 03

FILTRATION

Two-phase, passive separator-and-filter assembly
LANGLEY-10976 B74-10133 04
Domestic wash water reclamation
LANGLEY-11606 B74-10177 04
Metalized polymeric foam material
ARC-10860 B74-10218 04

FINGERS

Therapeutic hand-exercising device with cycling pressure value
LANGLEY-11579 B74-10140 05
Finger recording electrode system for electrical impedance plethysmograph
ARC-10816 B74-10172 05

FINITE DIFFERENCE THEORY

Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09

FIRE CONTROL

Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03

FIRE CONTROL CIRCUITS

Fail-safe fire detection system
LEWIS-12238 B74-10078 02

FIRE FIGHTING

Emergency descent device
M-FS-23074 B74-10226 05
A band clamp with a spring toggle lever
MSC-14736 B74-10240 07
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

FIRE PREVENTION

Combustion products generating and metering device
GSFC-11095 B74-10036 04
Process for fabrication of stabilized aluminum phosphate fibers
LANGLEY-11526 B74-10185 08

FITTINGS

Artificial limb connection
KSC-10833 B74-10183 05

FLAME IONIZATION

Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03

FLAME TEMPERATURE

Measurement of temperature profiles in hot gases and flames
LEWIS-12055 B74-10060 03

FLANGES

Improved geneva mechanism
LANGLEY-11443 B74-10030 06
Design standards for low-profile flanges
M-FS-22708 B74-10033 09
Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06

FLAPS (CONTROL SURFACES)

Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06
Thrust vector control for V/STOL aircraft
ARC-10788 B74-10049 06

FLAT CONDUCTORS

Microelectronics packaging technique: A Concept
MSC-19399 B74-10192 01

FLAT PLATES

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)

LANGLEY-11199 B74-10203 09

Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)

LANGLEY-11533 B74-10204 09

FLAT SURFACES

Flat device for heat concentration or dispersion

LANGLEY-11699 B74-10291 03

FLEXING

Mechanical coupling for high cyclic loading

LEWIS-11690 B74-10001 06

FLIGHT CONTROL

Vented-vectoring-nozzle for STOL and V/STOL aircraft

ARC-10839 B74-10058 06

FLIGHT CREWS

Liquid-cooled liner for helmets

ARC-10534 B74-10249 05

FLIGHT TEST INSTRUMENTS

Optical discriminator system

LANGLEY-11580 B74-10139 03

FLIGHT TESTS

G-load indicator and warning device for aircraft

ARC-10806 B74-10171 02

Flight tests of vortex-attenuating splines

LANGLEY-11645 B74-10187 03

FLOATS

Wireless telemetry system for floating bodies

KSC-10855 B74-10028 06

FLOCCULATING

Polyelectrolytes with high charge density

NPO-11918 B74-10159 04

FLOTATION

Improved magnetic suspension technique

GSFC-11079 B74-10254 03

FLOW MEASUREMENT

System for measuring transients in fluid flow

ARC-10852 B74-10217 03

FLOW REGULATORS

Remotely operated gas-pressure regulator and shuttle valve

NPO-13201 B74-10298 07

FLOW RESISTANCE

Full-flow fluid filter

NPO-13118 B74-10277 02

FLOW VELOCITY

Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine

LEWIS-12129 B74-10130 09

FLUERICS

Ignition of sounding rocket motors with hand-pumped air

LANGLEY-11152 B74-10202 03

FLUID DYNAMICS

Fluid dynamics test method

NPO-11895 B74-10211 03

FLUID FILTERS

Full-flow fluid filter

NPO-13118 B74-10277 02

FLUID FLOW

Modular support blocks for fluid lines

MSC-19335 B74-10023 07

Computer program for predicting off-design performance of centrifugal compressors

LEWIS-12186 B74-10067 09

Thin-film temperature sensor

NPO-11775 B74-10100 01

System for measuring transients in fluid flow

ARC-10852 B74-10217 03

FLUID TRANSMISSION LINES

Modular support blocks for fluid lines

MSC-19335 B74-10023 07

FLUORIDES

Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)

LEWIS-11930 B74-10016 04

FLUX DENSITY

Calorimetric detection of neutral-atom content of ion beam

LANGLEY-11505 B74-10184 03

Improved magnetic suspension technique

GSFC-11079 B74-10254 03

FOAMS

Thermally-stable, syntactic pyrrone foams

LANGLEY-11325 B74-10135 06

FOLDING STRUCTURES

Horn antenna with v-shaped corrugated surface

LANGLEY-11112 B74-10260 01

FORCED CONVECTION

Computer program for calculating water and steam properties

LEWIS-12206 B74-10123 09

FORMING TECHNIQUES

Pressure application technique for high-temperature composite fabrication

LANGLEY-11601 B74-10141 08

FORTRAN

Design standards for low-profile flanges

M-FS-22708 B74-10033 09

Computer program for spacecraft-booster separation spring selection, set composition, and location determination

GSFC-11616 B74-10037 09

Graphics shadowing analysis

M-FS-21406 B74-10040 09

Marshall information retrieval and display system (MIRADS)

M-FS-22536 B74-10043 09

Generalized curve fit and plotting (GECAP) program

M-FS-22728 B74-10044 09

Computer program for predicting off-design performance of centrifugal compressors

LEWIS-12186 B74-10067 09

Dynamic transformation method

M-FS-22848 B74-10076 06

Computer program for flexible rotor dynamics analysis

LEWIS-12153 B74-10084 09

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow

LANGLEY-11175 B74-10091 06

Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans

ARC-10833 B74-10113 09

Computer program for calculating water and steam properties

LEWIS-12206 B74-10123 09

Data summary and computer program for axial-flow pump rotor performance

LEWIS-11920 B74-10127 09

Computer program for calculating critical speeds of rotating shafts

LEWIS-11910 B74-10128 09

Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow

LEWIS-12178 B74-10129 09

Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine

LEWIS-12129 B74-10130 09

Space ultrareliable modular computer (SUMC) instruction simulator

M-FS-22697 B74-10145 09

Separation dynamics of S-II derivative launch vehicle

M-FS-24325 B74-10151 06

Eigenfunction solution of damped structural systems: DAMP

NPO-13480 B74-10169 09

Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option

LANGLEY-11569 B74-10186 09

Model optimization using statistical estimation

M-FS-22873 B74-10189 09

FORTRAN automatic code evaluation system (FACES)

M-FS-22910 B74-10190 09

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)

LANGLEY-11199 B74-10203 09

Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4

LANGLEY-11209 B74-10205 09

Computer program for steamtube curvature analysis: Analytical method

LANGLEY-11535 B74-10206 09

Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)

LANGLEY-11581 B74-10207 09

Eigenvalue algorithm based on a combined Sturm sequence and inverse iteration technique (EASI)

