NASA SP–7063 (05)

NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS

A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS 1987–1990

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PREFACE

The pursuit of human knowledge through scientific research and technical endeavor has vastly expanded understanding of our world and the universe we live in. The contributions of NASA through scientific and technical research and development affect not only our understanding and use of aeronautics and space but also touch our daily lives. Geologists, oceanographers, meteorologists, archaeologists, aircraft engineers, aerospace decision makers, land-use planners, historians, and rescue teams all make use of the results of NASA's research. The findings of this research and development are published in NASA's scientific and technical report series as a part of NASA's mandate to disseminate the results of the agency's far-reaching work.

This catalog provides a cumulative list of NASA publications from four report series entered into the NASA Scientific and Technical Information Database during the accession years 1987 through 1990. For previous lists, see *Records of Achievement: NASA Special Publications*, NASA SP-470 (accession number N83-33792), *NASA Scientific and Technical Publications: A Catalog of Special Publications, Reference Publications, Conference Publications, and Technical Papers, 1977-1986,* NASA SP-7063(01) (accession number N87-30218). Supplements 02, 03, and 04 of this catalog list NASA publications announced in 1987, 1988, and 1989, respectively.

Two semimonthly abstract journals cover all aspects of aeronautics and space research, NASA and non-NASA, nationally and worldwide. *STAR (Scientific and Technical Aerospace Reports),* focuses on scientific and technical reports, and *IAA (International Aerospace Abstracts),* covers the open literature. These are available by subscription from, respectively, the U.S. Government Printing Office and the American Institute of Aeronautics and Astronautics, Inc., (see page vi).

This catalog includes publicly available reports from four NASA report series: Special Publications (SPs), Reference Publications (RPs), Conference Publications (CPs), and Technical Papers (TPs). The scope of each series is defined as follows:

Special Publications are often concerned with subjects of substantial public interest. They report scientific and technical information derived from NASA programs for audiences of diverse technical backgrounds.

Reference Publications contain compilations of scientific and technical data of continuing reference value.

Conference Publications record the proceedings of scientific and technical symposia and other professional meetings sponsored or cosponsored by NASA.

Technical Papers present the results of significant research conducted by NASA scientists and engineers.

Presented here are citations for reports from each of these series. An explanation of the elements in a typical citation follows. Accession numbers (N numbers) at the end of a citation are separate citations to articles within the report. Please use *STAR* to locate these citations.

Also note that some bibliographies in the NASA SP-7000 series are issued periodically. This catalog lists only the last accessioned report in each bibliography series. The periodicity of each bibliography is as follows:

NASA SP-7011	*Aerospace Medicine and Biology: A Continuing Bibliography with Indexes*	Monthly plus annual cumulative index
NASA SP-7037	*Aeronautical Engineering: A Continuing Bibliography with Indexes*	Monthly plus annual cumulative index
NASA SP-7039	*NASA Patent Abstracts Bibliography: A Continuing Bibliography Section 1: Abstracts; Section 2: Indexes*	Semiannual

NASA SP-7046	*Technology for Large Space Systems: A Bibliography with Indexes*	Semiannual
NASA SP-7056	*Space Station Systems: A Bibliography with Indexes*	Semiannual
NASA SP-7500	*Management: A Bibliography for NASA Managers*	Annual

Please note that the reports cited in this catalog are available for purchase from the U.S. Government Printing Office for a limited time after publication, depending on public demand, and from the National Technical Information Service (NTIS) with no time limit. They are also available at any Federal Regional Depository Library. Additional availability information follows, including current NTIS price schedules, which are keyed to the price code in the citation.

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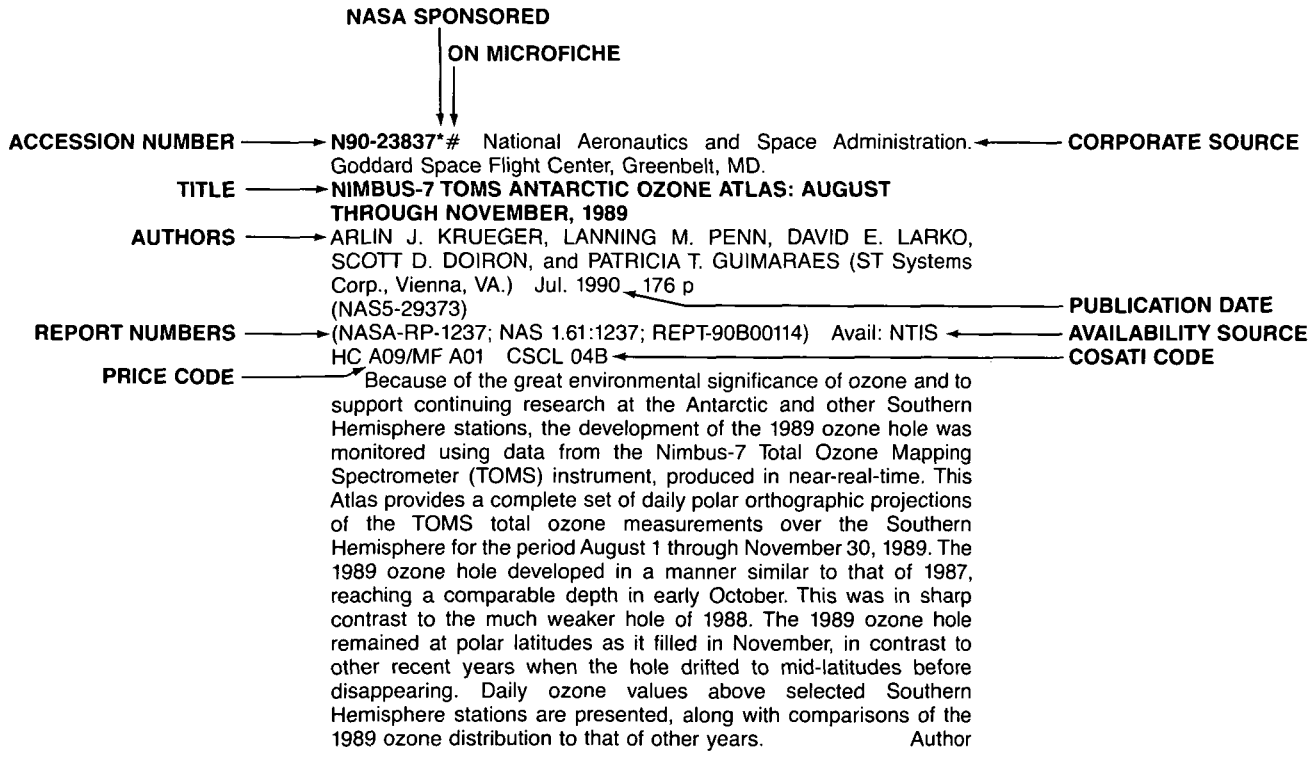

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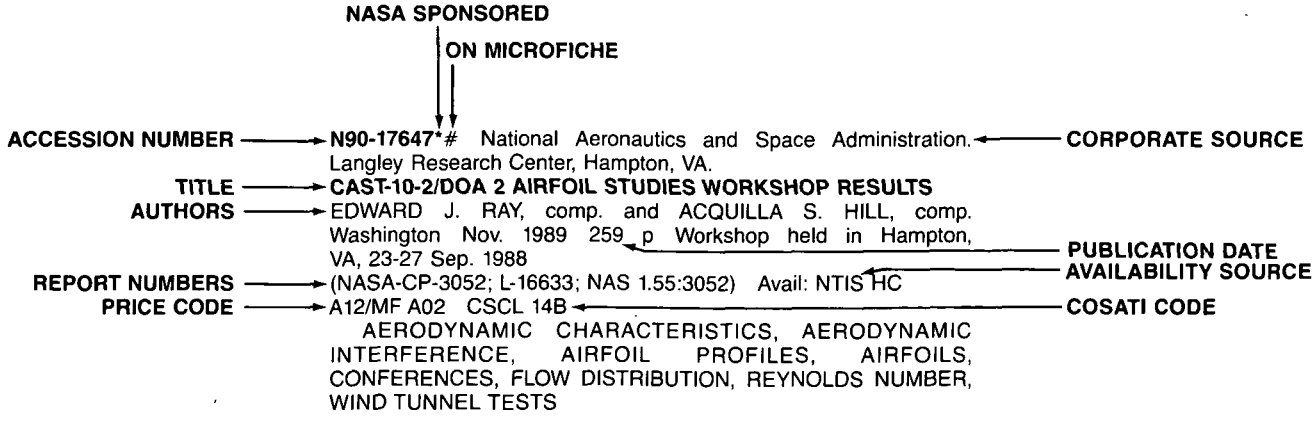

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Other Domestic: NASA publications are also available to the public for reference purposes at the library maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, NY 10019, (212) 247-6500.

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N.A.—no abstracts were assigned to this category for this issue.

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ENGINEERING For related information see also *Physics.*

GEOSCIENCES For related information see also *Space Sciences.*

LIFE SCIENCES

MATHEMATICAL AND COMPUTER SCIENCES

PHYSICS For related information see also *Engineering.*

SOCIAL SCIENCES

SPACE SCIENCES For related information see also *Geosciences.*

GENERAL

Includes aeronautical, astronautical, and space science related histories, biographies, and pertinent reports too broad for categorization; histories or broad overviews of NASA programs.

01

AERONAUTICS (GENERAL)

N87-18520*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1983
FREDERICK R. MORRELL, comp. Mar. 1987 80 p Conference held in Atlantic City, N.J., 16 Dec. 1983; sponsored by NASA and FAA
(NASA-CP-2451; L-16254; NAS 1.55:2451) Avail: NTIS HC A05/MF A01 CSCL 01B
AIR NAVIGATION, AIR TRANSPORTATION, AIRCRAFT GUIDANCE, AVIONICS, CONFERENCES, FLIGHT CONTROL

N87-22604*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1984
FREDERICK R. MORRELL, comp. May 1987 165 p Meeting held in Hampton, Va., 18 Jan. 1985
(NASA-CP-2452; L-16255; NAS 1.55:2452) Avail: NTIS HC A08/MF A01 CSCL 01B
AIR TRANSPORTATION, AIRCRAFT CONTROL, AIRCRAFT GUIDANCE, AVIONICS, CONTROL THEORY, SURFACE NAVIGATION

N87-25267*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND SHEAR/TURBULENCE INPUTS TO FLIGHT SIMULATION AND SYSTEMS CERTIFICATION
ROLAND L. BOWLES, ed. and WALTER FROST, ed. (FWG Associates, Inc., Tullahoma, Tenn.) Jul. 1987 272 p Workshop held in Hampton, Va., 30 May - 1 Jun. 1984
(NASA-CP-2474; L-16329; NAS 1.55:2474) Avail: NTIS HC A12/MF A02 CSCL 01B
AIRCRAFT PERFORMANCE, AVIONICS, FLIGHT SAFETY, FLIGHT SIMULATION, PILOT PERFORMANCE, WIND SHEAR

N87-27596*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1985
FREDERICK R. MORRELL, comp. Jul. 1987 100 p Conference held in Atlantic City, N.J., 30 Jan. 1986
(NAS 1.55:2453; NASA-CP-2453) Avail: NTIS HC A05/MF A01 CSCL 01B
AIR TRAFFIC CONTROL, AIR TRANSPORTATION, CONFERENCES, FAULT TOLERANCE, FLIGHT CONTROL, GLOBAL POSITIONING SYSTEM, INERTIAL NAVIGATION

N87-27613* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 217)
Sep. 1987 134 p
(NASA-SP-7037(217); NAS 1.21:7037(217)) Avail: NTIS HC A07 CSCL 01B
This bibliography lists 450 reports, articles, and other documents introduced into the NASA scientific and technical information system in August, 1987. Author

N88-14926*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LANGLEY SYMPOSIUM ON AERODYNAMICS, VOLUME 1
SHARON H. STACK, comp. Dec. 1986 592 p Symposium held in Hampton, Va., 23-25 Apr. 1985
(NASA-CP-2397; L-16031; NAS 1.55:2397) Avail: NTIS HC A25/MF A04 CSCL 01B
AERODYNAMIC CONFIGURATIONS, AIRCRAFT DESIGN, AIRCRAFT MANEUVERS, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES

N88-16625*# National Aeronautics and Space Administration, Washington, DC.
NASA/ARMY ROTORCRAFT TECHNOLOGY. VOLUME 1: AERODYNAMICS, AND DYNAMICS AND AEROELASTICITY
Feb. 1988 537 p Conference held at Moffett Field, Calif., 17-19 Mar. 1987
(NASA-CP-2495-VOL-1; NAS 1.55:2495-VOL-1) Avail: NTIS HC A23/MF A03 CSCL 01B
AEROELASTICITY, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, FLIGHT CONTROL, HELICOPTERS, ROTOR AERODYNAMICS

N88-16632*# National Aeronautics and Space Administration, Washington, DC.
NASA/ARMY ROTORCRAFT TECHNOLOGY. VOLUME 2: MATERIALS AND STRUCTURES, PROPULSION AND DRIVE SYSTEMS, FLIGHT DYNAMICS AND CONTROL, AND ACOUSTICS
Feb. 1988 587 p Conference held at Moffett Field, Calif., 17-19 Mar. 1987
(NASA-CP-2495-VOL-2; NAS 1.55:2495-VOL-2) Avail: NTIS HC A25/MF A04 CSCL 01B
AEROACOUSTICS, AIRCRAFT DESIGN, CONFERENCES, CONTROLLABILITY, ENGINE DESIGN, FRACTURE MECHANICS, HELICOPTERS, ROTOR AERODYNAMICS

N88-16650*# National Aeronautics and Space Administration, Washington, DC.
NASA/ARMY ROTORCRAFT TECHNOLOGY. VOLUME 3: SYSTEMS INTEGRATION, RESEARCH AIRCRAFT, AND INDUSTRY
Feb. 1988 387 p Conference held at Moffett Field, Calif., 17-19 Mar. 1987
(NASA-CP-2495-VOL-3; NAS 1.55:2495-VOL-3) Avail: NTIS HC A17/MF A03 CSCL 01B
AIRCRAFT DESIGN, FLIGHT TESTS, HELICOPTER PERFORMANCE, ROTARY WING AIRCRAFT, SYSTEMS INTEGRATION

N88-19407*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
GENERAL EQUILIBRIUM CHARACTERISTICS OF A DUAL-LIFT HELICOPTER SYSTEM
L. S. CICOLANI and G. KANNING Jul. 1986 86 p
(NASA-TP-2615; A-86114; NAS 1.60:2615) Avail: NTIS HC A05/MF A01 CSCL 01B
CARGO AIRCRAFT, EQUILIBRIUM, HEAVY LIFT HELICOPTERS, SUSPENDING (HANGING), TETHERING

N88-23715*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1986
FREDERICK R. MORRELL, *comp.* Apr. 1988 115 p *Meeting* held in Hampton, Va., 8-9 Jan. 1987; sponsored by NASA, Langley Research Cetner, Hampton, Va. and FAA, Washington, D.C. Sponsored by NASA, Washington
(NASA-CP-2502; L-16406; NAS 1.55:2502) Avail: NTIS HC A06/MF A01 CSCL 01B
AERODYNAMICS, AIRCRAFT CONTROL, AIRCRAFT GUIDANCE, AVIONICS, SURFACE NAVIGATION

N88-27148*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
INTEGRATED TECHNOLOGY ROTOR METHODOLOGY ASSESSMENT WORKSHOP
MICHAEL J. MCNULTY, ed. and WILLIAM G. BOUSMAN, ed. Jun. 1988 381 p Workshop held in Moffett Field, Calif., 21-22 Jun. 1983; sponsored by NASA, Ames Research Center and the Army Prepared in cooperation with Army Aviation Systems Command, Moffett Field, Calif. Sponsored by NASA, Washington, D.C.
(NASA-CP-10007; A-86381; NAS 1.55:10007; USAAVSCOM-CP-88-A-001; AD-A200007) Avail: NTIS HC A17/MF A03 CSCL 01/2
AERODYNAMIC STABILITY, AEROELASTICITY, CONFERENCES, MATHEMATICAL MODELS, ROTOR AERODYNAMICS, ROTOR BODY INTERACTIONS

N88-27163* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES
Aug. 1988 126 p
(NASA-SP-7037(229); NAS 1.21:7037(229)) Avail: NTIS HC A07 CSCL 01B
This bibliography lists 455 reports, articles, and other documents introduced into the NASA scientific and technical information system in July, 1988. Author

N89-19230*# *National Aeronautics and Space Administration.* Langley Research Center, Hampton, VA.
JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1987
FREDERICK R. MORRELL, comp. Apr. 1989 118 p Presented at a conference held in Atlantic City, NJ, 14-15 Jan. 1988
(NASA-CP-3028; L-16547; NAS 1.55:3028) Avail: NTIS HC A06/MF A01 CSCL 01B
AVIONICS, COMPUTER TECHNIQUES, CONTROL THEORY, GUIDANCE (MOTION), SURFACE NAVIGATION

N89-22568*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EVALUATION OF THE RIDE QUALITY OF A LIGHT TWIN ENGINE AIRPLANE USING A RIDE QUALITY METER
ERIC C. STEWART *Jun. 1989* 27 p
(NASA-TP-2913; L-16524; NAS 1.60:2913) Avail: NTIS HC A03/MF A01 CSCL 01B
AIRCRAFT COMPARTMENTS, AIRCRAFT NOISE, NOISE TOLERANCE, SOUND TRANSMISSION, VIBRATION

N89-29304* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 242)
Aug. 1989 132 p
(NASA-SP-7037(242); NAS 1.21:7037(242)) Avail: NTIS HC A07; NTIS standing order as PB89-914100, $10.50 domestic, $21.00 foreign CSCL 01A
This bibliography lists 466 reports, articles, and other documents introduced into the NASA scientific and technical information system in July, 1989. Subject coverage includes: design, construction and testing of aircraft and aircraft engines; aircraft components, equipment and systems; ground support systems; and theoretical and applied aspects of aerodynamics and general fluid dynamics. Author

N90-20921*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
JOINT UNIVERSITY PROGRAM FOR AIR TRANSPORTATION RESEARCH, 1988-1989
FREDERICK R. MORRELL, comp. Mar. 1990 202 p Research program held during 1988-1989; sponsored by NASA, Langley Research Center and FAA
(NASA-CP-3063; L-16740; NAS 1.55:3063) Avail: NTIS HC A10/MF A02 CSCL 01C
AIR NAVIGATION, AIR TRAFFIC CONTROL, AIR TRANSPORTATION, AIRCRAFT CONTROL, AVIONICS, CONFERENCES, CONTROL SYSTEMS DESIGN, CONTROL THEORY, PSYCHOLOGY, UNIVERSITIES, WARNING SYSTEMS, WIND SHEAR

N90-20942*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LASER-VELOCIMETER-MEASURED FLOW FIELD AROUND AN ADVANCED, SWEPT, EIGHT-BLADE PROPELLER AT MACH 0.8
HARVEY E. NEUMAN, JOHN A. SERAFINI, DANIEL Y. WHIPPLE, and BRIAN T. HOWARD May 1985 100 p
(NASA-TP-2462; E-2429; NAS 1.60:2462) Avail: Issuing Activity CSCL 01B
FLOW DISTRIBUTION, LASER DOPPLER VELOCIMETERS, PROPELLERS, WIND TUNNEL TESTS

N90-27648* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 255)
Aug. 1990 153 p
(NASA-SP-7037(255); NAS 1.21:7037(255)) Avail: NTIS HC A08; NTIS standing order as PB90-914100, $11.50 domestic, $23.00 foreign CSCL 01A
This bibliography lists 529 reports, articles, and other documents introduced into the NASA scientific and technical information system in June 1990. Subject coverage includes: design, construction and testing of aircraft and aircraft engines; aircraft components, equipment and systems; ground support systems; and theoretical and applied aspects of aerodynamics and general fluid dynamics. Author

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AERODYNAMICS

Includes aerodynamics of bodies, combinations, wings, rotors, and control surfaces; and internal flow in ducts and turbomachinery.

N77-85474* National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.
SUPERCRITICAL WING TECHNOLOGY: A REPORT ON

FLIGHT EVALUATIONS
1972 133 p
(NASA-SP-301; C72-71337)

N87-10039*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND-TUNNEL INVESTIGATION OF THE FLIGHT CHARACTERISTICS OF A CANARD GENERAL-AVIATION AIRPLANE CONFIGURATION
D. R. SATRAN Oct. 1986 60 p
(NASA-TP-2623; L-15929; NAS 1.60:2623) Avail: NTIS HC A04/MF A01 CSCL 01A
CANARD CONFIGURATIONS, FLIGHT CHARACTERISTICS, GENERAL AVIATION AIRCRAFT, WIND TUNNEL TESTS

N87-10042*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SUPERSONIC, NONLINEAR, ATTACHED-FLOW WING DESIGN FOR HIGH LIFT WITH EXPERIMENTAL VALIDATION
J. L. PITTMAN, D. S. MILLER, and W. H. MASON (Grumman Aerospace Corp., Bethpage, N.Y.) Aug. 1984 221 p
(NASA-TP-2336; L-15787; NAS 1.60:2336) Avail: NTIS HC A10/MF A02 CSCL 01A
CAMBERED WINGS, REATTACHED FLOW, SUPERCRITICAL FLOW, SUPERSONIC AIRFOILS, SUPERSONIC FLOW

N87-10838*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF TAIL SPAN AND EMPENNAGE ARRANGEMENT ON DRAG OF A TYPICAL SINGLE-ENGINE FIGHTER AFT END
J. R. BURLEY, II and B. L. BERRIER Sep. 1984 136 p
(NASA-TP-2352; L-15742; NAS 1.60:2352) Avail: NTIS HC A07/MF A01 CSCL 01A
AERODYNAMIC DRAG, AIRCRAFT CONFIGURATIONS, SKIN FRICTION, TAIL ASSEMBLIES, TRANSONIC SPEED

N87-10839*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC INTERNAL PERFORMANCE OF SINGLE-EXPANSION-RAMP NOZZLES WITH THRUST-VECTORING CAPABILITY UP TO 60 DEG
B. L. BERRIER and L. D. LEAVITT Oct. 1984 144 p
(NASA-TP-2364; L-15766; NAS 1.60:2364) Avail: NTIS HC A07/MF A01 CSCL 01A
AXISYMMETRIC BODIES, NOZZLE FLOW, THRUST VECTOR CONTROL

N87-10841*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
TRANSONIC FLOW ANALYSIS FOR ROTORS. PART 2: THREE-DIMENSIONAL, UNSTEADY, FULL-POTENTIAL CALCULATION
I. C. CHANG Jan. 1985 27 p
(NASA-TP-2375-PT-2; A-9682; NAS 1.60:2375-PT-2) Avail: NTIS HC A03/MF A01 CSCL 01A
AERODYNAMIC STABILITY, HELICOPTER PERFORMANCE, ROTORS, TIP VANES, TRANSONIC FLOW

N87-10843*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PILOTED SIMULATION STUDY OF THE EFFECTS OF AN AUTOMATED TRIM SYSTEM ON FLIGHT CHARACTERISTICS OF A LIGHT TWIN-ENGINE AIRPLANE WITH ONE ENGINE INOPERATIVE
E. C. STEWART, P. W. BROWN, and K. R. YENNI Nov. 1986 41 p
(NASA-TP-2633; L-16147; NAS 1.60:2633) Avail: NTIS HC A03/MF A01 CSCL 01A
AERODYNAMIC BALANCE, AUTOMATIC FLIGHT CONTROL, ENGINE FAILURE, LIGHT AIRCRAFT

N87-11702*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FORWARD-SWEPT WING CONFIGURATION DESIGNED FOR HIGH MANEUVERABILITY BY USE OF A TRANSONIC COMPUTATIONAL METHOD
M. J. MANN and C. E. MERCER Nov. 1986 185 p
(NASA-TP-2628; L-16120; NAS 1.60:2628) Avail: NTIS HC A09/MF A01 CSCL 01A
AERODYNAMIC CONFIGURATIONS, HIGHLY MANEUVERABLE AIRCRAFT, SWEPT FORWARD WINGS, TRANSONIC SPEED

N87-12541*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF PORT CORNER GEOMETRY ON THE INTERNAL PERFORMANCE OF A ROTATING-VANE-TYPE THRUST REVERSER
B. L. BERRIER and F. J. CAPONE Dec. 1986 51 p
(NASA-TP-2624; L-16135; NAS 1.60:2624) Avail: NTIS HC A04/MF A01 CSCL 01A
CORNER FLOW, NOZZLE GEOMETRY, PORTS (OPENINGS), ROTATING BODIES, THRUST REVERSAL, VANES, WIND TUNNEL TESTS

N87-14284*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
PROPAGATION OF SOUND WAVES IN TUBES OF NONCIRCULAR CROSS SECTION
W. B. RICHARDS (Oberlin Coll., Ohio) Aug. 1986 33 p
(NASA-TP-2601; E-2690; NAS 1.60:2601) Avail: NTIS HC A03/MF A01 CSCL 01A
ELLIPTICAL CYLINDERS, PIPES (TUBES), SOUND WAVES, WAVE PROPAGATION

N87-15174*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
APPLICABILITY OF LINEARIZED-THEORY ATTACHED-FLOW METHODS TO DESIGN AND ANALYSIS OF FLAP SYSTEMS AT LOW SPEEDS FOR THIN SWEPT WINGS WITH SHARP LEADING EDGES
HARRY W. CARLSON and CHRISTINE M. DARDEN Jan. 1987 54 p
(NASA-TP-2653; L-16151; NAS 1.60:2653) Avail: NTIS HC A04/MF A01 CSCL 01A
DESIGN ANALYSIS, FLAPS (CONTROL SURFACES), LINEARITY, LOW SPEED, SHARP LEADING EDGES, SWEPT WINGS, THIN WINGS, VORTEX FLAPS

N87-15183*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFICIENT SOLUTIONS TO THE EULER EQUATIONS FOR SUPERSONIC FLOW WITH EMBEDDED SUBSONIC REGIONS
ROBERT W. WALTERS and DOUGLAS L. DWOYER Jan. 1987 18 p
(NASA-TP-2523; L-15975; NAS 1.60:2523) Avail: NTIS HC A03/MF A01 CSCL 01A
EMBEDDING, EULER EQUATIONS OF MOTION, PROBLEM SOLVING, SUBSONIC FLOW, SUPERSONIC FLOW

N87-15184*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SUBSONIC MANEUVER CAPABILITY OF A SUPERSONIC CRUISE FIGHTER WING CONCEPT
GREGORY D. RIEBE and CHARLES H. FOX, JR. Jan. 1987 74 p
(NASA-TP-2642; L-16097; NAS 1.60:2642) Avail: NTIS HC A04/MF A01 CSCL 01A
FIGHTER AIRCRAFT, MANEUVERS, SUBSONIC SPEED, SUPERSONIC CRUISE AIRCRAFT RESEARCH, WINGS

N87-17665*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
PRELIMINARY DESIGN OF TURBOPUMPS AND RELATED MACHINERY

GEORGE F. WISLICENUS Oct. 1986 397 p
(NAS3-13475)
(NASA-RP-1170; E-7389; NAS 1.61:1170) Avail: NTIS HC A17/MF A03 CSCL 01A

Pumps used in large liquid-fuel rocket engines are examined. The term preliminary design denotes the initial, creative phases of design, where the general shape and characteristics of the machine are determined. This compendium is intended to provide the design engineer responsible for these initial phases with a physical understanding and background knowledge of the numerous special fields involved in the design process. Primary attention is directed to the pumping part of the turbopump and hence is concerned with essentially incompressible fluids. However, compressible flow principles are developed. As much as possible, the simplicity and reliability of incompressible flow considerations are retained by treating the mechanics of compressible fluids as a departure from the theory of incompressible fluids. Five areas are discussed: a survey of the field of turbomachinery in dimensionless form; the theoretical principles of the hydrodynamic design of turbomachinery; the hydrodynamic and gas dynamic design of axial flow turbomachinery; the hydrodynamic and gas dynamic design of radial and mixed flow turbomachinery; and some mechanical design considerations of turbomachinery. Theoretical considerations are presented with a relatively elementary mathematical treatment. Author

N87-17668*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND-TUNNEL INVESTIGATION AT SUPERSONIC SPEEDS OF A REMOTE-CONTROLLED CANARD MISSILE WITH A FREE-ROLLING-TAIL BRAKE TORQUE SYSTEM
A. B. BLAIR, JR. Mar. 1985 38 p
(NASA-TP-2401; L-15882; NAS 1.60:2401) Avail: NTIS HC A03/MF A01 CSCL 01A

BRAKING, CANARD CONFIGURATIONS, FINS, MISSILE CONFIGURATIONS, REMOTE CONTROL, ROLLING MOMENTS, SUPERSONIC SPEED, TAIL ASSEMBLIES, TORQUE, WIND TUNNEL TESTS

N87-17669*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMBINED AERODYNAMIC AND STRUCTURAL DYNAMIC PROBLEM EMULATING ROUTINES (CASPER): THEORY AND IMPLEMENTATION
WILLIAM H. JONES Feb. 1985 75 p
(NASA-TP-2418; E-2278; NAS 1.60:2418) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC COEFFICIENTS, COMPUTATIONAL FLUID DYNAMICS, COMPUTERIZED SIMULATION, DYNAMIC STRUCTURAL ANALYSIS

N87-18537*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
HELICOPTER BLADE-VORTEX INTERACTION LOCATIONS: SCALE-MODEL ACOUSTICS AND FREE-WAKE ANALYSIS RESULTS
DANNY R. HOAD Apr. 1987 106 p
(DA PROJ. 1L1-62209-AH-76-A)
(NASA-TP-2658; L-16214; AVSCOM-TM-87-B-1; NAS 1.60:2658; AD-A179379) Avail: NTIS HC A06/MF A01 CSCL 01/1

ACOUSTICS, BLADE-VORTEX INTERACTION, FREE FLOW, HELICOPTERS, ROTORS, VORTICES, WAKES

N87-19351*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NUMERICAL SIMULATION OF CHANNEL FLOW TRANSITION, RESOLUTION REQUIREMENTS AND STRUCTURE OF THE HAIRPIN VORTEX
STEVEN E. KRIST (Joint Inst. for Advancement of Flight Sciences, Hampton, Va.) and THOMAS A. ZANG Apr. 1987 71 p
(NASA-TP-2667; L-16204; NAS 1.60:2667) Avail: NTIS HC A04/MF A01 CSCL 01A

BOUNDARY LAYER STABILITY, BOUNDARY LAYER TRANSITION, BOUNDARY VALUE PROBLEMS, CHANNEL FLOW, COMPUTATIONAL FLUID DYNAMICS, SPECTRAL METHODS

N87-20233*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INVESTIGATION OF LEADING-EDGE FLAP PERFORMANCE ON DELTA AND DOUBLE-DELTA WINGS AT SUPERSONIC SPEEDS
PETER F. COVELL, RICHARD M. WOOD, and DAVID S. MILLER Apr. 1987 125 p
(NASA-TP-2656; L-16143; NAS 1.60:2656) Avail: NTIS HC A06/MF A01 CSCL 01A

DELTA WINGS, EXPERIMENT DESIGN, LEADING EDGE FLAPS, SUPERSONIC SPEED

N87-20238*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LEWIS INVERSE DESIGN CODE (LINDES): USERS MANUAL
JOSE M. SANZ Mar. 1987 67 p
(NASA-TP-2676; E-3221; NAS 1.60:2676) Avail: NTIS HC A04/MF A01 CSCL 01A

AIRFOILS, CODING, DESIGN ANALYSIS, HODOGRAPHS, INVERSIONS, TURBINE BLADES, USER MANUALS (COMPUTER PROGRAMS)

N87-20966*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.
IN-FLIGHT SURFACE OIL-FLOW PHOTOGRAPHS WITH COMPARISONS TO PRESSURE DISTRIBUTION AND BOUNDARY-LAYER DATA
ROBERT R. MEYER, JR. and LISA A. JENNETT Apr. 1985 27 p Original contains color illustrations
(NASA-TP-2395; H-1184; NAS 1.60:2395) Avail: NTIS HC A03/MF A01 CSCL 01A

BOUNDARY LAYER FLOW, FLOW VISUALIZATION, IN-FLIGHT MONITORING, OILS, PHOTOGRAPHY, PRESSURE DISTRIBUTION

N87-21855*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND-TUNNEL FREE-FLIGHT INVESTIGATION OF A 0.15-SCALE MODEL OF THE F-106B AIRPLANE WITH VORTEX FLAPS
LONG P. YIP May 1987 46 p
(NASA-TP-2700; L-16202; NAS 1.60:2700) Avail: NTIS HC A03/MF A01 CSCL 01A

F-106 AIRCRAFT, FREE FLIGHT, VORTEX FLAPS, WIND TUNNEL MODELS, WIND TUNNEL TESTS

N87-21871*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NEW METHODS AND RESULTS FOR QUANTIFICATION OF LIGHTNING-AIRCRAFT ELECTRODYNAMICS
FELIX L. PITTS, LARRY D. LEE, RODNEY A. PERALA, and TERENCE H. RUDOLPH (Electro Magnetic Applications, Inc., Lakewood, Colo.) Jun. 1987 67 p
(NASA-TP-2737; L-16281; NAS 1.60:2737) Avail: NTIS HC A04/MF A01 CSCL 01A

ELECTRODYNAMICS, F-106 AIRCRAFT, FLIGHT TESTS, LIGHTNING, RESEARCH AIRCRAFT

N87-21873*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF AFTERBODY BOATTAIL DESIGN AND EMPENNAGE ARRANGEMENT ON AEROPROPULSIVE CHARACTERISTICS OF A TWIN-ENGINE FIGHTER MODEL AT TRANSONIC SPEEDS
LINDA S. BANGERT, LAURENCE D. LEAVITT, and DAVID E. REUBUSH Jun. 1987 134 p
(NASA-TP-2704; L-16227; NAS 1.60:2704) Avail: NTIS HC A07/MF A01 CSCL 01A

AFTERBODIES, AXISYMMETRIC FLOW, BOATTAILS, DRAG,

FIGHTER AIRCRAFT, NOZZLES, PROPULSIVE EFFICIENCY, TAIL ASSEMBLIES

N87-22626*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EXPERIMENTAL CAVITY PRESSURE DISTRIBUTIONS AT SUPERSONIC SPEEDS
ROBERT L. STALLINGS, JR. and FLOYD J. WILCOX, JR. Jun. 1987 79 p
(NASA-TP-2683; L-16215; NAS 1.60:2683) Avail: NTIS HC A05/MF A01 CSCL 01A
CAVITIES, FLUID FLOW, PRESSURE DISTRIBUTION, SUPERSONIC SPEED

N87-23586*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ON MINIMIZING THE NUMBER OF CALCULATIONS IN DESIGN-BY-ANALYSIS CODES
RAYMOND L. BARGER and ANUTOSH MOITRA Jun. 1987 16 p
(NASA-TP-2706; L-16226; NAS 1.60:2706) Avail: NTIS HC A03/MF A01 CSCL 01A
AERODYNAMIC CONFIGURATIONS, APPROXIMATION, DESIGN ANALYSIS, NUMERICAL ANALYSIS, PRESSURE DISTRIBUTION

N87-23592*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MACH 6 EXPERIMENTAL AND THEORETICAL STABILITY AND PERFORMANCE OF A CRUCIFORM MISSILE AT ANGLES OF ATTACK UP TO 65 DEGREES
EDWARD R. HARTMAN (Arnold Engineering Development Center, Arnold Air Force Station, Tenn.) and PATRICK J. JOHNSTON Jul. 1987 41 p
(NASA-TP-2733; L-16287; NAS 1.60:2733) Avail: NTIS HC A03/MF A01 CSCL 01A
ANGLE OF ATTACK, CRUCIFORM WINGS, EXPERIMENTATION, HYPERSONIC SPEED, MACH NUMBER, MISSILES

N87-23593*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF A TRADE BETWEEN BOATTAIL ANGLE AND WEDGE SIZE ON THE PERFORMANCE OF A NONAXISYMMETRIC WEDGE NOZZLE
GEORGE T. CARSON, JR., E. ANN BARE, and JAMES R. BURLEY, II Jul. 1987 67 p
(NASA-TP-2717; L-16248; NAS 1.60:2717) Avail: NTIS HC A04/MF A01 CSCL 01A
AXISYMMETRIC BODIES, BOATTAILS, NOZZLE GEOMETRY, PERFORMANCE TESTS, TRADEOFFS, WEDGES

N87-23597*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STUDY OF LEE-SIDE FLOWS OVER CONICALLY CAMBERED DELTA WINGS AT SUPERSONIC SPEEDS, PART 1
RICHARD M. WOOD and CAROLYN B. WATSON Jul. 1987 212 p
(NASA-TP-2660-PT-1; L-16192; NAS 1.60:2660-PT-1) Avail: NTIS HC A10/MF A02 CSCL 01A
CONICAL CAMBER, DELTA WINGS, FLOW DISTRIBUTION, LEE WAVES, STRUCTURAL DESIGN, SUPERSONIC FLOW, VORTICES

N87-24410*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
PROCEEDINGS OF THE 1985 NASA AMES RESEARCH CENTER'S GROUND-EFFECTS WORKSHOP
KERRY MITCHELL, ed. Feb. 1987 448 p Workshop held at Moffett Field, Calif., 20-21 Aug. 1985
(NASA-CP-2462; A-86391; NAS 1.55:2462) Avail: NTIS HC A19/MF A03 CSCL 01A
GROUND EFFECT (AERODYNAMICS), INGESTION (ENGINES), POWERED LIFT AIRCRAFT, V/STOL AIRCRAFT, VERTICAL LANDING