NPO-13368 B74-10215 09

Calculation of aerodynamic characteristics of STOL aircraft

ARC-10882 B74-10221 09

Computerized logic design of digital circuits

M-FS-22401 B74-10225 09

Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)

LANGLEY-11596 B74-10236 09

FOURIER TRANSFORMATION

Continuous Fourier transform system

ARC-10466 B74-10170 02

FRACTURE MECHANICS

Evaluation of test procedures for hydrogen environment embrittlement

ARC-10919 B74-10222 04

FRACTURE STRENGTH

Controlled intermittent interfacial bond concept for composite materials

LANGLEY-11628 B74-10264 04

FRAGMENTATION

Economical technique for fragmentation testing
ARC-10792 B74-10052 04

FRAMES

Expandable space frames
ERC-10365 B74-10252 06

FREQUENCIES

High-efficiency multifrequency feed
GSFC-11909 B74-10288 02

FREQUENCY CONVERTERS

Synchronized frequency transposer
GSFC-11763 B74-10256 01

FREQUENCY MEASUREMENT

Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02

FREQUENCY MULTIPLIERS

Phased-array antenna phase control circuit using frequency multiplication
ERC-10285 B74-10251 01

FREQUENCY SYNTHESIZERS

Minicomputer-controlled frequency generator
NPO-11962 B74-10163 02

FRESNEL DIFFRACTION

A low cost "Air Mass 2" solar simulator
LEWIS-12266 B74-10086 02

FRICTION REDUCTION

Lightweight, high speed bearing balls: A concept
LEWIS-11087 B74-10013 06
Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

FUEL FLOW

Propellant acquisition device for use with a spinning toroidal tank
ARC-10840 B74-10059 06

FUEL VALVES

Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07
Design criteria monograph for valve components
LEWIS-12327 B74-10087 06

FUNCTION GENERATORS

Logarithmic-function generator
ERC-10267 B74-10285 02

FUNGICIDES

Polyelectrolytes with high charge density
NPO-11918 B74-10159 04

FURNACES

High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04

FUSES

Self-healing fuse
LEWIS-11964 B74-10004 02

G**GALVANOMETERS**

Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01

GAS ANALYSIS

Rapid method for determining nitrogen in tantalum and niobium alloys
LEWIS-12237 B74-10085 04

GAS BEARINGS

Self-leveling load table
M-FS-22039 B74-10144 06

GAS DETECTORS

Extendible probe for atmosphere sampling
ARC-10829 B74-10054 03
Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03
Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03

GAS DISCHARGE TUBES

Coaxial anode improves sensitivity of gas radiation counters
GSFC-11492 B74-10229 03

GAS FLOW

Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03
Shutoff and throttling valve
NPO-11951 B74-10105 07
Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06

GAS GENERATORS

Design criteria monograph for liquid propellant gas generators
LEWIS-12139 B74-10008 07

GAS IONIZATION

Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03
Electrostatically controlled heat shutter
NPO-11942 B74-10161 03

GAS PRESSURE

Remotely operated gas-pressure regulator and shuttle valve
NPO-13201 B74-10298 07

GAS SPECTROSCOPY

Improved nondispersive infrared analyzer
ARC-10802 B74-10243 03

GAS TURBINE ENGINES

New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04
High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04

GAS TURBINES

Design criteria monograph for liquid propellant gas generators
LEWIS-12139 B74-10008 07
Advanced tungsten fiber-reinforced nickel superalloy
LEWIS-12394 B74-10248 04

GASKETS

Soft, thermally conductive material
LANGLEY-10850 B74-10132 04

GATES (CIRCUITS)

High voltage solid-state relay
LEWIS-12096 B74-10006 01

GE COMPUTERS

Computer program for spacecraft-booster separation spring selection, set composition, and location determination
GSFC-11616 B74-10037 09

GEARS

Improved geneva mechanism
LANGLEY-11443 B74-10030 06

GEOMAGNETISM

Magnetometer with miniature transducer and automatic transducer scanning apparatus
LANGLEY-11617 B74-10142 02

GERMANIUM

Improved solid-state triode construction
NPO-13064 B74-10107 01

GLASS

Precision glasscutter
LANGLEY-11604 B74-10031 07

GLASS FIBERS

Glass fiber addition strengthens low-density ablative compositions
LANGLEY-11288 B74-10027 04

GRAPHIC ARTS

Viewgraph preparation made easier
LANGLEY-11612 B74-10094 03

GRAPHITE

Graphite ionization vacuum gauge
LANGLEY-11338 B74-10136 03

GROUND-AIR-GROUND COMMUNICATIONS

Traffic control system and method
GSFC-10087 B74-10024 02

GUNS

Economical technique for fragmentation testing
ARC-10792 B74-10052 04

GUNS (ORDNANCE)

Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03

GYROSCOPES

Temperature compensation of digital inertial sensors
NPO-13044 B74-10106 02

H**HANDBOOKS**

Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
Guidebook of nondestructive evaluation techniques for materials and structures
LEWIS-12272 B74-10122 04
Telecommunications systems design techniques handbook
NPO-13245 B74-10284 02

HANDLES

A band clamp with a spring toggle lever
MSC-14736 B74-10240 07

HARDENING (MATERIALS)

Lightweight, high speed bearing balls: A concept
LEWIS-11087 B74-10013 06

HEART RATE

Heart-rate pulse-shift detector
ARC-10729 B74-10196 01

HEAT

Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03

HEAT MEASUREMENT

Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03

HEAT PIPES

Throttleable heat pipe
ARC-10848 B74-10173 03
Heat pipe with hot gas reservoir
ARC-10847 B74-10216 03
Flat device for heat concentration or dispersion
LANGLEY-11699 B74-10291 03

HEAT RESISTANT ALLOYS

A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04

New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04

Addition of silicon improves oxidation resistance of nickel based superalloys
LEWIS-12138 B74-10007 04

Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03

High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04

Advanced tungsten fiber-reinforced nickel superalloy
LEWIS-12394 B74-10248 04

HEAT SHIELDING

Volume-reflecting dielectric heat shield
ARC-10803 B74-10074 04

HEAT TOLERANCE

Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

HEAT TRANSFER

Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06

Analysis of orbital heat transfer
ARC-10844 B74-10116 03

Electrostatically controlled heat shutter
NPO-11942 B74-10161 03

Flat device for heat concentration or dispersion
LANGLEY-11699 B74-10291 03

HEAT TREATMENT

Apparatus for heat treating plastic belts
NPO-13205 B74-10299 02

HEATING EQUIPMENT

Radioisotope heater
ARC-10791 B74-10051 03

Implementation of a self-controlling heater: A concept
GSFC-11752 B74-10241 06

HELICOPTER DESIGN

Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06

HELIUM-NEON LASERS

Laser-scanning techniques for rapid ballistics identification
NPO-11861 B74-10102 03