N87-24432*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC INTERNAL PERFORMANCE OF A TWO-DIMENSIONAL CONVERGENT-DIVERGENT NOZZLE WITH THRUST VECTORING
E. ANN BARE and DAVID E. REUBUSH Jul. 1987 115 p
(NASA-TP-2721; L-16240; NAS 1.60:2721) Avail: NTIS HC A06/MF A01 CSCL 01A
CONVERGENT-DIVERGENT NOZZLES, STATIC TESTS, THRUST VECTOR CONTROL, TWO DIMENSIONAL FLOW

N87-24433*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MULTIAXIS CONTROL POWER FROM THRUST VECTORING FOR A SUPERSONIC FIGHTER AIRCRAFT MODEL AT MACH 0.20 TO 2.47
FRANCIS J. CAPONE and E. ANN BARE Jul. 1987 264 p
(NASA-TP-2712; L-16213; NAS 1.60:2712) Avail: NTIS HC A12/MF A02 CSCL 01A
FIGHTER AIRCRAFT, MACH NUMBER, SUPERSONIC CRUISE AIRCRAFT RESEARCH, THRUST VECTOR CONTROL

N87-25301*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STUDY OF LEE-SIDE FLOWS OVER CONICALLY CAMBERED DELTA WINGS AT SUPERSONIC SPEEDS, PART 2
RICHARD M. WOOD and CAROLYN B. WATSON Jul. 1987 404 p
(NASA-TP-2660-PT-2; L-16192; NAS 1.60:2660-PT-2) Avail: NTIS HC A18/MF A03 CSCL 01A
CONICAL CAMBER, DELTA WINGS, FLOW DISTRIBUTION, FLOW VISUALIZATION, SUPERSONIC FLOW, WING LOADING

N87-25998*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
SUPERCOMPUTING IN AEROSPACE
PAUL KUTLER and HELEN YEE Mar. 1987 299 p Symposium held at Moffett Field, Calif., 10-12 Mar. 1987
(NASA-CP-2454; A-87082; NAS 1.55:2454) Avail: NTIS HC A13/MF A02 CSCL 01A
COMPUTATIONAL ASTROPHYSICS, COMPUTATIONAL CHEMISTRY, COMPUTATIONAL FLUID DYNAMICS, COMPUTATIONAL GRIDS, COMPUTERIZED SIMULATION, CONFERENCES, INTERACTIONAL AERODYNAMICS, NAVIER-STOKES EQUATION, SUPERCOMPUTERS

N87-26031*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF REYNOLDS NUMBER VARIATION ON AERODYNAMICS OF A HYDROGEN-FUELED TRANSPORT CONCEPT AT MACH 6
JIM A. PENLAND and DON C. MARCUM, JR. Aug. 1987 28 p
(NASA-TP-2728; L-16286; NAS 1.60:2728) Avail: NTIS HC A03/MF A01 CSCL 01A
AERODYNAMIC CONFIGURATIONS, HYDROGEN FUELS, HYPERSONIC AIRCRAFT, MACH NUMBER, REYNOLDS NUMBER, TRANSPORT AIRCRAFT

N87-26032*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STEADY AND UNSTEADY AERODYNAMIC FORCES FROM THE SOUSSA SURFACE-PANEL METHOD FOR A FIGHTER WING WITH TIP MISSILE AND COMPARISON WITH EXPERIMENT AND PANAIR
HERBERT J. CUNNINGHAM Aug. 1987 29 p
(NASA-TP-2736; L-16262; NAS 1.60:2736) Avail: NTIS HC A03/MF A01 CSCL 01A
AERODYNAMIC FORCES, FIGHTER AIRCRAFT, PANEL METHOD (FLUID DYNAMICS), UNSTEADY AERODYNAMICS, UNSTEADY FLOW, WINGS

N87-26874*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SUBSONIC LONGITUDINAL AND LATERAL-DIRECTIONAL CHARACTERISTICS OF A FORWARD-SWEPT-WING FIGHTER CONFIGURATION AT ANGLES OF ATTACK UP TO 47 DEG
MICHAEL J. MANN, JARRETT K. HUFFMAN, and CHARLES H. FOX, JR. Sep. 1987 103 p
(NASA-TP-2727; L-16206; NAS 1.60:2727) Avail: NTIS HC A06/MF A01 CSCL 01A
AERODYNAMIC CONFIGURATIONS, ANGLE OF ATTACK, FIGHTER AIRCRAFT, LATERAL CONTROL, LATERAL STABILITY, SUBSONIC AIRCRAFT, SWEPT FORWARD WINGS

N87-26883*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN EXPERIMENTAL INVESTIGATION OF AN ADVANCED TURBOPROP INSTALLATION ON A SWEPT WING AT SUBSONIC AND TRANSONIC SPEEDS
JOHN R. CARLSON and ODIS C. PENDERGRAFT, JR. Sep. 1987 242 p
(NASA-TP-2729; L-16043; NAS 1.60:2729) Avail: NTIS HC A11/MF A02 CSCL 01A
AERODYNAMICS, ENGINE AIRFRAME INTEGRATION, SUBSONIC SPEED, SWEPT WINGS, TRANSONIC SPEED, TURBOPROP ENGINES

N87-27622*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CALCULATION OF VISCOUS EFFECTS ON TRANSONIC FLOW FOR OSCILLATING AIRFOILS AND COMPARISONS WITH EXPERIMENT
JAMES T. HOWLETT and SAMUEL R. BLAND Sep. 1987 77 p
(NASA-TP-2731; L-16289; NAS 1.60:2731) Avail: NTIS HC A05/MF A01 CSCL 01A
AIRFOILS, COMPARISON, INVISCID FLOW, OSCILLATIONS, TRANSONIC FLOW, VISCOUS FLOW

N87-27626*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DRAG MEASUREMENTS OF BLUNT STORES TANGENTIALLY MOUNTED ON A FLAT PLATE AT SUPERSONIC SPEEDS
FLOYD J. WILCOX, JR. Sep. 1987 68 p
(NASA-TP-2742; L-16284; NAS 1.60:2742) Avail: NTIS HC A04/MF A01 CSCL 01A
AERODYNAMIC DRAG, BLUNT BODIES, EXTERNAL STORES, FLAT PLATES, MOUNTING, SUPERSONIC SPEED, TANGENTS

N87-27643*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PRESSURE MEASUREMENTS ON A THICK CAMBERED AND TWISTED 58 DEG DELTA WING AT HIGH SUBSONIC SPEEDS
JULIO CHU and JOHN E. LAMAR Sep. 1987 233 p
(NASA-TP-2713; L-16224; NAS 1.60:2713) Avail: NTIS HC A11/MF A02 CSCL 01A
CAMBER, DELTA WINGS, PRESSURE MEASUREMENT, SUBSONIC SPEED, THICKNESS, TWISTED WINGS

N87-29432*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
AUTOMATED REDUCTION OF DATA FROM IMAGES AND HOLOGRAMS
G. LEE, ed., JAMES D. TROLINGER, ed. (Spectron Development Labs., Inc., Costa Mesa, Calif.), and Y. H. YU, ed. May 1987 614 p Workshop held at Moffett Field, Calif., 10-11 Jan. 1985
(NASA-CP-2477; A-87135; NAS 1.55:2477) Avail: NTIS HC A99/MF A04 CSCL 01A
COMBUSTIBLE FLOW, DIGITAL TECHNIQUES, HOLOGRAPHIC INTERFEROMETRY, IMAGE ANALYSIS, PARTICLE SIZE DISTRIBUTION

N87-29462*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LOW-SPEED AERODYNAMIC CHARACTERISTICS OF A TWIN-ENGINE GENERAL AVIATION CONFIGURATION WITH AFT-FUSELAGE-MOUNTED PUSHER PROPELLERS
DANA MORRIS DUNHAM, GARL L. GENTRY, JR., GREGORY S. MANUEL, ZACHARY T. APPLIN, and P. FRANK QUINTO Oct. 1987 116 p
(NASA-TP-2763; L-16331; NAS 1.60:2763) Avail: NTIS HC A06/MF A01 CSCL 01A
AERODYNAMIC CHARACTERISTICS, GENERAL AVIATION AIRCRAFT, LOW SPEED, PROPELLERS, PROPULSION SYSTEM CONFIGURATIONS, PYLON MOUNTING, TURBOPROP ENGINES

N88-10009*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WIND-TUNNEL INVESTIGATION OF A FULL-SCALE GENERAL AVIATION AIRPLANE EQUIPPED WITH AN ADVANCED NATURAL LAMINAR FLOW WING
DANIEL G. MURRI and FRANK L. JORDAN, JR. Nov. 1987 136 p
(NASA-TP-2772; L-16283; NAS 1.60:2772) Avail: NTIS HC A07/MF A01 CSCL 01A
GENERAL AVIATION AIRCRAFT, LAMINAR FLOW AIRFOILS, WIND TUNNEL TESTS, WINGS

N88-10765*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
COMPARISON OF WIND TUNNEL AND FLIGHT TEST AFTERBODY AND NOZZLE PRESSURES FOR A TWIN-JET FIGHTER AIRCRAFT AT TRANSONIC SPEEDS
JACK NUGENT and ODIS C. PENDERGRAFT, JR. Mar. 1987 125 p
(NASA-TP-2588; H-1214; NAS 1.60:2588) Avail: NTIS HC A06/MF A01 CSCL 01A
AFTERBODIES, FIGHTER AIRCRAFT, FLIGHT TESTS, NOZZLE THRUST COEFFICIENTS, TRANSONIC SPEED, WIND TUNNEL MODELS, WIND TUNNEL TESTS

N88-10771*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF EMPENNAGE ARRANGEMENT ON SINGLE-ENGINE NOZZLE/AFTERBODY STATIC PRESSURES AT TRANSONIC SPEEDS
WILLIAM P. HENDERSON and JAMES R. BURLEY, II Nov. 1987 230 p
(NASA-TP-2753; L-16223; NAS 1.60:2753) Avail: NTIS HC A11/MF A02 CSCL 01A
AFTERBODIES, AXISYMMETRIC FLOW, JET AIRCRAFT, JET ENGINES, NOZZLES, STATIC PRESSURE, TAIL ASSEMBLIES, TRANSONIC SPEED

N88-12454*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PLANFORM EFFECTS ON THE SUPERSONIC AERODYNAMICS OF MULTIBODY CONFIGURATIONS
NAOMI MCMILLIN and RICHARD M. WOOD 1987 138 p
(NASA-TP-2762; L-16312; NAS 1.60:2762) Avail: NTIS HC A07/MF A01 CSCL 01A
AERODYNAMIC CHARACTERISTICS, AERODYNAMIC DRAG, AIRCRAFT CONFIGURATIONS, FINENESS RATIO, PLANFORMS, SUPERSONICS, ZERO LIFT

N88-12455* National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF THE INSTALLATION AND OPERATION OF JET-EXHAUST YAW VANES ON THE LONGITUDINAL AND LATERAL-DIRECTIONAL CHARACTERISTICS OF THE F-14 AIRPLANE
DAVID E. REUBUSH and BOBBY L. BERRIER Dec. 1987 121 p

(NASA-TP-2769; L-16302; NAS 1.60:2769) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMIC STABILITY, AIRCRAFT CONTROL, DIRECTIONAL STABILITY, F-14 AIRCRAFT, JET VANES, LATERAL STABILITY, LONGITUDINAL STABILITY, THRUST VECTOR CONTROL, WIND TUNNEL STABILITY TESTS

N88-16662*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A SIMPLIFIED APPROACH TO AXISYMMETRIC DUAL-REFLECTOR ANTENNA DESIGN
RAYMOND L. BARGER Mar. 1988 14 p
(NASA-TP-2797; L-16392; NAS 1.60:2797) Avail: NTIS HC A03/MF A01 CSCL 20N

ANTENNA DESIGN, ANTENNA RADIATION PATTERNS, REFLECTOR ANTENNAS, REFLECTORS, STIMULATED EMISSION

N88-17586*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
PROCEEDINGS OF THE CIRCULATION-CONTROL WORKSHOP, 1986
JACK N. NIELSEN, comp. May 1987 591 p Workshop held at Moffett Field, Calif., 19-21 Feb. 1986 Original contains color illustrations
(NASA-CP-2432; A-86314; NAS 1.55:2432) Avail: NTIS HC A25/MF A04 CSCL 01A

AIRCRAFT CONTROL, CIRCULATION CONTROL AIRFOILS, CIRCULATION CONTROL ROTORS, COANDA EFFECT, X WING ROTORS

N88-17614*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A TRANSONIC-SMALL-DISTURBANCE WING DESIGN METHODOLOGY
PAMELA S. PHILLIPS, EDGAR G. WAGGONER, and RICHARD L. CAMPBELL Mar. 1988 32 p
(NASA-TP-2806; L-16393; NAS 1.60:2806) Avail: NTIS HC A03/MF A01 CSCL 01A

CODING, COMPUTER PROGRAMS, DESIGN ANALYSIS, SMALL PERTURBATION FLOW, TRANSONIC FLOW, WINGS

N88-17615*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SUPERSONIC AERODYNAMICS OF DELTA WINGS
RICHARD M. WOOD Mar. 1988 106 p
(NASA-TP-2771; L-16212; NAS 1.60:2771) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMICS, DELTA WINGS, INVISCID FLOW, SUPERSONIC AIRFOILS, SUPERSONIC SPEED

N88-18552*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A PERFORMANCE INDEX APPROACH TO AERODYNAMIC DESIGN WITH THE USE OF ANALYSIS CODES ONLY
RAYMOND L. BARGER and ANUTOSH MOITRA (High Technology Corp., Hampton, Va.) Mar. 1988 21 p
(NASA-TP-2805; L-16379; NAS 1.60:2805) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC CONFIGURATIONS, CODING, COMPUTER PROGRAMS, DESIGN ANALYSIS, INDEXES (DOCUMENTATION), PERFORMANCE TESTS

N88-18567*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.
EFFECTS OF WINGLETS ON A FIRST-GENERATION JET TRANSPORT WING. 7: SIDESLIP EFFECTS ON WINGLET LOADS AND SELECTED WING LOADS AT SUBSONIC SPEEDS FOR A FULL-SPAN MODEL
ROBERT R. MEYER, JR. and PETER F. COVELL Sep. 1986 60 p
(NASA-TP-2619; H-1193; NAS 1.60:2619) Avail: NTIS HC A04/MF A01 CSCL 01A

SIDESLIP, SUBSONIC SPEED, WIND TUNNEL MODELS, WINGLETS

N88-19412*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
TRAJECTORY CHARACTERISTICS AND HEATING OF HYPERVELOCITY PROJECTILES HAVING LARGE BALLISTIC COEFFICIENTS
MICHAEL E. TAUBER Aug. 1986 21 p
(NASA-TP-2614; A-86187; NAS 1.60:2614) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC HEATING, BALLISTIC TRAJECTORIES, HYPERVELOCITY PROJECTILES, TRAJECTORY ANALYSIS

N88-19416* National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL ENGINEERING: A CUMULATIVE INDEX TO A CONTINUING BIBLIOGRAPHY
Jan. 1988 499 p
(NASA-SP-7037(222); NAS 1.21:7037(222)) Avail: NTIS HC $14.50 domestic, $29.00 foreign CSCL 01A

This bibliography is a cumulative index to the abstracts contained in NASA SP-7037(210) through NASA SP-7037(221) of Aeronautical Engineering: A Continuing Bibliography. NASA SP-7037 and its supplements have been compiled through the cooperative efforts of the American Institute of Aeronautics and Astronautics (AIAA) and the National Aeronautics and Space Administration (NASA). This cumulative index includes subject, personal author, corporate source, foreign technology, contract number, report number, and accession number indexes. Author

N88-19420*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AERODYNAMIC CHARACTERISTICS OF WINGS DESIGNED WITH A COMBINED-THEORY METHOD TO CRUISE AT A MACH NUMBER OF 4.5
ROBERT J. MACK Apr. 1988 60 p Sponsored by NASA, Washington
(NASA-TP-2799; L-16333; NAS 1.60:2799) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AIRCRAFT DESIGN, CAMBERED WINGS, DESIGN ANALYSIS, HYPERSONIC SPEED, SUPERSONIC SPEED

N88-20257*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
AN EXPERIMENTAL INVESTIGATION OF THE FLAP-LAG-TORSION AEROELASTIC STABILITY OF A SMALL-SCALE HINGELESS HELICOPTER ROTOR IN HOVER
DAVID L. SHARPE Jan. 1986 86 p Prepared in cooperation with Army Aviation Research and Development Command, Moffett Field, Calif.
(NASA-TP-2546; REPT-85142; NAS 1.60:2546; AVSCOM-TR-85-A-9) Avail: NTIS HC A05/MF A01 CSCL 01A

AEROELASTICITY, FLAPS (CONTROL SURFACES), HELICOPTERS, HOVERING, RIGID ROTORS, STABILITY, TORSION

N88-20264*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A REVIEW OF TECHNOLOGIES APPLICABLE TO LOW-SPEED FLIGHT OF HIGH-PERFORMANCE AIRCRAFT INVESTIGATED IN THE LANGLEY 14- X 22-FOOT SUBSONIC TUNNEL
JOHN W. PAULSON, JR., P. FRANK QUINTO, DANIEL W. BANKS, GUY T. KEMMERLY, and GREGORY M. GATLIN May 1988 94 p
(NASA-TP-2796; L-16364; NAS 1.60:2796) Avail: NTIS HC A05/MF A01 CSCL 01A

AERODYNAMIC CONFIGURATIONS, FLIGHT TESTS, LOW SPEED, RESEARCH FACILITIES, SHORT TAKEOFF AIRCRAFT, TECHNOLOGY ASSESSMENT, V/STOL AIRCRAFT, WIND TUNNEL TESTS

N88-20280*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC PERFORMANCE OF AN AXISYMMETRIC NOZZLE WITH POST-EXIT VANES FOR MULTIAXIS THRUST VECTORING
BOBBY L. BERRIER and MARY L. MASON May 1988 54 p
(NASA-TP-2800; L-16371; NAS 1.60:2800) Avail: NTIS HC A04/MF A01 CSCL 01A
AXISYMMETRIC BODIES, CONVERGENT-DIVERGENT NOZZLES, STATIC TESTS, THRUST VECTOR CONTROL, VANES

N88-21117*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE NASA LANGLEY LAMINAR-FLOW-CONTROL (LFC) EXPERIMENT ON A SWEPT, SUPERCRITICAL AIRFOIL: DESIGN OVERVIEW
CHARLES D. HARRIS, WILLIAM D. HARVEY, and CUYLER W. BROOKS, JR. May 1988 128 p
(NASA-TP-2809; L-16324; NAS 1.60:2809) Avail: NTIS HC A07/MF A01 CSCL 01A
BOUNDARY LAYER CONTROL, LAMINAR BOUNDARY LAYER, LAMINAR FLOW, SUPERCRITICAL AIRFOILS, SWEPT WINGS

N88-21118*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC PERFORMANCE OF NONAXISYMMETRIC NOZZLES WITH YAW THRUST-VECTORING VANES
MARY L. MASON and BOBBY L. BERRIER May 1988 79 p
(NASA-TP-2813; L-16389; NAS 1.60:2813) Avail: NTIS HC A05/MF A01 CSCL 01A
CONVERGENT NOZZLES, CONVERGENT-DIVERGENT NOZZLES, STATIC TESTS, STATIC THRUST, THRUST VECTOR CONTROL

N88-23735*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NUMERICAL SIMULATION OF SCRAMJET INLET FLOW FIELDS
AJAY KUMAR May 1986 29 p
(NASA-TP-2517; L-16000; NAS 1.60:2517) Avail: NTIS HC A03/MF A01 CSCL 01A
APPLICATIONS PROGRAMS (COMPUTERS), COMPUTATIONAL FLUID DYNAMICS, INLET FLOW, NAVIER-STOKES EQUATION, SUPERSONIC COMBUSTION RAMJET ENGINES, THREE DIMENSIONAL FLOW, TURBULENT FLOW

N88-23737*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LAMINAR FLOW AIRCRAFT CERTIFICATION
LOUIS J. WILLIAMS, comp. May 1986 325 p Workshop held in Wichita, Kans., 15-16 Apr. 1985; sponsored by NASA, AIAA, SAE and FAA Sponsored by NASA, Washington
(NASA-CP-2413; L-16111; NAS 1.55:2413) Avail: NTIS HC A14/MF A02 CSCL 01A
AIRCRAFT DESIGN, CERTIFICATION, CONFERENCES, LAMINAR FLOW, LAMINAR FLOW AIRFOILS

N88-23757*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROPROPULSIVE CHARACTERISTICS OF ISOLATED COMBINED TURBOJET/RAMJET NOZZLES AT MACH NUMBERS FROM 0 TO 1.20
GEORGE T. CARSON, JR. and MILTON LAMB Jun. 1988 174 p
(NASA-TP-2814; L-16390; NAS 1.60:2814) Avail: NTIS HC A08/MF A01 CSCL 01A
MACH NUMBER, NOZZLE EFFICIENCY, NOZZLE GEOMETRY, RAMJET ENGINES, ROCKET NOZZLES, TURBINE ENGINES

N88-23760*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SENSITIVITY OF F-106B LEADING-EDGE-VORTEX IMAGES TO FLIGHT AND VAPOR-SCREEN PARAMETERS
JOHN E. LAMAR and THOMAS D. JOHNSON, JR. (Planning Research Corp., Hampton, Va.) Jun. 1988 80 p Original contains color illustrations
(NASA-TP-2818; L-16395; NAS 1.60:2818) Avail: NTIS HC A05/MF A01 CSCL 01A
F-106 AIRCRAFT, IMAGE PROCESSING, LEADING EDGES, SCREEN EFFECT, TRANSONIC FLIGHT, VAPORS, VORTICES, WINGS

N88-28895*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STEADY AND UNSTEADY TRANSONIC PRESSURE MEASUREMENTS ON A CLIPPED DELTA WING FOR PITCHING AND CONTROL-SURFACE OSCILLATIONS
ROBERT W. HESS, F. W. CAZIER, JR., and ELEANOR C. WYNNE Washington, D.C. Oct. 1986 118 p MF as supplement
(NASA-TP-2594; L-16082; NAS 1.60:2594) Avail: NTIS HC A06/MF A01 CSCL 01A
CONTROL SURFACES, DELTA WINGS, LONGITUDINAL CONTROL, OSCILLATIONS, PRESSURE MEASUREMENT, STEADY STATE, WIND TUNNEL TESTS

N88-29752*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AERODYNAMICS IN GROUND EFFECT AND PREDICTED LANDING GROUND ROLL OF A FIGHTER CONFIGURATION WITH A SECONDARY-NOZZLE THRUST REVERSER
DANIEL W. BANKS Oct. 1988 131 p
(NASA-TP-2834; L-16435; NAS 1.60:2834) Avail: NTIS HC A07/MF A01 CSCL 01A
CASCADE FLOW, GROUND EFFECT (AERODYNAMICS), NOZZLE FLOW, ROLL, SHORT TAKEOFF AIRCRAFT, THRUST REVERSAL

N89-10020*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
WEAK-WAVE ANALYSIS OF SHOCK INTERACTION WITH A SLIPSTREAM
RAYMOND L. BARGER Nov. 1988 20 p
(NASA-TP-2848; L-16469; NAS 1.60:2848) Avail: NTIS HC A03/MF A01 CSCL 01A
COUNTERFLOW, SHOCK WAVE INTERACTION, SLIPSTREAMS

N89-10024*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
VALIDATION OF A PAIR OF COMPUTER CODES FOR ESTIMATION AND OPTIMIZATION OF SUBSONIC AERODYNAMIC PERFORMANCE OF SIMPLE HINGED-FLAP SYSTEMS FOR THIN SWEPT WINGS
HARRY W. CARLSON (PRC Systems Services Co., Hampton, Va.) and CHRISTINE M. DARDEN Washington Nov. 1988 118 p
(NASA-TP-2828; L-16428; NAS 1.60:2828) Avail: NTIS HC A06/MF A01 CSCL 01A
AERODYNAMICS, COMPUTER PROGRAMS, FLAPPING HINGES, OPTIMIZATION, SUBSONIC FLOW, SWEPT WINGS

N89-10844*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THREE COMPONENT LASER ANEMOMETER MEASUREMENTS IN AN ANNULAR CASCADE OF CORE TURBINE VANES WITH CONTOURED END WALL
LOUIS J. GOLDMAN and RICHARD G. SEASHOLTZ Nov. 1988 44 p
(NASA-TP-2846; E-4183; NAS 1.60:2846) Avail: NTIS HC A03/MF A01 CSCL 20D
ANNULAR FLOW, CASCADE FLOW, FABRY-PEROT

INTERFEROMETERS, FLOW MEASUREMENT, LASER ANEMOMETERS, STATOR BLADES, VELOCITY MEASUREMENT

N89-10849*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
THE 1987 GROUND VORTEX WORKSHOP
RICHARD J. MARGASON, ed. Feb. 1988 216 p Workshop held at Moffett Field, Calif., 22-23 Apr. 1987
(NASA-CP-10008; A-88008; NAS 1.55:10008) Avail: NTIS HC A10/MF A02 CSCL 01A
CONFERENCES, EXHAUST GASES, GROUND EFFECT (AERODYNAMICS), SHORT TAKEOFF AIRCRAFT, VATOL AIRCRAFT, VERTICAL TAKEOFF AIRCRAFT, VORTICES

N89-12543*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A SPECTRAL COLLOCATION SOLUTION TO THE COMPRESSIBLE STABILITY EIGENVALUE PROBLEM
MICHELE G. MACARAEG, CRAIG L. STREETT, and M. YOUSUFF HUSSAINI Washington, D.C. Dec. 1988 42 p
(NASA-TP-2858; L-16470; NAS 1.60:2858) Avail: NTIS HC A03/MF A01 CSCL 01A
BOUNDARY LAYER FLOW, COMPRESSIBLE FLOW, COMPUTATIONAL GRIDS, FLOW DISTRIBUTION, FLOW STABILITY, SHEAR FLOW

N89-14213*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THRUST-REVERSER FLOW INVESTIGATION ON A TWIN-ENGINE TRANSPORT
GREGORY M. GATLIN and P. FRANK QUINTO Washington, DC Dec. 1988 156 p
(NASA-TP-2856; L-16426; NAS 1.60:2856) Avail: NTIS HC A08/MF A01 CSCL 01A
ENGINE TESTS, FREE FLOW, GROUND EFFECT (AERODYNAMICS), REVERSED FLOW, THRUST REVERSAL, TRANSPORT AIRCRAFT

N89-15888*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INTEGRATION EFFECTS OF PYLON GEOMETRY ON A HIGH-WING TRANSPORT AIRPLANE
JOHN R. CARLSON and MILTON LAMB Washington, DC Feb. 1989 78 p
(NASA-TP-2877; L-16489; NAS 1.60:2877) Avail: NTIS HC A05/MF A01 CSCL 01A
INSTALLING, NACELLES, PYLONS, TRANSPORT AIRCRAFT, WINGS

N89-17568*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA SC(2)-0714 AIRFOIL DATA CORRECTED FOR SIDEWALL BOUNDARY-LAYER EFFECTS IN THE LANGLEY 0.3-METER TRANSONIC CRYOGENIC TUNNEL
RENALDO V. JENKINS Washington, DC Mar. 1989 58 p
(NASA-TP-2890; L-16385; NAS 1.60:2890) Avail: NTIS HC A04/MF A01 CSCL 01A
BOUNDARY LAYERS, CRYOGENIC WIND TUNNELS, SUPERCRITICAL AIRFOILS, WIND TUNNEL WALLS

N89-17579*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
TIP AERODYNAMICS AND ACOUSTICS TEST: A REPORT AND DATA SURVEY
JEFFREY L. CROSS and MICHAEL E. WATTS Dec. 1988 463 p
(NASA-RP-1179; A-87128; NAS 1.61:1179) Avail: NTIS HC A20/MF A03 CSCL 01A
In a continuing effort to understand helicopter rotor tip aerodynamics and acoustics, a flight test was conducted by NASA Ames Research Center. The test was performed using the NASA White Cobra and a set of highly instrumented blades. All aspects of the flight test instrumentation and test procedures are explained. Additionally, complete data sets for selected test points are presented and analyzed. Because of the high volume of data acquired, only selected data points are presented. However, access to the entire data set is available to the researcher on request.
Author

N89-19232*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DRAG MEASUREMENTS ON A LAMINAR-FLOW BODY OF REVOLUTION IN THE 13-INCH MAGNETIC SUSPENSION AND BALANCE SYSTEM
DAVID A. DRESS 1989 37 p
(NASA-TP-2895; L-16483; NAS 1.60:2895) Avail: NTIS HC A03/MF A01 CSCL 01A
AERODYNAMIC BALANCE, BODIES OF REVOLUTION, DRAG MEASUREMENT, LAMINAR FLOW, MAGNETIC SUSPENSION

N89-19234*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TRANSONIC UNSTEADY AERODYNAMICS AND AEROELASTICITY 1987, PART 1
SAMUEL R. BLAND, comp. Washington, DC Feb. 1989 261 p Symposium held in Hampton, VA, 20-22 May 1987
(NASA-CP-3022-PT-1; L-16532-PT-1; NAS 1.55:3022-PT-1)
Avail: NTIS HC A12/MF A02 CSCL 01A
AEROELASTICITY, AIRCRAFT CONFIGURATIONS, COMPUTATIONAL FLUID DYNAMICS, FLUTTER ANALYSIS, TRANSONIC FLOW, UNSTEADY AERODYNAMICS

N89-19247*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TRANSONIC UNSTEADY AERODYNAMICS AND AEROELASTICITY 1987, PART 2
SAMUEL R. BLAND, comp. Washington, DC Feb. 1989 379 p Symposium held in Hampton, VA, 20-22 May 1987
(NASA-CP-3022-PT-2; L-16532-PT-2; NAS 1.55:3022-PT-2)
Avail: NTIS HC A17/MF A03 CSCL 01A
AEROELASTICITY, AIRCRAFT STABILITY, FLOW DISTRIBUTION, TRANSONIC FLOW, UNSTEADY AERODYNAMICS, VISCOUS FLOW

N89-20925*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TRANSONIC SYMPOSIUM: THEORY, APPLICATION, AND EXPERIMENT, VOLUME 1, PART 1
JEROME T. FOUGHNER, JR., comp. Mar. 1989 416 p Symposium held in Hampton, VA, 19-21 Apr. 1988; sponsored by NASA, Washington Original contains color illustrations
(NASA-CP-3020-VOL-1-PT-1; L-16501-VOL-1-PT-1; NAS 1.55:3020-VOL-1-PT-1) Avail: NTIS HC A18/MF A03 CSCL 01A
AIRCRAFT DESIGN, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, FLIGHT TESTS, GRID GENERATION (MATHEMATICS), WIND TUNNEL TESTS

N89-20942*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TRANSONIC SYMPOSIUM: THEORY, APPLICATION, AND EXPERIMENT, VOLUME 1, PART 2
JEROME T. FOUGHNER, JR., comp. Mar. 1989 511 p Symposium held in Hampton, VA, 19-21 Apr.1988; sponsored by NASA, Washington Original contains color illustrations
(NASA-CP-3020-VOL-1-PT-2; L-16501-VOL-1-PT-2; NAS 1.55:3020-VOL-1-PT-2) Avail: NTIS HC A22/MF A03 CSCL 01A
COMPUTATIONAL FLUID DYNAMICS, COMPUTERIZED SIMULATION, GRID GENERATION (MATHEMATICS), INTERACTIONAL AERODYNAMICS, TRANSONIC FLOW, WIND TUNNEL TESTS

N89-23415*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATUS OF SONIC BOOM METHODOLOGY AND UNDERSTANDING

CHRISTINE M. DARDEN, CLEMANS A. POWELL, WALLACE D. HAYES, ALBERT R. GEORGE, and ALLAN D. PIERCE (Pennsylvania State Univ., University Park.) Washington Jun. 1989 32 p Presented at the Sonic Boom Workshop, Hampton, VA, Jan. 1988
(NASA-CP-3027; L-16567; NAS 1.55:3027) Avail: NTIS HC A03/MF A01 CSCL 01A
NOISE PREDICTION (AIRCRAFT), SONIC BOOMS, SUPERSONIC FLIGHT

N89-24264*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF ADVANCED ROTORCRAFT AIRFOIL SECTIONS ON THE HOVER PERFORMANCE OF A SMALL-SCALE ROTOR MODEL
SUSAN L. ALTHOFF (Army Aviation Systems Command, Hampton, VA.) Sep. 1988 35 p
(DA PROJ. 1L1-61102-AH-45-A)
(NASA-TP-2832; L-16407; NAS 1.60:2832; AVSCOM-TP-88-B-001) Avail: NTIS HC A03/MF A01 CSCL 01A
AIRFOIL PROFILES, FLIGHT TESTS, HOVERING, ROTARY WINGS, ROTORCRAFT AIRCRAFT

N89-25117*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF MILLING MACHINE ROUGHNESS AND WING DIHEDRAL ON THE SUPERSONIC AERODYNAMIC CHARACTERISTICS OF A HIGHLY SWEPT WING
CHRISTINE M. DARDEN Washington Aug. 1989 88 p
(NASA-TP-2918; L-16546; NAS 1.60:2918) Avail: NTIS HC A05/MF A01 CSCL 01A
DIHEDRAL ANGLE, LIFT DRAG RATIO, MILLING (MACHINING), SUPERSONIC SPEED, SURFACE ROUGHNESS EFFECTS, SWEPT WINGS

N89-25118*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INTERACTIONS OF TOLLMIEN-SCHLICHTING WAVES AND DEAN VORTICES. COMPARISON OF DIRECT NUMERICAL SIMULATION AND A WEAKLY NONLINEAR THEORY
BART A. SINGER (High Technology Corp., Hampton, VA.) and THOMAS A. ZANG Washington Aug. 1989 21 p
(NASA-TP-2919; L-16559; NAS 1.60:2919) Avail: NTIS HC A03/MF A01 CSCL 01A
CHANNEL FLOW, COMPUTERIZED SIMULATION, NONLINEAR SYSTEMS, TOLLMIEN-SCHLICHTING WAVES, VORTICES, WAVE INTERACTION

N89-25951*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STEADY-STATE AND TRANSITIONAL AERODYNAMIC CHARACTERISTICS OF A WING IN SIMULATED HEAVY RAIN
BRYAN A. CAMPBELL and GAUDY M. BEZOS Washington Aug. 1989 95 p
(NASA-TP-2932; L-16576; NAS 1.60:2932) Avail: NTIS HC A05/MF A01 CSCL 01A
AERODYNAMIC CHARACTERISTICS, AERODYNAMIC STALLING, AIRFOILS, RAIN, STEADY STATE, TRANSIENT RESPONSE, WINGS

N89-26811*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A PROCEDURE FOR COMPUTING SURFACE WAVE TRAJECTORIES ON AN INHOMOGENEOUS SURFACE
RAYMOND L. BARGER Washington Aug. 1989 14 p
(NASA-TP-2929; L-16558; NAS 1.60:2929) Avail: NTIS HC A03/MF A01 CSCL 01A
AERODYNAMIC CHARACTERISTICS, COMPUTATIONAL FLUID DYNAMICS, HYDRODYNAMICS, INHOMOGENEITY, MATHEMATICAL MODELS, SURFACE WAVES

N89-27634*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC INTERNAL PERFORMANCE OF A NONAXISYMMETRIC VANED THRUST REVERSER WITH FLOW SPLAY CAPABILITY
LINDA S. BANGERT and LAURENCE D. LEAVITT Washington Sep. 1989 89 p
(NASA-TP-2933; L-16552; NAS 1.60:2933) Avail: NTIS HC A05/MF A01 CSCL 01A
DEFLECTORS, FLOW DEFLECTION, STATIC TESTS, THRUST REVERSAL, THRUST VECTOR CONTROL, WIND TUNNEL TESTS

N90-10829*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MEASUREMENTS OF PRESSURES ON THE TAIL AND AFT FUSELAGE OF AN AIRPLANE MODEL DURING ROTARY MOTIONS AT SPIN ATTITUDES
JAMES S. BOWMAN, JR., RANDY S. HULTBERG, and COLIN A. MARTIN (Aeronautical Research Labs., Melbourne, Australia) Washington Nov. 1989 85 p
(NASA-TP-2939; L-16570; NAS 1.60:2939) Avail: NTIS HC A05/MF A01 CSCL 01A
AIRCRAFT MODELS, FUSELAGES, PRESSURE MEASUREMENT, SPIN TESTS, TAIL ASSEMBLIES

N90-10830*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LOW-SPEED, HIGH-LIFT AERODYNAMIC CHARACTERISTICS OF SLENDER, HYPERSONIC ACCELERATOR-TYPE CONFIGURATIONS
GREGORY M. GATLIN Washington Nov. 1989 46 p
(NASA-TP-2945; L-16537; NAS 1.60:2945) Avail: NTIS HC A03/MF A01 CSCL 01A
AERODYNAMIC CHARACTERISTICS, AEROSPACE PLANES, AIRCRAFT DESIGN, BODY-WING CONFIGURATIONS, HYPERSONIC FLOW, LIFT

N90-12503*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RESEARCH IN NATURAL LAMINAR FLOW AND LAMINAR-FLOW CONTROL, PART 1
JERRY N. HEFNER, comp. and FRANCES E. SABO, comp. Dec. 1987 322 p Symposium held in Hampton, VA, 16-19 Mar. 1987
(NASA-CP-2487-PT-1; L-16350-PT-1; NAS 1.55:2487-PT-1) Avail: NTIS HC A14/MF A02 CSCL 01A
BOUNDARY LAYER CONTROL, BOUNDARY LAYER TRANSITION, CONFERENCES, FLOW STABILITY, LAMINAR BOUNDARY LAYER, LAMINAR FLOW, LAMINAR FLOW AIRFOILS

N90-12519*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RESEARCH IN NATURAL LAMINAR FLOW AND LAMINAR-FLOW CONTROL, PART 2
JERRY N. HEFNER, comp. and FRANCES E. SABO, comp. Dec. 1987 328 p Symposium held in Hampton, VA, 16-19 Mar. 1987
(NASA-CP-2487-PT-2; L-16350-PT-2; NAS 1.55:2487-PT-2) Avail: NTIS HC A15/MF A02 CSCL 01A
AIRCRAFT DESIGN, BOUNDARY LAYER CONTROL, BOUNDARY LAYER TRANSITION, COMPUTATIONAL FLUID DYNAMICS, CONFERENCES, LAMINAR BOUNDARY LAYER, LAMINAR FLOW, LAMINAR FLOW AIRFOILS, WIND TUNNEL TESTS

N90-12539*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RESEARCH IN NATURAL LAMINAR FLOW AND LAMINAR-FLOW CONTROL, PART 3
JERRY N. HEFNER, comp. and FRANCES E. SABO, comp. Dec. 1987 399 p Symposium held in Hampton, VA, 16-19 Mar.