HELMETS

Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

HIGH GAIN

Bidirectional zoom antenna
GSFC-11862 B74-10257 01

HIGH PASS FILTERS

Electronic high pass filter
LEWIS-11600 B74-10083 02

HIGH PRESSURE

Light-weight spherical submergence vessel
ARC-10838 B74-10114 08

Full-flow fluid filter
NPO-13118 B74-10277 02

HIGH STRENGTH ALLOYS

A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04

New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04

Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03

High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04

High-strength alloy with resistance to hydrogen-environment embrittlement
M-FS-19234 B74-10265 04

HIGH TEMPERATURE

Shutoff and throttling valve
NPO-11951 B74-10105 07

Light-weight spherical submergence vessel
ARC-10838 B74-10114 08

Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 B74-10141 08

HIGH TEMPERATURE ENVIRONMENTS

Integrated structure vacuum tube: A Concept
ARC-10445 B74-10110 01

Laser-actuated mechanical device
NPO-13105 B74-10166 03

HIGH TEMPERATURE GASES

Measurement of temperature profiles in hot gases and flames
LEWIS-12055 B74-10060 03

HIGH TEMPERATURE LUBRICANTS

Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

HIGH TEMPERATURE TESTS

High-temperature tensile tester for ceramics
ARC-10822 B74-10244 04

HIGH VACUUM

Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04

HIGH VOLTAGES

Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01

Very high voltage latching relay
LEWIS-12265 B74-10079 01

High-voltage distributors
GSFC-11849 B74-10242 01

HOLDERS

Thermistor holder for skin-temperature measurements
ARC-10855 B74-10119 05

Finger recording electrode system for electrical impedance plethysmograph
ARC-10816 B74-10172 05

Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01

HOLOGRAPHY

Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06

Acoustic-optic deflector telescope
M-FS-23107 B74-10293 03

HONEYCOMB CORES

Laminating cored, stressed-face, sandwich structures
XLA-11028 B74-10233 06

HONEYCOMB STRUCTURES

Thermally-stable, syntactic pyrrone foams
LANGLEY-11325 B74-10135 06

Noise suppressor
LANGLEY-11141 B74-10261 03

HORN ANTENNAS

Horn antenna with v-shaped corrugated surface
LANGLEY-11112 B74-10260 01

HOUSINGS

Design criteria monograph for valve components
LEWIS-12327 B74-10087 06

HYBRID CIRCUITS

High voltage solid-state relay
LEWIS-12096 B74-10006 01

HYDRAULIC CONTROL

Mechanical coupling for high cyclic loading
LEWIS-11690 B74-10001 06

HYDROGEN

Evaluation of test procedures for hydrogen environment embrittlement
ARC-10919 B74-10222 04

High-strength alloy with resistance to hydrogen-environment embrittlement
M-FS-19234 B74-10265 04

HYDROGEN IONS

Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03

HYSTERESIS

Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06

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IBM 360 COMPUTER

Graphics shadowing analysis
M-FS-21406 B74-10040 09

Computer program for flexible rotor dynamics analysis
LEWIS-12153 B74-10084 09

Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09

Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09

Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09

Separation dynamics of S-II derivative launch vehicle
M-FS-24325 B74-10151 06

Calculation of aerodynamic characteristics of STOL aircraft
ARC-10882 B74-10221 09

IBM 1130 COMPUTER

Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09

IBM 2250 COMPUTER

Graphics shadowing analysis
M-FS-21406 B74-10040 09

IBM 7044 COMPUTER

Computer program for predicting off-design performance of centrifugal compressors
LEWIS-12186 B74-10067 09

Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09

Computer program for calculating critical speeds of rotating shafts
LEWIS-11910 B74-10128 09

- Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09
- IBM 7094 COMPUTER**
Computer program for spacecraft-booster separation spring selection, set composition, and location determination
GSFC-11616 B74-10037 09
- Computer program for predicting off-design performance of centrifugal compressors
LEWIS-12186 B74-10067 09
- Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans
ARC-10833 B74-10113 09
- Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09
- Computer program for calculating critical speeds of rotating shafts
LEWIS-11910 B74-10128 09
- Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09
- IDENTIFYING**
Ultrasonic scanner for footprint identification
NPO-13055 B74-10212 03
- Automated drug identification system
NPO-13063 B74-10213 05
- IGNITION SYSTEMS**
Ignition of sounding rocket motors with hand-pumped air
LANGLEY-11152 B74-10202 03
- IMAGE ENHANCEMENT**
Vertical copy camera system provides photographs from erts-1 imagery
LEWIS-12140 B74-10009 07
- IMAGERY**
Vertical copy camera system provides photographs from erts-1 imagery
LEWIS-12140 B74-10009 07
- IMAGES**
Recorder/processor apparatus
GSFC-11553 B74-10042 03
- IMAGING TECHNIQUES**
Graphics shadowing analysis
M-FS-21406 B74-10040 09
- IMPEDANCE MATCHING**
High q band-pass resonators utilizing composite band-stop resonator pairs
GSFC-10990 B74-10035 02
- IMPEDANCE PROBES**
In vivo measurement of mechanical impedance of bone
ARC-10857 B74-10245 05
- IMPLANTATION**
Artificial limb connection
KSC-10833 B74-10183 05
- Heart-rate pulse-shift detector
ARC-10729 B74-10196 01
- IMPROVEMENT**
Improved capacitance multiplier circuit
NPO-11948 B74-10162 02
- INDUSTRIAL SAFETY**
Directory of aerospace safety specialized information sources
LEWIS-12223 B74-10019 03
- INERTIAL REFERENCE SYSTEMS**
Temperature compensation of digital inertial sensors
NPO-13044 B74-10106 02
- INFORMATION RETRIEVAL**
Marshall information retrieval and display system (MIRADS)
M-FS-22536 B74-10043 09
- INFORMATION THEORY**
Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02
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MSC-14615 B74-10155 05

OPTICAL MEASUREMENT

Wavelength-selective, sequential Q-switching laser cavity
LANGLEY-11045 B74-10134 03

OPTICAL REFLECTION

Surface roughness measured by optical signatures
ARC-10853 B74-10118 03

OPTICAL SCANNERS

Laser-scanning techniques for rapid ballistic identification
NPO-11861 B74-10102 03

Fast signal averager
ARC-10090 B74-10109 02

OPTICAL TRACKING

Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03

ORGANIC COMPOUNDS

Detection of cracks in surface insulation
MSC-14187 B74-10095 04

ORGANIC MATERIALS

Polymer compositions suitable for use in enriched oxygen atmospheres
MSC-14618 B74-10154 04

New tooth enamel from brushite crystals
ERC-10338 B74-10199 05

ORGANIC NITRATES

Negative ion spectrometry for detecting nitrated explosives
NPO-13082 B74-10276 02

ORIENTATION

Spacecraft attitude determination by fanscan technique
ARC-10827 B74-10198 02

ORTHOPEDICS

Therapeutic hand-exercising device with cycling pressure value
LANGLEY-11579 B74-10140 05