1987
(NASA-CP-2487-PT-3; L-16350-PT-3; NAS 1.55:2487-PT-3)
Avail: NTIS HC A17/MF A03 CSCL 01A

AIRCRAFT DESIGN, BOUNDARY LAYER CONTROL, BOUNDARY LAYER STABILITY, BOUNDARY LAYER TRANSITION, CONFERENCES, LAMINAR FLOW, LAMINAR FLOW AIRFOILS

N90-14185*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MEASURED AND PREDICTED AERODYNAMIC COEFFICIENTS AND SHOCK SHAPES FOR AEROASSIST FLIGHT EXPERIMENT (AFE) CONFIGURATION
WILLIAM L. WELLS 1989 52 p
(NASA-TP-2956; L-16644; NAS 1.60:2956) Avail: NTIS HC A04/MF A01 CSCL 01A

AEROASSIST, AERODYNAMIC CHARACTERISTICS, AERODYNAMIC COEFFICIENTS, AERODYNAMIC CONFIGURATIONS, BLUNT BODIES, HYPERSONIC FLOW, HYPERSONIC VEHICLES, NORMAL SHOCK WAVES, WIND TUNNEL TESTS

N90-14187*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
VALIDATION OF A COMPUTER CODE FOR ANALYSIS OF SUBSONIC AERODYNAMIC PERFORMANCE OF WINGS WITH FLAPS IN COMBINATION WITH A CANARD OR HORIZONTAL TAIL AND AN APPLICATION TO OPTIMIZATION
HARRY W. CARLSON (PRC Systems Services Co., Hampton, VA.), CHRISTINE M. DARDEN, and MICHAEL J. MANN Jan. 1990 125 p
(NASA-TP-2961; L-16611; NAS 1.60:2961) Avail: NTIS HC A06/MF A01 CSCL 01A

CANARD CONFIGURATIONS, COMPUTER PROGRAMS, FLAPS (CONTROL SURFACES), HORIZONTAL TAIL SURFACES, PROGRAM VERIFICATION (COMPUTERS)

N90-15882*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ROTOR INDUCED-INFLOW-RATIO MEASUREMENTS AND CAMRAD CALCULATIONS
DANNY R. HOAD Washington Jan. 1990 28 p Original contains color illustrations
(DA PROJ. 1L1-62211-A-47-AA)
(NASA-TP-2946; L-16594; NAS 1.60:2946;
AVSCOM-TM-89-B-010; AD-A219296) Avail: NTIS HC A03/MF A01 CSCL 01/1

BLADE TIPS, BLADE-VORTEX INTERACTION, COMPUTER PROGRAMS, FLOW MEASUREMENT, HELICOPTER WAKES, INLET FLOW, MATHEMATICAL MODELS

N90-16710*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA SUPERCRITICAL AIRFOILS: A MATRIX OF FAMILY-RELATED AIRFOILS
CHARLES D. HARRIS Washington Mar. 1990 73 p
(NASA-TP-2969; L-16625; NAS 1.60:2969) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AIRCRAFT DESIGN, SUPERCRITICAL AIRFOILS

N90-19193*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC INVESTIGATION OF A TWO-DIMENSIONAL CONVERGENT-DIVERGENT EXHAUST NOZZLE WITH MULTIAXIS THRUST-VECTORING CAPABILITY
JOHN G. TAYLOR Washington Apr. 1990 104 p
(NASA-TP-2973; L-16632; NAS 1.60:2973) Avail: NTIS HC A06/MF A01 CSCL 01A

CONVERGENT-DIVERGENT NOZZLES, EXHAUST NOZZLES, NOZZLE DESIGN, NOZZLE EFFICIENCY, STATIC TESTS, THRUST VECTOR CONTROL

N90-19200*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INTERNAL PERFORMANCE OF TWO NOZZLES UTILIZING GIMBAL CONCEPTS FOR THRUST VECTORING
BOBBY L. BERRIER and JOHN G. TAYLOR Washington Apr. 1990 128 p
(NASA-TP-2991; L-16722; NAS 1.60:2991) Avail: NTIS HC A07/MF A01 CSCL 01A

CONVERGENT-DIVERGENT NOZZLES, GIMBALS, NOZZLE EFFICIENCY, NOZZLE GEOMETRY, THRUST VECTOR CONTROL

N90-20046*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EXPERIMENTAL AND THEORETICAL AERODYNAMIC CHARACTERISTICS OF A HIGH-LIFT SEMISPAN WING MODEL
ZACHARY T. APPLIN and GARL L. GENTRY, JR. Washington May 1990 111 p
(NASA-TP-2990; L-16441; NAS 1.60:2990) Avail: NTIS HC A06/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AERODYNAMIC CONFIGURATIONS, AIRFOIL PROFILES, BOUNDARY LAYER CONTROL, COMPUTER PROGRAMS, LAMINAR BOUNDARY LAYER, PANEL METHOD (FLUID DYNAMICS), SEMISPAN MODELS

N90-20946*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DISCRETE-VORTEX MODEL FOR THE SYMMETRIC-VORTEX FLOW ON CONES
THOMAS G. GAINER Washington May 1990 29 p
(NASA-TP-2989; L-16586; NAS 1.60:2989) Avail: NTIS HC A03/MF A01 CSCL 01A

CONICAL BODIES, FLOW DISTRIBUTION, MATHEMATICAL MODELS, POTENTIAL FLOW, VORTICES

N90-22531*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DYNAMIC GROUND-EFFECT MEASUREMENTS ON THE F-15 STOL AND MANEUVER TECHNOLOGY DEMONSTRATOR (S/MTD) CONFIGURATION
GUY T. KEMMERLY Washington Jun. 1990 31 p
(NASA-TP-3000; L-16555; NAS 1.60:3000) Avail: NTIS HC A03/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AIRCRAFT CONFIGURATIONS, AIRCRAFT LANDING, F-15 AIRCRAFT, GROUND EFFECT (AERODYNAMICS), GROUND TESTS, SHORT TAKEOFF AIRCRAFT

N90-24239*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AERODYNAMIC CHARACTERISTICS OF TWO ROTORCRAFT AIRFOILS DESIGNED FOR APPLICATION TO THE INBOARD REGION OF A MAIN ROTOR BLADE
KEVIN W. NOONAN (Army Aerostructures Directorate, Hampton, VA.) Washington Jul. 1990 89 p
(DA PROJ. 1L1-62211-A-47-AA)
(NASA-TP-3009; L-16737; NAS 1.60:3009;
AVSCOM-TR-90-B-005) Avail: NTIS HC A05/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, AERODYNAMIC COEFFICIENTS, ROTARY WINGS, ROTORCRAFT AIRCRAFT

N90-25938*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF TAIL SIZE REDUCTIONS ON LONGITUDINAL AERODYNAMIC CHARACTERISTICS OF A THREE SURFACE F-15 MODEL WITH NONAXISYMMETRIC NOZZLES
MARK C. FRASSINELLI (Air Force Wright Aeronautical Labs., Wright-Patterson AFB, OH.) and GEORGE T. CARSON, JR. Washington Aug. 1990 59 p

(NASA-TP-3036; L-16800; NAS 1.60:3036) Avail: NTIS HC A04/MF A01 CSCL 01A

AERODYNAMIC CHARACTERISTICS, CANARD CONFIGURATIONS, F-15 AIRCRAFT, NOZZLE FLOW, NOZZLE GEOMETRY, TAIL ASSEMBLIES, TRANSONIC WIND TUNNELS

N90-27649*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

THE LANGLEY 14- BY 22-FOOT SUBSONIC TUNNEL: DESCRIPTION, FLOW CHARACTERISTICS, AND GUIDE FOR USERS

GARL L. GENTRY, JR., P. FRANK QUINTO, GREGORY M. GATLIN, and ZACHARY T. APPLIN Washington Sep. 1990 73 p

(NASA-TP-3008; L-16731; NAS 1.60:3008) Avail: NTIS HC A04/MF A01 CSCL 01A

DATA ACQUISITION, FLOW CHARACTERISTICS, GROUND EFFECT (AERODYNAMICS), SUBSONIC WIND TUNNELS, USER REQUIREMENTS, WIND TUNNEL APPARATUS

N90-28503*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

THE EFFECTS OF STRUCTURAL FLAP-LAG AND PITCH-LAG COUPLING ON SOFT INPLANE HINGELESS ROTOR STABILITY IN HOVER

WILLIAM G. BOUSMAN Washington May 1990 65 p Sponsored by Army Aviation Systems Command, Saint Louis, MO Prepared in cooperation with Army Aviation Systems Command, Moffett Field, CA

(NASA-TP-3002; A-89093; NAS 1.60:3002; AVSCOM-TR-89-A-002; AD-A226087) Avail: NTIS HC A04/MF A01 CSCL 01/1

COUPLING, HOVERING, HOVERING STABILITY, MATHEMATICAL MODELS, RIGID ROTORS, ROTARY WINGS

03

AIR TRANSPORTATION AND SAFETY

Includes passenger and cargo air transport operations; and aircraft accidents.

N87-10054*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

DOPPLER RADAR DETECTION OF WIND SHEAR

V. E. DELNORE, Comp. (PRC Kentron, Inc., Hampton, Va.) and V. A. MCCLELLAN (Research Triangle Inst., Research Triangle Park, N.C.) Sep. 1985 118 p Presented at a Meeting, Hampton, Va., 24-25 Sep., 1985; sponsored in part by FAA

(NASA-CP-2435; NAS 1.55:2435; FAA/PM-86/31) Avail: NTIS HC A06/MF A01 CSCL 01C

AIRCRAFT HAZARDS, AVIATION METEOROLOGY, CONFERENCES, DOPPLER RADAR, MICROBURSTS (METEOROLOGY), RADAR MEASUREMENT, WIND SHEAR

N87-22634*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.

COCKPIT RESOURCE MANAGEMENT TRAINING

HARRY W. ORLADY, ed. (Orlady Associates, Inc., Los Gatos, Calif.) and H. CLAYTON FOUSHEE, ed. May 1987 308 p Workshop held in San Francisco, Calif., 6-8 May 1986; sponsored by NASA. Ames Research Center and Air Force Military Airlift

(NASA-CP-2455; A-87038; NAS 1.55:2455) Avail: NTIS HC A14/MF A02 CSCL 01C

FLIGHT CREWS, FLIGHT SIMULATION, FLIGHT TRAINING, GROUP DYNAMICS, PERSONNEL MANAGEMENT

N87-29469*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

JET TRANSPORT FLIGHT OPERATIONS USING COCKPIT DISPLAY OF TRAFFIC INFORMATION DURING INSTRUMENT METEOROLOGICAL CONDITIONS: SIMULATION EVALUATION

DAVID H. WILLIAMS and DOUGLAS C. WELLS May 1986 50 p

(NASA-TP-2567; L-16091; NAS 1.60:2567) Avail: NTIS HC A03/MF A01 CSCL 01C

AIR TRAFFIC CONTROL, COCKPIT SIMULATORS, DISPLAY DEVICES, INSTRUMENT APPROACH, JET AIRCRAFT, TRANSPORT AIRCRAFT, VIDEO COMMUNICATION, WORKLOADS (PSYCHOPHYSIOLOGY)

N88-14970*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

WIND SHEAR DETECTION. FORWARD-LOOKING SENSOR TECHNOLOGY

E. M. BRACALENTE, comp. and V. E. DELNORE, comp. (PRC Kentron, Inc., Hampton, Va.) Oct. 1987 282 p Presented at the 1st Industry Review, Hampton, Va., 24-25 Feb. 1987

(NASA-CP-10004; NAS 1.55:10004; DOT/FAA/PS-87/2) Avail: NTIS HC A13/MF A02 CSCL 01C

AEROSPACE INDUSTRY, CONFERENCES, DOPPLER RADAR, FLIR DETECTORS, REMOTE SENSING, WIND SHEAR

N88-17616*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

AIRBORNE WIND SHEAR DETECTION AND WARNING SYSTEMS: FIRST COMBINED MANUFACTURERS' AND TECHNOLOGISTS' CONFERENCE

AMOS A. SPADY, JR., comp., ROLAND L. BOWLES, comp., and HERBERT SCHLICKENMAIER, comp. (Federal Aviation Administration, Washington, D.C.) Jan. 1988 558 p Conference held in Hampton, Va., 22-23 Oct. 1987

(NASA-CP-10006; NAS 1.55:10006; DOT/FAA/PS-88/7) Avail: NTIS HC A24/MF A03 CSCL 01C

AIRBORNE EQUIPMENT, AIRCRAFT CONTROL, CONFERENCES, DETECTION, DOPPLER RADAR, INFORMATION TRANSFER, OPTICAL RADAR, WARNING SYSTEMS, WIND SHEAR

N88-21144*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.

INVESTIGATION OF THE MISFUELING OF RECIPROCATING PISTON AIRCRAFT ENGINES

J. HOLLAND SCOTT, JR. Mar. 1988 82 p

(NASA-TP-2803; NAS 1.60:2803) Avail: NTIS HC A05/MF A01 CSCL 01C

AIRCRAFT ENGINES, ERRORS, GENERAL AVIATION AIRCRAFT, PISTON ENGINES, REFUELING

N88-26344*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

INFLUENCE OF WIND SHEAR ON THE AERODYNAMIC CHARACTERISTICS OF AIRPLANES

DAN D. VICROY Aug. 1988 62 p Sponsored by NASA, Washington, D.C. and DOT, Washington, D.C.

(NASA-TP-2827; L-16439; NAS 1.60:2827; DOT/FAA/PS-88/15) Avail: NTIS HC A04/MF A01 CSCL 01C

AERODYNAMIC CHARACTERISTICS, AIRCRAFT CONTROL, MICROBURSTS (METEOROLOGY), SHEAR FLOW, WIND SHEAR

04

AIRCRAFT COMMUNICATIONS AND NAVIGATION

Includes digital and voice communication with aircraft; air navigation systems (satellite and ground based); and air traffic control.

N89-11726*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A SIMULATOR INVESTIGATION OF THE USE OF DIGITAL DATA LINK FOR PILOT/ATC COMMUNICATIONS IN A SINGLE PILOT OPERATION
DAVID A. HINTON and GARY W. LOHR (Embry-Riddle Aeronautical Univ., Daytona Beach, Fla.) Jun. 1988 41 p
(NASA-TP-2837; L-16457; NAS 1.60:2837) Avail: NTIS HC A03/MF A01 CSCL 17B
DATA TRANSMISSION, DIGITAL DATA, PILOT PERFORMANCE, RADIO COMMUNICATION, SIMULATION, VOICE COMMUNICATION

N89-15900*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A PILOTED SIMULATION STUDY OF DATA LINK ATC MESSAGE EXCHANGE
MARVIN C. WALLER and GARY W. LOHR (Embry-Riddle Aeronautical Univ., Daytona Beach, FL.) Washington, DC Feb. 1989 38 p
(NASA-TP-2859; L-16450; NAS 1.60:2859) Avail: NTIS HC A03/MF A01 CSCL 17B
AIR TRAFFIC CONTROL, DATA LINKS, FLIGHT SIMULATION, MESSAGE PROCESSING

N89-15901*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SIMULATION EVALUATION OF TIMER, A TIME-BASED, TERMINAL AIR TRAFFIC, FLOW-MANAGEMENT CONCEPT
LEONARD CREDEUR and WILLIAM R. CAPRON (PRC Kentron, Inc., Hampton, VA.) Washington, DC Feb. 1989 69 p
(NASA-TP-2870; L-16386; NAS 1.60:2870) Avail: NTIS HC A04/MF A01 CSCL 17G
AIR TRAFFIC CONTROL, AUTOMATIC CONTROL, EVALUATION, MANAGEMENT PLANNING, SCHEDULING, SIMULATION, TERMINAL FACILITIES

N90-18378*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DELIVERY PERFORMANCE OF CONVENTIONAL AIRCRAFT BY TERMINAL-AREA, TIME-BASED AIR TRAFFIC CONTROL: A REAL-TIME SIMULATION EVALUATION
LEONARD CREDEUR, JACOB A. HOUCK, WILLIAM R. CAPRON, and GARY W. LOHR (Embry-Riddle Aeronautical Univ., Daytona Beach, FL.) Washington Apr. 1990 66 p
(NASA-TP-2978; L-16615; NAS 1.60:2978) Avail: NTIS HC A04/MF A01 CSCL 17G
AIR TRAFFIC CONTROL, AIR TRAFFIC CONTROLLERS (PERSONNEL), COMPUTERIZED SIMULATION, FLIGHT CREWS, PILOT PERFORMANCE, REAL TIME OPERATION

05

AIRCRAFT DESIGN, TESTING AND PERFORMANCE

Includes aircraft simulation technology.

N87-11717*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RECENT EXPERIENCES IN MULTIDISCIPLINARY ANALYSIS AND OPTIMIZATION, PART 1
J. SOBIESKI, comp. 1984 517 p Symposium held in Hampton, Va., 24-26 Apr. 1984
(NASA-CP-2327-PT-1; NAS 1.55:2327-PT-1) Avail: NTIS HC A22/MF A03 CSCL 01C
AIRCRAFT DESIGN, COMPUTER AIDED DESIGN, CONFERENCES, DESIGN ANALYSIS, OPTIMIZATION, STRUCTURAL DESIGN

N87-11750*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RECENT EXPERIENCES IN MULTIDISCIPLINARY ANALYSIS AND OPTIMIZATION, PART 2
J. SOBIESKI, comp. 1984 509 p Symposium held in Hampton, Va., 24-26 Apr. 1984
(NASA-CP-2327-PT-2; L-15830; NAS 1.55:2327-PT-2) Avail: NTIS HC A22/MF A03 CSCL 01C
AIRCRAFT DESIGN, COMPUTER AIDED DESIGN, HELICOPTERS, OPTIMIZATION

N87-15959*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
LARGE-SCALE STATIC INVESTIGATION OF CIRCULATION-CONTROL-WING CONCEPTS APPLIED TO UPPER SURFACE-BLOWING AIRCRAFT
M. D. SHOVLIN, R. J. ENGLAR (Naval Ship Research and Development Center, Bethesda, Md.), J. C. EPPEL, and J. H. NICHOLS, JR. Jan. 1987 65 p
(NASA-TP-2684; NAS 1.60:2684) Avail: NTIS HC A04/MF A01 CSCL 01C
CIRCULATION CONTROL AIRFOILS, GROUND TESTS, LIFT AUGMENTATION, SHORT TAKEOFF AIRCRAFT, STATIC TESTS, THRUST CONTROL, TURBOFAN ENGINES, UPPER SURFACE BLOWING

N87-16815*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FLIGHT INVESTIGATION OF THE EFFECT OF TAIL CONFIGURATION ON STALL, SPIN, AND RECOVERY CHARACTERISTICS OF A LOW-WING GENERAL AVIATION RESEARCH AIRPLANE
H. PAUL STOUGH, III, JAMES M. PATTON, JR., and STEVEN M. SLIWA Feb. 1987 125 p
(NASA-TP-2644; L-16194; NAS 1.60:2644) Avail: NTIS HC A06/MF A01 CSCL 01C
AERODYNAMIC CONFIGURATIONS, AERODYNAMIC STALLING, AIRCRAFT SPIN, GENERAL AVIATION AIRCRAFT, RESEARCH AIRCRAFT, TAIL ASSEMBLIES

N87-17690*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EXPLOITING SYMMETRIES IN THE MODELING AND ANALYSIS OF TIRES
AHMED K. NOOR (Joint Inst. for Advancement of Flight Sciences, Hampton, Va.), CARL M. ANDERSEN (College of William and Mary, Hampton, Va.), and JOHN A. TANNER Mar. 1987 63 p (NCC1-40)
(NASA-TP-2649; L-16185; NAS 1.60:2649) Avail: NTIS HC A04/MF A01 CSCL 01C
FINITE ELEMENT METHOD, MATHEMATICAL MODELS, SYMMETRY, TIRES

N87-17693*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF EMPENNAGE SURFACE LOCATION ON AERODYNAMIC CHARACTERISTICS OF A TWIN-ENGINE AFTERBODY MODEL WITH NONAXISYMMETRIC NOZZLES
FRANCIS J. CAPONE and GEORGE T. CARSON, JR. Feb. 1985 79 p
(NASA-TP-2392; L-15825; NAS 1.60:2392) Avail: NTIS HC A05/MF A01 CSCL 01C
AERODYNAMIC CHARACTERISTICS, AERODYNAMIC DRAG, AFTERBODIES, AXISYMMETRIC BODIES, FIGHTER AIRCRAFT, NOZZLE GEOMETRY, TAIL ASSEMBLIES, TAIL SURFACES

N87-20990*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
SUMMARY OF STUDIES TO REDUCE WING-MOUNTED PROPFAN INSTALLATION DRAG ON AN M = 0.8 TRANSPORT
RONALD C. SMITH, ALAN D. LEVIN, and RICHARD D. WOOD May 1987 29 p
(NASA-TP-2678; A-86242; NAS 1.60:2678) Avail: NTIS HC A03/MF A01 CSCL 01C
DRAG REDUCTION, HIGH SPEED, PROP-FAN TECHNOLOGY, TRANSPORT AIRCRAFT, WIND TUNNEL TESTS

N87-23614*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FLIGHT INVESTIGATION OF THE EFFECTS OF AN OUTBOARD WING-LEADING-EDGE MODIFICATION ON STALL/SPIN CHARACTERISTICS OF A LOW-WING, SINGLE-ENGINE, T-TAIL LIGHT AIRPLANE
H. PAUL STOUGH, III, DANIEL J. DICARLO, and JAMES M. PATTON, JR. Jul. 1987 117 p
(NASA-TP-2691; L-16243; NAS 1.60:2691) Avail: NTIS HC A06/MF A01 CSCL 01A
AERODYNAMIC STALLING, FLIGHT TESTS, INVESTIGATION, LEADING EDGES, REVISIONS, SPIN, WINGS

N87-24458*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MEASUREMENTS OF FLOW RATE AND TRAJECTORY OF AIRCRAFT TIRE-GENERATED WATER SPRAY
ROBERT H. DAUGHERTY and SANDY M. STUBBS Jul. 1987 118 p
(NASA-TP-2718; L-16195; NAS 1.60:2718) Avail: NTIS HC A06/MF A01 CSCL 01C
AIRCRAFT TIRES, ENGINE INLETS, FLOW VELOCITY, INGESTION (ENGINES), SPLASHING, SPRAYING

N87-26041*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EVALUATION OF INSTALLED PERFORMANCE OF A WING-TIP-MOUNTED PUSHER TURBOPROP ON A SEMISPAN WING
JAMES C. PATTERSON, JR. and GLYNN R. BARTLETT Aug. 1987 30 p
(NASA-TP-2739; L-16252; NAS 1.60:2739) Avail: NTIS HC A03/MF A01 CSCL 01C
INSTALLING, PROPELLERS, SEMISPAN MODELS, TURBOFAN ENGINES, TURBOPROP ENGINES, WING TIP VORTICES

N87-29497*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
QUALITATIVE EVALUATION OF A FLUSH AIR DATA SYSTEM AT TRANSONIC SPEEDS AND HIGH ANGLES OF ATTACK
TERRY J. LARSON, STEPHEN A. WHITMORE, L. J. EHERNBERGER, J. BLAIR JOHNSON, and PAUL M. SIEMERS, III Washington NASA Apr. 1987 64 p
(NASA-TP-2716; H-1277; NAS 1.60:2716) Avail: NTIS HC A04/MF A01 CSCL 01C
AIR DATA SYSTEMS, ANGLE OF ATTACK, FLOW DISTRIBUTION, ORIFICE FLOW, PITOT TUBES, STAGNATION PRESSURE, TRANSONIC SPEED

N87-29499*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.
APPLICATION OF PARAMETER ESTIMATION TO AIRCRAFT STABILITY AND CONTROL: THE OUTPUT-ERROR APPROACH
RICHARD E. MAINE and KENNETH W. ILIFF Jun. 1986 175 p Submitted for publication
(NASA-RP-1168; H-1299; NAS 1.61:1168) Avail: NTIS HC A08/MF A01 CSCL 01C
The practical application of parameter estimation methodology to the problem of estimating aircraft stability and control derivatives from flight test data is examined. The primary purpose of the document is to present a comprehensive and unified picture of the entire parameter estimation process and its integration into a flight test program. The document concentrates on the output-error method to provide a focus for detailed examination and to allow us to give specific examples of situations that have arisen. The document first derives the aircraft equations of motion in a form suitable for application to estimation of stability and control derivatives. It then discusses the issues that arise in adapting the equations to the limitations of analysis programs, using a specific program for an example. The roles and issues relating to mass distribution data, preflight predictions, maneuver design, flight scheduling, instrumentation sensors, data acquisition systems, and data processing are then addressed. Finally, the document discusses evaluation and the use of the analysis results. Author

N88-12480*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF MOTION CUES DURING COMPLEX CURVED APPROACH AND LANDING TASKS: A PILOTED SIMULATION STUDY
CHARLES H. SCANLON (Arkansas State Univ., State University.) Dec. 1987 28 p
(NCC1-107)
(NASA-TP-2773; L-16351; NAS 1.60:2773) Avail: NTIS HC A03/MF A01 CSCL 01C
APPROACH, CUES, LANDING, MICROWAVE LANDING SYSTEMS, MOTION, PILOT PERFORMANCE, TRACKING (POSITION), WORKLOADS (PSYCHOPHYSIOLOGY)

N88-18583*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CORNERING CHARACTERISTICS OF THE MAIN-GEAR TIRE OF THE SPACE SHUTTLE ORBITER
ROBERT H. DAUGHERTY, SANDY M. STUBBS, and MARTHA P. ROBINSON Mar. 1988 29 p
(NASA-TP-2790; L-16370; NAS 1.60:2790) Avail: NTIS HC A03/MF A01 CSCL 01C
AERODYNAMIC LOADS, COEFFICIENTS, LANDING GEAR, SPACE SHUTTLES, TIRES, YAWING MOMENTS

N88-19467*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
A PERSPECTIVE ON 15 YEARS OF PROOF-OF-CONCEPT AIRCRAFT DEVELOPMENT AND FLIGHT RESEARCH AT AMES-MOFFETT BY THE ROTORCRAFT AND POWERED-LIFT FLIGHT PROJECTS DIVISION, 1970-1985
DAVID D. FEW Aug. 1987 55 p
(NASA-RP-1187; A-86404; NAS 1.61:1187) Avail: NTIS HC A04/MF A01 CSCL 01C
A proof-of-concept (POC) aircraft is defined and the concept of interest described for each of the six aircraft developed by the Ames-Moffet Rotorcraft and Powered-Lift Flight Projects Division from 1970 through 1985; namely, the OV-10, the C-8A Augmentor Wing, the Quiet Short-Haul Research Aircraft (QSRA), the XV-15 Tilt Rotor Research Aircraft (TRRA), the Rotor Systems Research Aircraft (RSRA)-compound, and the yet-to-fly RSRA/X-Wing Aircraft. The program/project chronology and most noteworthy features of the concepts are reviewed. The paper discusses the significance of each concept and the project demonstrating it; it

briefly looks at what concepts are on the horizon as potential POC research aircraft and emphasizes that no significant advanced concept in aviation technology has ever been accepted by civilian or military users without first completing a demonstration through flight testing. Author

N88-21153*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.
DEVELOPMENT AND FLIGHT TEST OF AN EXPERIMENTAL MANEUVER AUTOPILOT FOR A HIGHLY MANEUVERABLE AIRCRAFT
EUGENE L. DUKE, FRANK P. JONES, and RALPH B. RONCOLI Sep. 1986 61 p
(NASA-TP-2618; H-1258; NAS 1.60:2618) Avail: NTIS HC A04/MF A01 CSCL 01C
AUTOMATIC CONTROL, AUTOMATIC PILOTS, FLIGHT TESTS, HIGHLY MANEUVERABLE AIRCRAFT

N88-21157*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STATIC MECHANICAL PROPERTIES OF 30 X 11.5 - 14.5, TYPE 8 AIRCRAFT TIRES OF BIAS-PLY AND RADIAL-BELTED DESIGN
PAMELA A. DAVIS and MERCEDES C. LOPEZ May 1988 24 p
(NASA-TP-2810; L-16374; NAS 1.60:2810) Avail: NTIS HC A03/MF A01 CSCL 01C
AIRCRAFT TIRES, MECHANICAL PROPERTIES, STATIC TESTS

N88-22031*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SHAPE SENSITIVITY ANALYSIS OF WING STATIC AEROELASTIC CHARACTERISTICS
JEAN-FRANCOIS M. BARTHELEMY and FRED D. BERGEN (Virginia Polytechnic Inst. and State Univ., Blacksburg.) May 1988 30 p
(NASA-TP-2808; L-16418; NAS 1.60:2808) Avail: NTIS HC A03/MF A01 CSCL 01C
AEROELASTICITY, DYNAMIC RESPONSE, SENSITIVITY, WING LOADING, WING PROFILES

N88-24623*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NONLINEAR PROGRAMMING EXTENSIONS TO RATIONAL FUNCTION APPROXIMATION METHODS FOR UNSTEADY AERODYNAMIC FORCES
SHERWOOD H. TIFFANY and WILLIAM M. ADAMS, JR. Jul. 1988 55 p Previously announced in IAA as A87-33694 Sponsored by NASA, Washington
(NASA-TP-2776; L-16205; NAS 1.60:2776) Avail: NTIS HC A04/MF A01 CSCL 01C
AERODYNAMIC FORCES, AERODYNAMICS, APPROXIMATION, EQUATIONS OF MOTION, FLEXIBLE BODIES, NONLINEAR PROGRAMMING, OPTIMIZATION

N89-23448*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
HOT-JET SIMULATION IN CRYOGENIC WIND TUNNELS
KEISUKE ASAI (National Aerospace Lab., Tokyo, Japan) Washington Jul. 1989 49 p
(NASA-RP-1220; L-16564; NAS 1.61:1220) Avail: NTIS HC A03/MF A01 CSCL 01C
In order to evaluate hot jet simulation capability in cryogenic wind tunnel testing, simple theoretical calculations were performed. The similarity parameters, isentropic flow properties, and normal shock relations were calculated for a variety of jet simulation techniques. The results were compared with those estimated for a full scale flight condition. It was shown that the cryogenic wind tunnel testing provides an opportunity for the most accurate hot jet simulation technique. By using a compressed nitrogen gas at ambient or moderately elevated temperatures as a jet gas, most all of the relevant similarity parameters including the jet temperature and velocity ratios and the Reynolds numbers, can be set to the full scale flight values. The only exception is the ratio of specific heats for jet flow. In an attempt to match the ratio of specific heats for the turbojet flow, gases other than pure nitrogen were considered. It was found that a nitrogen/methane mixture at moderately elevated temperature behaves like the real combustion gas. Using this mixture as a jet gas, complete simulation of the full scale turbojet exhaust becomes possible in cryogenic wind tunnels. Author

N89-25146*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RECENT ADVANCES IN MULTIDISCIPLINARY ANALYSIS AND OPTIMIZATION, PART 1
JEAN-FRANCOIS M. BARTHELEMY, ed. Washington Apr. 1989 527 p Symposium held in Hampton, VA, 28-30 Sep. 1988; sponsored by NASA, Langley Research Center, NASA, *LeResear Center, and Wright Research Development Center*
(NASA-CP-3031-PT-1; L-16568-PT-1; NAS 1.55:3031-PT-1)
Avail: NTIS HC A23/MF A03 CSCL 01C
AIRCRAFT DESIGN, COMPUTATIONAL FLUID DYNAMICS, COMPUTER AIDED DESIGN, CONFERENCES, EXPERT SYSTEMS, OPTIMIZATION, STRUCTURAL ENGINEERING

N89-25173*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RECENT ADVANCES IN MULTIDISCIPLINARY ANALYSIS AND OPTIMIZATION, PART 2
JEAN-FRANCOIS M. BARTHELEMY, ed. Washington Apr. 1989 501 p Symposium held in Hampton, VA, 28-30 Sep. 1988; sponsored by NASA, Langley Research Center, NASA, Lewis Research Center, and Wright Research Development Center
(NASA-CP-3031-PT-2; L-16568-PT-2; NAS 1.55:3031-PT-2)
Avail: NTIS HC A22/MF A03 CSCL 01C
AIRCRAFT DESIGN, ARTIFICIAL INTELLIGENCE, COMPUTER AIDED DESIGN, CONFERENCES, DESIGN ANALYSIS, OPTIMIZATION, STRUCTURAL ANALYSIS, STRUCTURAL DESIGN

N89-25201*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RECENT ADVANCES IN MULTIDISCIPLINARY ANALYSIS AND OPTIMIZATION, PART 3
JEAN-FRANCOIS M. BARTHELEMY, ed. Washington Apr. 1989 513 p Symposium held in Hampton, VA, 28-30 Sep. 1988; sponsored by NASA, Langley Research Center, NASA, Lewis Research Center, and Wright Research Development Center
(NASA-CP-3031-PT-3; L-16568-PT-3; NAS 1.55:3031-PT-3)
Avail: NTIS HC A22/MF A03 CSCL 01C
AIRCRAFT DESIGN, COMPUTER AIDED DESIGN, COMPUTERIZED SIMULATION, CONFERENCES, CONTROL THEORY, DESIGN ANALYSIS, FLEXIBLE SPACECRAFT, LARGE SPACE STRUCTURES, OPTIMIZATION, SPACECRAFT DESIGN, STRUCTURAL DESIGN, STRUCTURAL ENGINEERING, SYSTEMS ENGINEERING

N89-26844*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
METHOD FOR EXPERIMENTAL DETERMINATION OF FLUTTER SPEED BY PARAMETER IDENTIFICATION
E. NISSIM (Technion - Israel Inst. of Tech., Haifa.) and GLENN B. GILYARD Washington Jun. 1989 44 p Previously announced in IAA as A89-30801
(NASA-TP-2923; H-1510; NAS 1.60:2923) Avail: NTIS HC A03/MF A01 CSCL 01C
AEROELASTICITY, DYNAMIC PRESSURE, FLIGHT TESTS, FLUTTER, PARAMETER IDENTIFICATION

N90-12589*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
POWERED-LIFT AIRCRAFT TECHNOLOGY
W. H. DECKERT and J. A. FRANKLIN 1989 36 p Original

contains color illustrations
(NASA-SP-501; NAS 1.21:501; LC-89-39482) Avail: SOD HC $4.25 as 033-000-01062-1; NTIS HC A03/MF A01 CSCL 01C

Powered lift aircraft have the ability to vary the magnitude and direction of the force produced by the propulsion system so as to control the overall lift and streamwise force components of the aircraft, with the objective of enabling the aircraft to operate from minimum sized terminal sites. Power lift technology has contributed to the development of the jet lift Harrier and to the forth coming operational V-22 Tilt Rotor and the C-17 military transport. This technology will soon be expanded to include supersonic fighters with short takeoff and vertical landing capability, and will continue to be used for the development of short- and vertical-takeoff and landing transport. An overview of this field of aeronautical technology is provided for several types of powered lift aircraft. It focuses on the description of various powered lift concepts and their operational capability. Aspects of aerodynamics and flight controls pertinent to powered lift are also discussed. Author

N90-14220*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
GLOBAL STRATOSPHERIC CHANGE: REQUIREMENTS FOR A VERY-HIGH-ALTITUDE AIRCRAFT FOR ATMOSPHERIC RESEARCH
1989 41 p Workshop held in Truckee, CA, 15-16 Jul. 1989
(NASA-CP-10041; A-89243; NAS 1.55:10041) Avail: NTIS HC A03/MF A01 CSCL 01C

ATMOSPHERIC CHEMISTRY, FLIGHT CHARACTERISTICS, METEOROLOGICAL FLIGHT, REMOTE SENSING, STRATOSPHERE, U-2 AIRCRAFT

N90-15100*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
THE EFFECTIVENESS OF VANE-AILERON EXCITATION IN THE EXPERIMENTAL DETERMINATION OF FLUTTER SPEED BY PARAMETER IDENTIFICATION
ELI NISSIM (Technion - Israel Inst. of Tech., Haifa.) Jan. 1990 23 p
(NASA-TP-2971; H-1516; NAS 1.60:2971) Avail: NTIS HC A03/MF A01 CSCL 01C

EXCITATION, FLUTTER, PARAMETER IDENTIFICATION, VANES

N90-15902*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EVALUATION OF TWO TRANSPORT AIRCRAFT AND SEVERAL GROUND TEST VEHICLE FRICTION MEASUREMENTS OBTAINED FOR VARIOUS RUNWAY SURFACE TYPES AND CONDITIONS. A SUMMARY OF TEST RESULTS FROM JOINT FAA/NASA RUNWAY FRICTION PROGRAM
THOMAS J. YAGER, WILLIAM A. VOGLER (PRC Kentron, Inc., Hampton, VA.), and PAUL BALDASARE Washington Feb. 1990 301 p
(NASA-TP-2917; L-16536; NAS 1.60:2917) Avail: NTIS HC A14/MF A02 CSCL 01C

AIRCRAFT TIRES, ASPHALT, CONCRETES, FRICTION MEASUREMENT, GROUND TESTS, RUNWAY CONDITIONS, TRANSPORT AIRCRAFT

N90-17627*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SIMULATED-AIRLINE-SERVICE FLIGHT TESTS OF LAMINAR-FLOW CONTROL WITH PERFORATED-SURFACE SUCTION SYSTEM
DAL V. MADDALON and ALBERT L. BRASLOW (Analytical Services and Materials, Inc., Hampton, VA.) Washington Mar. 1990 40 p
(NASA-TP-2966; L-16589; NAS 1.60:2966) Avail: NTIS HC A03/MF A01 CSCL 01C

BOUNDARY LAYER CONTROL, C-140 AIRCRAFT, LAMINAR FLOW, LEADING EDGES, PERFORATION, SUCTION

N90-18385*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FUSELAGE DESIGN FOR A SPECIFIED MACH-SLICED AREA DISTRIBUTION
RAYMOND L. BARGER and MARY S. ADAMS Washington Feb. 1990 88 p
(NASA-TP-2975; L-16651; NAS 1.60:2975) Avail: NTIS HC A05/MF A01 CSCL 01C

AIRCRAFT CONFIGURATIONS, AIRCRAFT DESIGN, FUSELAGES, MACH NUMBER, NOISE REDUCTION

N90-25134*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
EVALUATION OF VARIOUS THRUST CALCULATION TECHNIQUES ON AN F404 ENGINE
RONALD J. RAY Apr. 1990 31 p
(NASA-TP-3001; H-1505; NAS 1.60:3001) Avail: NTIS HC A03/MF A01 CSCL 21E

CALIBRATING, ENGINE TESTS, FLIGHT TESTS, PERFORMANCE PREDICTION, REAL TIME OPERATION, THRUST

N90-26823*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EVALUATION OF ENERGY ABSORPTION OF NEW CONCEPTS OF AIRCRAFT COMPOSITE SUBFLOOR INTERSECTIONS
LISA E. JONES (PRC Kentron, Inc., Hampton, VA.) and HUEY D. CARDEN Washington Nov. 1989 33 p
(NASA-TP-2951; L-16628; NAS 1.60:2951) Avail: NTIS HC A03/MF A01 CSCL 01C

AIRCRAFT CONSTRUCTION MATERIALS, CRASHWORTHINESS, FLOORS, LAMINATES, STRUCTURAL ANALYSIS, STRUCTURAL FAILURE, SUBSTRUCTURES

06

AIRCRAFT INSTRUMENTATION

Includes cockpit and cabin display devices; and flight instruments.

N87-10864*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
GROUND-BASED TIME-GUIDANCE ALGORITHM FOR CONTROL OF AIRPLANES IN A TIME-METERED AIR TRAFFIC CONTROL ENVIRONMENT: A PILOTED SIMULATION STUDY
C. E. KNOX and N. IMBERT (Office National d'Etudes et de Recherches Aerospatiales, Toulouse, France) Nov. 1986 36 p
(NASA-TP-2616; L-16116; NAS 1.60:2616) Avail: NTIS HC A03/MF A01 CSCL 01D

AIR TRAFFIC CONTROL, ENERGY CONSERVATION, FLIGHT MANAGEMENT SYSTEMS, FLIGHT SIMULATION, FUEL CONSUMPTION, PILOTS (PERSONNEL), TIMING DEVICES

N87-13438*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DEVELOPMENT AND EVALUATION OF AN AIRPLANE ELECTRONIC DISPLAY FORMAT ALIGNED WITH THE INERTIAL VELOCITY VECTOR
G. G. STEINMETZ Dec. 1986 23 p
(NASA-TP-2648; L-16168; NAS 1.60:2648) Avail: NTIS HC A03/MF A01 CSCL 01D

ALIGNMENT, DIRECTIONAL CONTROL, DISPLAY DEVICES, ELECTRONIC EQUIPMENT, FLIGHT TESTS, INERTIAL NAVIGATION, PERFORMANCE TESTS, VELOCITY

N87-19393*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A SIMULATION EVALUATION OF A PILOT INTERFACE WITH AN AUTOMATIC TERMINAL APPROACH SYSTEM

DAVID A. HINTON Apr. 1987 21 p
(NASA-TP-2669; L-16222; NAS 1.60:2669) Avail: NTIS HC A03/MF A01 CSCL 17G
APPROACH CONTROL, AUTOMATIC CONTROL, AUTOMATIC PILOTS, GENERAL AVIATION AIRCRAFT, MAN MACHINE SYSTEMS

N87-29533*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
ANALOG SIGNAL CONDITIONING FOR FLIGHT-TEST INSTRUMENTATION
DONALD W. VEATCH and RODNEY K. BOGUE Washington NASA Jan. 1986 173 p Presented at the AGARD Flight Mechanics Panel, Flight-test Techniques Working Group, AGARDograph 160, Flight-Test Instrumentation Series Previously announced as N86-29816
(NASA-RP-1159; H-1191; NAS 1.61:1159) Avail: NTIS HC A08/MF A01 CSCL 01D
The application of analog signal conditioning to flight-tests data acquisition systems is discussed. Emphasis is placed on practical applications of signal conditioning for the most common flight-test data-acquisition systems. A limited amount of theoretical discussion is included to assist the reader in a more complete understanding of the subject matter. Nonspecific signal conditioning, such as amplification, filtering, and multiplexing, is discussed. Signal conditioning for various specific transducers and data terminal devices is also discussed to illustrate signal conditioning that is unique to particular types of transducers. The purpose is to delineate for the reader the various signal-conditioning technique options, together with tradeoff considerations, for commonly encountered flight-test situations. Author

N88-12487*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF COMBINING VERTICAL AND HORIZONTAL INFORMATION INTO A PRIMARY FLIGHT DISPLAY
TERENCE S. ABBOTT, MARK NATAUPSKY, and GEORGE G. STEINMETZ Dec. 1987 21 p
(NASA-TP-2783; L-16366; NAS 1.60:2783) Avail: NTIS HC A03/MF A01 CSCL 01D
COCKPITS, CONSOLIDATION, DISPLAY DEVICES, HORIZONTAL ORIENTATION, POSITION INDICATORS, VERTICAL ORIENTATION

N89-16820*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PILOTED-SIMULATION EVALUATION OF ESCAPE GUIDANCE FOR MICROBURST WIND SHEAR ENCOUNTERS M.S. Thesis - George Washington Univ.
DAVID A. HINTON Washington, DC Mar. 1989 57 p Sponsored in part by FAA, Washington, DC
(NASA-TP-2886; L-16498; NAS 1.60:2886; DOT/FAA/DS-89/06) Avail: NTIS HC A04/MF A01 CSCL 01D
FLIGHT HAZARDS, FLIGHT SIMULATION, MICROBURSTS (METEOROLOGY), PILOT PERFORMANCE, WIND SHEAR

N90-13384*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
FLIGHT DECK AUTOMATION: PROMISES AND REALITIES
SUSAN D. NORMAN, ed. and HARRY W. ORLADY, ed. (Orlady Associates, Inc., Los Gatos, CA.) Sep. 1989 200 p Proceedings of a NASA/FAA/Industry Workshop, Carmel Valley, CA, 1-4 Aug. 1988
(NASA-CP-10036; A-89196; NAS 1.55:10036) Avail: NTIS HC A09/MF A02 CSCL 01D
AIR TRAFFIC CONTROL, AIR TRANSPORTATION, AUTOMATIC CONTROL, COCKPITS, CONFERENCES, MAN-COMPUTER INTERFACE

N90-18393*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A SIMULATION EVALUATION OF THE ENGINE MONITORING AND CONTROL SYSTEM DISPLAY
TERENCE S. ABBOTT Washington Feb. 1990 39 p Original contains color illustrations
(NASA-TP-2960; L-16637; NAS 1.60:2960) Avail: NTIS HC A03/MF A01; 6 functional color pages CSCL 01D
AIRCRAFT INSTRUMENTS, DISPLAY DEVICES, ENGINE MONITORING INSTRUMENTS, FLIGHT INSTRUMENTS

N90-21004*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
STEREOPSIS CUEING EFFECTS ON HOVER-IN-TURBULENCE PERFORMANCE IN A SIMULATED ROTORCRAFT
RUSSELL V. PARRISH and STEVEN P. WILLIAMS (Army Aviation Systems Command, Hampton, VA.) Washington May 1990 62 p
(DA PROJ. 1L1-61102-AH-45)
(NASA-TP-2980; L-16652; NAS 1.60:2980; AVSCOM-TR-90-B-002; AD-A224484) Avail: NTIS HC A04/MF A01 CSCL 01/4
CUES, DISPLAY DEVICES, FLIGHT SIMULATION, HOVERING, PILOT PERFORMANCE, ROTARY WING AIRCRAFT, TURBULENCE

N90-25980*# National Aeronautics and Space Administration, Washington, DC.
SPACE TRANSPORTATION AVIONICS TECHNOLOGY SYMPOSIUM. VOLUME 1: EXECUTIVE SUMMARY
Aug. 1990 24 p Symposium held in Williamsburg, VA, 7-9 Nov. 1989
(NASA-CP-3081-VOL-1; NAS 1.55:3081-VOL-1) Avail: NTIS HC A03/MF A01 CSCL 01D
AVIONICS, CONFERENCES, SPACE TRANSPORTATION

07

AIRCRAFT PROPULSION AND POWER

Includes prime propulsion systems and systems components, e.g., gas turbine engines and compressors; and onboard auxiliary power plants for aircraft.

N87-17699*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DESIGN OF 9.271-PRESSURE-RATIO 5-STAGE CORE COMPRESSOR AND OVERALL PERFORMANCE FOR FIRST 3 STAGES
RONALD J. STEINKE May 1986 35 p
(NASA-TP-2597; E-2589; NAS 1.60:2597) Avail: NTIS HC A03/MF A01 CSCL 21E
COMPRESSORS, DESIGN ANALYSIS, FLOW DISTRIBUTION, PERFORMANCE TESTS, ROTOR BLADES (TURBOMACHINERY)

N87-20267*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
NASA-CHINESE AERONAUTICAL ESTABLISHMENT (CAE) SYMPOSIUM
1986 230 p Symposium held in Cleveland, Ohio, 23-27 Sep. 1985
(NASA-CP-2433; E-3033; NAS 1.55:2433) Avail: NTIS HC A11/MF A02 CSCL 21E
COMBUSTION, FLUID DYNAMICS, THERMODYNAMICS

N87-24481*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LOW-COST FM OSCILLATOR FOR CAPACITANCE TYPE OF BLADE TIP CLEARANCE MEASUREMENT SYSTEM
JOHN P. BARRANGER Jul. 1987 16 p
(NASA-TP-2746; E-3455; NAS 1.60:2746) Avail: NTIS HC A03/MF A01 CSCL 21E

BLADE TIPS, ERROR ANALYSIS, FREQUENCY MODULATION, NONDESTRUCTIVE TESTS, OSCILLATORS, ROTOR BLADES (TURBOMACHINERY)

N88-15785*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
AEROPROPULSION '87. SESSION 2: AEROPROPULSION STRUCTURES RESEARCH
Nov. 1987 52 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication
(NASA-CP-10003-SESS-2; E-3798-SESS-2; NAS 1.55:10003-SESS-2) Avail: NTIS HC A04/MF A01 CSCL 21E
CONTROL SYSTEMS DESIGN, DESIGN ANALYSIS, PROPULSION SYSTEM CONFIGURATIONS, STRUCTURAL ANALYSIS

N88-15790*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
AEROPROPULSION '87. SESSION 3: INTERNAL FLUID MECHANICS RESEARCH
Nov. 1987 75 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication
(NASA-CP-10003-SESS-3; E-3798-SESS-3; NAS 1.55:10003-SESS-3) Avail: NTIS HC A04/MF A01 CSCL 21E
CHEMICAL REACTIONS, DUCTS, FLUID MECHANICS, INLET FLOW, NOZZLES, PREDICTION ANALYSIS TECHNIQUES, PROPULSION, TURBOMACHINERY

N88-15794*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
AEROPROPULSION '87. SESSION 4: INSTRUMENTATION AND CONTROLS RESEARCH
Nov. 1987 77 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication
(NASA-CP-10003-SESS-4; E-3798-SESS-4; NAS 1.55:10003-SESS-4) Avail: NTIS HC A05/MF A01 CSCL 21E
CONFERENCES, CONTROL SYSTEMS DESIGN, FIBER OPTICS, FLUID MECHANICS, MEASURING INSTRUMENTS, PROPULSION

N88-15800*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
AEROPROPULSION '87. SESSION 5: SUBSONIC PROPULSION TECHNOLOGY
Nov. 1987 153 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication
(NASA-CP-10003-SESS-5; E-3798-SESS-5; NAS 1.55:10003-SESS-5) Avail: NTIS HC A08/MF A01 CSCL 21E
CONFERENCES, ENGINE DESIGN, FLUID MECHANICS, PROP-FAN TECHNOLOGY, PROPULSION

N88-15807*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
AEROPROPULSION '87. SESSION 6: HIGH-SPEED PROPULSION TECHNOLOGY
Nov. 1987 119 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication
(NASA-CP-10003-SESS-6; E-3798-SESS-6; NAS 1.55:10003-SESS-6) Avail: NTIS HC A06/MF A01 CSCL 21E
CONFERENCES, FLUID MECHANICS, HYPERSONIC AIRCRAFT, PROPULSION SYSTEM CONFIGURATIONS, SUPERSONIC AIRCRAFT, SUPERSONIC COMBUSTION RAMJET ENGINES, TRANSPORT AIRCRAFT

N88-16697*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
AEROPROPULSION '87. SESSION 1: AEROPROPULSION MATERIALS RESEARCH
Nov. 1987 121 p Conference held in Cleveland, Ohio, 17-19 Nov. 1987 Submitted for publication
(NASA-CP-10003-SESS-1; E-3798-SESS-1; NAS 1.55:10003-SESS-1) Avail: NTIS HC A06/MF A01 CSCL 21E
CERAMICS, CREEP PROPERTIES, ENGINE DESIGN, ENGINE PARTS, FATIGUE (MATERIALS), METAL MATRIX COMPOSITES, POLYMER MATRIX COMPOSITES

N89-12565*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ADVANCED TURBOPROP PROJECT
ROY D. HAGER and DEBORAH VRABEL (Sverdrup Technology, Inc., Cleveland, Ohio.) 1988 130 p Original contains color illustrations
(NASA-SP-495; NAS 1.21:495; LC88-1690) Avail: NTIS HC A07/MF A01 CSCL 21E
At the direction of Congress, a task force headed by NASA was organized in 1975 to identify potential fuel saving concepts for aviation. The result was the Aircraft Energy Efficiency (ACEE) Program implemented in 1976. An important part of the program was the development of advanced turboprop technology for Mach 0.65 to 0.85 applications having the potential fuel saving of 30 to 50 percent relative to existing turbofan engines. A historical perspective is presented of the development and the accomplishments that brought the turboprop to successful flight tests in 1986 and 1987. Author

N90-21037*# Sverdrup Technology, Inc., Cleveland, OH.
EXHAUST NOZZLES FOR PROPULSION SYSTEMS WITH EMPHASIS ON SUPERSONIC CRUISE AIRCRAFT
LEONARD E. STITT May 1990 107 p
(NAS3-25266)
(NASA-RP-1235; E-4789; NAS 1.61:1235) Avail: NTIS HC A06/MF A01 CSCL 21E
This compendium summarizes the contributions of the NASA-Lewis and its contractors to supersonic exhaust nozzle research from 1963 to 1985. Two major research and technology efforts sponsored this nozzle research work; the U.S. Supersonic Transport (SST) Program and the follow-on Supersonic Cruise Research (SCR) Program. They account for two generations of nozzle technology: the first from 1963 to 1971, and the second from 1971 to 1985. First, the equations used to calculate nozzle thrust are introduced. Then the general types of nozzles are presented, followed by a discussion of those types proposed for supersonic aircraft. Next, the first-generation nozzles designed specifically for the Boeing SST and the second-generation nozzles designed under the SCR program are separately reviewed and then compared. A chapter on throttle-dependent afterbody drag is included, since drag has a major effect on the off-design performance of supersonic nozzles. A chapter on the performance of supersonic dash nozzles follows, since these nozzles have similar design problems, Finally, the nozzle test facilities used at NASA-Lewis during this nozzle research effort are identified and discussed. These facilities include static test stands, a transonic wind tunnel, and a flying testbed aircraft. A concluding section points to the future: a third generation of nozzles designed for a new era of high speed civil transports to produce even greater advances in performance, to meet new noise rules, and to ensure the continuity of over two decades of NASA research. Author

N90-23403*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL EVALUATION OF A TUNED ELECTROMAGNETIC DAMPER FOR VIBRATION CONTROL OF CRYOGENIC TURBOPUMP ROTORS
ELISEO DIRUSSO and GERALD V. BROWN Washington Jun. 1990 17 p
(NASA-TP-3005; E-5012; NAS 1.60:3005) Avail: NTIS HC A03/MF A01 CSCL 21E
CRYOGENIC TEMPERATURE, ELECTROMAGNETISM, ROCKET ENGINES, ROTOR SPEED, ROTORS, SHAFTS (MACHINE ELEMENTS), TURBINE PUMPS, VIBRATION DAMPING

N90-27722*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPUTER CODE FOR PREDICTING COOLANT FLOW AND HEAT TRANSFER IN TURBOMACHINERY

PETER L. MEITNER Washington Sep. 1990 41 p Prepared in cooperation with Army Aviation Systems Command, Cleveland, OH
(DA PROJ. 1L1-61102-AH-45)
(NASA-TP-2985; E-5186; NAS 1.60:2985; AVSCOM-TR-89-C-008) Avail: NTIS HC A03/MF A01 CSCL 21E
COMPUTER PROGRAMS, ENGINE COOLANTS, FLOW DISTRIBUTION, HEAT TRANSFER, TURBOMACHINERY

08

AIRCRAFT STABILITY AND CONTROL

Includes aircraft handling qualities; piloting; flight controls; and autopilots.

N87-10103*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
IN-FLIGHT TOTAL FORCES, MOMENTS AND STATIC AEROELASTIC CHARACTERISTICS OF AN OBLIQUE-WING RESEARCH AIRPLANE
R. E. CURRY and A. G. SIM Oct. 1984 30 p
(NASA-TP-2224; H-1181; NAS 1.60:2224) Avail: NTIS HC A03/MF A01 CSCL 01C
AEROELASTIC RESEARCH WINGS, AIRCRAFT DESIGN, FLIGHT TESTS, OBLIQUE WINGS, RESEARCH AIRCRAFT, STRUCTURAL DESIGN, WIND TUNNEL TESTS

N87-10870*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INTERFERENCE EFFECTS OF THRUST REVERSING ON HORIZONTAL TAIL EFFECTIVENESS OF TWIN-ENGINE FIGHTER AIRCRAFT AT MACH NUMBERS FROM 0.15 TO 0.90
F. J. CAPONE and M. L. MASON Oct. 1984 104 p
(NASA-TP-2350; L-15811; NAS 1.60:2350) Avail: NTIS HC A06/MF A01 CSCL 01C
AERODYNAMIC INTERFERENCE, FIGHTER AIRCRAFT, TAIL ASSEMBLIES, THRUST REVERSAL, WIND TUNNEL TESTS

N87-10871*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
FLIGHT-DETERMINED AERODYNAMIC DERIVATIVES OF THE AD-1 OBLIQUE-WING RESEARCH AIRPLANE
A. G. SIM and R. E. CURRY Oct. 1984 40 p
(NASA-TP-2222; H-1179; NAS 1.60:2222) Avail: NTIS HC A03/MF A01 CSCL 01C
AERODYNAMIC COEFFICIENTS, OBLIQUE WINGS, RESEARCH AIRCRAFT, VARIABLE SWEEP WINGS

N87-16849*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PILOTED SIMULATOR STUDY OF ALLOWABLE TIME DELAYS IN LARGE-AIRPLANE RESPONSE
WILLIAM D. GRANTHAM, PAUL M. SMITH (PRC Kentron, Inc., Hampton, Va.), LEE H. PERSON, JR., ROBERT T. MEYER (Lockheed-Georgia Co., Marietta), and STEPHEN A. TINGAS Feb. 1987 69 p
(NASA-TP-2652; L-16149; NAS 1.60:2652) Avail: NTIS HC A04/MF A01 CSCL 01C
CONTROL SYSTEMS DESIGN, FLIGHT CHARACTERISTICS, FLIGHT SIMULATORS, LOW SPEED, TIME LAG, TRANSPORT AIRCRAFT

N87-18570*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
FLIGHT CHARACTERISTICS OF THE AD-1 OBLIQUE-WING RESEARCH AIRCRAFT
ALEX G. SIM and ROBERT E. CURRY Mar. 1985 29 p
(NASA-TP-2223; H-1180; NAS 1.60:2223) Avail: NTIS HC A03/MF A01 CSCL 01C
AERODYNAMIC CONFIGURATIONS, FLIGHT CHARACTERISTICS, LOW SPEED, OBLIQUE WINGS, RESEARCH AIRCRAFT

N87-25331*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ADVANCED DETECTION, ISOLATION AND ACCOMMODATION OF SENSOR FAILURES: REAL-TIME EVALUATION
WALTER C. MERRILL, JOHN C. DELAAT, and WILLIAM M. BRUTON Jul. 1987 30 p
(NASA-TP-2740; E-3479; NAS 1.60:2740) Avail: US Patent and Trademark Office CSCL 01C
ENGINE CONTROL, ENGINE FAILURE, FAULT TOLERANCE, REDUNDANCY ENCODING, REMOTE SENSORS, TURBINE ENGINES

N87-26922*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PILOTED-SIMULATION STUDY OF EFFECTS OF VORTEX FLAPS ON LOW-SPEED HANDLING QUALITIES OF A DELTA-WING AIRPLANE
JAY M. BRANDON, PHILIP W. BROWN, and ALFRED J. WUNSCHEL Sep. 1987 38 p
(NASA-TP-2747; L-16307; NAS 1.60:2747) Avail: NTIS HC A03/MF A01 CSCL 01C
CONTROLLABILITY, DELTA WINGS, FLIGHT SIMULATION, LOW SPEED, PILOTS (PERSONNEL), VORTEX FLAPS

N88-14987*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
HANDLING QUALITIES OF A WIDE-BODY TRANSPORT AIRPLANE UTILIZING PITCH ACTIVE CONTROL SYSTEMS (PACS) FOR RELAXED STATIC STABILITY APPLICATION
WILLIAM D. GRANTHAM, LEE H. PERSON, JR., PHILIP W. BROWN, LAWRENCE E. BECKER, GEORGE E. HUNT, J. J. RISING, W. J. DAVIS, C. S. WILLEY, W. A. WEAVER, and R. COKELEY Dec. 1985 109 p
(NASA-TP-2482; L-15928; NAS 1.60:2482) Avail: NTIS HC A06/MF A01 CSCL 01C
ACTIVE CONTROL, FLIGHT CHARACTERISTICS, FLIGHT SIMULATION, PITCH (INCLINATION), STATIC STABILITY, TRANSPORT AIRCRAFT

N88-19475*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ROTORCRAFT FLIGHT-PROPULSION CONTROL INTEGRATION: AN ECLECTIC DESIGN CONCEPT
JAMES R. MIHALOEW, MARK G. BALLIN, and D. C. G. RUTTLEDGE (Sikorsky Aircraft, Stratford, Conn.) Apr. 1988 34 p
(NASA-TP-2815; E-3812; NAS 1.60:2815) Avail: NTIS HC A03/MF A01 CSCL 01C
AIRCRAFT CONTROL, DESIGN ANALYSIS, INTEGRATORS, PROPULSIVE EFFICIENCY, ROTARY WING AIRCRAFT

N89-12569*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SINGULAR PERTURBATIONS AND TIME SCALES IN THE DESIGN OF DIGITAL FLIGHT CONTROL SYSTEMS
DESINENI S. NAIDU (Old Dominion Univ., Norfolk, Va.) and DOUGLAS B. PRICE Washington, D.C. Dec. 1988 30 p
(NASA-TP-2844; L-16440; NAS 1.60:2844) Avail: NTIS HC A03/MF A01 CSCL 01C
DIGITAL SYSTEMS, FLIGHT CONTROL, OPTIMAL CONTROL, PERTURBATION THEORY

N89-15123*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.
DERIVATION AND DEFINITION OF A LINEAR AIRCRAFT MODEL
EUGENE L. DUKE, ROBERT F. ANTONIEWICZ, and KEITH D. KRAMBEER Aug. 1988 106 p
(NASA-RP-1207; H-1391; NAS 1.61:1207) Avail: NTIS HC A06/MF A01 CSCL 01C

08 AIRCRAFT STABILITY AND CONTROL

A linear aircraft model for a rigid aircraft of constant mass flying over a flat, nonrotating earth is derived and defined. The derivation makes no assumptions of reference trajectory or vehicle symmetry. The linear system equations are derived and evaluated along a general trajectory and include both aircraft dynamics and observation variables. Author

N89-15929*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
FLIGHT CONTROL SYSTEMS DEVELOPMENT AND FLIGHT TEST EXPERIENCE WITH THE HIMAT RESEARCH VEHICLES
ROBERT W. KEMPEL and MICHAEL R. EARLS Jun. 1988 88 p
(NASA-TP-2822; H-1428; NAS 1.60:2822) Avail: NTIS HC A05/MF A01 CSCL 01C
DIGITAL SYSTEMS, FLIGHT CONTROL, FLIGHT TESTS, HIGHLY MANEUVERABLE AIRCRAFT, REMOTELY PILOTED VEHICLES, RESEARCH AIRCRAFT, SCALE MODELS

N89-15930*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
A PILOTED EVALUATION OF AN OBLIQUE-WING RESEARCH AIRCRAFT MOTION SIMULATION WITH DECOUPLING CONTROL LAWS
ROBERT W. KEMPEL, WALTER E. MCNEILL, GLENN B. GILYARD, and TRINDEL A. MAINE Nov. 1988 52 p
(NASA-TP-2874; H-1430; NAS 1.60:2874) Avail: NTIS HC A04/MF A01 CSCL 01C
DECOUPLING, EVALUATION, FLIGHT SIMULATION, FLIGHT TESTS, OBLIQUE WINGS, PILOT PERFORMANCE

N89-16845*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
MODAL CONTROL OF AN OBLIQUE WING AIRCRAFT
JAMES D. PHILLIPS Jan. 1989 49 p
(NASA-TP-2898; A-88250; NAS 1.60:2898) Avail: NTIS HC A03/MF A01 CSCL 01C
FLIGHT CONTROL, MODAL RESPONSE, OBLIQUE WINGS, RESEARCH AIRCRAFT

N89-19309*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INTEGRATED TOOLS FOR CONTROL-SYSTEM ANALYSIS
AARON J. OSTROFF, MELISSA S. PROFFITT, and DAVID R. CLARK (Planning Research Corp., Hampton, VA.) Washington NASA Mar. 1989 61 p
(NASA-TP-2885; L-16482; NAS 1.60:2885) Avail: NTIS HC A04/MF A01 CSCL 01C
ACTUATORS, COMPUTER PROGRAMS, CONTROL SYSTEMS DESIGN, CONTROLLERS, LINEAR SYSTEMS, SOFTWARE TOOLS, SYSTEMS ANALYSIS

N89-23468*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A CLOSED-FORM TRIM SOLUTION YIELDING MINIMUM TRIM DRAG FOR AIRPLANES WITH MULTIPLE LONGITUDINAL-CONTROL EFFECTORS
KENNETH H. GOODRICH, STEVEN M. SLIWA, and FREDERICK J. LALLMAN Washington May 1989 30 p
(NASA-TP-2907; L-16484; NAS 1.60:2907) Avail: NTIS HC A03/MF A01 CSCL 01C
AERODYNAMIC BALANCE, AIRCRAFT DESIGN, COMPUTATION, LIFT DEVICES, OPTIMIZATION, REDUNDANCY, THRUST VECTOR CONTROL

N89-23469*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SIMULATOR EVALUATION OF A DISPLAY FOR A TAKEOFF PERFORMANCE MONITORING SYSTEM
DAVID B. MIDDLETON, RAGHAVACHARI SRIVATSAN, and LEE H. PERSON, JR. Washington May 1989 29 p
(NASA-TP-2908; L-16510; NAS 1.60:2908) Avail: NTIS HC A03/MF A01 CSCL 01C
ABORTED MISSIONS, DISPLAY DEVICES, MONITORS, RATINGS, SIMULATORS, TAKEOFF

N89-24327*# National Aeronautics and Space Administration. Flight Research Center, Edwards, CA.
DEVELOPMENT AND FLIGHT TEST EXPERIENCES WITH A FLIGHT-CRUCIAL DIGITAL CONTROL SYSTEM
DALE A. MACKALL Washington Nov. 1988 116 p
(NASA-TP-2857; H-1344; NAS 1.60:2857) Avail: NTIS HC A06/MF A01 CSCL 01C
AIRCRAFT PERFORMANCE, CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS, F-16 AIRCRAFT, FLIGHT CONTROL, SYSTEMS INTEGRATION

N90-10074*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANALYSIS OF FLIGHT DATA FROM A HIGH-INCIDENCE RESEARCH MODEL BY SYSTEM IDENTIFICATION METHODS
JAMES G. BATTERSON and VLADISLAV KLEIN (Joint Inst. for Advancement of Flight Sciences, Hampton, VA.) Washington Nov. 1989 50 p
(NASA-TP-2940; L-16571; NAS 1.60:2940) Avail: NTIS HC A03/MF A01 CSCL 01C
AERODYNAMIC CONFIGURATIONS, AERODYNAMIC STABILITY, ANGLE OF ATTACK, DYNAMIC CONTROL, FLIGHT CHARACTERISTICS, STABILITY DERIVATIVES

N90-11757*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPARISON OF FLYING QUALITIES DERIVED FROM IN-FLIGHT AND GROUND-BASED SIMULATORS FOR A JET-TRANSPORT AIRPLANE FOR THE APPROACH AND LANDING PILOT TASKS
WILLIAM D. GRANTHAM Washington Dec. 1989 32 p
(NASA-TP-2962; L-16609; NAS 1.60:2962) Avail: NTIS HC A03/MF A01 CSCL 01C
FLIGHT CHARACTERISTICS, FLIGHT CONTROL, FLIGHT SIMULATION, JET AIRCRAFT, TRANSPORT AIRCRAFT

N90-15112*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ADVANCED DETECTION, ISOLATION, AND ACCOMMODATION OF SENSOR FAILURES IN TURBOFAN ENGINES: REAL-TIME MICROCOMPUTER IMPLEMENTATION
JOHN C. DELAAT and WALTER C. MERRILL Washington Feb. 1990 28 p
(NASA-TP-2925; E-4391; NAS 1.60:2925) Avail: NTIS HC A03/MF A01 CSCL 01C
ALGORITHMS, DIGITAL ELECTRONICS, ELECTRONIC CONTROL, ENGINE TESTS, FEEDBACK CONTROL, TURBOFAN ENGINES

N90-17639*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
LONGITUDINAL STABILITY AND CONTROL CHARACTERISTICS OF THE QUIET SHORT-HAUL RESEARCH AIRCRAFT (QSRA)
JACK D. STEPHENSON and GORDON H. HARDY Washington Dec. 1989 43 p
(NASA-TP-2965; A-89133; NAS 1.60:2965) Avail: NTIS HC A03/MF A01 CSCL 01C
AIRCRAFT PERFORMANCE, FLIGHT CHARACTERISTICS, FLIGHT TESTS, LONGITUDINAL CONTROL, LONGITUDINAL STABILITY, RESEARCH AIRCRAFT, SHORT HAUL AIRCRAFT

N90-19239*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LOW-SPEED WIND-TUNNEL INVESTIGATION OF THE FLIGHT DYNAMIC CHARACTERISTICS OF AN ADVANCED TURBOPROP BUSINESS/COMMUTER AIRCRAFT CONFIGURATION
PAUL L. COE, JR., STEVEN G. TURNER, and D. BRUCE OWENS Washington Apr. 1990 50 p

(NASA-TP-2982; L-16664; NAS 1.60:2982) Avail: NTIS HC A03/MF A01 CSCL 01C

AERODYNAMIC CHARACTERISTICS, COMMUTER AIRCRAFT, DYNAMIC CHARACTERISTICS, FLIGHT CHARACTERISTICS, FLIGHT TESTS, TURBOPROP AIRCRAFT, WIND TUNNEL TESTS

09

RESEARCH AND SUPPORT FACILITIES (AIR)

Includes airports, hangars and runways; aircraft repair and overhaul facilities; wind tunnels; shock tubes; and aircraft engine test stands.