ORTHOTROPIC PLATES

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09

ORTHOTROPIC SHELLS

Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 B74-10186 09

OSCILLATION DAMPERS

Swashplate feedback control for tilt-rotor aircraft
ARC-10854 B74-10174 06

OSCILLATORS

Minicomputer-controlled frequency generator
NPO-11962 B74-10163 02

OSMOSIS

Domestic wash water reclamation
LANGLEY-11606 B74-10177 04

OXIDATION

In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04

OXIDATION RESISTANCE

Addition of silicon improves oxidation resistance of nickel based superalloys
LEWIS-12138 B74-10007 04

Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

OXYGEN

Lead-oxygen closed-loop battery system
M-FS-23059 B74-10267 06

OXYGEN PRODUCTION

Spacecraft oxygen recovery system
ARC-10868 B74-10220 05

P**P-TYPE SEMICONDUCTORS**

Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01

PACKAGING

Toroidal equipment packaging
ARC-10828 B74-10055 03

PACKING

Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01

PANELS

Laminating cored, stressed-face, sandwich structures
XLA-11028 B74-10233 06

New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07

PAPERS

Polyelectrolytes with high charge density
NPO-11918 B74-10159 04

Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03

PARABOLIC ANTENNAS

Variable-beamwidth antennas
GSFC-11760 B74-10041 02

Bidirectional zoom antenna
GSFC-11862 B74-10257 01

PARALLEL PROCESSING (COMPUTERS)

Data processor with conditionally supplied clock signals
GSFC-10975 B74-10021 02

PARTICLE ACCELERATOR TARGETS

Long life neutron generator target using deuterium pass-through structure
LEWIS-11866 B74-10063 03
A high yield neutron target
LEWIS-12058 B74-10066 03

PARTICLE DIFFUSION

Long life neutron generator target using deuterium pass-through structure
LEWIS-11866 B74-10063 03

PARTICLE INTERACTIONS

Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04

PARTICLE MASS

Particle impact location detector
GSFC-11829 B74-10230 03

PARTICLE PRODUCTION

Improved dispensing targets for ion beam particle generators
NPO-13112 B74-10108 03

PARTICLE SIZE DISTRIBUTION

Improved high volume air sampler
LEWIS-11644 B74-10080 05

PARTICULATE SAMPLING

Improved high volume air sampler
LEWIS-11644 B74-10080 05

PEENING

Mechanical rod peening
M-FS-23047 B74-10237 07

PERFORMANCE PREDICTION

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 B74-10091 06
Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans
ARC-10833 B74-10113 09

Reliability data for electronic and electromechanical components: A report
NPO-13153 B74-10280 01

Telecommunications systems design techniques handbook
NPO-13245 B74-10284 02

Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 B74-10301 03

PETROLOGY

Improved dispensing targets for ion beam particle generators
NPO-13112 B74-10108 03

PHASE COHERENCE

Amplitude-steered, pseudophased antenna array
GSFC-11446 B74-10255 01

PHASE CONTROL

Phased-array antenna phase control circuit using frequency multiplication
ERC-10285 B74-10251 01

PHASE DETECTORS

Frequency discriminator/phase detector
NPO-11515 B74-10098 02

PHASE ERROR

Stable group delay cable
NPO-13138 B74-10295 01

PHASE LOCKED SYSTEMS

Frequency discriminator/phase detector
NPO-11515 B74-10098 02
Digital second-order phase-locked loop
NPO-11905 B74-10274 01

PHASE MODULATION

Dually-mode-locked ND: YAG laser
GSFC-11746 B74-10038 03
Wide deviation phase modulator
LANGLEY-11607 B74-10178 02

PHASE SHIFT

Heart-rate pulse-shift detector
ARC-10729 B74-10196 01

PHASED ARRAYS

Phased-array antenna phase control circuit using frequency multiplication
ERC-10285 B74-10251 01
Amplitude-steered, pseudophased antenna array
GSFC-11446 B74-10255 01

PHOSPHORYLATION

Enzymatic regeneration of adenosine triphosphate cofactor
ARC-10837 B74-10057 04

PHOTOCONDUCTIVE CELLS

Facility for testing solar cells
NPO-11761 B74-10099 02

PHOTOGRAPHIC EQUIPMENT

Vertical copy camera system provides photographs from erts-1 imagery
LEWIS-12140 B74-10009 07
Viewgraph preparation made easier
LANGLEY-11612 B74-10094 03

PHOTOGRAPHIC FILM

Precision glasscutter
LANGLEY-11604 B74-10031 07
Viewgraph preparation made easier
LANGLEY-11612 B74-10094 03
Automatic marker for photographic film
MSC-14705 B74-10152 03

PHOTOGRAPHIC PROCESSING

Vertical copy camera system provides photographs from erts-1 imagery
LEWIS-12140 B74-10009 07

PHOTOGRAPHIC PROCESSING EQUIPMENT

Precision glasscutter
LANGLEY-11604 B74-10031 07

PHOTOGRAPHIC TRACKING

Optical discriminator system
LANGLEY-11580 B74-10139 03

PHOTOMETERS

Digital multichannel photometer
HQ-10791 B74-10200 03

PHOTOMULTIPLIER TUBES

Digital multichannel photometer
HQ-10791 B74-10200 03
Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01

PHOTOSENSITIVITY

Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03

PIEZOELECTRIC TRANSDUCERS

Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 B74-10020 07
Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03
Piezoelectric relay
GSFC-11627 B74-10089 01

PIEZORESISTIVE TRANSDUCERS

Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
LANGLEY-11589 B74-10263 08

PINS

Pocket gauge for checking insert clocking of multipin circular connectors
NPO-11924 B74-10160 01

PIPES (TUBES)

Modular support blocks for fluid lines
MSC-19335 B74-10023 07
Automatic soldering machine
MSC-19401 B74-10193 06

Explosive welding technique for joining aluminum and steel tubes
MSC-14721 B74-10272 08

PLANETARY ATMOSPHERES

Extendible probe for atmosphere sampling
ARC-10829 B74-10054 03
Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03

PLANETARY SURFACES

Analysis of orbital heat transfer
ARC-10842 B74-10115 02

PLASMA DIAGNOSTICS

Wavelength-selective, sequential Q-switching laser cavity
LANGLEY-11045 B74-10134 03

PLASMA SPRAYING

Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

PLASTICS

Plastic covering on airfoil structure provides smooth uninterrupted surface
MSC-12631 B74-10270 08
Apparatus for heat treating plastic belts
NPO-13205 B74-10299 02

PLATFORMS

Brake for rollable platform
ARC-10512 B74-10045 06

PLATING

Fabrication of thick structures by sputtering
LEWIS-12331 B74-10126 08

PLOTTING

Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09
Computer program for calculating critical speeds of rotating shafts
LEWIS-11910 B74-10128 09