N87-10876*# National Aeronautics and Space Administration, Washington, DC.
AERONAUTICAL FACILITIES ASSESSMENT
F. E. PENARANDA, comp. Nov. 1985 204 p
(NASA-RP-1146; NAS 1.61:1146) Avail: NTIS HC A10/MF A02 CSCL 14B

A survey of the free world's aeronautical facilities was undertaken and an evaluation made on where the relative strengths and weaknesses exist. Special emphasis is given to NASA's own capabilities and needs. The types of facilities surveyed are: Wind Tunnels; Airbreathing Propulsion Facilities; and Flight Simulators Author

N87-17717*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL EVALUATION OF WALL MACH NUMBER DISTRIBUTIONS OF THE OCTAGONAL TEST SECTION PROPOSED FOR NASA LEWIS RESEARCH CENTER'S ALTITUDE WIND TUNNEL
DOUGLAS E. HARRINGTON, RICHARD R. BURLEY, and ROBERT R. CORBAN Nov. 1986 35 p
(NASA-TP-2666; E-3145; NAS 1.60:2666) Avail: NTIS HC A03/MF A01 CSCL 14B

FLOW VELOCITY, MACH NUMBER, WIND TUNNEL APPARATUS, WIND TUNNEL WALLS

N87-18576*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL EVALUATION OF TWO TURNING VANE DESIGNS FOR FAN DRIVE CORNER OF 0.1-SCALE MODEL OF NASA LEWIS RESEARCH CENTER'S PROPOSED ALTITUDE WIND TUNNEL
DONALD R. BOLDMAN, ROYCE D. MOORE, and RICKEY J. SHYNE Mar. 1987 148 p
(NASA-TP-2646; E-3175; NAS 1.60:2646) Avail: NTIS HC A07/MF A01 CSCL 14B

CORNER FLOW, VANES, WIND TUNNEL APPARATUS, WIND TUNNEL DRIVES

N87-20295*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DETAILED FLOW SURVEYS OF TURNING VANES DESIGNED FOR A 0.1-SCALE MODEL OF NASA LEWIS RESEARCH CENTER'S PROPOSED ALTITUDE WIND TUNNEL
ROYCE D. MOORE, RICKEY J. SHYNE, DONALD R. BOLDMAN, and THOMAS F. GELDER Apr. 1987 151 p
(NASA-TP-2680; E-3294; NAS 1.60:2680) Avail: NTIS HC A08/MF A01 CSCL 14B

ALTITUDE SIMULATION, FLOW DISTRIBUTION, GUIDE VANES, WIND TUNNEL APPARATUS, WIND TUNNEL DRIVES

N87-22694*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL EVALUATION OF BLOCKAGE RATIO AND PLENUM EVACUATION SYSTEM FLOW EFFECTS ON PRESSURE DISTRIBUTION FOR BODIES OF REVOLUTION IN 0.1 SCALE MODEL TEST SECTION OF NASA LEWIS RESEARCH CENTER'S PROPOSED ALTITUDE WIND TUNNEL
RICHARD R. BURLEY and DOUGLAS E. HARRINGTON Apr. 1987 26 p
(NASA-TP-2702; E-3267; NAS 1.60:2702) Avail: NTIS HC A03/MF A01 CSCL 14B

EVACUATING (VACUUM), EVALUATION, PLENUM CHAMBERS, WIND TUNNEL MODELS, WIND TUNNEL TESTS

N87-23662*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL EVALUATION OF HONEYCOMB/SCREEN CONFIGURATIONS AND SHORT CONTRACTION SECTION FOR NASA LEWIS RESEARCH CENTER'S ALTITUDE WIND TUNNEL
RICHARD R. BURLEY and DOUGLAS E. HARRINGTON May 1987 30 p
(NASA-TP-2692; E-3142; NAS 1.60:2692) Avail: NTIS HC A03/MF A01 CSCL 14B

HONEYCOMB STRUCTURES, PRESSURE DISTRIBUTION, SCREENS, TURBULENCE EFFECTS, TURBULENT FLOW, WIND TUNNEL CALIBRATION

N87-28570*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EVOLUTION, CALIBRATION, AND OPERATIONAL CHARACTERISTICS OF THE TWO-DIMENSIONAL TEST SECTION OF THE LANGLEY 0.3-METER TRANSONIC CRYOGENIC TUNNEL
CHARLES L. LADSON and EDWARD J. RAY Sep. 1987 171 p
(NASA-TP-2749; L-16190; NAS 1.60:2749) Avail: NTIS HC A08/MF A01 CSCL 14B

CRYOGENIC WIND TUNNELS, EVOLUTION (DEVELOPMENT), HISTORIES, TRANSONIC WIND TUNNELS, TWO DIMENSIONAL FLOW

N87-29544*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LANGLEY AIRCRAFT LANDING DYNAMICS FACILITY
PAMELA A. DAVIS, SANDY M. STUBBS, and JOHN A. TANNER Oct. 1987 35 p
(NASA-RP-1189; L-16293; NAS 1.61:1189) Avail: NTIS HC A03/MF A01 CSCL 14B

The Langley Research Center has recently upgraded the Landing Loads Track (LLT) to improve the capability of low-cost testing of conventional and advanced landing gear systems. The unique feature of the Langley Aircraft Landing Dynamics Facility (ALDF) is the ability to test aircraft landing gear systems on actual runway surfaces at operational ground speeds and loading conditions. A historical overview of the original LLT is given, followed by a detailed description of the new ALDF systems and operational capabilities. Author

N88-17686*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL EVALUATION OF TURNING VANE DESIGNS FOR HIGH-SPEED AND COUPLED FAN-DRIVE CORNERS OF 0.1-SCALE MODEL OF NASA LEWIS RESEARCH CENTER'S PROPOSED ALTITUDE WIND TUNNEL
THOMAS F. GELDER, ROYCE D. MOORE, RICKEY J. SHYNE, and DONALD R. BOLDMAN May 1987 54 p Microfiche available as supplement
(NASA-TP-2681; E-3218; NAS 1.60:2681) Avail: NTIS HC A04/MF A01 CSCL 14B

ALTITUDE SIMULATION, CORNER FLOW, COUPLING, GUIDE VANES, HIGH SPEED, WIND TUNNEL APPARATUS, WIND TUNNEL DRIVES

N88-28075*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FINITE-RATE WATER CONDENSATION IN COMBUSTION-HEATED WIND TUNNELS
WAYNE D. ERICKSON, GERALD H. MALL, and RAMADAS K. PRABHU (PRC Systems Services Co., Hampton, Va.) Sep. 1988 76 p
(NASA-TP-2833; L-16443; NAS 1.60:2833) Avail: NTIS HC A05/MF A01 CSCL 14B
COMBUSTION PRODUCTS, COMBUSTION WIND TUNNELS, CONDENSING, HIGH TEMPERATURE ENVIRONMENTS, NUCLEATION, WATER

N90-17647*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CAST-10-2/DOA 2 AIRFOIL STUDIES WORKSHOP RESULTS
EDWARD J. RAY, comp. and ACQUILLA S. HILL, comp. Washington Nov. 1989 259 p Workshop held in Hampton, VA, 23-27 Sep. 1988
(NASA-CP-3052; L-16633; NAS 1.55:3052) Avail: NTIS HC A12/MF A02 CSCL 14B
AERODYNAMIC CHARACTERISTICS, AERODYNAMIC INTERFERENCE, AIRFOIL PROFILES, AIRFOILS, CONFERENCES, FLOW DISTRIBUTION, REYNOLDS NUMBER, WIND TUNNEL TESTS

N90-19242*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPARISON BETWEEN DESIGN AND INSTALLED ACOUSTIC CHARACTERISTICS OF NASA LEWIS 9- BY 15-FOOT LOW-SPEED WIND TUNNEL ACOUSTIC TREATMENT
MILO D. DAHL and RICHARD P. WOODWARD Washington Apr. 1990 28 p Presented at the 115th Meeting of the Acoustical Society of America, Seattle, WA, 16-20 May 1988
(NASA-TP-2996; E-4981; NAS 1.60:2996) Avail: NTIS HC A03/MF A01 CSCL 14B
ACOUSTIC ATTENUATION, ACOUSTIC MEASUREMENT, AIRCRAFT NOISE, LOW SPEED WIND TUNNELS, PANELS, PERFORATED PLATES

12

ASTRONAUTICS (GENERAL)

N78-76855* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FLIGHT MECHANICS/ESTIMATION THEORY SYMPOSIUM
A. FUCHS 1975 265 p refs Symp. held at Greenbelt, Md., 29-30 1975
(NASA-CP-2002) Avail: Goddard Space Flight Center, Code 582
CONFERENCES, FLIGHT MECHANICS, ORBIT CALCULATION, ORBITAL POSITION ESTIMATION

N87-20302*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1986 GET AWAY SPECIAL EXPERIMENTER'S SYMPOSIUM
LAWRENCE R. THOMAS, ed. and FRANCES L. MOSIER, ed. Feb. 1987 236 p Symposium held in Greenbelt, Md., 7-8 Oct. 1986
(NASA-CP-2438; NAS 1.55:2438) Avail: NTIS HC A11/MF A02 CSCL 22A
CONFERENCES, GET AWAY SPECIALS (STS), GOVERNMENT/INDUSTRY RELATIONS, SPACE SHUTTLE PAYLOADS, UNIVERSITIES

N87-29576* National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
TECHNOLOGY FOR LARGE SPACE SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 17)
Oct. 1987 140 p
(NASA-SP-7046(17); NAS 1.21:7046(17)) Avail: NTIS HC A07 CSCL 22B
This bibliography lists 512 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1, 1987 and June 30, 1987. Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design according to system, interactive analysis and design, structural and thermal analysis and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems. Author

N88-17691*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1987 GET AWAY SPECIAL EXPERIMENTER'S SYMPOSIUM
NEAL BARTHELME, ed. and FRANCES L. MOSIER, ed. (RMS Technologies, Inc., Landover, Md.) Feb. 1988 169 p Symposium held in Greenbelt, Md., 27-28 Oct. 1987
(NASA-CP-2500; REPT-88B0049; NAS 1.55:2500) Avail: NTIS HC A08/MF A01 CSCL 22A
GET AWAY SPECIALS (STS), MISSION PLANNING, PROJECT PLANNING, SPACE SHUTTLE MISSIONS, SPACE STATIONS

N88-27214* National Aeronautics and Space Administration, Washington, DC.
TECHNOLOGY FOR LARGE SPACE SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 18)
Jun. 1988 162 p
(NASA-SP-7046(18); NAS 1.21:7046(18)) Avail: NTIS HC A08 CSCL 22B
This bibliography lists 569 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1,1987 and December 31, 1987. Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design according to system, interactive analysis and design, structural and thermal analysis and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems. Author

N89-10902*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1988 GET AWAY SPECIAL EXPERIMENTER'S SYMPOSIUM
LAWRENCE R. THOMAS, ed. and FRANCES L. MOSIER, ed. (RMS Technologies, Inc., Landover, Md.) Sep. 1988 127 p Symposium held in Cocoa Beach, Fla., 27-30 Sep. 1988 Sponsored by NASA, Washington
(NASA-CP-3008; REPT-88-158; NAS 1.55:3008) Avail: NTIS HC A07/MF A01 CSCL 22A
CONFERENCES, GET AWAY SPECIALS (STS), SPACE SHUTTLE PAYLOADS, SPACEBORNE EXPERIMENTS

N89-11760*# National Aeronautics and Space Administration, Washington, DC.
TECHNOLOGY FOR FUTURE NASA MISSIONS: CIVIL SPACE TECHNOLOGY INITIATIVE (CSTI) AND PATHFINDER
Sep. 1988 550 p Conference held in Washington, D.C., 12-13 Sep. 1988; sponsored in part by NASA and AIAA
(NASA-CP-3016; NAS 1.55:3016) Avail: NTIS HC A23/MF A03 CSCL 22A
AEROASSIST, CONFERENCES, NASA PROGRAMS, ORBIT TRANSFER VEHICLES, SPACEBORNE EXPERIMENTS, SPACECRAFT CONSTRUCTION MATERIALS, SPACECRAFT INSTRUMENTS, SPACECRAFT POWER SUPPLIES, SPACECRAFT PROPULSION

13

ASTRODYNAMICS

Includes powered and free-flight trajectories; and orbital and launching dynamics.

N88-15820*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A STUDY TO EVALUATE STS HEADS-UP ASCENT TRAJECTORY PERFORMANCE EMPLOYING A MINIMUM-HAMILTONIAN OPTIMIZATION STRATEGY
SUJIT SINHA Feb. 1988 56 p
(NASA-TP-2793; M-580; NAS 1.60:2793) Avail: NTIS HC A04/MF A01 CSCL 22A
ASCENT TRAJECTORIES, EVALUATION, HAMILTONIAN FUNCTIONS, OPTIMIZATION, SPACE TRANSPORTATION SYSTEM

N89-15934*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FLIGHT MECHANICS/ESTIMATION THEORY SYMPOSIUM 1988
THOMAS STENGLE, ed. Washington, DC Sep. 1988 611 p Symposium held in Greenbelt, MD, 10-11 May 1988
(NASA-CP-3011; REPT-88B0224; NAS 1.55:3011) Avail: NTIS HC A99/MF A04 CSCL 22A
ESTIMATES, FLIGHT MECHANICS, ORBITAL MECHANICS, SPACECRAFT PERFORMANCE

N90-13413*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FLIGHT MECHANICS/ESTIMATION THEORY SYMPOSIUM, 1989
THOMAS STENGLE, ed. Washington Oct. 1989 466 p Symposium held in Greenbelt, MD, 23-24 May 1989
(NASA-CP-3050; REPT-89B00261; NAS 1.55:3050) Avail: NTIS HC A20/MF A03 CSCL 22A
CONFERENCES, FLIGHT MECHANICS, ORBITAL MECHANICS, SATELLITE ATTITUDE CONTROL

N90-13444*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A TRANSIENT RESPONSE METHOD FOR LINEAR COUPLED SUBSTRUCTURES
J. R. ADMIRE and J. A. BRUNTY Dec. 1989 26 p
(NASA-TP-2926; NAS 1.60:2926) Avail: NTIS HC A03/MF A01 CSCL 22A
DISCRETE FUNCTIONS, LINEAR SYSTEMS, LOADS (FORCES), MATHEMATICAL MODELS, NUMERICAL INTEGRATION, TRANSIENT RESPONSE

N90-26028*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
FORBIDDEN TANGENTIAL ORBIT TRANSFERS BETWEEN INTERSECTING KEPLERIAN ORBITS
ROWLAND E. BURNS Jul. 1990 53 p
(NASA-TP-3031; NAS 1.60:3031) Avail: NTIS HC A04/MF A01 CSCL 22A
KEPLER LAWS, PLANAR STRUCTURES, TRANSFER ORBITS, TWO BODY PROBLEM

14

GROUND SUPPORT SYSTEMS AND FACILITIES (SPACE)

Includes launch complexes, research and production facilities; ground support equipment, e.g., mobile transporters; and simulators.

N89-28545*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DIGITALLY MODULATED BIT ERROR RATE MEASUREMENT SYSTEM FOR MICROWAVE COMPONENT EVALUATION
MARY JO W. SHALKHAUSER and JAMES M. BUDINGER Washington Jul. 1989 20 p
(NASA-TP-2912; E-4456; NAS 1.60:2912) Avail: NTIS HC A03/MF A01 CSCL 14B
BIT ERROR RATE, COMMUNICATION SATELLITES, DATA TRANSMISSION, DIGITAL DATA, MICROWAVE EQUIPMENT, MODULATION, TIME DIVISION MULTIPLE ACCESS

15

LAUNCH VEHICLES AND SPACE VEHICLES

Includes boosters; operating problems of launch/space vehicle systems; and reusable vehicles.

N87-12581*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SOLAR ARRAY FLIGHT DYNAMIC EXPERIMENT
R. W. SCHOCK Washington May 1986 27 p
(NASA-TP-2598; NAS 1.60:2598) Avail: NTIS HC A03/MF A01 CSCL 10A
LARGE SPACE STRUCTURES, LASER APPLICATIONS, SOLAR ARRAYS, SPACE SHUTTLE PAYLOADS, TRACKING (POSITION)

N87-18588*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SYSTEM STUDY OF THE CARBON DIOXIDE OBSERVATIONAL PLATFORM SYSTEM (CO-OPS): PROJECT OVERVIEW
J. BRISCOE STEPHENS and WILBUR E. THOMPSON Mar. 1987 35 p
(NASA-TP-2696; NAS 1.60:2696) Avail: NTIS HC A03/MF A01 CSCL 22B
ATMOSPHERIC COMPOSITION, CARBON DIOXIDE, REMOTE SENSING, SPACE PLATFORMS

N87-22702*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
STRUCTURAL DYNAMICS AND CONTROL INTERACTION OF FLEXIBLE STRUCTURES
ROBERT S. RYAN, ed. and HAROLD N. SCOFIELD, ed. Apr. 1987 680 p Workshop held in Huntsville, ALa., 22-24 Apr. 1986
(NASA-CP-2467-PT-1; M-554-PT-1; NAS 1.55:2467-PT-1) Avail: NTIS HC A99/MF A04 CSCL 22B
CONTROL SYSTEMS DESIGN, DYNAMIC STRUCTURAL ANALYSIS, FLEXIBLE BODIES, LARGE SPACE STRUCTURES, SPACECRAFT CONTROL

N87-22729*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
STRUCTURAL DYNAMICS AND CONTROL INTERACTION OF FLEXIBLE STRUCTURES
ROBERT S. RYAN, ed. and HAROLD N. SCOFIELD, ed. Apr.

1987 729 p Workshop held in Huntsville, Ala., 22-24 Apr. 1986
(NASA-CP-2467-PT-2; M-554-PT-2; NAS 1.55:2467-PT-2) Avail: NTIS HC A99/MF A04 CSCL 22B

CONFERENCES, DESIGN ANALYSIS, DYNAMIC STRUCTURAL ANALYSIS, FLEXIBLE BODIES, JOINTS (JUNCTIONS), LARGE SPACE STRUCTURES, SPACE STATIONS

N88-14112*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
HYDROBURST TEST OF A CARBON-CARBON INVOLUTE EXIT CONE
ROY M. SULLIVAN Jan. 1986 33 p
(NASA-TP-2556; NAS 1.60:2556) Avail: NTIS HC A03/MF A01 CSCL 20H

BURST TESTS, CARBON-CARBON COMPOSITES, CONES, EXHAUST NOZZLES, HYDRODYNAMICS

N89-18504*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
PRACTICES IN ADEQUATE STRUCTURAL DESIGN
ROBERT S. RYAN Jan. 1989 98 p
(NASA-TP-2893; NAS 1.60:2893) Avail: NTIS HC A05/MF A01 CSCL 22B

FLIGHT SAFETY, MANAGEMENT METHODS, PROJECT MANAGEMENT, REQUIREMENTS, SPACE SHUTTLES, STRESS ANALYSIS, STRUCTURAL DESIGN

N90-14256*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
PAYLOAD CREW UTILIZATION FOR SPACELAB MISSIONS
K. Y. IBRAHIM and J. D. WEILER Jan. 1990 55 p
(NASA-TP-2976; NAS 1.60:2976) Avail: NTIS HC A04/MF A01 CSCL 22A

CREW PROCEDURES (INFLIGHT), PAYLOAD INTEGRATION, SCHEDULING, SPACECREWS, TASK COMPLEXITY

N90-19249*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EARTH SCIENCE GEOSTATIONARY PLATFORM TECHNOLOGY
ROBERT L. WRIGHT, ed. and THOMAS G. CAMPBELL, ed. Washington Jul. 1989 386 p Workshop held in Hampton, VA, 21-22 Sep. 1988
(NASA-CP-3040; L-16612; NAS 1.55:3040) Avail: NTIS HC A17/MF A03 CSCL 22B

ANTENNA DESIGN, CONFERENCES, ELECTROMAGNETISM, LARGE SPACE STRUCTURES, METROLOGY, MICROWAVE SENSORS, REMOTE SENSING, SYNCHRONOUS PLATFORMS

16

SPACE TRANSPORTATION

Includes passenger and cargo space transportation, e.g., shuttle operations; and space rescue techniques.

N87-12585*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
DEVELOPMENT TESTING OF LARGE VOLUME WATER SPRAYS FOR WARM FOG DISPERSAL
V. W. KELLER, B. J. ANDERSON, R. A. BURNS, G. G. LALA (New York State Univ., Albany), M. B. MEYER, and K. V. BEARD (Illinois Univ., Urbana-Champaign) Washington Jun. 1986 112 p
(NASA-TP-2607; NAS 1.60:2607) Avail: NTIS HC A06/MF A01 CSCL 14B

COALESCING, FOG DISPERSAL, SPACE SHUTTLES, SPACECRAFT LAUNCHING, SPRAY NOZZLES, WATER

N88-12520*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACECRAFT FIRE SAFETY
JANICE M. MARGLE, ed. (Pennsylvania State Univ., Abington.) 1987 134 p Workshop held in Cleveland, Ohio, 20-21 Aug. 1986
(NASA-CP-2476; E-3464; NAS 1.55:2476) Avail: NTIS HC A07/MF A01 CSCL 22B

ATMOSPHERIC COMPOSITION, COMBUSTION PHYSICS, CONFERENCES, FIRE EXTINGUISHERS, FIRES, FLAMMABILITY, INERT ATMOSPHERE, SPACE STATIONS, SPACECRAFT ENVIRONMENTS

N90-25160*# National Aeronautics and Space Administration, Washington, DC.
SPACE SHUTTLE AVIONICS SYSTEM
JOHN F. HANAWAY (Intermetrics, Inc., Houston, TX.) and ROBERT W. MOOREHEAD 1989 75 p Original contains color illustrations
(NAS9-17826)
(NASA-SP-504; S-579; NAS 1.21:504; LC-89-600316) Avail: NTIS HC A04/MF A01; also available SOD HC $8.50 as 033-000-01079-6; 5 functional color pages CSCL 22B

The Space Shuttle avionics system, which was conceived in the early 1970's and became operational in the 1980's represents a significant advancement of avionics system technology in the areas of systems and redundacy management, digital data base technology, flight software, flight control integration, digital fly-by-wire technology, crew display interface, and operational concepts. The origins and the evolution of the system are traced; the requirements, the constraints, and other factors which led to the final configuration are outlined; and the functional operation of the system is described. An overall system block diagram is included. Author

N90-26036*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE EFFECT OF INTERPLANETARY TRAJECTORY OPTIONS ON A MANNED MARS AEROBRAKE CONFIGURATION
ROBERT D. BRAUN, RICHARD W. POWELL, and LIN C. HARTUNG Washington Aug. 1990 79 p
(NASA-TP-3019; L-16661; NAS 1.60:3019) Avail: NTIS HC A05/MF A01 CSCL 22B

AEROBRAKING, ATMOSPHERIC ENTRY SIMULATION, INTERPLANETARY NAVIGATION, INTERPLANETARY TRAJECTORIES, MANNED MARS MISSIONS, PROPULSION SYSTEM PERFORMANCE, TRAJECTORY OPTIMIZATION

18

SPACECRAFT DESIGN, TESTING AND PERFORMANCE

Includes satellites; space platforms; space stations; spacecraft systems and components such as thermal and environmental controls; and attitude controls.

N87-16014*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA/DOD CONTROL/STRUCTURES INTERACTION TECHNOLOGY, 1986
ROBERT L. WRIGHT, comp. Nov. 1986 549 p Conference held in Norfolk, Va., 18-21 Nov. 1986; sponsored by NASA Langley Research Center and AFWAL
(NASA-CP-2447-PT-1; L-16242-PT-1; NAS 1.55:2447-PT-1) Avail: NTIS HC A23/MF A04 CSCL 22B

ANTENNAS, CONFERENCES, FLEXIBLE SPACECRAFT, LARGE SPACE STRUCTURES, SPACE STATIONS, SPACECRAFT CONTROL, SPACECRAFT DESIGN, SYSTEMS ENGINEERING, TRUSSES, VIBRATION DAMPING

N87-24495*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA/DOD CONTROL/STRUCTURES INTERACTION TECHNOLOGY, 1986
ROBERT L. WRIGHT, comp. Jun. 1987 314 p Conference held in Norfolk, Va., 18-21 Nov. 1986
(NASA-CP-2447-PT-2; L-16242-PT-2; NAS 1.55:2447-PT-2)
Avail: NTIS HC A14/MF A02 CSCL 22B
CONTROL STABILITY, CONTROL SYSTEMS DESIGN, INTERACTIVE CONTROL, SPACE STATIONS, SPACECRAFT CONTROL, VIBRATION DAMPING

N87-26073* National Aeronautics and Space Administration, Washington, DC.
SPACE STATION SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 4)
May 1987 220 p
(NASA-SP-7056(04); NAS 1.21:7056(04)) Avail: NTIS HC A10 CSCL 22B
This bibliography lists 832 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1, 1986 and December 31, 1986. Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design according to system, interactive analysis and design, structural and thermal analysis and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems. The coverage includes documents that define major systems and subsystems, servicing and support requirements, procedures and operations, and missions for the current and future space station. Author

N88-10084*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACECRAFT 2000
Jul. 1986 236 p Workshop held in Cleveland, Ohio, 29-31 Jul. 1986
(NASA-CP-2473; E-3358; NAS 1.55:2473) Avail: NTIS HC A11/MF A02 CSCL 22B
CONFERENCES, SPACE STATIONS, SPACECRAFT ELECTRONIC EQUIPMENT, SPACECRAFT PROPULSION, SPACECRAFT TRACKING, SYSTEMS ANALYSIS, TELEMETRY

N88-10829*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FOURTEENTH SPACE SIMULATION CONFERENCE: TESTING FOR A PERMANENT PRESENCE IN SPACE
JOSEPH L. STECHER, III, ed. 1986 435 p Conference held in Baltimore, Md., 3-6 Nov. 1986; sponsored by NASA, Inst. of Environmental Sciences, AIAA, and the American Society for Testing and Materials
(NASA-CP-2446; REPT-86B0561; NAS 1.55:2446) Avail: NTIS HC A19/MF A03 CSCL 22B
CLEANING, CONFERENCES, SIMULATION, SPACE SHUTTLES, SPACE STATIONS, SPACECRAFT CONTAMINATION, SPACECRAFT ENVIRONMENTS, TEST FACILITIES, THERMAL ENVIRONMENTS

N88-10870*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SPACE CONSTRUCTION
JANE A. HAGAMAN, ed. Oct. 1987 308 p Conference held in Hampton, Va., 6-7 Aug. 1986
(NASA-CP-2490; L-16378; NAS 1.55:2490) Avail: NTIS HC A14/MF A02 CSCL 22B
CONFERENCES, EXTRAVEHICULAR ACTIVITY, MANAGEMENT PLANNING, MISSION PLANNING, SPACE SHUTTLE PAYLOADS, SPACE STATIONS, SPACE TRANSPORTATION SYSTEM

N88-13382* National Aeronautics and Space Administration, Washington, DC.
SPACE STATION SYSTEMS: A BIBLIOGRAPHY WITH INDEXES
Nov. 1987 245 p
(NASA-SP-7056(05); NAS 1.21:7056(05)) Avail: NTIS HC A11 CSCL 22B
This bibliography lists 967 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1, 1987 and June 30, 1987. Its purpose is to provide helpful information to the researcher, manager, and designer in technology development and mission design according to system, interactive analysis and design, structural and thermal analysis and design, structural concepts and control systems, electronics, advanced materials, assembly concepts, propulsion, and solar power satellite systems. The coverage includes documents that define major systems and subsystems, servicing and support requirements, procedures and operations, and missions for the current and future space station. Author

N88-14115*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CONTINUUM MODELING OF LARGE LATTICE STRUCTURES: STATUS AND PROJECTIONS
AHMED K. NOOR and MARTIN M. MIKULAS, JR. Feb. 1988 79 p
(NASA-TP-2767; L-16360; NAS 1.60:2767) Avail: NTIS HC A05/MF A01 CSCL 22B
CONTINUUM MODELING, LATTICES, STRUCTURAL ANALYSIS, TRUSSES

N89-12580*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LIGHTWEIGHT STRUCTURAL DESIGN OF A BOLTED CASE JOINT FOR THE SPACE SHUTTLE SOLID ROCKET MOTOR
JOHN T. DORSEY, PETER A. STEIN (Coast Guard, Yorktown, Va.), and HAROLD G. BUSH Washington, D.C. Nov. 1988 24 p
(NASA-TP-2851; L-16496; NAS 1.60:2851) Avail: NTIS HC A03/MF A01 CSCL 22B
BOLTED JOINTS, ROCKET ENGINE CASES, SPACE SHUTTLE MAIN ENGINE, STRUCTURAL ANALYSIS

N89-12582*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FIFTEENTH SPACE SIMULATION CONFERENCE: SUPPORT THE HIGHWAY TO SPACE THROUGH TESTING
JOSEPH STECHER, ed. 1988 492 p Conference held in Williamsburg, Va., 31 Oct. - 3 Nov. 1988; sponsored by NASA, Inst. of Environmental Sciences, AIAA, and the American Society for Testing and Materials
(NASA-CP-3015; REPT-88B0253; NAS 1.55:3015) Avail: NTIS HC A21/MF A03 CSCL 22B
COMMUNICATION SATELLITES, CONFERENCES, HEAT TRANSFER, RADIATION DAMAGE, SOLAR SIMULATORS, SPACE ENVIRONMENT SIMULATION, SPACE SIMULATORS, SPACE STATIONS, SPACECRAFT CONTAMINATION, THERMAL CONTROL COATINGS

N89-18522* National Aeronautics and Space Administration, Washington, DC.
SPACE STATION SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 7)
Dec. 1988 289 p
(NASA-SP-7056(07); NAS 1.21:7056(07)) Avail: NTIS HC A13 CSCL 22B
This bibliography lists 1,158 reports, articles, and other documents introduced into the NASA scientific and technical information system between January 1, 1988 and June 30, 1988. Its purpose is to provide helpful information to researchers, designers and managers engaged in Space Station technology development and mission design. Coverage includes documents that define major systems and subsystems related to structures

and dynamic control, electronics and power supplies, propulsion, and payload integration. In addition, orbital construction methods, servicing and support requirements, procedures and operations, and missions for the current and future Space Station are included. Author

N89-26037* National Aeronautics and Space Administration, Washington, DC.
TECHNOLOGY FOR LARGE SPACE SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 20)
Jun. 1989 183 p
(NASA-SP-7046(20); NAS 1.21:7046(20)) Avail: NTIS HC A09 CSCL 22B

This bibliography lists 694 reports, articles, and other documents introduced into the NASA Scientific and Technical Information System between July, 1988 and December, 1988. Its purpose is to provide helpful information to the researcher or manager engaged in the development of technologies related to large space systems. Subject areas include mission and program definition, design techniques, structural and thermal analysis, structural dynamics and control systems, electronics, advanced materials, assembly concepts, and propulsion. Author

N90-21062*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA/DOD CONTROLS-STRUCTURES INTERACTION TECHNOLOGY 1989
JERRY R. NEWSOM, comp. Washington Aug. 1989 543 p Conference held in San Diego, CA, 29 Jan. - 2 Feb. 1989; sponsored by NASA Langley Research Center, Hampton, VA and Wright Research Development Center, Wright-Patterson AFB, OH
(NASA-CP-3041; L-16602; NAS 1.55:3041) Avail: NTIS HC A23/MF A03 CSCL 22B

CONFERENCES, CONTROL SYSTEMS DESIGN, FLEXIBLE BODIES, GROUND TESTS, LARGE SPACE STRUCTURES, MATHEMATICAL MODELS, STRUCTURAL DESIGN, SYSTEMS ENGINEERING

N90-25171* National Aeronautics and Space Administration, Washington, DC.
SPACE STATION SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 10)
Jun. 1990 352 p
(NASA-SP-7056(10); NAS 1.21:7056(10)) Avail: NTIS HC A16 CSCL 22B

This bibliography lists 1,422 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1, 1989 and December 31, 1989. Its purpose is to provide helpful information to researchers, designers and managers engaged in Space Station technology development and mission design. Coverage includes documents that define major systems and subsystems related to structures and dynamic control, electronics and power supplies, propulsion, and payload integration. In addition, orbital construction methods, servicing and support requirements, procedures and operations, and missions for the current and future Space Station are included. Author

N90-26056* National Aeronautics and Space Administration, Washington, DC.
TECHNOLOGY FOR LARGE SPACE SYSTEMS: A BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 22)
Jul. 1990 274 p
(NASA-SP-7046(22); NAS 1.21:7046(22)) Avail: NTIS HC A12 CSCL 22B

This bibliography lists 1077 reports, articles, and other documents introduced into the NASA Scientific and Technical Information System between July 1, 1989 and December 31, 1989. Its purpose is to provide helpful information to the researcher or manager engaged in the development of technologies related to large space systems. Subject areas include mission and program definition, design techniques, structural and thermal analysis, structural dynamics and control systems, electronics, advanced materials, assembly concepts, and propulsion. Author

N90-27738*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THERMAL-DISTORTION ANALYSIS OF AN ANTENNA STRONGBACK FOR GEOSTATIONARY HIGH-FREQUENCY MICROWAVE APPLICATIONS
JEFFREY T. FARMER, DEBORAH M. WAHLS, and ROBERT L. WRIGHT Washington Sep. 1990 22 p
(NASA-TP-3016; L-16739; NAS 1.60:3016) Avail: NTIS HC A03/MF A01 CSCL 22A

ANTENNA DESIGN, GEOSYNCHRONOUS ORBITS, MICROWAVE ANTENNAS, MICROWAVE SOUNDING, STRUCTURAL ANALYSIS, SYNCHRONOUS PLATFORMS, THERMAL ENVIRONMENTS

20

SPACECRAFT PROPULSION AND POWER

Includes main propulsion systems and components, e.g., rocket engines; and spacecraft auxiliary power sources.

N87-20380*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SOLAR ARRAY FLIGHT EXPERIMENT/DYNAMIC AUGMENTATION EXPERIMENT
LEIGHTON E. YOUNG and HOMER C. PACK, JR. Feb. 1987 72 p
(NASA-TP-2690; NAS 1.60:2690) Avail: NTIS HC A04/MF A01 CSCL 10A

LARGE SPACE STRUCTURES, SOLAR ARRAYS, SOLAR DYNAMIC POWER SYSTEMS, SPACE ERECTABLE STRUCTURES, SPACE SHUTTLE PAYLOADS

N87-20381*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL THRUST PERFORMANCE OF A HIGH-AREA-RATIO ROCKET NOZZLE
ALBERT J. PAVLI, KENNETH J. KACYNSKI, and TAMARA A. SMITH Apr. 1987 16 p Presented at the 23rd JANNAF Combustion Meeting, Hampton, Va., 20-24 Oct. 1986
(NASA-TP-2720; E-3236-1; NAS 1.60:2720) Avail: NTIS HC A03/MF A01 CSCL 21H

AREA, NOZZLE GEOMETRY, ROCKET NOZZLES, ROCKET THRUST

N87-22766*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
STRUCTURAL INTEGRITY AND DURABILITY OF REUSABLE SPACE PROPULSION SYSTEMS
1987 205 p Conference held in Cleveland, Ohio, 12-13 May 1987
(NASA-CP-2471; E-3512; NAS 1.55:2471) Avail: NTIS HC A10/MF A02 CSCL 21H

AEROTHERMODYNAMICS, CONFERENCES, DURABILITY, DYNAMIC STRUCTURAL ANALYSIS, FATIGUE (MATERIALS), FRACTURE MECHANICS, SPACE SHUTTLE MAIN ENGINE, SPACECRAFT PROPULSION, STRUCTURAL RELIABILITY

N87-25423*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPARISON OF THEORETICAL AND EXPERIMENTAL THRUST PERFORMANCE OF A 1030:1 AREA RATIO ROCKET NOZZLE AT A CHAMBER PRESSURE OF 2413 KN/M2 (350 PSIA)
TAMARA A. SMITH, ALBERT J. PAVLI, and KENNETH J. KACYNSKI 1987 25 p Presented at the 23rd Joint Propulsion Conference, San Diego, Calif., 29 Jun. - 2 Jul. 1987; sponsored

by AIAA, SAE, ASME and ASEE
(NASA-TP-2725; E-3523; NAS 1.60:2725; AIAA-87-2069) Avail: NTIS HC A03/MF A01 CSCL 21H
ENGINE TESTS, PREDICTIONS, ROCKET NOZZLES, ROCKET THRUST

N87-25424*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EXPERIMENTAL EVALUATION OF HEAT TRANSFER ON A 1030:1 AREA RATIO ROCKET NOZZLE
KENNETH J. KACYNSKI, ALBERT J. PAVLI, and TAMARA A. SMITH Aug. 1987 28 p Presented at the 23rd Joint Propulsion Conference, San Diego, Calif., 29 Jun. - 2 Jul. 1987; sponsored by AIAA, SAE, ASME and ASEE
(NASA-TP-2726; E-3558; NAS 1.60:2726; AIAA-87-2070) Avail: NTIS HC A03/MF A01 CSCL 21H
EXHAUST NOZZLES, HEAT FLUX, HEAT TRANSFER, NOZZLE FLOW, ROCKET NOZZLES, WALL TEMPERATURE

N87-25425*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ANALYSIS OF QUASI-HYBRID SOLID ROCKET BOOSTER CONCEPTS FOR ADVANCED EARTH-TO-ORBIT VEHICLES
ROBERT L. ZURAWSKI and DOUGLAS C. RAPP (Sverdrup Technology, Inc., Cleveland, Ohio.) Aug. 1987 32 p Presented at the 23rd Joint Propulsion Conference, San Diego, Calif. 29 Jun. - 2 Jul. 1987; sponsored by AIAA, SAE, ASME and ASEE
(NASA-TP-2751; E-3554; NAS 1.60:2751; AIAA-87-2082) Avail: NTIS HC A03/MF A01 CSCL 21H
FEASIBILITY ANALYSIS, HYBRID PROPELLANT ROCKET ENGINES, SPACE SHUTTLE BOOSTERS

N88-12538*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPATABILITY OF DISPERSION-STRENGTHENED PLATINUM WITH RESISTOJET PROPELLANTS
MARGARET V. WHALEN and MICHAEL V. NATHAL Oct. 1987 29 p
(NASA-TP-2765; E-3738; NAS 1.60:2765) Avail: NTIS HC A03/MF A01 CSCL 21H
COMPATIBILITY, DISPERSING, PLATINUM, PRECIPITATION HARDENING, RESISTOJET ENGINES, ROCKET PROPELLANTS

N89-12626*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
ADVANCED EARTH-TO-ORBIT PROPULSION TECHNOLOGY 1986, VOLUME 2
R. J. RICHMOND, ed. and S. T. WU, ed. (Alabama Univ., Huntsville.) Oct. 1986 775 p Conference held in Huntsville, Ala., 13-15 May 1986
(NASA-CP-2437-VOL-2; M-541-VOL-2; NAS 1.55:2437-VOL-2) Avail: NTIS HC A99/MF E06 CSCL 21H
BEARINGS, BOOSTER ROCKET ENGINES, CONFERENCES, FRACTURE MECHANICS, FUEL COMBUSTION, HYDROGEN EMBRITTLEMENT, HYDROGEN OXYGEN ENGINES, METAL FATIGUE, PROPULSION SYSTEM CONFIGURATIONS, ROCKET ENGINE DESIGN, SPACE SHUTTLE MAIN ENGINE, SPACECRAFT PROPULSION

N89-15979*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
HIGH-PRESSURE CALORIMETER CHAMBER TESTS FOR LIQUID OXYGEN/KEROSENE (LOX/RP-1) ROCKET COMBUSTION
PHILIP A. MASTERS, ELIZABETH S. ARMSTRONG, and HAROLD G. PRICE Dec. 1988 18 p
(NASA-TP-2862; E-2645; NAS 1.60:2862) Avail: NTIS HC A03/MF A01 CSCL 21H
CALORIMETERS, COMBUSTION CHAMBERS, HIGH PRESSURE, KEROSENE, LIQUID OXYGEN, OXYGEN-HYDROCARBON ROCKET ENGINES, RP-1 ROCKET PROPELLANTS

N90-10140*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SECOND BEAMED SPACE-POWER WORKSHOP
RUSSELL J. DEYOUNG, ed. Washington Jul. 1989 439 p Workshop held in Hampton, VA, 28 Feb. - 2 Mar. 1989
(NASA-CP-3037; L-16590; NAS 1.55:3037) Avail: NTIS HC A19/MF A03 CSCL 10B
CONFERENCES, ENERGY CONVERSION, LASER POWER BEAMING, LASER PROPULSION, LUNAR BASES, MICROWAVE POWER BEAMING, SATELLITE POWER TRANSMISSION, SOLAR POWER SATELLITES, SPACECRAFT POWER SUPPLIES, SPACECRAFT PROPULSION

N90-21795*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
FREE-SPACE POWER TRANSMISSION
Washington Nov. 1989 189 p Workshop held in Cleveland, OH, 29-30 Mar. 1988
(NASA-CP-10016; E-4161; NAS 1.55:10016) Avail: NTIS HC A09/MF A02 CSCL 10B
CONFERENCES, CYCLOTRON RESONANCE DEVICES, FREE ELECTRON LASERS, INFLATABLE STRUCTURES, POWER TRANSMISSION, SOLAR-PUMPED LASERS

N90-28611*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
ADVANCED EARTH-TO-ORBIT PROPULSION TECHNOLOGY 1988, VOLUME 1
ROBERT J. RICHMOND, ed. and S. T. WU, ed. (Alabama Univ., Huntsville.) Washington Sep. 1988 775 p Conference held in Huntsville, AL, 10-12 May 1988
(NASA-CP-3012-VOL-1; M-593-VOL-1; NAS 1.55:3012-VOL-1) Avail: NTIS HC A99/MF E06 CSCL 21H
CONFERENCES, LIQUID PROPELLANT ROCKET ENGINES, LIQUID ROCKET PROPELLANTS, OXYGEN-HYDROCARBON ROCKET ENGINES, PROPULSION SYSTEM PERFORMANCE, TRANSFER ORBITS

23

CHEMISTRY AND MATERIALS (GENERAL)

N87-18611*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SPECTROSCOPIC COMPARISON OF EFFECTS OF ELECTRON RADIATION ON MECHANICAL PROPERTIES OF TWO POLYIMIDES
EDWARD R. LONG, JR. and SHEILA ANN T. LONG Apr. 1987 21 p
(NASA-TP-2663; L-16200; NAS 1.60:2663) Avail: NTIS HC A03/MF A01 CSCL 11C
DURABILITY, ELECTRON RADIATION, KAPTON (TRADEMARK), RADIATION DAMAGE, TENSILE PROPERTIES

N88-12543*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SURFACE CATALYTIC DEGRADATION STUDY OF TWO LINEAR PERFLUOROPOLYALKYLETHERS AT 345 C
WILFREDO MORALES Nov. 1987 12 p
(NASA-TP-2774; E-3395; NAS 1.60:2774) Avail: NTIS HC A03/MF A01 CSCL 07A
ALKYL COMPOUNDS, CATALYSIS, DEGRADATION, ETHERS, PERFLUORO COMPOUNDS, SURFACE REACTIONS

N89-23528*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA/SDIO SPACE ENVIRONMENTAL EFFECTS ON MATERIALS WORKSHOP, PART 1

LOUIS A. TEICHMAN, comp. and BLAND A. STEIN, comp. Washington May 1989 356 p Workshop held in Hampton, VA, 28 Jun. - 1 Jul. 1988
(NASA-CP-3035-PT-1; L-16575-PT-1; NAS 1.55:3035-PT-1)
Avail: NTIS HC A16/MF A02 CSCL 11G
CONFERENCES, EARTH ORBITAL ENVIRONMENTS, MICROMETEOROIDS, OXYGEN ATOMS, RADIATION EFFECTS, SPACE DEBRIS, SPACECRAFT CHARGING, SPACECRAFT CONTAMINATION

N89-23547*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA/SDIO SPACE ENVIRONMENTAL EFFECTS ON MATERIALS WORKSHOP, PART 2
LOUIS A. TEICHMAN, comp. and BLAND A. STEIN, comp. Washington May 1989 253 p Workshop held in Hampton, VA, 28 Jun. - 1 Jul. 1988
(NASA-CP-3035-PT-2; L-16575-PT-2; NAS 1.55:3035-PT-2)
Avail: NTIS HC A12/MF A02 CSCL 11G
EXTRATERRESTRIAL ENVIRONMENTS, MICROMETEOROIDS, OXYGEN ATOMS, RADIATION EFFECTS, THERMAL RADIATION

N90-24350*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NATIONAL EDUCATORS' WORKSHOP: UPDATE 1989 STANDARD EXPERIMENTS IN ENGINEERING MATERIALS SCIENCE AND TECHNOLOGY
JAMES E. GARDNER, comp. and JAMES A. JACOBS, comp. (Norfolk State Univ., VA.) Washington May 1990 182 p Workshop held in Hampton, VA, 17-19 Oct. 1989
(NAG1-976)
(NASA-CP-3074; L-16785; NAS 1.55:3074) Avail: NTIS HC A09/MF A02 CSCL 07A
COMPUTER ASSISTED INSTRUCTION, CONFERENCES, DECISION MAKING, EDUCATION, ELECTROCHEMISTRY, EXPERIMENT DESIGN, FIBER COMPOSITES, MANUFACTURING, NASA PROGRAMS, PLASTICS, PROCESS CONTROL (INDUSTRY), RESEARCH AND DEVELOPMENT, TECHNOLOGIES, THERMAL CONDUCTIVITY

N90-26075*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PROCEEDINGS OF THE LDEF MATERIALS DATA ANALYSIS WORKSHOP
BLAND A. STEIN, comp. and PHILIP R. YOUNG, comp. Jul. 1990 289 p Workshop held at Cocoa Beach, FL, 13-14 Feb. 1990
(NASA-CP-10046; NAS 1.55:10046) Avail: NTIS HC A13/MF A02 CSCL 07A
CONFERENCES, DATA BASES, ENVIRONMENT EFFECTS, LIFE (DURABILITY), LONG DURATION EXPOSURE FACILITY, SPACEBORNE EXPERIMENTS, SPACECRAFT CONSTRUCTION MATERIALS

24

COMPOSITE MATERIALS

Includes physical, chemical, and mechanical properties of laminates and other composite materials.

N87-10184*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF THERMAL CYCLING ON GRAPHIE-FIBER-REINFORCED 6061 ALUMINUM
G. A. DRIES (PRC Kentron, Inc., Hampton, Va.) and S. S. TOMPKINS Oct. 1986 29 p
(NASA-TP-2612; L-16139; NAS 1.60:2612) Avail: NTIS HC A03/MF A01 CSCL 11D
ALUMINUM GRAPHITE COMPOSITES, CARBON FIBERS, METAL MATRIX COMPOSITES, REINFORCING FIBERS, SPACECRAFT STRUCTURES, THERMAL CYCLING TESTS

N87-25435*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PRELIMINARY STRUCTURAL DESIGN OF COMPOSITE MAIN ROTOR BLADES FOR MINIMUM WEIGHT
MARK W. NIXON Jul. 1987 28 p Prepared in cooperation with Army Aviation Research and Development Command, Hampton, Va.
(DA PROJ. 1L1-62209-AH-76)
(NASA-TP-2730; L-16310; NAS 1.60:2730; AVSCOM-TM-87-B-6; AD-A180364) Avail: NTIS HC A03/MF A01 CSCL 11/4
BLADES, COMPOSITE MATERIALS, DYNAMIC STRUCTURAL ANALYSIS, HELICOPTERS, ROTORS, WEIGHT REDUCTION

N87-29612*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE ACEE PROGRAM AND BASIC COMPOSITES RESEARCH AT LANGLEY RESEARCH CENTER (1975 TO 1986): SUMMARY AND BIBLIOGRAPHY
MARVIN B. DOW Oct. 1987 147 p
(NASA-RP-1177; L-16290; NAS 1.61:1177) Avail: NTIS HC A07/MF A01 CSCL 11D
Composites research conducted at the Langley Research Center during the period from 1975 to 1986 is described, and an annotated bibliography of over 600 documents (with their abstracts) is presented. The research includes Langley basic technology and the composite primary structures element of the NASA Aircraft Energy Efficiency (ACEE) Program. The basic technology documents cited in the bibliography are grouped according to the research activity such as design and analysis, fatigue and fracture, and damage tolerance. The ACEE documents cover development of composite structures for transport aircraft. Author

N88-10117*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
OUTGASSING DATA FOR SELECTING SPACECRAFT MATERIALS
WILLIAM A. CAMPBELL, JR. and RICHARD S. MARRIOTT Aug. 1987 323 p Revised
(NASA-RP-1124; REPT-87B0347; NAS 1.61:1124) Avail: NTIS HC A14/MF A02 CSCL 11D
Outgassing data, derived from tests at 398 K (125 C) for 24 hours in vacuum as per ASTM E 595-77, have been compiled for numerous materials for spacecraft use. The data presented are the total mass loss (TML) and the collected volatile condensable materials (CVCM). The various materials are listed by likely usage and alphabetically. Author

N88-25480*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PROPERTIES OF TWO COMPOSITE MATERIALS MADE OF TOUGHENED EPOXY RESIN AND HIGH-STRAIN GRAPHITE FIBER
MARVIN B. DOW and DONALD L. SMITH (PRC Kentron, Inc., Hampton, Va.) Jul. 1988 44 p
(NASA-TP-2826; L-16425; NAS 1.60:2826) Avail: NTIS HC A03/MF A01 CSCL 11D
COMPRESSIVE STRENGTH, EPOXY RESINS, GRAPHITE-EPOXY COMPOSITES, REINFORCING FIBERS

N88-70029* National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF CONTINUOUS AND CYCLIC THERMAL EXPOSURES ON BORON- AND BORSIC-REINFORCED 6061 ALUMINUM COMPOSITES
GEORGE C. OLSEN and STEPHEN S. TOMPKINS Nov. 1977 48 p
(NASA-TP-1063; L-11722; NAS 1.60:1063) Avail: NTIS
ALUMINUM, BORON, BORSIC (TRADENAME), COMPOSITE

MATERIALS, CYCLIC LOADS, METAL MATRIX COMPOSITES, THERMAL CYCLING TESTS

N89-19385*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE EFFECTS OF SIMULATED SPACE ENVIRONMENTAL PARAMETERS ON SIX COMMERCIALLY AVAILABLE COMPOSITE MATERIALS
JOAN G. FUNK and GEORGE F. SYKES, JR. Apr. 1989 34 p
(NASA-TP-2906; L-16549; NAS 1.60:2906) Avail: NTIS HC A03/MF A01 CSCL 11D
COMPOSITE MATERIALS, EARTH ORBITAL ENVIRONMENTS, FIBER COMPOSITES, RADIATION EFFECTS, SPACE ENVIRONMENT SIMULATION

N89-27796*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
TUNGSTEN FIBER REINFORCED COPPER MATRIX COMPOSITES: A REVIEW
DAVID L. MCDANELS Sep. 1989 24 p
(NASA-TP-2924; E-4318; NAS 1.60:2924) Avail: NTIS HC A03/MF A01 CSCL 11D
COPPER, FIBER COMPOSITES, METAL MATRIX COMPOSITES, STRESS-STRAIN RELATIONSHIPS, TUNGSTEN

N90-10179*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE INTERLAMINAR FRACTURE TOUGHNESS OF WOVEN GRAPHITE/EPOXY COMPOSITES
JOAN G. FUNK and JERRY W. DEATON Washington Nov. 1989 28 p
(NASA-TP-2950; L-16629; NAS 1.60:2950) Avail: NTIS HC A03/MF A01 CSCL 11D
FABRICS, FRACTURE STRENGTH, GRAPHITE-EPOXY COMPOSITES, WEAVING

N90-16007*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
INSTRUMENTED IMPACT AND RESIDUAL TENSILE STRENGTH TESTING OF EIGHT-PLY CARBON EOPOXY SPECIMENS
A. T. NETTLES Jan. 1990 43 p
(NASA-TP-2981; NAS 1.60:2981) Avail: NTIS HC A03/MF A01 CSCL 11D
CARBON FIBERS, EPOXY MATRIX COMPOSITES, IMPACT STRENGTH, IMPACT TESTS

N90-19302*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
HEAT TREATMENT STUDY OF THE SIC/TI-15-3 COMPOSITE SYSTEM Final Report
BRADLEY A. LERCH, TIMOTHY P. GABB, and REBECCA A. MACKAY Washington Jan. 1990 31 p
(NASA-TP-2970; E-4985; NAS 1.60:2970) Avail: NTIS HC A03/MF A01 CSCL 11D
AGING (METALLURGY), FIBER COMPOSITES, OXIDATION, SILICON CARBIDES, TENSILE STRENGTH, TITANATES

N90-25198*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
LOW VELOCITY INSTRUMENTED IMPACT TESTING OF FOUR NEW DAMAGE TOLERANT CARBON/EPOXY COMPOSITE SYSTEMS
D. G. LANCE and A. T. NETTLES Jul. 1990 39 p
(NASA-TP-3029; NAS 1.60:3029) Avail: NTIS HC A03/MF A01 CSCL 11D
CARBON FIBERS, DAMAGE ASSESSMENT, EPOXY MATRIX COMPOSITES, IMPACT DAMAGE, IMPACT TESTS, LOW SPEED

N90-26077*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
BUCKLING AND POSTBUCKLING BEHAVIOR OF SQUARE COMPRESSION-LOADED GRAPHITE-EPOXY PLATES WITH CIRCULAR CUTOUTS
MICHAEL P. NEMETH Washington Aug. 1990 33 p Presented at the 8th DOD/NASA/FAA Conference on Fibrous Composites in Structural Design, Norfolk, VA, 28-30 1989
(NASA-TP-3007; L-16777; NAS 1.60:3007) Avail: NTIS HC A03/MF A01 CSCL 11D
BENDING, BUCKLING, COMPRESSION LOADS, GRAPHITE-EPOXY COMPOSITES, METAL PLATES, OPENINGS, ORTHOTROPIC PLATES

N90-27788*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A PROTECTION AND DETECTION SURFACE (PADS) FOR DAMAGE TOLERANCE
MARK J. SHUART, CHUNCHU B. PRASAD, and SHERRILL B. BIGGERS (Lockheed Aeronautical Systems Co., Burbank, CA.) Washington Sep. 1990 21 p
(NASA-TP-3011; L-16775; NAS 1.60:3011) Avail: NTIS HC A03/MF A01 CSCL 11D
AIRCRAFT STRUCTURES, COMPOSITE STRUCTURES, FAILURE, IMPACT DAMAGE, PROTECTION, TOLERANCES (MECHANICS)

N90-27792*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
AMSAHTS 1990: ADVANCES IN MATERIALS SCIENCE AND APPLICATIONS OF HIGH TEMPERATURE SUPERCONDUCTORS
YURY FLOM, ed. Washington Apr. 1990 137 p Conference held in Greenbelt, MD, 2-6 Apr. 1990
(NASA-CP-10043; REPT-90B00018; NAS 1.55:10043) Avail: NTIS HC A07/MF A02 CSCL 11D
CONFERENCES, HIGH TEMPERATURE SUPERCONDUCTORS, REACTION KINETICS, SURFACE RACTIONS, TECHNOLOGY UTILIZATION, THERMODYNAMIC PROPERTIES

N90-27876*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
AN EXAMINATION OF IMPACT DAMAGE IN GLASS-PHENOLIC AND ALUMINUM HONEYCOMB CORE COMPOSITE PANELS
A. T. NETTLES, D. G. LANCE, and A. J. HODGE Aug. 1990 25 p
(NASA-TP-3042; NAS 1.60:3042) Avail: NTIS HC A03/MF A01 CSCL 11D
ALUMINUM, GLASS FIBER REINFORCED PLASTICS, GRAPHITE-EPOXY COMPOSITES, HONEYCOMB CORES, IMPACT DAMAGE, PHENOLIC RESINS, SANDWICH STRUCTURES

25

INORGANIC AND PHYSICAL CHEMISTRY

Includes chemical analysis, e.g., chromatography; combustion theory; electrochemistry; and photochemistry.

N87-18629*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ELECTRON STIMULATED DESORPTION OF ATOMIC OXYGEN FROM SILVER
R. A. OUTLAW, W. K. PEREGOY, GAR B. HOFLUND (Florida Univ., Gainesville), and GREGORY R. CORALLO Apr. 1987 25 p
(NASA-TP-2668; L-16225; NAS 1.60:2668) Avail: NTIS HC A03/MF A01 CSCL 07D
ATOMIC BEAMS, DESORPTION, ELECTRON EMISSION, OXYGEN, SILVER, STIMULATED EMISSION

N88-15846*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN ANALYTICAL STUDY OF THE HYDROGEN-AIR REACTION MECHANISM WITH APPLICATION TO SCRAMJET COMBUSTION
CASIMIR J. JACHIMOWSKI Feb. 1988 18 p
(NASA-TP-2791; L-16372; NAS 1.60:2791) Avail: NTIS HC A03/MF A01 CSCL 07D
CHEMICAL REACTIONS, COMBUSTION, HYDROGEN OXYGEN ENGINES, REACTION KINETICS, SUPERSONIC COMBUSTION RAMJET ENGINES

N88-16830*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A RAPID METHOD FOR THE COMPUTATION OF EQUILIBRIUM CHEMICAL COMPOSITION OF AIR TO 15000 K
RAMADAS K. PRABHU (Planning Research Corp., Hampton, Va.) and WAYNE D. ERICKSON Mar. 1988 31 p
(NASA-TP-2792; L-16375; NAS 1.60:2792) Avail: NTIS HC A03/MF A01 CSCL 07D
AIR, ATMOSPHERIC COMPOSITION, CHEMICAL COMPOSITION, CHEMICAL EQUILIBRIUM, COMPUTATION, HIGH TEMPERATURE

26

METALLIC MATERIALS

Includes physical, chemical, and mechanical properties of metals, e.g., corrosion; and metallurgy.

N87-16902*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
CONVENTIONALLY CAST AND FORGED COPPER ALLOY FOR HIGH-HEAT-FLUX THRUST CHAMBERS
JOHN M. KAZAROFF and GEORGE A. REPAS Feb. 1987 12 p
(NASA-TP-2694; E-3304; NAS 1.60:2694) Avail: NTIS HC A03/MF A01 CSCL 11F
COMBUSTION CHAMBERS, COPPER ALLOYS, HEAT FLUX, HIGH TEMPERATURE, LININGS, SPACE SHUTTLE MAIN ENGINE

N87-18644*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF LID (REGISTERED) PROCESSING ON THE MICROSTRUCTURE AND MECHANICAL PROPERTIES OF TI-6AL-4V AND TI-6AL-2SN-4ZR-2MO TITANIUM FOIL-GAUGE MATERIALS
LINDA B. BALCKBURN Apr. 1987 27 p
(NASA-TP-2677; L-16098; NAS 1.60:2677) Avail: NTIS HC A03/MF A01 CSCL 11F
BONDING, DIFFUSION, INTERFACES, LIQUIDS, MECHANICAL PROPERTIES, MICROSTRUCTURE, PROTECTIVE COATINGS, TITANIUM ALLOYS

N87-20407*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MATERIAL CHARACTERIZATION OF SUPERPLASTICALLY FORMED TITANIUM (TI-6AL-2SN-4ZR-2MO) SHEET
WILLIAM A. OSSA (PRC Kentron, Inc., Hampton, Va.) and DICK M. ROYSTER 1987 38 p
(NASA-TP-2674; L-16115; NAS 1.60:2674) Avail: NTIS HC A03/MF A01 CSCL 11F
AEROSPACE INDUSTRY, SUPERPLASTICITY, TENSILE CREEP, TITANIUM ALLOYS

N87-21076*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE CORROSION MECHANISMS FOR PRIMER COATED 2219-T87 ALUMINUM
MERLIN D. DANFORD and WARD W. KNOCKEMUS (Huntingdon Coll., Montgomery, Ala.) Apr. 1987 25 p
(NASA-TP-2715; M-559; NAS 1.60:2715) Avail: NTIS HC A03/MF A01 CSCL 11F
ALUMINUM ALLOYS, CORROSION RESISTANCE, PRIMERS (COATINGS), PROTECTIVE COATINGS

N87-25463*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
HYDROGEN TRAPPING AND THE INTERACTION OF HYDROGEN WITH METALS
MERLIN D. DANFORD Jul. 1987 36 p
(NASA-TP-2744; NAS 1.60:2744) Avail: NTIS HC A03/MF A01 CSCL 11F
CRYSTAL LATTICES, GAS-METAL INTERACTIONS, HYDROGEN, TRAPPING

N87-27024*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PERMEATION OF OXYGEN THROUGH HIGH PURITY, LARGE GRAIN SILVER
R. A. OUTLAW, W. K. PEREGOY, and GAR B. HOFLUND (Florida Univ., Gainesville.) Sep. 1987 19 p
(NASA-TP-2755; L-16305; NAS 1.60:2755) Avail: NTIS HC A03/MF A01 CSCL 11F
GRAIN BOUNDARIES, OXYGEN, PERMEATING, PURITY, SILVER

N89-10996*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
INDENTATION PLASTICITY AND FRACTURE IN SILICON
GEORGE C. RYBICKI and P. PIROUZ (Case Western Reserve Univ., Cleveland, Ohio.) Nov. 1988 30 p
(NASA-TP-2863; E-4184; NAS 1.60:2863) Avail: NTIS HC A03/MF A01 CSCL 11B
CRYSTAL DISLOCATIONS, DOPED CRYSTALS, FRACTURE STRENGTH, HARDNESS, PLASTIC PROPERTIES, SILICON, SINGLE CRYSTALS, TRANSITION TEMPERATURE

N89-17650*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SECONDARY ELECTRON EMISSION CHARACTERISTICS OF UNTREATED AND ION-TEXTURED TITANIUM
ARTHUR N. CURREN, KENNETH A. JENSEN, and GARY A. BLACKFORD (Case Western Reserve Univ., Cleveland, OH.) Mar. 1989 16 p
(NASA-TP-2902; E-4495; NAS 1.60:2902) Avail: NTIS HC A03/MF A01 CSCL 11F
ELECTRON EMISSION, ION PLATING, MACHINING, SECONDARY EMISSION, SURFACE FINISHING, TITANIUM

N89-19406*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
AN ELECTROCHEMICAL STUDY OF CORROSION PROTECTION BY PRIMER-TOPCOAT SYSTEMS ON 4130 STEEL WITH AC IMPEDANCE AND DC METHODS
M. J. MENDREK, R. H. HIGGINS, and M. D. DANFORD May 1988 56 p
(NASA-TP-2820; NAS 1.60:2820) Avail: NTIS HC A04/MF A01 CSCL 11F
ALTERNATING CURRENT, DIRECT CURRENT, ELECTROCHEMICAL CORROSION, IMPEDANCE, METAL SURFACES, PRIMERS (COATINGS), PROTECTIVE COATINGS, STAINLESS STEELS

N89-26976*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
STRESS CORROSION STUDY OF PH13-8MO STAINLESS STEEL USING THE SLOW STRAIN RATE TECHNIQUE

PABLO D. TORRES Washington Jul. 1989 32 p
(NASA-TP-2934; NAS 1.60:2934) Avail: NTIS HC A03/MF A01 CSCL 11F

AGING (METALLURGY), SALT SPRAY TESTS, STAINLESS STEELS, STRAIN RATE, STRESS CORROSION CRACKING

N90-10248*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EMITTANCE, CATALYSIS, AND DYNAMIC OXIDATION OF TI-14AL-21NB
K. E. WIEDEMANN, R. K. CLARK, and S. N. SANKARAN (Analytical Services and Materials, Inc., Hampton, VA.) 1989 1 p Presented at the 1988 Annual Meeting of TMS AIME, Phoenix, AZ, Jan. 1988
(NASA-TP-2955; L-16606; NAS 1.60:2955) PREVIEW CSCL 11F

ALUMINUM ALLOYS, CATALYSIS, EMITTANCE, NIOBIUM ALLOYS, OXIDATION, OXIDATION RESISTANCE, TITANIUM ALLOYS

N90-15211*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SECONDARY ELECTRON EMISSION CHARACTERISTICS OF MOLYBDENUM-MASKED, ION-TEXTURED OFHC COPPER
ARTHUR N. CURREN, KENNETH A. JENSEN, and ROBERT F. ROMAN Jan. 1990 15 p
(NASA-TP-2967; E-5009; NAS 1.60:2967) Avail: NTIS HC A03/MF A01 CSCL 11F

COPPER, ELECTRON BOMBARDMENT, MOLYBDENUM, SECONDARY EMISSION, TRAVELING WAVE TUBES

N90-25206*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
OXIDATION CHARACTERISTICS OF TI-14AL-21NB INGOT ALLOY
SANKARA N. SANKARAN, RONALD K. CLARK, JALAIAH UNNAM, and KARL E. WIEDEMANN (*Analytical Services and Materials*, Inc., Hampton, VA.) Washington Jul. 1990 24 p
(NASA-TP-3012; L-16658; NAS 1.60:3012) Avail: NTIS HC A03/MF A01 CSCL 11F

ALUMINUM OXIDES, INGOTS, NIOBIUM ALLOYS, OXIDATION, REACTION KINETICS, TEMPERATURE EFFECTS, TITANIUM ALLOYS

27

NONMETALLIC MATERIALS

Includes physical, chemical, and mechanical properties of plastics, elastomers, lubricants, polymers, textiles, adhesives, and ceramic materials.

N87-12680*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INVESTIGATION OF THE EFFECTS OF COBALT IONS ON EPOXY PROPERTIES
J. J. SINGH and D. M. STOAKLEY Dec. 1986 16 p
(NASA-TP-2639; L-16196; NAS 1.60:2639) Avail: NTIS HC A03/MF A01 CSCL 11G

COBALT, EPOXY RESINS, INVESTIGATION, IONS, MECHANICAL PROPERTIES

N87-18666*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ESTER OXIDATION ON AN ALUMINUM SURFACE USING CHEMILUMINESCENCE
WILLIAM R. JONES, JR., MICHAEL A. MEADOR, and WILFREDO MORALES Jul. 1986 16 p
(NASA-TP-2611; E-2647; NAS 1.60:2611) Avail: NTIS HC A03/MF A01 CSCL 11B

ALUMINUM ALLOYS, CHEMILUMINESCENCE, ESTERS, METAL SURFACES, OXIDATION

N87-20423*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
MICROGRAVITY CRYSTALLIZATION OF MACROMOLECULES: AN INTERIM REPORT AND PROPOSAL FOR CONTINUED RESEARCH
BENJAMIN E. GOLDBERG Dec. 1986 26 p
(NASA-TP-2671; NAS 1.60:2671) Avail: NTIS HC A03/MF A01 CSCL 20B

MOLECULES, POLYMER CHEMISTRY, RECRYSTALLIZATION, REDUCED GRAVITY

N88-23872*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
STRUCTURAL CERAMICS
May 1986 226 p Workshop held in Cleveland, Ohio, 20-21 May 1986 Sponsored by NASA, Washington
(NASA-CP-2427; E-3063; NAS 1.55:2427) Avail: NTIS HC A11/MF A02 CSCL 11B

CERAMICS, CONFERENCES, CORROSION, FRACTURE MECHANICS, NONDESTRUCTIVE TESTS, POLYMER CHEMISTRY, TRIBOLOGY

N89-13642*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THERMAL BARRIER COATINGS. ABSTRACTS AND FIGURES
1985 220 p Workshop held in Cleveland, Ohio, 21-22 May 1985
(NASA-CP-10019; E-4425; NAS 1.55:10019) Avail: NTIS HC A10/MF A02 CSCL 11C

BARRIER LAYERS, CONFERENCES, FAILURE ANALYSIS, GAS TURBINES, LIFE (DURABILITY), MATHEMATICAL MODELS, NONDESTRUCTIVE TESTS, PLASMA SPRAYING, THERMAL CONTROL COATINGS

N89-21103*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DEGRADATION AND CROSSLINKING OF PERFLUOROALKYL POLYETHERS UNDER X-RAY IRRADIATION IN ULTRAHIGH VACUUM
SHIGEYUKI MORI (National Academy of Sciences - National Research Council, Washington, DC.) and WILFREDO MORALES Mar. 1989 15 p Prepared in cooperation with Iwate Univ., Morioka (Japan)
(NASA-TP-2910; E-4500; NAS 1.60:2910) Avail: NTIS HC A03/MF A01 CSCL 11B

CROSSLINKING, PHOTOELECTRON SPECTROSCOPY, POLYETHER RESINS, RADIATION EFFECTS

N89-25332*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ABSORBED DOSE THRESHOLDS AND ABSORBED DOSE RATE LIMITATIONS FOR STUDIES OF ELECTRON RADIATION EFFECTS ON POLYETHERIMIDES
EDWARD R. LONG, JR., SHEILA ANN T. LONG, STEPHANIE L. GRAY, and WILLIAM D. COLLINS (Old Dominion Univ., Norfolk, VA.) Washington Aug. 1989 22 p
(NASA-TP-2928; L-16585; NAS 1.60:2928) Avail: NTIS HC A03/MF A01 CSCL 11C

ELECTRON RADIATION, POLYETHER RESINS, POLYIMIDE RESINS, RADIATION ABSORPTION, RADIATION DOSAGE, RADIATION EFFECTS

N89-26091*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
REACTION OF PERFLUOROALKYLPOLYETHERS (PFPE) WITH 440C STEEL IN VACUUM UNDER SLIDING CONDITIONS AT ROOM TEMPERATURE
SHIGEYUKI MORI (Iwate Univ., Morioka, Japan) and WILFREDO MORALES Jan. 1989 12 p
(NASA-TP-2883; E-4209; NAS 1.60:2883) Avail: NTIS HC A03/MF A01 CSCL 07D

ALKYL COMPOUNDS, PERFLUORO COMPOUNDS, POLYETHER RESINS, SLIDING FRICTION, STAINLESS STEELS, VACUUM EFFECTS

29

MATERIALS PROCESSING

Includes space-based development of products and processes for commercial applications.

N87-21141*# National Aeronautics and Space Administration. *Lewis Research Center, Cleveland, OH.*
MICROGRAVITY FLUID MANAGEMENT SYMPOSIUM
Apr. 1987 225 p Symposium held in Cleveland, Ohio, 9-10 Sep. 1986
(NASA-CP-2465; E-3386; NAS 1.55:2465) Avail: NTIS HC A10/MF A02 CSCL 22A
AEROSPACE ENVIRONMENTS, CONFERENCES, FLUID MANAGEMENT, WEIGHTLESSNESS

N88-10977*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
PREPARATIVE ELECTROPHORESIS FOR SPACE
PERCY H. RHODES and ROBERT S. SNYDER Oct. 1987 15 p
(NASA-TP-2777; NAS 1.60:2777) Avail: NTIS HC A03/MF A01 CSCL 22A
CONVECTIVE FLOW, ELECTROHYDRODYNAMICS, ELECTROKINETICS, ELECTROPHORESIS, TEMPERATURE EFFECTS

N88-10978*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
CONTINUOUS FLOW ELECTROPHORESIS SYSTEM EXPERIMENTS ON SHUTTLE FLIGHTS STS-6 AND STS-7
ROBERT S. SNYDER, PERCY H. RHODES, and TERESA Y. MILLER Oct. 1987 17 p
(NASA-TP-2778; NAS 1.60:2778) Avail: NTIS HC A03/MF A01 CSCL 22A
CONVECTIVE FLOW, ELECTRICAL RESISTIVITY, ELECTRODYNAMICS, ELECTROPHORESIS, GRAVITATIONAL EFFECTS

N88-14212*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
GROWTH OF SOLID SOLUTION SINGLE CRYSTALS
S. L. LEHOCZKY and F. R. SZOFRAN Dec. 1987 18 p
(NASA-TP-2787; NAS 1.60:2787) Avail: NTIS HC A03/MF A01 CSCL 20B
CRYSTAL GROWTH, MERCURY CADMIUM TELLURIDES, SINGLE CRYSTALS, SOLID SOLUTIONS, THERMOPHYSICAL PROPERTIES

N88-23895*# *National Aeronautics and Space Administration,* Washington, DC.
NONCONTACT TEMPERATURE MEASUREMENT
MARK C. LEE, ed. Mar. 1988 429 p Workshop held in Washington, D.C., 30 Apr. - 1 May 1987
(NASA-CP-2503; NAS 1.55:2503) Avail: NTIS HC A19/MF A03 CSCL 12A
CONFERENCES, INFRARED RADIOMETERS, OPTICAL PYROMETERS, RADIATION PYROMETERS, TEMPERATURE MEASUREMENT, TEMPERATURE MEASURING INSTRUMENTS

N89-17682*# *National Aeronautics and Space Administration.* Lewis Research Center, Cleveland, OH.
MICROGRAVITY COMBUSTION DIAGNOSTICS WORKSHOP
GILBERT J. SANTORO, ed., PAUL S. GREENBERG, ed., and NANCY D. PILTCH, ed. 1988 47 p Workshop held in Cleveland, OH, 28-29 Jul. 1987
(NASA-CP-10017; E-4213; NAS 1.55:10017) Avail: NTIS HC A03/MF A01 CSCL 22A
COMBUSTION PHYSICS, CONFERENCES, DIAGNOSIS, REDUCED GRAVITY

31

ENGINEERING (GENERAL)

Includes vacuum technology; control engineering; display engineering; cryogenics; and fire prevention.

N87-22870*# National Aeronautics and Space Administration. *Marshall Space Flight Center, Huntsville, AL.*
MODELING DIGITAL CONTROL SYSTEMS WITH MA-PREFILTERED MEASUREMENTS
MICHAEL E. POLITES Jun. 1987 23 p
(NASA-TP-2732; NAS 1.60:2732) Avail: NTIS HC A03/MF A01 CSCL 13H
CONTROL SYSTEMS DESIGN, DIGITAL FILTERS, DIGITAL SYSTEMS, STATE VECTORS, SYSTEMS ENGINEERING

N87-24585*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A NEW APPROACH TO STATE ESTIMATION IN DETERMINISTIC DIGITAL CONTROL SYSTEMS
MICHAEL E. POLITES Jul. 1987 16 p
(NASA-TP-2745; NAS 1.60:2745) Avail: NTIS HC A03/MF A01 CSCL 09B
CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS, STATE ESTIMATION

N87-27067*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
EXACT STATE RECONSTRUCTION IN DETERMINISTIC DIGITAL CONTROL SYSTEMS
MICHAEL E. POLITES Aug. 1987 19 p
(NASA-TP-2757; NAS 1.60:2757) Avail: NTIS HC A03/MF A01 CSCL 13H
DIGITAL COMMAND SYSTEMS, STATE ESTIMATION, STATE VECTORS

N88-17869*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A GENERALIZED METHOD FOR AUTOMATIC DOWNHAND AND WIREFEED CONTROL OF A WELDING ROBOT AND POSITIONER
KEN FERNANDEZ and GEORGE E. COOK (Vanderbilt Univ., Nashville, Tenn.) Feb. 1988 54 p
(NASA-TP-2807; NAS 1.60:2807) Avail: NTIS HC A04/MF A01 CSCL 13H
ARC WELDING, COMPUTER AIDED DESIGN, COMPUTER AIDED MANUFACTURING, PROGRAM VERIFICATION (COMPUTERS), ROBOT CONTROL, ROBOTICS, ROBOTS

N88-18751*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
FURTHER DEVELOPMENTS IN EXACT STATE RECONSTRUCTION IN DETERMINISTIC DIGITAL CONTROL SYSTEMS
MICHAEL E. POLITES Mar. 1988 19 p
(NASA-TP-2812; NAS 1.60:2812) Avail: NTIS HC A03/MF A01 CSCL 13B
CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS, EQUATIONS OF STATE, RECONSTRUCTION, STATE ESTIMATION

N88-28177*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
MORE ON EXACT STATE RECONSTRUCTION IN DETERMINISTIC DIGITAL CONTROL SYSTEMS
MICHAEL E. POLITES Sep. 1988 21 p
(NASA-TP-2847; NAS 1.60:2847) Avail: NTIS HC A03/MF A01 CSCL 13B
CONTROL SYSTEMS DESIGN, DIGITAL SYSTEMS, PLANT DESIGN, RECONSTRUCTION, STATE ESTIMATION

N89-24507*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
FURTHER DEVELOPMENTS IN MODELING DIGITAL CONTROL SYSTEMS WITH MA-PREFILTERED MEASUREMENTS
MICHAEL E. POLITES Washington Mar. 1989 20 p
(NASA-TP-2909; M-612; NAS 1.60:2909) Avail: NTIS HC A03/MF A01 CSCL 13B
ACCELEROMETERS, CONTROL SYSTEMS DESIGN, DIGITAL FILTERS, DIGITAL SYSTEMS, GYROSCOPES, STAR TRACKERS

N89-27039*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A NEW STATE RECONSTRUCTOR FOR DIGITAL CONTROLS SYSTEMS USING WEIGHTED-AVERAGE MEASUREMENTS
MICHAEL E. POLITES Washington Aug. 1989 17 p
(NASA-TP-2936; M-615; NAS 1.60:2936) Avail: NTIS HC A03/MF A01 CSCL 09B
CONTROL SYSTEMS DESIGN, DIGITAL TECHNIQUES, RECONSTRUCTION, STATE ESTIMATION

N90-16968*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN AUGER ELECTRON SPECTROSCOPY STUDY OF SURFACE-PREPARATION CONTAMINANTS
D. WU (Old Dominion Univ., Norfolk, VA.), R. M. STEPHENS, R. A. OUTLAW, and P. HOPSON Washington Feb. 1990 16 p
(NASA-TP-2972; L-16653; NAS 1.60:2972) Avail: NTIS HC A03/MF A01 CSCL 13B
AUGER SPECTROSCOPY, CLEANING, CONTAMINANTS, ELECTRON SPECTROSCOPY, ELECTROPOLISHING, SURFACE FINISHING

N90-21210*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
INFLUENCE OF THE DEPOSITION CONDITIONS ON RADIOFREQUENCY MAGNETRON SPUTTERED MOS2 FILMS
PIERRE A. STEINMANN and TALIVALDIS SPALVINS Apr. 1990 11 p
(NASA-TP-2994; E-5181; NAS 1.60:2994) Avail: NTIS HC A03/MF A01 CSCL 13B
DEPOSITION, LUBRICANTS, MAGNETRON SPUTTERING, MORPHOLOGY, RADIO FREQUENCIES, STOICHIOMETRY, THIN FILMS

N90-21219*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
A GENERAL-PURPOSE BALLOON-BORNE POINTING SYSTEM FOR SOLAR SCIENTIFIC INSTRUMENTS
M. E. POLITES Washington May 1990 22 p
(NASA-TP-3013; NAS 1.60:3013) Avail: NTIS HC A03/MF A01 CSCL 13I
BALLOON-BORNE INSTRUMENTS, CONTROL SYSTEMS DESIGN, POINTING CONTROL SYSTEMS, SOLAR INSTRUMENTS, THREE AXIS STABILIZATION

N90-25255*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
ROTATING-UNBALANCED-MASS DEVICES FOR SCANNING BALLOON-BORNE EXPERIMENTS, FREE-FLYING SPACECRAFT, AND SPACE SHUTTLE/SPACE STATION EXPERIMENTS
MICHAEL E. POLITES Jun. 1990 17 p
(NASA-TP-3030; NAS 1.60:3030) Avail: NTIS HC A03/MF A01 CSCL 14B
POINTING CONTROL SYSTEMS, ROTATING BODIES, SPACE SHUTTLES, SPACE STATION PAYLOADS, SPACE STATIONS, SPACEBORNE EXPERIMENTS

N90-28754*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DEVELOPMENT AND APPROACH TO LOW-FREQUENCY MICROGRAVITY ISOLATION SYSTEMS
CARLOS M. GRODSINSKY Washington Aug. 1990 24 p
(NASA-TP-2984; E-5287; NAS 1.60:2984) Avail: NTIS HC A03/MF A01 CSCL 22A
GRAVITATIONAL EFFECTS, PAYLOADS, REDUCED GRAVITY, SPACE SHUTTLES, SPACE STATIONS, SPACEBORNE EXPERIMENTS, VIBRATION ISOLATORS

32

COMMUNICATIONS AND RADAR

Includes radar; land and global communications; communications theory; and optical communications.