PNEUMATIC CIRCUITS

Pulse-width-modulated servo valve for autopilot system
LANGLEY-11643 B74-10179 06

PNEUMATIC EQUIPMENT

Ignition of sounding rocket motors with hand-pumped air
LANGLEY-11152 B74-10202 03
Mechanical rod peening
M-FS-23047 B74-10237 07

POISSON RATIO

Miniature biaxial strain transducer
LANGLEY-11648 B74-10180 01

POLARIZED LIGHT

Dynamic polarization compensating system for optical communications receiver
GSFC-11782 B74-10182 03

POLARIZERS

Field-sequential stereo television
MSC-12616 B74-10223 03

POLICE

Location of vehicles using AM station broadcasting signals
NPO-13217 B74-10300 02

POLLUTION

Combustion products generating and metering device
GSFC-11095 B74-10036 04

POLYIMIDE RESINS

Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 B74-10141 08

POLYMER CHEMISTRY

- New polymer systems: Chain extension by dianhydrides
NPO-13046 B74-10077 04
- Polymer compositions suitable for use in enriched oxygen atmospheres
MSC-14618 B74-10154 04
- Flame resistant elastic elastomeric fiber
MSC-14331 B74-10157 04
- Polyelectrolytes with high charge density
NPO-11918 B74-10159 04
- Polymers used to absorb fats and oils: A concept
NPO-11609 B74-10210 05

POLYMERIZATION

- New polymer systems: Chain extension by dianhydrides
NPO-13046 B74-10077 04
- New tooth enamel from brushite crystals
ERC-10338 B74-10199 05

POLYMERS

- Cushion module for stowing electronic equipment
ARC-10779 B74-10073 04

POLYTETRAFLUOROETHYLENE

- Volume-reflecting dielectric heat shield
ARC-10803 B74-10074 04

POLYURETHANE FOAM

- Inexpensive lightweight mirror
MSC-14615 B74-10155 05
- Metallized polymeric foam material
ARC-10860 B74-10218 04
- Moisture-resistant baffle material for fuel tanks
ARC-10861 B74-10219 04

POROUS MATERIALS

- Noise suppressor
LANGLEY-11141 B74-10261 03

POSITION (LOCATION)

- Particle impact location detector
GSFC-11829 B74-10230 03
- Location of vehicles using AM station broadcasting signals
NPO-13217 B74-10300 02

POSITIONING

- Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01

POTABLE WATER

- Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05
- Iodine generator for disinfecting reclaimed water
MSC-14632 B74-10153 05

POWDER METALLURGY

- A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
- New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04

POWER CONDITIONING

- Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03

POWER EFFICIENCY

- Interplex modulation and a suppressed-carrier tracking loop for coherent communications systems
NPO-11572 B74-10209 01

PREAMPLIFIERS

- Bio-isolated DC operational amplifier
ARC-10596 B74-10112 01

PREDICTION ANALYSIS TECHNIQUES

- Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 B74-10301 03

PRESSURE BREATHING

- Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 B74-10075 05

PRESSURE REGULATORS

- Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07

- Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 B74-10075 05

- Design criteria monograph for valve components
LEWIS-12327 B74-10087 06

- Therapeutic hand-exercising device with cycling pressure value
LANGLEY-11579 B74-10140 05

- Remotely operated gas-pressure regulator and shuttle valve
NPO-13201 B74-10298 07

PRESSURE SENSORS

- Electronic high pass filter
LEWIS-11600 B74-10083 02

PRESSURE SWITCHES

- Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06

PRESSURE VESSELS

- High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08

- Light-weight spherical submergence vessel
ARC-10838 B74-10114 08

- A band clamp with a spring toggle lever
MSC-14736 B74-10240 07

PRESSURE WELDING

- Fabrication of complex structures or assemblies by hot isostatic pressure (HIP) welding
LEWIS-11490 B74-10124 04

PREVENTION

- Polymers used to absorb fats and oils: A concept
NPO-11609 B74-10210 05

PRINTED CIRCUITS

- High-voltage distributors
GSFC-11849 B74-10242 01
- Alignment fixture for precision cutting of printed-wiring boards
LANGLEY-11658 B74-10290 01

PRIORITIES

- Advanced-priority interrupt module
NPO-13067 B74-10165 02

PROBABILITY DISTRIBUTION FUNCTIONS

- Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02

- Micro-organism distribution sampling for bioassays
LANGLEY-10789 B74-10289 05

PROJECTILES

- Economical technique for fragmentation testing
ARC-10792 B74-10052 04

PROPELLANT BINDERS

- New polymer systems: Chain extension by dianhydrides
NPO-13046 B74-10077 04

PROPELLANT TANKS

- Propellant acquisition device for use with a spinning toroidal tank
ARC-10840 B74-10059 06

PROPULSION SYSTEM PERFORMANCE

- Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
LANGLEY-11596 B74-10236 09

PROSTHETIC DEVICES

- Artificial limb connection
KSC-10833 B74-10183 05

PROTECTIVE COATINGS

- Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

- Detection of cracks in surface insulation
MSC-14187 B74-10095 04

- In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04

- Moisture-resistant baffle material for fuel tanks
ARC-10861 B74-10219 04

PROTECTORS

- Self-protected electrodes limit field-emission current
ERC-10015 B74-10253 01

PROTRACTORS

- Pocket gauge for checking insert clocking of multipin circular connectors
NPO-11924 B74-10160 01

PULLEYS

- Apparatus for heat treating plastic belts
NPO-13205 B74-10299 02

PULSE CODE MODULATION

- Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 B74-10025 02

- Dually-mode-locked ND: YAG laser
GSFC-11746 B74-10038 03

- Traffic control system and method
GSFC-10087 B74-10024 02

- Dynamic polarization compensating system for optical communications receiver
GSFC-11782 B74-10182 03

PULSE DOPPLER RADAR

- Analysis of orbital heat transfer
ARC-10842 B74-10115 02

- Pulse-width-modulated servo valve for autopilot system
LANGLEY-11643 B74-10179 06

PUMP IMPELLERS

- Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09

PYROMETERS

- Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03

- Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03

PYROHELIOMETERS

- Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03

PYROLYSIS

- Glass fiber addition strengthens low-density ablative compositions
LANGLEY-11288 B74-10027 04

PYROMETERS

- Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01

PYROTECHNICS

Battery activation system
 ARC-10832 B74-10056 03
PYRRONES (TRADEMARK)
 Thermally-stable, syntactic pyrrone
 foams
 LANGLEY-11325 B74-10135 06

Q

Q FACTORS

High q band-pass resonators utilizing
 composite band-stop resonator pairs
 GSFC-10990 B74-10035 02

Q SWITCHED LASERS

Wavelength-selective, sequential Q-
 switching laser cavity
 LANGLEY-11045 B74-10134 03
 Laser-actuated mechanical device
 NPO-13105 B74-10166 03
 Laser system to detonate explosive
 devices
 NPO-11743 B74-10194 03