N87-11916*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.
PULSE CODE MODULATION (PCM) ENCODER HANDBOOK FOR AYDIN VECTOR MMP-600 SERIES SYSTEM
S. F. CURRIER and W. R. POWELL Washington, D.C. Aug. 1986 139 p
(NASA-RP-1171; NAS 1.61:1171) Avail: NTIS HC A07/MF A01 CSCL 17B
The hardware and software characteristics of a time division multiplex system are described. The system is used to sample analog and digital data. The data is merged with synchronization information to produce a serial pulse coded modulation (PCM) bit stream. Information presented herein is required by users to design compatible interfaces and assure effective utilization of this encoder system. GSFC/Wallops Flight Facility has flown approximately 50 of these systems through 1984 on sounding rockets with no inflight failures. Aydin Vector manufactures all of the components for these systems. Author

N87-12718*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.
PULSE CODE MODULATION (PCM) DATA STORAGE AND ANALYSIS USING A MICROCOMPUTER
D. E. MASSEY Aug. 1986 8 p
(NASA-TP-2629; REPT-822.3; NAS 1.60:2629) Avail: NTIS HC A02/MF A01 CSCL 17B
DATA PROCESSING, DATA REDUCTION, DATA STORAGE, MICROCOMPUTERS, PULSE CODE MODULATION

N87-17971*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
BIT-ERROR-RATE TESTING OF HIGH-POWER 30-GHZ TRAVELING WAVE TUBES FOR GROUND-TERMINAL APPLICATIONS
KURT A. SHALKHAUSER and GENE FUJIKAWA Oct. 1986 16 p
(NASA-TP-2635; E-2996; NAS 1.60:2635) Avail: NTIS HC A03/MF A01 CSCL 17B
BIT ERROR RATE, PERFORMANCE TESTS, TRANSMISSION EFFICIENCY, TRAVELING WAVE TUBES

N87-20448*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
UNIQUE BIT-ERROR-RATE MEASUREMENT SYSTEM FOR SATELLITE COMMUNICATION SYSTEMS

MARY JO WINDMILLER Mar. 1987 13 p
(NASA-TP-2699; E-3322; NAS 1.60:2699) Avail: NTIS HC A03/MF A01 CSCL 17B
BIT ERROR RATE, COMMUNICATION NETWORKS, SATELLITE COMMUNICATION, SYSTEMS ANALYSIS

N87-24590*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.
A SYNCHRONOUS DATA ANALYZER FOR THE MINIMUM DELAY DATA FORMAT (MDDF) AND LAUNCH TRAJECTORY ACQUISITION SYSTEM (LTAS)
ANDREW J. GREEN Jul. 1987 10 p
(NASA-TP-2743; REPT-822.1; NAS 1.60:2743) Avail: NTIS HC A02/MF A01 CSCL 17B
DATA REDUCTION, LAUNCHING, SAMPLING, SYNCHRONISM, TRAJECTORY ANALYSIS

N88-14226*# *Colorado Univ., Boulder. Dept. of Electrical* Engineering.
PROPAGATION EFFECTS ON SATELLITE SYSTEMS AT FREQUENCIES BELOW 10 GHZ: A HANDBOOK FOR SATELLITE SYSTEMS DESIGN
WARREN L. FLOCK Dec. 1987 501 p
(NAS7-100; JPL-956249)
(NASA-RP-1108/2; NAS 1.61:1108/2) Avail: NTIS HC A22/MF A03 CSCL 22D

Frequencies below 10 GHz continue to be used for a large portion of satellite service, and new applications, including mobile satellite service and the global positioning system, use frequencies below 10 GHz. As frequency decreases below 10 GHz, attenuation due to precipitation and gases decreases and ionospheric effects increase. Thus the ionosphere, which can be largely neglected above 10 GHz, receives major attention. Although attenuation and depolarization due to rain are less severe below 10 GHz than above, they are nevertheless still important and constitute another major topic. The handbook emphasizes the propagation effects on satellite communications but material that is pertinent to radio navigation and positioning systems and deep-space telecommunications is included as well. Chapter 1 through 7 describe the various propagation impairments, and Chapter 9 is devoted to the estimation or calculation of the magnitudes of these effects for use in system design. Chapter 10 covers link power budget equations and the role of propagation effects in these equations. Chapter 8 deals with the complex subject of interference between space and terrestrial systems. *Author*

N89-17060*# Westinghouse Electric Corp., Baltimore, MD.
PROPAGATION EFFECTS HANDBOOK FOR SATELLITE SYSTEMS DESIGN. A SUMMARY OF PROPAGATION IMPAIRMENTS ON 10 TO 100 GHZ SATELLITE LINKS WITH TECHNIQUES FOR SYSTEM DESIGN
LOUIS J. IPPOLITO Washington, DC Feb. 1989 531 p
(NAS7-100; JPL-958178)
(NASA-RP-1082(04); NAS 1.61:1082(04)) Avail: NTIS HC A23/MF A03 CSCL 20N

The NASA Propagation Effects Handbook for Satellite Systems Design provides a systematic compilation of the major propagation effects experienced on space-Earth paths in the 10 to 100 GHz frequency band region. It provides both a detailed description of the propagation phenomenon and a summary of the impact of the effect on the communications system design and performance. Chapter 2 through 5 describe the propagation effects, prediction models, and available experimental data bases. In Chapter 6, design techniques and prediction methods available for evaluating propagation effects on space-Earth communication systems are presented. Chapter 7 addresses the system design process and how the effects of propagation on system design and performance should be considered and how that can be mitigated. Examples of operational and planned Ku, Ka, and EHF satellite communications systems are given. *Author*

N89-17767*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
UNIVERSAL TEST FIXTURE FOR MONOLITHIC MM-WAVE INTEGRATED CIRCUITS CALIBRATED WITH AN AUGMENTED TRD ALGORITHM
ROBERT R. ROMANOFSKY and KURT A. SHALKHAUSER Mar. 1989 42 p Presented at the 13th International Conference on Infrared and mm-Waves, Honolulu, Hawaii, 5-9 Dec. 1988
(NASA-TP-2875; E-3983; NAS 1.60:2875) Avail: NTIS HC A03/MF A01 CSCL 09C
ALGORITHMS, CALIBRATING, INTEGRATED CIRCUITS, MICROWAVE CIRCUITS, MILLIMETER WAVES, SOLID STATE DEVICES

N90-11915*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SATELLITE-MATRIX-SWITCHED, TIME-DIVISION-MULTIPLE-ACCESS NETWORK SIMULATOR
WILLIAM D. IVANCIC, MONTY ANDRO, LAWRENCE A. NAGY, JAMES M. BUDINGER, and MARY JO SHALKHAUSER Washington Oct. 1989 21 p Proposed for presentation at the 13th AIAA International Communication Satellite System Conference, 11-15 Mar. 1990
(NASA-TP-2944; E-4813; NAS 1.60:2944) Avail: NTIS HC A03/MF A01 CSCL 17B
COMMUNICATION NETWORKS, COMMUNICATION SATELLITES, SIMULATORS, TIME DIVISION MULTIPLE ACCESS

33

ELECTRONICS AND ELECTRICAL ENGINEERING

Includes test equipment and maintainability; components, e.g., tunnel diodes and transistors; microminiaturization; and integrated circuitry.

N87-11072*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1985 GODDARD SPACE FLIGHT CENTER BATTERY WORKSHOP
G. MORROW, ed. Sep. 1986 427 p Workshop held in Greenbelt, Md., 19-21 Nov. 1985
(NASA-CP-2434; REPT-86B0366; NAS 1.55:2434) Avail: NTIS HC A19/MF A03 CSCL 10C
CONFERENCES, ENERGY STORAGE, LITHIUM SULFUR BATTERIES, NICKEL CADMIUM BATTERIES, NICKEL HYDROGEN BATTERIES

N87-17990*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
PERFORMANCE OF TEXTURED CARBON ON COPPER ELECTRODE MULTISTAGE DEPRESSED COLLECTORS WITH MEDIUM-POWER TRAVELING WAVE TUBES
PETER RAMINS and ARTHUR N. CURREN Nov. 1986 12 p
(NASA-TP-2665; E-3143; NAS 1.60:2665) Avail: NTIS HC A03/MF A01 CSCL 09A
ACCUMULATORS, CURRENT DENSITY, ELECTRODES, ELECTRON EMISSION, TRAVELING WAVE TUBES

N87-17991*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
CALCULATION OF SECONDARY ELECTRON TRAJECTORIES IN MULTISTAGE DEPRESSED COLLECTORS FOR MICROWAVE AMPLIFIERS
DALE A. FORCE Nov. 1986 7 p
(NASA-TP-2664; E-3196; NAS 1.60:2664) Avail: NTIS HC A02/MF A01 CSCL 09A
ACCUMULATORS, ELECTRON EMISSION, MICROWAVE

AMPLIFIERS, PARTICLE TRAJECTORIES, TRAVELING WAVE TUBES

N87-20474*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DESIGN, FABRICATION AND PERFORMANCE OF SMALL, GRAPHITE ELECTRODE, MULTISTAGE DEPRESSED COLLECTORS WITH 200-W, CW, 8- TO 18-GHZ TRAVELING-WAVE TUBES
BEN T. EBIHARA and PETER RAMINS Feb. 1987 22 p
(NASA-TP-2693; E-3099; NAS 1.60:2693) Avail: NTIS HC A03/MF A01 CSCL 09A
ACCUMULATORS, DESIGN ANALYSIS, ELECTRODES, FABRICATION, PYROLYTIC GRAPHITE, TRAVELING WAVE TUBES

N87-21239*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
TRAVELING-WAVE-TUBE EFFICIENCY IMPROVEMENT BY A LOW-COST TECHNIQUE FOR DEPOSITION OF CARBON ON MULTISTAGE DEPRESSED COLLECTOR
BEN T. EBIHARA, PETER RAMINS, and SHELLY PEET May 1987 14 p
(NASA-TP-2719; E-3416; NAS 1.60:2719) Avail: NTIS HC A03/MF A01 CSCL 09A
CARBON, COPPER, DEPOSITION, ELECTRODES, THIN FILMS, TRAVELING WAVE TUBES

N87-22923*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
REVISED NASA AXIALLY SYMMETRIC RING MODEL FOR COUPLED-CAVITY TRAVELING-WAVE TUBES
JEFFREY D. WILSON Jan. 1987 17 p
(NASA-TP-2675; E-3220; NAS 1.60:2675) Avail: NTIS HC A03/MF A01 CSCL 09A
AXISYMMETRIC BODIES, CAVITIES, COUPLED MODES, MODELS, RINGS, TRAVELING WAVE TUBES

N87-25532*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ANALYTICAL AND EXPERIMENTAL PERFORMANCE OF A DUAL-MODE TRAVELING WAVE TUBE AND MULTISTAGE DEPRESSED COLLECTOR
PETER RAMINS, DALE A. FORCE, and HENRY G. KOSMAHL Aug. 1987 29 p
(NASA-TP-2752; E-3470; NAS 1.60:2752) Avail: NTIS HC A03/MF A01 CSCL 09A
ACCUMULATORS, ELECTRON BEAMS, TRAVELING WAVE TUBES

N88-11021*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1986 GODDARD SPACE FLIGHT CENTER BATTERY WORKSHOP
GEORGE W. MORROW, ed. and THOMAS Y. YI, ed. Sep. 1987 374 p Workshop held in Greenbelt, Md., 18-19 Nov. 1986
(NASA-CP-2486; REPT-87B0408; NAS 1.55:2486) Avail: NTIS HC A16/MF A03 CSCL 10C
CONFERENCES, ELECTROCHEMISTRY, FAILURE ANALYSIS, FLIGHT TESTS, LITHIUM SULFUR BATTERIES, NICKEL CADMIUM BATTERIES, NICKEL HYDROGEN BATTERIES

N88-15146*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
PERFORMANCE OF A SMALL, GRAPHITE ELECTRODE, MULTISTAGE DEPRESSED COLLECTOR WITH A 500-W, CONTINUOUS WAVE, 4.8- TO 9.6-GHZ TRAVELING WAVE TUBE
PETER RAMINS, GARY G. LESNY, BEN T. EBIHARA, and SHELLY PEET Feb. 1988 15 p
(NASA-TP-2788; E-3800; NAS 1.60:2788) Avail: NTIS HC A03/MF A01 CSCL 09A
ACCUMULATORS, CONTINUOUS RADIATION, ELECTRODES, GRAPHITE, TRAVELING WAVE TUBES

N89-15337*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
PERFORMANCE OF A MULTISTAGE DEPRESSED COLLECTOR WITH MACHINED TITANIUM ELECTRODES
PETER RAMINS and BEN T. EBIHARA Jan. 1989 10 p
(NASA-TP-2891; E-4400; NAS 1.60:2891) Avail: NTIS HC A02/MF A01 CSCL 09A
ACCUMULATORS, ELECTRODES, MACHINING, PERFORMANCE TESTS, TITANIUM

N89-21169*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ANALYTICAL AND EXPERIMENTAL PROCEDURES FOR DETERMINING PROPAGATION CHARACTERISTICS OF MILLIMETER-WAVE GALLIUM ARSENIDE MICROSTRIP LINES
ROBERT R. ROMANOFSKY Mar. 1989 21 p
(NASA-TP-2899; E-4273; NAS 1.60:2899) Avail: NTIS HC A03/MF A01 CSCL 20N
ELECTROMAGNETIC RADIATION, MICROSTRIP TRANSMISSION LINES, MICROWAVE TRANSMISSION, REFLECTANCE

N89-21171*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DESIGN, FABRICATION, AND PERFORMANCE OF BRAZED, GRAPHITE ELECTRODE, MULTISTAGE DEPRESSED COLLECTORS WITH 500-W, CONTINUOUS WAVE, 4.8- TO 9.6-GHZ TRAVELING-WAVE TUBES
PETER RAMINS and BEN EBIHARA Mar. 1989 18 p
(NASA-TP-2904; E-4361; NAS 1.60:2904) Avail: NTIS HC A03/MF A01 CSCL 09A
BRAZING, CONTINUOUS RADIATION, ELECTRODE MATERIALS, ELECTRON EMISSION, SOLID ELECTRODES, TRAVELING WAVE TUBES

N90-27965*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPENT-BEAM REFOCUSING ANALYSIS AND MULTISTAGE DEPRESSED COLLECTOR DESIGN FOR A 75-W, 59- TO 64-GHZ COUPLED-CAVITY TRAVELING-WAVE TUBE
JEFFREY D. WILSON, PETER RAMINS, and DALE A. FORCE Aug. 1990 22 p
(NASA-TP-3039; E-5455; NAS 1.60:3039) Avail: NTIS HC A03/MF A01 CSCL 09A
ACCUMULATORS, COMPUTER AIDED DESIGN, DESIGN ANALYSIS, TRAVELING WAVE TUBES

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FLUID MECHANICS AND HEAT TRANSFER

Includes boundary layers; hydrodynamics; fluidics; mass transfer; and ablation cooling.

N87-11963*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ON THE MAXWELLIAN DISTRIBUTION, SYMMETRIC FORM, AND ENTROPY CONSERVATION FOR THE EULER EQUATIONS
S. M. DESHPANDE Nov. 1986 30 p
(NASA-TP-2583; L-16036; NAS 1.60:2583) Avail: NTIS HC A03/MF A01 CSCL 20D
ENTROPY, EULER EQUATIONS OF MOTION, MAXWELL-BOLTZMANN DENSITY FUNCTION

N87-13664*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROTHERMAL TESTS OF SPHERICAL DOME PROTUBERANCES ON A FLAT PLATE AT A MACH NUMBER OF 6.5

C. E. GLASS and L. R. HUNT Dec. 1986 61 p
(NASA-TP-2631; L-16160; NAS 1.60:2631) Avail: NTIS HC A04/MF A01 CSCL 20D

AEROTHERMODYNAMICS, HYPERSONIC VEHICLES, LAMINAR BOUNDARY LAYER, PREDICTION ANALYSIS TECHNIQUES, PROTUBERANCES, THERMAL PROTECTION, TILES, TURBULENT BOUNDARY LAYER

N87-17000*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SPACE SHUTTLE MAIN ENGINE HIGH PRESSURE FUEL PUMP AFT PLATFORM SEAL CAVITY FLOW ANALYSIS
S. A. LOWRY and L. W. KEETON (CHAM of North America, Inc., Huntsville, Ala.) Jan. 1987 134 p
(NASA-TP-2685; NAS 1.60:2685) Avail: NTIS HC A07/MF A01 CSCL 20D

CAVITIES, FUEL PUMPS, HIGH PRESSURE, SEALS (STOPPERS), SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS

N87-18034*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
JET MODEL FOR SLOT FILM COOLING WITH EFFECT OF FREE-STREAM AND COOLANT TURBULENCE
FREDERICK F. SIMON Oct. 1986 21 p
(NASA-TP-2655; E-2961; NAS 1.60:2655) Avail: NTIS HC A03/MF A01 CSCL 20D

FILM COOLING, FLOW VELOCITY, JET ENGINES, NUMERICAL ANALYSIS, TURBULENCE EFFECTS, WALL JETS

N87-18035*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
VELOCITY PROFILES IN LAMINAR DIFFUSION FLAMES
VALERIE J. LYONS and JANICE M. MARGLE (Pennsylvania State Univ., Abington) May 1986 13 p Presented at the Combustion Inst. Meeting, Cleveland, Ohio, 5-6 May 1986
(NASA-TP-2596; E-2879; NAS 1.60:2596) Avail: NTIS HC A03/MF A01 CSCL 20D

CYCLOHEXANE, DIFFUSION FLAMES, ETHYL ALCOHOL, HEPTANES, LAMINAR FLOW, OCTANES, TEMPERATURE PROFILES, VELOCITY MEASUREMENT

N87-18782*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROTHERMAL EVALUATION OF A SPHERICALLY BLUNTED BODY WITH A TRAPEZOIDAL CROSS SECTION IN THE LANGLEY 8-FOOT HIGH-TEMPERATURE TUNNEL
CINDY W. ALBERTSON Apr. 1987 83 p
(NASA-TP-2641; L-16096; NAS 1.60:2641) Avail: NTIS HC A05/MF A01 CSCL 20D

BOUNDARY LAYERS, FLOW DISTRIBUTION, HEAT TRANSFER, PREDICTIONS, PRESSURE MEASUREMENT, THERMAL PROTECTION

N87-18783*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A SECOND-ORDER ACCURATE KINETIC-THEORY-BASED METHOD FOR INVISCID COMPRESSIBLE FLOWS
SURESH M. DESHPANDE Dec. 1986 42 p
(NASA-TP-2613; L-16050; NAS 1.60:2613) Avail: NTIS HC A03/MF A01 CSCL 20D

BOLTZMANN TRANSPORT EQUATION, EULER EQUATIONS OF MOTION, KINETIC THEORY, NUMERICAL ANALYSIS, SHOCK WAVE PROPAGATION

N87-22103*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SPACELAB 3 MISSION SCIENCE REVIEW
GEORGE H. FICHTL, ed., JOHN S. THEON, ed. (National Aeronautics and Space Administration, Washington, D.C.), CHARLES K. HILL, ed., and OTHA H. VAUGHAN, ed. Feb. 1987 98 p Symposium held in Huntsville, Ala., 4 Dec. 1985
(NASA-CP-2429; M-547; NAS 1.55:2429) Avail: NTIS HC A05/MF A01 CSCL 22A

AEROSPACE ENVIRONMENTS, POSTFLIGHT ANALYSIS, REDUCED GRAVITY, SPACE COMMERCIALIZATION, SPACE SHUTTLES, SPACEBORNE EXPERIMENTS, SPACELAB

N87-23921*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THREE-STEP LABYRINTH SEAL FOR HIGH-PERFORMANCE TURBOMACHINES
ROBERT C. HENDRICKS Jun. 1987 75 p
(NASA-TP-1848; E-3186; NAS 1.60:1848) Avail: NTIS HC A04/MF A01 CSCL 20D

FUEL PUMPS, LABYRINTH SEALS, SPACE SHUTTLE MAIN ENGINE, STATIC TESTS, TURBOMACHINERY

N87-23936*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
STRAIGHT CYLINDRICAL SEAL FOR HIGH-PERFORMANCE TURBOMACHINES
ROBERT C. HENDRICKS Jun. 1987 76 p
(NASA-TP-1850; E-3184; NAS 1.60:1850) Avail: NTIS HC A05/MF A01 CSCL 20D

CYLINDRICAL BODIES, FUEL PUMPS, SEALS (STOPPERS), SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS, TURBOMACHINERY

N87-24639*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THREE-STEP CYLINDRICAL SEAL FOR HIGH-PERFORMANCE TURBOMACHINES
ROBERT C. HENDRICKS Jun. 1987 79 p
(NASA-TP-1849; E-3185; NAS 1.60:1849) Avail: NTIS HC A05/MF A01 CSCL 20D

DYNAMIC STABILITY, FUEL PUMPS, LEAKAGE, PUMP SEALS, SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS

N87-24672*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MULTISCALE TURBULENCE EFFECTS IN SUPERSONIC JETS EXHAUSTING INTO STILL AIR
KHALED S. ABDOL-HAMID (Analytical Services and Materials, Inc., Hampton, Va.) and RICHARD G. WILMOTH Jul. 1987 38 p
(NASA-TP-2707; L-16258; NAS 1.60:2707) Avail: NTIS HC A03/MF A01 CSCL 20D

JET EXHAUST, NAVIER-STOKES EQUATION, SUPERSONIC AIRCRAFT, TURBULENCE

N87-26309*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SIMPLIFIED CURVE FITS FOR THE THERMODYNAMIC PROPERTIES OF EQUILIBRIUM AIR
S. SRINIVASAN, J. C. TANNEHILL (Iowa State Univ. of Science and Technology, Ames.), and K. J. WEILMUENSTER Aug. 1987 48 p
(NAG1-313)
(NASA-RP-1181; L-16276; NAS 1.61:1181) Avail: NTIS HC A03/MF A01 CSCL 20D

New, improved curve fits for the thermodynamic properties of equilibrium air have been developed. The curve fits are for pressure, speed of sound, temperature, entropy, enthalpy, density, and internal energy. These curve fits can be readily incorporated into new or existing computational fluid dynamics codes if real gas effects are desired. The curve fits are constructed from Grabau-type transition functions to model the thermodynamic surfaces in a piecewise manner. The accuracies and continuity of these curve fits are substantially improved over those of previous curve fits. These improvements are due to the incorporation of a small number of additional terms in the approximating polynomials and careful choices of the transition functions. The ranges of validity of the new curve fits are temperatures up to 25 000 K and densities from 10 to the -7 to 10 to the 3d power amagats. Author

N87-27161*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
APPLICATION OF TURBULENCE MODELING TO PREDICT SURFACE HEAT TRANSFER IN STAGNATION FLOW REGION OF CIRCULAR CYLINDER
CHI R. WANG and FREDERICK C. YEH Sep. 1987 25 p
(NASA-TP-2758; E-3418; NAS 1.60:2758) Avail: NTIS HC A03/MF A01 CSCL 20D
CIRCULAR CYLINDERS, HEAT TRANSFER, MODELS, STAGNATION FLOW, SURFACE PROPERTIES, TURBULENCE

N87-29778*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DESCRIPTION AND CALIBRATION OF THE LANGLEY HYPERSONIC CF4 TUNNEL: A FACILITY FOR SIMULATING LOW GAMMA FLOW AS OCCURS FOR A REAL GAS
RAYMOND E. MIDDEN and CHARLES G. MILLER, III Mar. 1985 78 p
(NASA-TP-2384; L-15798; NAS 1.60:2384) Avail: NTIS HC A05/MF A01 CSCL 20D
CALIBRATING, CARBON TETRAFLUORIDE, HYPERSONIC WIND TUNNELS, MACH NUMBER, REAL GASES, TEST FACILITIES

N87-29795*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
FINITE-ELEMENT REENTRY HEAT-TRANSFER ANALYSIS OF SPACE SHUTTLE ORBITER
WILLIAM L. KO, ROBERT D. QUINN, and LESLIE GONG Dec. 1986 59 p
(NASA-TP-2657; H-1236; NAS 1.60:2657) Avail: NTIS HC A04/MF A01 CSCL 20D
AERODYNAMIC HEATING, FINITE ELEMENT METHOD, HEAT TRANSFER COEFFICIENTS, REENTRY SHIELDING, SPACE SHUTTLE ORBITERS, THERMAL ANALYSIS

N88-14299*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
FLIGHT AND WIND-TUNNEL MEASUREMENTS SHOWING BASE DRAG REDUCTION PROVIDED BY A TRAILING DISK FOR HIGH REYNOLDS NUMBER TURBULENT FLOW FOR SUBSONIC AND TRANSONIC MACH NUMBERS
SHERYLL GOECKE POWERS, JARRETT K. HUFFMAN, and CHARLES H. FOX, JR. (National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.) Nov. 1986 143 p
(NASA-TP-2638; H-1281; NAS 1.60:2638) Avail: NTIS HC A07/MF A01 CSCL 20D
BASE PRESSURE, DRAG REDUCTION, FLIGHT TESTS, TRAILING EDGE FLAPS, TURBULENT FLOW, WIND TUNNEL TESTS

N88-15924*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
CRYOGENIC FLUID MANAGEMENT TECHNOLOGY WORKSHOP. VOLUME 1: PRESENTATION MATERIAL AND DISCUSSION
JOHN C. AYDELOTT, ed. and WILLIAM DEVOL, ed. (Sverdrup Technology, Inc., Middleburg Heights, Ohio.) Sep. 1987 386 p Workshop held in Cleveland, Ohio, 28-30 Apr. 1987
(NASA-CP-10001; E-3732; NAS 1.55:10001) Avail: NTIS HC A17/MF A03 CSCL 20D
CONFERENCES, CRYOGENIC COOLING, CRYOGENIC FLUID STORAGE, CRYOGENIC FLUIDS, CRYOGENIC ROCKET PROPELLANTS, CRYOGENICS, REDUCED GRAVITY

N88-18881*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.
INFLUENCE OF BASE MODIFICATIONS ON IN-FLIGHT BASE DRAG IN THE PRESENCE OF JET EXHAUST FOR MACH NUMBERS FROM 0.7 TO 1.5
SHERYLL GOECKE POWERS Feb. 1988 20 p
(NASA-TP-2802; H-1408; NAS 1.60:2802) Avail: NTIS HC A03/MF A01 CSCL 20D
BASE FLOW, DRAG, FLIGHT TESTS, JET EXHAUST, MACH NUMBER, REVISIONS

N88-18884*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
GALILEO PROBE PARACHUTE TEST PROGRAM: WAKE PROPERTIES OF THE GALILEO PROBE AT MACH NUMBERS FROM 0.25 TO 0.95
THOMAS N. CANNING (Canning, T. N., Portola Valley, Calif) and THOMAS M. EDWARDS Apr. 1988 144 p
(NAS2-10000)
(NASA-RP-1130; A-9643; NAS 1.61:1130) Avail: NTIS HC A07/MF A01 CSCL 20D
The results of surveys of the near and far wake of the Galileo Probe are presented for Mach numbers from 0.25 tp 0.95. The trends in the data resulting from changes in Mach number, radial and axial distance, angle of attack, and a small change in model shape are shown in crossplots based on the data. A rationale for selecting an operating volume suitable for parachute inflation based on low Mach number flight results is outlined. Author

N88-20599*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
CRYOGENIC FLUID MANAGEMENT TECHNOLOGY WORKSHOP. VOLUME 2: ROUNDTABLE DISCUSSION OF TECHNOLOGY REQUIREMENTS
Mar. 1988 84 p Workshop held in Cleveland, Ohio, 28-30 Apr. 1987
(NASA-CP-10009; E-3987; NAS 1.55:10009) Avail: NTIS HC A05/MF A01 CSCL 20D
CONFERENCES, CRYOGENIC FLUIDS, FLUID MANAGEMENT, TECHNOLOGY ASSESSMENT

N88-22325*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AEROTHERMAL TESTS OF QUILTED DOME MODELS ON A FLAT PLATE AT A MACH NUMBER OF 6.5
CHRISTOPHER E. GLASS and L. ROANE HUNT May 1988 72 p
(NASA-TP-2804; L-16346; NAS 1.60:2804) Avail: NTIS HC A04/MF A01 CSCL 20D
AEROTHERMODYNAMICS, HYPERSONIC AIRCRAFT, LAMINAR BOUNDARY LAYER, PRESSURE DISTRIBUTION, THERMAL PROTECTION, TURBULENT BOUNDARY LAYER

N89-11153*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
MIXING AND DEMIXING PROCESSES IN MULTIPHASE FLOWS WITH APPLICATION TO PROPULSION SYSTEMS
RAND DECKER, ed. and CHARLES F. SCHAFER, ed. Jul. 1988 191 p Workshop was held in Huntsville, Ala., 25-26 Feb. 1988; sponsored by NASA, Marshall Space Flight Center, Huntsville, Ala. and USRA, Huntsville, Ala. Sponsored by NASA, Washington, D.C.
(NASA-CP-3006; M-591; NAS 1.55:3006) Avail: NTIS HC A09/MF A02 CSCL 20D
COMBUSTION PHYSICS, CONFERENCES, FLUID DYNAMICS, FUEL COMBUSTION, LAMINAR FLOW, MIXING, MULTIPHASE FLOW, PROPULSION, TURBULENT FLOW

N89-12822*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AERODYNAMIC PRESSURES AND HEATING RATES ON SURFACES BETWEEN SPLIT ELEVONS AT MACH 6.6
L. ROANE HUNT Washington, D.C. Dec. 1988 85 p
(NASA-TP-2855; L-16460; NAS 1.60:2855) Avail: NTIS HC A05/MF A01 CSCL 20D
AERODYNAMIC HEATING, DYNAMIC PRESSURE, ELEVONS, HYPERSONIC FLIGHT, SPLIT FLAPS

N89-16115*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CONSERVATION EQUATIONS AND PHYSICAL MODELS FOR HYPERSONIC AIR FLOWS IN THERMAL AND CHEMICAL NONEQUILIBRIUM
PETER A. GNOFFO, ROOP N. GUPTA (Scientific Research and Technology, Inc., Hampton, VA.), and JUDY L. SHINN Washington, DC Feb. 1989 62 p
(NASA-TP-2867; L-16477; NAS 1.60:2867) Avail: NTIS HC A04/MF A01 CSCL 20D
AIR FLOW, CHEMICAL EQUILIBRIUM, CONSERVATION EQUATIONS, HYPERSONIC FLOW, MATHEMATICAL MODELS, NONEQUILIBRIUM FLOW, NONEQUILIBRIUM THERMODYNAMICS

N89-19499*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CONTAMINATION OF LIQUID OXYGEN BY PRESSURIZED GASEOUS NITROGEN
ALLAN J. ZUCKERWAR, TRACY K. KING, and KIM CHI NGO (Old Dominion Univ., Norfolk, VA.) Apr. 1989 26 p
(NASA-TP-2894; L-16526; NAS 1.60:2894) Avail: NTIS HC A03/MF A01 CSCL 20D
FUEL CONTAMINATION, GAS-GAS INTERACTIONS, GASEOUS DIFFUSION, HYPERSONIC WIND TUNNELS, LIQUID NITROGEN, LIQUID OXYGEN, PRESSURE EFFECTS

N89-25409*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DETERMINATION OF COMBUSTION GAS TEMPERATURES BY *INFRARED RADIOMETRY IN SOOTING AND NONSOOTING* FLAMES
VALERIE J. LYONS and CARMEN M. GRACIA-SALCEDO (Army Aviation Systems Command, Cleveland, OH.) Feb. 1989 13 p (DA PROJ. 1L1-61102-AH-45)
(NASA-TP-2900; E-4446; NAS 1.60:2900; AVSCOM-TR-88-C-008; AD-A205373) Avail: NTIS HC A03/MF A01 CSCL 21/2
COMBUSTION TEMPERATURE, FLAME TEMPERATURE, GAS TEMPERATURE, INFRARED RADIOMETERS, PREMIXED FLAMES, RADIATION PYROMETERS, SOOT, TEMPERATURE MEASUREMENT

N89-26184*# National Aeronautics and Space Administration. *Goddard Space Flight Center, Greenbelt, MD.*
WORKSHOP ON TWO-PHASE FLUID BEHAVIOR IN A SPACE ENVIRONMENT
THEODORE D. SWANSON, ed., AL JUHASZ, ed., W. RUSS LONG, ed. (National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.), and LAURA OTTENSTEIN, ed. 1989 45 p Workshop held in Ocean City, MD, 13-14 Jun. 1988
(NASA-CP-3043; REPT-89B00114; NAS 1.55:3043) Avail: NTIS HC A03/MF A01 CSCL 20D
AEROSPACE ENVIRONMENTS, FLUID MANAGEMENT, HEAT TRANSFER, LIQUID-VAPOR INTERFACES, TWO PHASE FLOW

N89-27116*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
A REVIEW OF HIGH-SPEED, CONVECTIVE, HEAT-TRANSFER COMPUTATION METHODS
MICHAEL E. TAUBER Washington Jul. 1989 38 p
(NASA-TP-2914; A-89042; NAS 1.60:2914) Avail: NTIS HC A03/MF A01 CSCL 20D
AERODYNAMIC HEATING, COMPUTATION, CONVECTIVE HEAT TRANSFER, LAMINAR BOUNDARY LAYER, SEPARATED FLOW, SHOCK HEATING, TURBULENT BOUNDARY LAYER

N90-10385*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
CONSTITUTIVE RELATIONSHIPS AND MODELS IN CONTINUUM THEORIES OF MULTIPHASE FLOWS
RAND DECKER, ed. Washington Sep. 1989 165 p Workshop held in Huntsville, AL, 5-7 Apr. 1989; sponsored by NASA, Washington and USRA, Washington, DC
(NASA-CP-3047; M-616; NAS 1.55:3047) Avail: NTIS HC A08/MF A01 CSCL 20D
CONSTITUTIVE EQUATIONS, CONTINUUM MECHANICS, MATHEMATICAL MODELS, MULTIPHASE FLOW

N90-11245*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LASER ANEMOMETER MEASUREMENTS IN A TRANSONIC AXIAL-FLOW FAN ROTOR
ANTHONY J. STRAZISAR, JERRY R. WOOD, MICHAEL D. HATHAWAY, and KENNETH L. SUDER Washington Nov. 1989 216 p
(NASA-TP-2879; E-4480; NAS 1.60:2879) Avail: NTIS HC A10/MF A02 CSCL 20D
AXIAL FLOW, FAN BLADES, FLOW VELOCITY, LASER ANEMOMETERS, ROTOR BLADES (TURBOMACHINERY), SURVEYS, TRANSONIC FLOW, VELOCITY DISTRIBUTION

N90-14493*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SURFACE FLOW AND HEATING DISTRIBUTIONS ON A CYLINDER IN NEAR WAKE OF AEROASSIST FLIGHT EXPERIMENT (AFE) CONFIGURATION AT INCIDENCE IN MACH 10 AIR
WILLIAM L. WELLS Jan. 1990 58 p
(NASA-TP-2954; L-16623; NAS 1.60:2954) Avail: NTIS HC A04/MF A01 CSCL 20D
COMPUTER PROGRAMS, CYLINDRICAL BODIES, FREE FLOW, HEAT TRANSFER, NAVIER-STOKES EQUATION, NEAR WAKES

N90-17042*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN UPWIND-BIASED, POINT-IMPLICIT RELAXATION ALGORITHM FOR VISCOUS, COMPRESSIBLE PERFECT-GAS FLOWS
PETER A. GNOFFO Washington Feb. 1990 75 p
(NASA-TP-2953; L-16588; NAS 1.60:2953) Avail: NTIS HC A04/MF A01 CSCL 20D
ALGORITHMS, COMPRESSIBLE FLOW, GAS FLOW, HYPERSONIC FLOW, RELAXATION METHOD (MATHEMATICS), THREE DIMENSIONAL FLOW, VISCOUS FLOW

N90-23670*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AERODYNAMIC PRESSURE AND HEATING-RATE DISTRIBUTIONS IN TILE GAPS AROUND CHINE REGIONS WITH PRESSURE GRADIENTS AT A MACH NUMBER OF 6.6
L. ROANE HUNT and KRISTOPHER K. NOTESTINE (PRC Kentron, Inc., Hampton, VA.) Washington Jun. 1990 70 p
(NASA-TP-2988; L-16649; NAS 1.60:2988) Avail: NTIS HC A04/MF A01 CSCL 20D
AERODYNAMIC LOADS, HEATING, HIGH PRESSURE, HYPERSONIC SPEED, THERMAL PROTECTION, TILES

N90-27064*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A REVIEW OF REACTION RATES AND THERMODYNAMIC AND TRANSPORT PROPERTIES FOR AN 11-SPECIES AIR MODEL FOR CHEMICAL AND THERMAL NONEQUILIBRIUM CALCULATIONS TO 30000 K
ROOP N. GUPTA, JERROLD M. YOS, RICHARD A. THOMPSON, and KAM-PUI LEE (Scientific Research and Technology, Inc., Hampton, VA.) Washington Aug. 1990 90 p
(NASA-RP-1232; L-16634; NAS 1.61:1232) Avail: NTIS HC A05/MF A01 CSCL 20D
Reaction rate coefficients and thermodynamic and transport properties are reviewed and supplemented for the 11-species air model which can be used for analyzing flows in chemical and thermal nonequilibrium up to temperatures of 3000 K. Such flows will likely occur around currently planned and future hypersonic vehicles. Guidelines for determining the state of the surrounding

environment are provided. Curve fits are given for the various species properties for their efficient computation in flowfield codes. Approximate and more exact formulas are provided for computing the properties of partially ionized air mixtures in a high energy environment. Limitations of the approximate mixing laws are discussed for a mixture of ionized species. An electron number-density correction for the transport properties of the charged species is obtained. This correction has been generally ignored in the literature. Author

N90-27066*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN APPROXIMATE METHOD FOR CALCULATING THREE-DIMENSIONAL INVISCID HYPERSONIC FLOW FIELDS
CHRISTOPHER J. RILEY and FRED R. DEJARNETTE Washington Aug. 1990 26 p
(NASA-TP-3018; L-16745; NAS 1.60:3018) Avail: NTIS HC A03/MF A01 CSCL 20D
APPROXIMATION, EULER EQUATIONS OF MOTION, FLOW DISTRIBUTION, HYPERSONIC FLOW, INVISCID FLOW, THREE DIMENSIONAL FLOW

N90-28806*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
GAS-JET AND TANGENT-SLOT FILM COOLING TESTS OF A 12.5 DEG CONE AT MACH NUMBER OF 6.7
ROBERT J. NOWAK May 1988 85 p
(NASA-TP-2786; L-16148; NAS 1.60:2786) Avail: NTIS HC A05/MF A01 CSCL 20D
FILM COOLING, GAS JETS, HEAT TRANSFER, MATHEMATICAL MODELS, PRESSURE MEASUREMENT, SHOCK LAYERS, SLOTS, TEMPERATURE MEASUREMENT

35

INSTRUMENTATION AND PHOTOGRAPHY

Includes remote sensors; measuring instruments and gages; detectors; cameras and photographic supplies; and holography.