QUALITY CONTROL

Pocket gauge for checking insert clocking
 of multipin circular connectors
 NPO-11924 B74-10160 01
 Nondestructive testing of railroad wheels
 and rails by ultrasonics
 M-FS-23086 B74-10238 06

R

RADIATION COUNTERS

Coaxial anode improves sensitivity of gas
 radiation counters
 GSFC-11492 B74-10229 03
 Particle impact location detector
 GSFC-11829 B74-10230 03
 Compact source of soft X-rays
 HQ-10732 B74-10232 03

RADIATION DETECTORS

Improved channel multiplier for
 radiation-and-particle detectors
 NPO-12128 B74-10275 03

RADIATION HARDENING

Radiation hardening of metal-oxide
 semiconductor (MOS) devices by boron
 GSFC-11425 B74-10026 01

RADIATION MEASUREMENT

Method of measuring the thickness of
 radioactive thin films
 LEWIS-11971 B74-10065 03

RADIATION MEASURING INSTRUMENTS

Rotating turbine blade pyrometer
 LEWIS-12218 B74-10068 01
 Pocket-size microwave radiation hazard
 detector
 NPO-11461 B74-10097 02

RADIATION SHIELDING

Volume-reflecting dielectric heat shield
 ARC-10803 B74-10074 04

RADIATION SOURCES

A low cost "Air Mass 2" solar
 simulator
 LEWIS-12266 B74-10086 02

RADIATION THERAPY

A high yield neutron target
 LEWIS-12058 B74-10066 03

RADIO CONTROL

Radio-controlled, sound-operated switch
 LANGLEY-11641 B74-10143 03

RADIO FILTERS

Third-order phase-locked loop receiver
 NPO-11941 B74-10104 02
 Continuous Fourier transform system
 ARC-10466 B74-10170 02

RADIO FREQUENCY DISCHARGE

Amplitude-steered, pseudophased
 antenna array
 GSFC-11446 B74-10255 01

RADIO FREQUENCY SHIELDING

Metallized polymeric foam material
 ARC-10860 B74-10218 04

RADIO RECEIVERS

Third-order phase-locked loop receiver
 NPO-11941 B74-10104 02
 Minicomputer-controlled frequency
 generator
 NPO-11962 B74-10163 02

RADIO SIGNALS

Location of vehicles using AM station
 broadcasting signals
 NPO-13217 B74-10300 02

RADIO TELEMETRY

Third-order phase-locked loop receiver
 NPO-11941 B74-10104 02

RADIO TRANSMISSION

Method for remotely sensing turbulence
 of planetary atmospheres
 NPO-13154 B74-10168 03

RADIOACTIVE ISOTOPES

Radioisotope thermal generator (RTG)
 power conditioner
 LANGLEY-11313 B74-10022 03
 Radioisotope heater
 ARC-10791 B74-10051 03

RADIOGRAPHY

Improved dispensing targets for ion beam
 particle generators
 NPO-13112 B74-10108 03

RADIOISOTOPE BATTERIES

Radioisotope thermal generator (RTG)
 power conditioner
 LANGLEY-11313 B74-10022 03
 Economical technique for fragmentation
 testing
 ARC-10792 B74-10052 04

RAIL TRANSPORTATION

Nondestructive testing of railroad wheels
 and rails by ultrasonics
 M-FS-23086 B74-10238 06

RAILS

Nondestructive testing of railroad wheels
 and rails by ultrasonics
 M-FS-23086 B74-10238 06

RANDOM SIGNALS

Optical communication channel simulator
 system
 GSFC-11877 B74-10258 01

RATIOMETERS

DC-to-AC inverter ratio failure detector
 NPO-13160 B74-10282 01

REACTOR TECHNOLOGY

Improved dispensing targets for ion beam
 particle generators
 NPO-13112 B74-10108 03

REBREATHING

Spacecraft oxygen recovery system
 ARC-10868 B74-10220 05

RECEIVERS

Low-distortion receiver for bilevel,
 baseband PCM waveforms
 MSC-14557 B74-10025 02
 Anti-multipath digital signal detector
 LANGLEY-11379 B74-10137 02

RECONSTRUCTION

New tooth enamel from brushite
 crystals
 ERC-10338 B74-10199 05

RECORDERS

Recorder/processor apparatus
 GSFC-11553 B74-10042 03

RECORDING INSTRUMENTS

Recorder/processor apparatus
 GSFC-11553 B74-10042 03
 Magnetometer with miniature transducer
 and automatic transducer scanning
 apparatus
 LANGLEY-11617 B74-10142 02

REFLECTANCE

Volume-reflecting dielectric heat shield
 ARC-10803 B74-10074 04
 Commercially available black chrome is
 an effective solar collector coating
 LEWIS-12159 B74-10121 04

REFRACTORY MATERIALS

Glass fiber addition strengthens
 low-density ablative compositions
 LANGLEY-11288 B74-10027 04
 Process for fabrication of stabilized
 aluminum phosphate fibers
 LANGLEY-11526 B74-10185 08
 Advanced tungsten fiber-reinforced nickel
 superalloy
 LEWIS-12394 B74-10248 04

REFRACTORY METAL ALLOYS

A new nickel-base wrought superalloy
 for applications up to 1033 K (1400 F)
 LEWIS-11827 B74-10002 04
 New nickel-base wrought superalloy with
 applications up to 1253 K (1800 F)
 LEWIS-11828 B74-10003 04
 Addition of silicon improves oxidation
 resistance of nickel based superalloys
 LEWIS-12138 B74-10007 04
 Rapid method for determining nitrogen
 in tantalum and niobium alloys
 LEWIS-12237 B74-10085 04

REFRACTORY METALS

Binary alloys for refractory-metal
 brazing
 LEWIS-12184 B74-10125 08

REGENERATION (ENGINEERING)

Self-regenerating desiccant system
 M-FS-23057 B74-10266 07

REINFORCED PLASTICS

Criteria for selecting resin matrices for
 improved composite strength
 LEWIS-12057 B74-10005 04
 Thermally-stable, syntactic pyrrone
 foams
 LANGLEY-11325 B74-10135 06

REINFORCEMENT

Modular support blocks for fluid lines
 MSC-19335 B74-10023 07

REINFORCEMENT (STRUCTURES)

High strength, wire-reinforced
 electroformed structures
 LEWIS-12087 B74-10018 08

REINFORCING FIBERS

Criteria for selecting resin matrices for
 improved composite strength
 LEWIS-12057 B74-10005 04
 Glass fiber addition strengthens
 low-density ablative compositions
 LANGLEY-11288 B74-10027 04
 Advanced fiber-composite hybrids--A
 new structural material
 LEWIS-12118 B74-10247 04
 Advanced tungsten fiber-reinforced nickel
 superalloy
 LEWIS-12394 B74-10248 04

Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04

RELIABILITY ANALYSIS
Reliability data for electronic and electromechanical components: A report
NPO-13153 B74-10280 01

RELIEF VALVES
Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07
Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 B74-10075 05

REMOTE CONTROL
Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03
Laser-actuated mechanical device
NPO-13105 B74-10166 03
Remotely operated gas-pressure regulator and shuttle valve
NPO-13201 B74-10298 07

REMOTE SENSORS
Time-control system for communication between data-collection and orbiting
GSFC-11182 B74-10088 02
Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03
Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01
Location of vehicles using AM station broadcasting signals
NPO-13217 B74-10300 02

REMOVAL
Straight-line IC removal tool
NPO-13157 B74-10281 01

REPORTS
Design criteria monograph for actuators and operators
LEWIS-12264 B74-10061 06
Evaluation of test procedures for hydrogen environment embrittlement
ARC-10919 B74-10222 04
Design criteria monograph for valve assemblies
LEWIS-12332 B74-10227 06
Design criteria monograph on centrifugal flow turbopumps
LEWIS-12346 B74-10228 06

RESINS
Criteria for selecting resin matrices for improved composite strength
LEWIS-12057 B74-10005 04

RESISTANCE
Piezoelectric relay
GSFC-11627 B74-10089 01

RESISTANCE THERMOMETERS
Valve degradation detector
ARC-10850 B74-10117 03

RESISTORS
Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01

RESOLUTION
Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04
Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02

RESONANCE TESTING
Fluid dynamics test method
NPO-11895 B74-10211 03

RESONATORS

High q band-pass resonators utilizing composite band-stop resonator pairs
GSFC-10990 B74-10035 02

RIFLES

Economical technique for fragmentation testing
ARC-10792 B74-10052 04

RIGID STRUCTURES

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09

RING STRUCTURES

Design standards for low-profile flanges
M-FS-22708 B74-10033 09

ROCKET ENGINE CONTROL

Design criteria monograph for actuators and operators
LEWIS-12264 B74-10061 06

ROCKET ENGINE DESIGN

Design criteria monograph for liquid propellant gas generators
LEWIS-12139 B74-10008 07

Design criteria monograph for valve components
LEWIS-12327 B74-10087 06

ROCKET ENGINES

High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08
Economical technique for fragmentation testing
ARC-10792 B74-10052 04

ROCKWELL HARDNESS

Lightweight, high speed bearing balls: A concept
LEWIS-11087 B74-10013 06

ROLL FORMING

Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03

ROOTS OF EQUATIONS

Zeros of certain cross products of Bessel functions of fractional order
LEWIS-12221 B74-10012 03

ROTATING BODIES

Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01

ROTATING SHAFTS

Computer program for calculating critical speed of rotating shafts
LEWIS-11910 B74-10128 09

ROTOR BLADES (TURBOMACHINERY)

Fabrication of complex structures or assemblies by hot isostatic pressure (HIP) welding
LEWIS-11490 B74-10124 04

ROTOR SPEED

Computer program for flexible rotor dynamics analysis
LEWIS-12153 B74-10084 09

ROTORS

Computer program for flexible rotor dynamics analysis
LEWIS-12153 B74-10084 09

S**S WAVES**

Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03

SAFETY

Directory of aerospace safety specialized information sources
LEWIS-12223 B74-10019 03

Laser system to detonate explosive devices
NPO-11743 B74-10194 03
Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 B74-10238 06

SAFETY DEVICES

Fail-safe fire detection system
LEWIS-12238 B74-10078 02
Pocket-size microwave radiation hazard detector
NPO-11461 B74-10097 02
Short-range laser obstacle detector
NPO-11856 B74-10101 03
Bio-isolated DC operational amplifier
ARC-10596 B74-10112 01

SAMPLERS

Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03
Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03

SAMPLING

Extendible probe for atmosphere sampling
ARC-10829 B74-10054 03
Liquid sample processor
NPO-13136 B74-10278 05

SANDWICH STRUCTURES

Criteria for selecting resin matrices for improved composite strength
LEWIS-12057 B74-10005 04
Soft, thermally conductive material
LANGLEY-10850 B74-10132 04
Laminating cored, stressed-face, sandwich structures
XLA-11028 B74-10233 06
Advanced fiber-composite hybrids--A new structural material
LEWIS-12118 B74-10247 04

SANITATION

Domestic wash water reclamation
LANGLEY-11606 B74-10177 04
Environmental control and waste management system design concept
LANGLEY-11588 B74-10235 06

SCANNING

Magnetometer with miniature transducer and automatic transducer scanning apparatus
LANGLEY-11617 B74-10142 02
Closed-circuit-television welding-electrode guidance system
M-FS-23026 B74-10150 02
Amplitude-steered, pseudophased antenna array
GSFC-11446 B74-10255 01
Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01

SEALERS

Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04

SEALING

Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
LANGLEY-11589 B74-10263 08

SEALS (STOPPERS)

Improved circumferential shaft seal
LEWIS-11873 B74-10062 07

- Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
- SECONDARY FLOW**
Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06
- SELF ADAPTIVE CONTROL SYSTEMS**
Fail-safe fire detection system
LEWIS-12238 B74-10078 02
- SELF LUBRICATING MATERIALS**
Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04
- SEMICONDUCTOR DEVICES**
Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01
Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03
- SENSITIVITY**
Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01
- SEPARATORS**
Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04
Two-phase, passive separator-and-filter assembly
LANGLEY-10976 B74-10133 04
Liquid sample processor
NPO-13136 B74-10278 05
- SEQUENCING**
Advanced-priority interrupt module
NPO-13067 B74-10165 02
- SERVOCONTROL**
Closed-circuit-television de guidance system
M-FS-23026 B74-10150 02
Implementation of a self-controlling heater: A concept
GSFC-11752 B74-10241 06
Stable group delay cable
NPO-13138 B74-10295 01
- SERVOMECHANISMS**
Mechanical coupling for high cyclic loading
LEWIS-11690 B74-10001 06
Pulse-width-modulated servo valve for autopilot system
LANGLEY-11643 B74-10179 06
- SHADOWS**
Graphics shadowing analysis
M-FS-21406 B74-10040 09
- SHAFTS (MACHINE ELEMENTS)**
Improved circumferential shaft seal
LEWIS-11873 B74-10062 07
Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
- SHAPED CHARGES**
Apparatus for monitoring linear explosive performance
LANGLEY-10800 B74-10201 04
- SHEAR STRESS**
Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03
- SHELL STABILITY**
Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 B74-10186 09
- SHELL THEORY**
Design standards for low-profile flanges
M-FS-22708 B74-10033 09
- SHELLS (STRUCTURAL FORMS)**
Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09
- SHIFT REGISTERS**
Synchronized frequency transposer
GSFC-11763 B74-10256 01
- SHIPS**
Short-range laser obstacle detector
NPO-11856 B74-10101 03
- SHOCK ABSORBERS**
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KSC-10850 B74-10039 07
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GSFC-11627 B74-10089 01
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Ultrasonic scanner for footprint identification
NPO-13055 B74-10212 03
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ARC-10839 B74-10058 06
- SHRAPNEL**
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ARC-10792 B74-10052 04
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Apparatus for heat treating plastic belts
NPO-13205 B74-10299 02
- SIDE-LOOKING RADAR**
Analysis of orbital heat transfer
ARC-10842 B74-10115 02
- SIGNAL ANALYSIS**
Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 B74-10025 02
Closed-circuit-television welding-electrode guidance system
M-FS-23026 B74-10150 02
- SIGNAL DETECTION**
Frequency discriminator/phase detector
NPO-11515 B74-10098 02
- SIGNAL DETECTORS**
Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02
- SIGNAL DISTORTION**
Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 B74-10025 02
Dynamic polarization compensating system for optical communications receiver
GSFC-11782 B74-10182 03
- SIGNAL PROCESSING**
Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01
Data processor with conditionally supplied clock signals
GSFC-10975 B74-10021 02
Third-order phase-locked loop receiver
NPO-11941 B74-10104 02
- Fast signal averager
ARC-10090 B74-10109 02
Decimal digit generator for commutated data: A Concept
ARC-10858 B74-10120 01
Continuous Fourier transform system
ARC-10466 B74-10170 02
Wide deviation phase modulator
LANGLEY-11607 B74-10178 02
Interplex modulation and a suppressed-carrier tracking loop for coherent communications systems
NPO-11572 B74-10209 01
Synchronized frequency transposer
GSFC-11763 B74-10256 01
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
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ARC-10881 B74-10175 04
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ARC-10779 B74-10073 04
- SILICONIZING**
Addition of silicon improves oxidation resistance of nickel based superalloys
LEWIS-12138 B74-10007 04
- SILVER OXIDES**
Silver oxide sorbent for carbon dioxide
ARC-10797 B74-10053 04
- SIMULATION**
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Space ultrareliable modular computer (SUMC) instruction simulator
M-FS-22697 B74-10145 09
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M-FS-24325 B74-10151 06
Optical communication channel simulator system
GSFC-11877 B74-10258 01
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- SKIN TEMPERATURE (BIOLOGY)**
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ARC-10855 B74-10119 05

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ERC-10214 B74-10250 02

SMOKE

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LANGLEY-11675 B74-10208 04

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Solar array deployment from a spinning spacecraft
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Self-protecting solid state isolated switch
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Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01

Time-control system for communication between data-collection and orbiting
GSFC-11182 B74-10088 02

Efficiency increased in new solar cell:
A Concept

LANGLEY-11174 B74-10090 01

Facility for testing solar cells
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Thermoelastic analysis of solar cell arrays and their material properties
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Commercially available black chrome is an effective solar collector coating
LEWIS-12159 B74-10121 04

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Self-regenerating desiccant system
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M-FS-23062 B74-10292 07

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LEWIS-12169 B74-10011 04

A low cost "Air Mass 2" solar simulator
LEWIS-12266 B74-10086 02

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LANGLEY-11152 B74-10202 03

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Radiation hardening of metal-oxide semiconductor (MOS) devices by boron
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NPO-13064 B74-10107 01

Logarithmic-function generator
ERC-10267 B74-10285 02

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ARC-10797 B74-10053 04

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LEWIS-12237 B74-10085 04

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MSC-14618 B74-10154 04

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GSFC-11182 B74-10088 02

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LANGLEY-11528 B74-10262 01

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LEWIS-11930 B74-10016 04

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A band clamp with a spring toggle lever
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LANGLEY-11526 B74-10185 08

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M-FS-24325 B74-10151 06

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LANGLEY-11649 B74-10188 05

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MSC-14721 B74-10272 08

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ARC-10844 B74-10116 03

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LEWIS-12206 B74-10123 09

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High-directivity acoustic antenna
ARC-10789 B74-10050 02

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MSC-12616 B74-10223 03

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ARC-10779 B74-10073 04

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M-FS-23086 B74-10238 06

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ARC-10755 B74-10072 03

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LEWIS-12346 B74-10228 06

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Lightweight, high speed bearing balls:
A concept
LEWIS-11087 B74-10013 06

Guidebook of nondestructive evaluation
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LEWIS-12272 B74-10122 04

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Modular support blocks for fluid lines
MSC-19335 B74-10023 07

Light-weight spherical submergence
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ARC-10838 B74-10114 08

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ARC-10881 B74-10175 04

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M-FS-22848 B74-10076 06

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ERC-10365 B74-10252 06

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GSFC-11760 B74-10041 02

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LANGLEY-11175 B74-10091 06

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A method for polycrystalline silicon
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LANGLEY-11536 B74-10234 01

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NPO-11875 B74-10158 02

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LANGLEY-11596 B74-10236 09

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GSFC-10087 B74-10024 02

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LEWIS-11690 B74-10001 06

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MSC-14187 B74-10095 04

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ARC-10853 B74-10118 03

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- Propellant acquisition device for use with a spinning toroidal tank
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LEWIS-12237 B74-10085 04

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LEWIS-11866 B74-10063 03
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LEWIS-11971 B74-10065 03
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- New tooth enamel from brushite crystals
ERC-10338 B74-10199 05

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- Dually-mode-locked ND: YAG laser
GSFC-11746 B74-10038 03
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NPO-13245 B74-10284 02
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B74-10203 09	LANGLEY-11199	B74-10279 09	NPO-13143
B74-10204 09	LANGLEY-11533	B74-10280 01	NPO-13153
B74-10205 09	LANGLEY-11209	B74-10281 01	NPO-13157
B74-10206 09	LANGLEY-11535	B74-10282 01	NPO-13160
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B74-10208 04	LANGLEY-11675	B74-10284 02	NPO-13245
B74-10209 01	NPO-11572	B74-10285 02	ERC-10267
B74-10210 05	NPO-11609	B74-10286 01	GSFC-11889
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B74-10212 03	NPO-13055	B74-10288 02	GSFC-11909
B74-10213 05	NPO-13063	B74-10289 05	LANGLEY-10789
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B74-10216 03	ARC-10847	B74-10292 07	M-FS-23062
B74-10217 03	ARC-10852	B74-10293 03	M-FS-23107
B74-10218 04	ARC-10860	B74-10294 01	M-FS-23133
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B74-10222 04	ARC-10919	B74-10298 07	NPO-13201
B74-10223 03	MSC-12616	B74-10299 02	NPO-13205
B74-10224 03	MSC-19442	B74-10300 02	NPO-13217
B74-10225 09	M-FS-22401	B74-10301 03	NPO-13458
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