N87-10263*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THIRTEENTH INTERNATIONAL LASER RADAR CONFERENCE
Aug. 1986 335 p Conference held in Toronto, Ontario, 11-15 Aug. 1986; sponsored by NASA, Washington, D.C., Atmospheric Environment Service, and York Univ.
(NASA-CP-2431; L-16201; NAS 1.55:2431) Avail: NTIS HC A15/MF A03 CSCL 20E
CONFERENCES, LASER APPLICATIONS, LASERS, METEOROLOGICAL PARAMETERS, MIDDLE ATMOSPHERE, OPTICAL RADAR, RADAR EQUIPMENT

N87-13731*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EVALUATION OF DIFFUSE-ILLUMINATION HOLOGRAPHIC CINEMATOGRAPHY IN A FLUTTER CASCADE
A. J. DECKER Jul. 1986 33 p
(NASA-TP-2593; E-2937; NAS 1.60:2593) Avail: NTIS HC A03/MF A01 CSCL 14E
CINEMATOGRAPHY, FLOW VISUALIZATION, HOLOGRAPHIC INTERFEROMETRY, HOLOGRAPHY, LASER OUTPUTS, THREE DIMENSIONAL FLOW

N87-20514*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A SIMPLIFIED METHOD FOR DETERMINING HEAT OF COMBUSTION OF NATURAL GAS
JAG J. SINGH, HOSHANG CHEGINI (Old Dominion Univ., Norfolk, Va.), and GERALD H. MALL (Computer Sciences Corp., Hampton, Va.) Apr. 1987 15 p
(NASA-TP-2682; L-16261; NAS 1.60:2682) Avail: NTIS HC A03/MF A01 CSCL 14B
GAS DETECTORS, HEAT OF COMBUSTION, NATURAL GAS, OXYGEN SUPPLY EQUIPMENT

N88-28286*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
OPTICAL MEASUREMENT OF PROPELLER BLADE DEFLECTIONS
ANATOLE P. KURKOV Sep. 1988 31 p
(NASA-TP-2841; E-4131; NAS 1.60:2841) Avail: NTIS HC A03/MF A01 CSCL 14B
DEFLECTION, DISPLACEMENT MEASUREMENT, OPTICAL MEASUREMENT, PROPELLER BLADES

N88-30099*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
MEASUREMENT OF LOCAL HIGH-LEVEL, TRANSIENT SURFACE HEAT FLUX
CURT H. LIEBERT Sep. 1988 9 p Sponsored by NASA, Washington, D.C.
(NASA-TP-2840; E-4200; NAS 1.60:2840) Avail: NTIS HC A02/MF A01 CSCL 14B
HEAT FLUX, SURFACE TEMPERATURE, TEMPERATURE MEASUREMENT, TEMPERATURE MEASURING INSTRUMENTS, TRANSIENT HEATING

N89-13762*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SPATIAL VISION PROCESSES: FROM THE OPTICAL IMAGE TO THE SYMBOLIC STRUCTURES OF CONTOUR INFORMATION
DANIEL J. JOBSON Nov. 1988 31 p Original contains color illustrations
(NASA-TP-2838; L-16479; NAS 1.60:2838) Avail: NTIS HC A03/MF A01 CSCL 14B
COMPUTER VISION, CONTOURS, EDGES, IMAGE PROCESSING, SPATIAL FILTERING, SYMBOLS, TEXTURES

N89-15380*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
TECHNIQUE FOR TEMPERATURE COMPENSATION OF EDDY-CURRENT PROXIMITY PROBES
ROBERT M. MASTERS Jan. 1989 10 p
(NASA-TP-2880; E-4316; NAS 1.60:2880) Avail: NTIS HC A02/MF A01 CSCL 14B
EDDY CURRENTS, EVALUATION, PERFORMANCE TESTS, PROBES, PROXIMITY, TEMPERATURE COMPENSATION, TEMPERATURE MEASUREMENT, TURBOMACHINERY

N89-16139*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
RAMAN INTENSITY AS A PROBE OF CONCENTRATION NEAR A CRYSTAL GROWING IN SOLUTION
R. ALLEN WILKINSON Feb. 1989 12 p
(NASA-TP-2865; E-4397; NAS 1.60:2865) Avail: NTIS HC A03/MF A01 CSCL 14B
CRYSTAL GROWTH, RAMAN SPECTRA, RAMAN SPECTROSCOPY, SOLUTIONS

N89-26209*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.
MARA (MULTIMODE AIRBORNE RADAR ALTIMETER) SYSTEM DOCUMENTATION. VOLUME 1: MARA SYSTEM REQUIREMENTS DOCUMENT
C. L. PARSONS, ed. Jul. 1989 88 p
(NASA-RP-1226; REPT-89-143; NAS 1.61:1226) Avail: NTIS HC A05/MF A01 CSCL 14B
The Multimode Airborne Radar Altimeter (MARA), a flexible airborne radar remote sensing facility developed by NASA's Goddard Space Flight Center, is discussed. This volume describes the scientific justification for the development of the instrument and the translation of these scientific requirements into instrument

design goals. Values for key instrument parameters are derived to accommodate these goals, and simulations and analytical models are used to estimate the developed system's performance. Author

N90-10412*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
INTRODUCTION TO TOTAL- AND PARTIAL-PRESSURE MEASUREMENTS IN VACUUM SYSTEMS
R. A. OUTLAW and F. A. KERN Washington Nov. 1989 77 p
(NASA-RP-1219; L-16494; NAS 1.61:1219) Avail: NTIS HC A05/MF A01 CSCL 14B

An introduction to the fundamentals of total and partial pressure measurement in the vacuum regime (760 x 10 to the -16th power Torr) is presented. The instrument most often used in scientific fields requiring vacuum measurement are discussed with special emphasis on ionization type gauges and quadrupole mass spectrometers. Some attention is also given to potential errors in measurement as well as calibration techniques. Author

N90-16204*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
VISUAL INFORMATION PROCESSING FOR TELEVISION AND TELEROBOTICS
FRIEDRICH O. HUCK, ed. and STEPHEN K. PARK, ed. (College of William and Mary, Williamsburg, VA.) Washington Nov. 1989 263 p Workshop held in Williamsburg, VA, 10-12 May 1989
(NASA-CP-3053; L-16665; NAS 1.55:3053) Avail: NTIS HC A12/MF A02 CSCL 14B

CODING, COMPUTER VISION, CONFERENCES, IMAGE RECONSTRUCTION, IMAGING TECHNIQUES, ROBOTICS, ROBOTS, TELEOPERATORS, TELEROBOTICS, TELEVISION SYSTEMS

N90-17085*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
NASA LASER LIGHT SCATTERING ADVANCED TECHNOLOGY DEVELOPMENT WORKSHOP, 1988
WILLIAM V. MEYER, ed. (Case Western Reserve Univ., Cleveland, OH.) Aug. 1989 306 p Workshop held in Cleveland, OH, 7-8 Sep. 1988
(NASA-CP-10033; E-4915; NAS 1.55:10033) Avail: NTIS HC A14/MF A02 CSCL 14B

FIBER OPTICS, LASER BEAMS, LIGHT SCATTERING, PHOTODIODES, REDUCED GRAVITY, SPECTROSCOPY

N90-21351*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
FOUNDATIONS OF MEASUREMENT AND INSTRUMENTATION
ISIDORE WARSHAWSKY Apr. 1990 232 p
(NASA-RP-1222; E-3786; NAS 1.61:1222) Avail: NTIS HC A11/MF A02 CSCL 14B

The user of instrumentation has provided an understanding of the factors that influence instrument performance, selection, and application, and of the methods of interpreting and presenting the results of measurements. Such understanding is prerequisite to the successful attainment of the best compromise among reliability, accuracy, speed, cost, and importance of the measurement operation in achieving the ultimate goal of a project. Some subjects covered are dimensions; units; sources of measurement error; methods of describing and estimating accuracy; deduction and presentation of results through empirical equations, including the method of least squares; experimental and analytical methods of determining the static and dynamic behavior of instrumentation systems, including the use of analogs. Author

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LASERS AND MASERS

Includes parametric amplifiers.

N87-20522*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CLOSED-CYCLE, FREQUENCY-STABLE CO2 LASER TECHNOLOGY
CARMEN E. BATTEN, ed., IRVIN M. MILLER, ed., GEORGE M. WOOD, JR., ed., and DAVID V. WILLETTS, ed. (Royal Signals and Radar Establishment, Malvern, England.) Apr. 1987 279 p Workshop held in Hampton, Va., 10-12 Jun. 1986
(NASA-CP-2456; L-16271; NAS 1.55:2456) Avail: NTIS HC A13/MF A02 CSCL 20E

CARBON DIOXIDE LASERS, CLOSED CYCLES, FREQUENCY STABILITY, RESEARCH MANAGEMENT

N87-27994*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FREQUENCY DOMAIN LASER VELOCIMETER SIGNAL PROCESSOR: A NEW SIGNAL PROCESSING SCHEME
JAMES F. MEYERS and JAMES I. CLEMMONS, JR. Sep. 1987 38 p
(NASA-TP-2735; L-16209; NAS 1.60:2735) Avail: NTIS HC A03/MF A01 CSCL 20E

DOMAINS, FREQUENCIES, LASER DOPPLER VELOCIMETERS, SIGNAL PROCESSING

N89-17855*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANALYSIS OF ND3+:GLASS, SOLAR-PUMPED, HIGH-POWR LASER SYSTEMS
L. E. ZAPATA and M. D. WILLIAMS Feb. 1989 13 p
(NASA-TP-2905; L-16085; NAS 1.60:2905) Avail: NTIS HC A03/MF A01 CSCL 20E

GLASS LASERS, HIGH POWER LASERS, NEODYMIUM LASERS, SOLAR COLLECTORS

N90-24585*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DIODE LASER SATELLITE SYSTEMS FOR BEAMED POWER TRANSMISSION
M. D. WILLIAMS, J. H. KWON (Miami Univ., Oxford, OH.), G. H. WALKER, and D. H. HUMES Washington 1990 31 p
(NASA-TP-2992; L-16669; NAS 1.60:2992) Avail: NTIS HC A03/MF A01 CSCL 20E

ESTIMATING, LASER POWER BEAMING, OPERATING TEMPERATURE, SATELLITE TRANSMISSION, SEMICONDUCTOR LASERS, STRUCTURAL DESIGN CRITERIA

N90-24586*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LOW-TEMPERATURE CO-OXIDATION CATALYSTS FOR LONG-LIFE CO2 LASERS
DAVID R. SCHRYER, ed. and GAR B. HOFLUND, ed. (Florida Univ., Gainesville.) Washington Jun. 1990 404 p Conference held in Hampton, VA, 17-19 Oct. 1989; sponsored by NASA, Washington and the Royal Signals and Radar Establishment, Malvern, England
(NASA-CP-3076; L-16797; NAS 1.55:3076) Avail: NTIS HC A18/MF A03 CSCL 20E

CARBON DIOXIDE LASERS, CATALYSTS, CATALYTIC ACTIVITY, CONFERENCES, LOW TEMPERATURE, OXIDATION

37

MECHANICAL ENGINEERING

Includes auxiliary systems (nonpower); machine elements and processes; and mechanical equipment.

N87-10391*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
TESTING OF UH-60A HELICOPTER TRANSMISSION IN NASA LEWIS 2240-KW (3000-HP) FACILITY
A. M. MITCHELL, F. B. OSWALD, and H. H. COE Aug. 1986 30 p
(NASA-TP-2626; E-2941; NAS 1.60:2626) Avail: NTIS HC A03/MF A01 CSCL 13I
HELICOPTERS, TRANSMISSIONS (MACHINE ELEMENTS), VIBRATION MEASUREMENT

N87-18095*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
PREDICTED EFFECT OF DYNAMIC LOAD ON PITTING FATIGUE LIFE FOR LOW-CONTACT-RATIO SPUR GEARS
DAVID G. LEWICKI Jun. 1986 19 p
(NASA-TP-2610; E-2989; NAS 1.60:2610; AD-A170906; AVSCOM-TR-86-C-21) Avail: NTIS HC A03/MF A01 CSCL 13/9
APPLICATIONS PROGRAMS (COMPUTERS), DYNAMIC LOADS, FATIGUE (MATERIALS), GEARS, LIFE (DURABILITY), PITTING

N87-18821*# National Aeronautics and Space Administration, Washington, DC.
TETHER DYNAMICS SIMULATION
Feb. 1987 338 p Workshop held in Arlington, Va., 16 Sep. 1986
(NASA-CP-2458; NAS 1.55:2458) Avail: NTIS HC A15/MF A02 CSCL 22B
COMPUTERIZED SIMULATION, ELECTRODYNAMICS, TETHERED SATELLITES, TETHERLINES

N87-20555*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
VIBRATION CHARACTERISTICS OF OH-58A HELICOPTER MAIN ROTOR TRANSMISSION
DAVID G. LEWICKI and JOHN J. COY Apr. 1987 18 p
(NASA-TP-2705; E-3368; NAS 1.60:2705; AVSCOM-TR-86-C-42; AD-A180364) Avail: NTIS HC A03/MF A01 CSCL 01/3
HELICOPTERS, ROTOR AERODYNAMICS, TRANSMISSIONS (MACHINE ELEMENTS), VIBRATION MEASUREMENT

N87-22199*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ROTORDYNAMIC INSTABILITY PROBLEMS IN HIGH-PERFORMANCE TURBOMACHINERY, 1986
Jan. 1987 548 p Workshop held in College Station, Tex., 2-4 Jun. 1986; sponsored in cooperation with Texas A&M Univ., Army Research Office, and Air Force Aeropropulsion Lab.
(NASA-CP-2443; E-3136; NAS 1.55:2443) Avail: NTIS HC A23/MF A03 CSCL 13I
ROTOR AERODYNAMICS, STABILITY, TURBOCOMPRESSORS, TURBOMACHINERY

N87-22235*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
GEAR TOOTH STRESS MEASUREMENTS ON THE UH-60A HELICOPTER TRANSMISSION
FRED B. OSWALD Mar. 1987 17 p
(NASA-TP-2698; E-3357; NAS 1.60:2698) Avail: NTIS HC A03/MF A01 CSCL 13I
GEAR TEETH, STRESS MEASUREMENT, TRANSMISSIONS (MACHINE ELEMENTS), UH-60A HELICOPTER

N88-15224*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
EFFICIENCY TESTING OF A HELICOPTER TRANSMISSION PLANETARY REDUCTION STAGE
ROBERT F. HANDSCHUH and DOUGLAS A. ROHN Feb. 1988 18 p Prepared in cooperation with Army Aviation Research and Development Command, Cleveland, Ohio
(DA PROJ. 1L1-61102-AH-45)
(NASA-TP-2795; E-3770; NAS 1.60:2795; AVSCOM-TR-87-C-28; AD-A191884) Avail: NTIS HC A03/MF A01 CSCL 13/9
ENGINE TESTS, GEARS, HELICOPTER ENGINES, POWER EFFICIENCY, TRANSMISSIONS (MACHINE ELEMENTS)

N88-17045*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
DYNAMIC ANALYSIS OF MULTIMESH-GEAR HELICOPTER TRANSMISSIONS
FRED K. CHOY, DENNIS P. TOWNSEND, and FRED B. OSWALD Feb. 1988 22 p
(NASA-TP-2789; E-3191; NAS 1.60:2789) Avail: NTIS HC A03/MF A01 CSCL 13I
DYNAMIC CHARACTERISTICS, GEARS, HELICOPTER ENGINES, SYSTEMS ANALYSIS, TRANSMISSIONS (MACHINE ELEMENTS)

N88-18933*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPUTER-AIDED DESIGN ANALYSIS OF 57-MM, ANGULAR-CONTACT, CRYOGENIC TURBOPUMP BEARINGS
ELIZABETH S. ARMSTRONG and HAROLD H. COE Mar. 1988 15 p
(NASA-TP-2816; E-3890; NAS 1.60:2816) Avail: NTIS HC A03/MF A01 CSCL 13K
BEARINGS, COMPUTER AIDED DESIGN, CRYOGENIC FLUIDS, RETROFITTING, REVISIONS, SERVICE LIFE, SPACE SHUTTLE MAIN ENGINE, TURBINE PUMPS

N89-21243*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPARISON STUDY OF GEAR DYNAMIC COMPUTER PROGRAMS AT NASA LEWIS RESEARCH CENTER
JAMES J. ZAKRAJSEK Mar. 1989 31 p Prepared in cooperation with Army Aviation Research and Development Command, Cleveland, OH
(DA PROJ. 1L1-62209-AH-76)
(NASA-TP-2901; E-4144; NAS 1.60:2901; AVSCOM-TR-88-C-010) Avail: NTIS HC A03/MF A01 CSCL 13I
COMPUTER AIDED DESIGN, COMPUTER PROGRAMS, GEARS, MECHANICAL DRIVES

N89-22891*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ROTORDYNAMIC INSTABILITY PROBLEMS IN HIGH-PERFORMANCE TURBOMACHINERY, 1988
Washington, DC Feb. 1989 454 p Workshop held in College Station, TX, 16-18 May 1988; sponsored by NASA, Lewis Research Center, Cleveland, OH, Texas A and M Univ., College Station, ARO, Durham, NC, and Aeropropulsion Lab., Wright-Patterson AFB, OH
(NASA-CP-3026; E-4227; NAS 1.55:3026) Avail: NTIS HC A20/MF A03 CSCL 13I
BEARINGS, COMPRESSORS, CONFERENCES, DAMPERS, DYNAMIC STABILITY, IMPELLERS, MATHEMATICAL MODELS, ROTOR AERODYNAMICS, SEALS (STOPPERS), TURBOMACHINERY

N89-24607*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
COMPARISON OF PREDICTED AND MEASURED TEMPERATURES OF UH-60A HELICOPTER TRANSMISSION
HAROLD H. COE Washington Apr. 1989 15 p
(NASA-TP-2911; NAS 1.60:2911; E-4588; AVSCOM-TR-89-C-010; AD-A219173) Avail: NTIS HC A03/MF A01 CSCL 13/9

COMPUTERIZED SIMULATION, HELICOPTER PROPELLER DRIVE, OPERATING TEMPERATURE, PERFORMANCE TESTS, ROLLER BEARINGS, THERMAL ANALYSIS, TRANSMISSIONS (MACHINE ELEMENTS), UH-60A HELICOPTER

N90-18740*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
FASTENER DESIGN MANUAL
RICHARD T. BARRETT Mar. 1990 99 p
(NASA-RP-1228; E-4911; NAS 1.61:1228) Avail: NTIS HC A05/MF A01 CSCL 13K

This manual was written for design engineers to enable them to choose appropriate fasteners for their designs. Subject matter includes fastener material selection, platings, lubricants, corrosion, locking methods, washers, inserts, thread types and classes, fatigue loading, and fastener torque. A section on design criteria covers the derivation of torque formulas, loads on a fastener group, combining simultaneous shear and tension loads, pullout load for tapped holes, grip length, head styles, and fastener strengths. The second half of this manual presents general guidelines and selection criteria for rivets and lockbolts. Author

N90-19593*# Illinois Univ., Chicago. Dept. of Mechanical Engineering.
THEORY OF GEARING
FAYDOR L. LITVIN 1989 479 p Prepared in cooperation with Army Aviation System s Command, Cleveland, OH
(NAG3-783; NAG3-655; DA PROJ. 1L1-62209-AH-76)
(NASA-RP-1212; E-2641; NAS 1.61:1212; AVSCOM-TR-88-C-035; L-89-600204) Avail: NTIS HC A21/MF A03; Also Avail: SOD HC $40.00 as 033-000-01068-1 CSCL 13I

Basic mathematical problems on the theory of gearing are covered in this book, such as the necessary and sufficient conditions of envelope existence, relations between principal curvatures and directions for surfaces of mating gears. Also included are singularities of surfaces accompanied by undercutting the process of generation, the phenomena of envelope of lines of contact, and the principles for generation of conjugate surfaces. Special attention is given to the algorithms for computer aided simulation of meshing and tooth contact. This edition was complemented with the results of research recently performed by the author and his doctoral students. The book contains sample problems and also problems for the reader to solve. K.C.D.

N90-19595*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MODELING AND ANALYSIS OF THE SPACE SHUTTLE NOSE-GEAR TIRE WITH SEMIANALYTIC FINITE ELEMENTS
KYUN O. KIM, AHMED K. NOOR (Joint Inst. for Advancement of Flight Sciences, Hampton, VA.), and JOHN A. TANNER Washington Apr. 1990 36 p
(NASA-TP-2977; L-16639; NAS 1.60:2977) Avail: NTIS HC A03/MF A01 CSCL 22B

AIRCRAFT TIRES, ANISOTROPIC SHELLS, FINITE ELEMENT METHOD, LANDING GEAR, MATHEMATICAL MODELS, NOSE WHEELS, SHELL THEORY, SPACE SHUTTLE ORBITERS

N90-28063*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LIQUID LUBRICATION IN SPACE
ERWIN V. ZARETSKY Jul. 1990 26 p
(NASA-RP-1240; E-5094; NAS 1.61:1240) Avail: NTIS HC A03/MF A01 CSCL 13I

The requirement for long-term, reliable operation of aerospace mechanisms has, with a few exceptions, pushed the state of the art in tribology. Space mission life requirements in the early 1960s were generally 6 months to a year. The proposed U.S. space station schedule to be launched in the 1990s must be continuously usable for 10 to 20 years. Liquid lubrication systems are generally used for mission life requirements longer than a year. Although most spacecraft or satellites have reached their required lifetimes without a lubrication-related failure, the application of liquid lubricants in the space environment presents unique challenges. The state of the art of liquid lubrication in space as well as the problems and their solutions are reviewed. Author

N90-28066*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
MODIFICATION OF THE SHABERTH BEARING CODE TO INCORPORATE RP-1 AND A DISCUSSION OF THE TRACTION MODEL
CLAUDIA M. WOODS Sep. 1990 30 p
(NASA-TP-3017; E-5407; NAS 1.60:3017) Avail: NTIS HC A03/MF A01 CSCL 13I

COMPUTER PROGRAMS, MATHEMATICAL MODELS, ROLLER BEARINGS, RP-1 ROCKET PROPELLANTS, SPACECRAFT LUBRICATION

38

QUALITY ASSURANCE AND RELIABILITY

Includes product sampling procedures and techniques; and quality control.

N87-27204*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ELECTRONICS RELIABILITY AND MEASUREMENT TECHNOLOGY
JOSEPH S. HEYMAN, ed. Aug. 1987 143 p Conference held in Hampton, Va., 3-5 Jun. 1986; sponsored by NASA Langley Research Center, USAF, National Security Industrial Association, and the Aerospace Industry Association
(NASA-CP-2472; L-16315; NAS 1.55:2472) Avail: NTIS HC A07/MF A01 CSCL 14D

COMPONENT RELIABILITY, INSPECTION, MICROELECTRONICS, NONDESTRUCTIVE TESTS, QUALITY CONTROL, RELIABILITY ENGINEERING

N87-28025*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A TECHNIQUE FOR EVALUATING THE APPLICATION OF THE PIN-LEVEL STUCK-AT FAULT MODEL TO VLSI CIRCUITS
DANIEL L. PALUMBO and GEORGE B. FINELLI Sep. 1987 45 p
(NASA-TP-2738; L-16269; NAS 1.60:2738) Avail: NTIS HC A03/MF A01 CSCL 14D

COMPUTERS, ERROR ANALYSIS, EVALUATION, FAULT TOLERANCE, INTEGRATED CIRCUITS, VERY LARGE SCALE INTEGRATION

39

STRUCTURAL MECHANICS

Includes structural element design and weight analysis; fatigue; and thermal stress.

N81-71592* National Aeronautics and Space Administration, Washington, DC.
THE NASTRAN DEMONSTRATION PROBLEM MANUAL, LEVEL 17.5
Dec. 1978 185 p refs
(NASA-SP-224(05))

N81-71594* National Aeronautics and Space Administration, Washington, DC.
THE NASTRAN PROGRAMMERS MANUAL, LEVEL 17.5

Dec. 1978 845 p refs
(NASA-SP-223(05))

N87-11180*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
TURBINE ENGINE HOT SECTION TECHNOLOGY, 1984
Oct. 1984 400 p Conference held in Cleveland, Ohio, 23-24 Oct. 1984
(NASA-CP-2339; E-2267; NAS 1.55:2339) Avail: NTIS HC A17/MF A03 CSCL 20K
AIRCRAFT ENGINES, AIRFOILS, CONFERENCES, LIFE (DURABILITY), LININGS, MATHEMATICAL MODELS, PREDICTION ANALYSIS TECHNIQUES, ROTOR BLADES (TURBOMACHINERY), TURBINE ENGINES

N87-12921*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
EFFECTS OF VARIABLES UPON PYROTECHNICALLY INDUCED SHOCK RESPONSE SPECTRA
J. L. SMITH May 1986 61 p
(NASA-TP-2603; NAS 1.60:2603) Avail: NTIS HC A04/MF A01 CSCL 20K
PYROTECHNICS, SHOCK LOADS, SHOCK SPECTRA, VARIABILITY

N87-13789*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF WINGLET ON TRANSONIC FLUTTER CHARACTERISTICS OF A CANTILEVERED TWIN-ENGINE-TRANSPORT WING MODEL
C. L. RUHLIN, K. G. BHATIA (Boeing Commercial Airplane Co., Seattle, Wash.), and K. S. NAGARAJA Dec. 1986 77 p
(NASA-TP-2627; L-16095; NAS 1.60:2627) Avail: NTIS HC A05/MF A01 CSCL 20K
AERODYNAMIC CONFIGURATIONS, FLUTTER, PREDICTION ANALYSIS TECHNIQUES, TRANSONIC FLOW, WIND TUNNEL TESTS, WINGLETS, WINGS

N87-16321*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THE 20TH AEROSPACE MECHANICS SYMPOSIUM
May 1986 316 p Symposium held in Cleveland, Ohio, 7-9 May 1986; sponsored by NASA, the California Inst. of Tech. and LMSC
(NASA-CP-2423-REV; E-2904; NAS 1.55:2423-REV) Avail: NTIS HC A14/MF A02 CSCL 20K
ACTUATORS, CONFERENCES, FLEXIBLE SPACECRAFT, HYDRAULIC EQUIPMENT, JOINTS (JUNCTIONS), MANIPULATORS, SPACE STATIONS, SPACECRAFT INSTRUMENTS, SPUTTERING, TRIBOLOGY

N87-18855*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SENSITIVITY ANALYSIS IN ENGINEERING
HOWARD M. ADELMAN, comp. and RAPHAEL T. HAFTKA, comp. (Virginia Polytechnic Inst. and State Univ., Blacksburg) Feb. 1987 369 p Symposium held in Hampton, Va., 25-26 Sep. 1986
(NASA-CP-2457; L-16278; NAS 1.55:2457) Avail: NTIS HC A16/MF A03 CSCL 20K
DYNAMIC STRUCTURAL ANALYSIS, EIGENVALUES, MODAL RESPONSE, OPTIMIZATION, SENSITIVITY

N87-20566*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SHOT PEENING FOR TI-6AL-4V ALLOY COMPRESSOR BLADES
GERALD A. CAREK Apr. 1987 9 p
(NASA-TP-2711; E-3430; NAS 1.60:2711) Avail: NTIS HC A02/MF A01 CSCL 20K
ALUMINUM, COMPRESSOR BLADES, SHOT PEENING, TITANIUM ALLOYS, VANADIUM

N87-20567*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MODELING OF JOINTS FOR THE DYNAMIC ANALYSIS OF TRUSS STRUCTURES
W. KEITH BELVIN May 1987 43 p
(NASA-TP-2661; L-16163; NAS 1.60:2661) Avail: NTIS HC A03/MF A01 CSCL 20K
DYNAMIC STRUCTURAL ANALYSIS, JOINTS (JUNCTIONS), LARGE SPACE STRUCTURES, MODELS, TRUSSES

N87-20568*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SPACE STATION STRUCTURES AND DYNAMICS TEST PROGRAM
CARLETON J. MOORE, JOHN S. TOWNSEND, and EDWARD W. IVEY Mar. 1987 47 p
(NASA-TP-2710; NAS 1.60:2710) Avail: NTIS HC A03/MF A01 CSCL 20K
DYNAMIC STRUCTURAL ANALYSIS, DYNAMIC TESTS, LARGE SPACE STRUCTURES, SPACE STATION STRUCTURES, SPACE STATIONS, SYSTEMS ANALYSIS

N87-27231*# Computer Software Management and Information Center, Athens, GA.
FIFTEENTH NASTRAN (R) USERS' COLLOQUIUM
Aug. 1987 312 p Colloquium held in Kansas City, Mo., 4-8 May 1987
(NASW-3247)
(NASA-CP-2481; NAS 1.55:2481; AD-A226753) Avail: NTIS HC A14/MF A02; also available from COSMIC, Athens, Ga. 30602 CSCL 20/11
COMPUTER AIDED DESIGN, COMPUTER TECHNIQUES, CONFERENCES, FINITE ELEMENT METHOD, NASTRAN, STRUCTURAL ANALYSIS, STRUCTURAL VIBRATION

N87-29858*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
THE 21ST AEROSPACE MECHANISMS SYMPOSIUM
May 1987 356 p Symposium held in Houston, Tex., 29 Apr. - 1 May 1987; sponsored by NASA, California Inst. of Tech., and LMSC
(NASA-CP-2470; S-560; NAS 1.55:2470) Avail: NTIS HC A16/MF A02 CSCL 20K
ACTUATORS, DEPLOYMENT, LARGE SPACE STRUCTURES, MANIPULATORS, ROBOTICS, SPACE ERECTABLE STRUCTURES

N88-11140*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
TURBINE ENGINE HOT SECTION TECHNOLOGY, 1985
Oct. 1985 443 p Conference held in Cleveland, Ohio, 22-23 Oct. 1985
(NASA-CP-2405; E-2727; NAS 1.55:2405) Avail: NTIS HC A19/MF A03 CSCL 20K
COMBUSTION CHAMBERS, CONFERENCES, GAS TURBINE ENGINES, LININGS, MATHEMATICAL MODELS, METAL FATIGUE, STRUCTURAL ANALYSIS, TURBINE BLADES, VANES

N88-13609*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE 58TH SHOCK AND VIBRATION SYMPOSIUM, VOLUME 1
WALTER D. PILKEY, comp. and BARBARA F. PILKEY, comp. (Virginia Univ., Charlottesville.) Oct. 1987 476 p Symposium held in Huntsville, Ala., 13-15 Oct. 1987; sponsored in part by DOD
(NASA-CP-2488-VOL-1; M-571-VOL-1; NAS 1.55:2488-VOL-1) Avail: NTIS HC A21/MF A03 CSCL 20K
CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, MECHANICAL SHOCK, SHOCK TESTS, SPACE SHUTTLE MAIN ENGINE, STRUCTURAL VIBRATION, VIBRATION DAMPING, VIBRATION ISOLATORS

N88-15263*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LIFE PREDICTION OF THERMOMECHANICAL FATIGUE USING TOTAL STRAIN VERSION OF STRAINRANGE PARTITIONING (SRP): A PROPOSAL
JAMES F. SALTSMAN and GARY R. HALFORD Feb. 1988 25 p
(NASA-TP-2779; E-3795; NAS 1.60:2779) Avail: NTIS HC A03/MF A01 CSCL 20K
FATIGUE LIFE, LIFE (DURABILITY), METALS, PREDICTIONS

N88-17095*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
STRESS INTENSITY AND CRACK DISPLACEMENT FOR SMALL EDGE CRACKS
THOMAS W. ORANGE Feb. 1988 11 p
(NASA-TP-2801; E-3744; NAS 1.60:2801) Avail: NTIS HC A03/MF A01 CSCL 20K
CRACKS, DISPLACEMENT, EDGES, ELASTIC DEFORMATION, STRESS INTENSITY FACTORS

N88-18948*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE 58TH SHOCK AND VIBRATION SYMPOSIUM, VOLUME 2
WALTER D. PILKEY, comp. and BARBARA F. PILKEY, comp. (Virginia Univ., Charlottesville.) Feb. 1988 208 p Symposium held in Huntsville, Ala., 13-15 Oct. 1987; sponsored in part by DOD
(NASA-CP-2488-VOL-2; M-572-VOL-2; NAS 1.55:2488-VOL-2) Avail: NTIS HC A10/MF A02 CSCL 20K
CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, FINITE ELEMENT METHOD, SPACECRAFT COMPONENTS, SPACECRAFT DESIGN, SPECTRUM ANALYSIS, STRUCTURAL VIBRATION

N88-20652*# Computer Software Management and Information Center, Athens, GA.
SIXTEENTH NASTRAN (R) USERS' COLLOQUIUM
Mar. 1988 196 p Colloquium held in Arlington, Va., 25-29 Apr. 1988
(NASA-CP-2505; NAS 1.55:2505; AD-A226754) Avail: NTIS HC A09/MF A02; also available from COSMIC, Athens, Ga. 30602 CSCL 20/11
CONFERENCES, NASTRAN, STRUCTURAL ANALYSIS

N88-21456*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ADVANCES IN CONTACT ALGORITHMS AND THEIR APPLICATION TO TIRES
AHMED K. NOOR and JOHN A. TANNER Apr. 1988 36 p Presented at the American Chemical Society Meeting, Montreal, Quebec, 26-29 May 1987 Original contains color illustrations
(NASA-TP-2781; L-16376; NAS 1.60:2781) Avail: NTIS HC A03/MF A01 CSCL 20K
ALGORITHMS, FRICTION, SURFACE PROPERTIES, TIRES

N88-21468*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE 22ND AEROSPACE MECHANISMS SYMPOSIUM
May 1988 416 p Symposium held in Hampton, Va.; sponsored by NASA, Washington, California Inst. of Tech., Pasadena, and LMSC, Sunnyvale, Calif.
(NASA-CP-2506; L-16433; NAS 1.55:2506) Avail: NTIS HC A18/MF A03 CSCL 20K
ACTUATORS, BEARINGS, MAGNETIC SUSPENSION, MECHANICAL DRIVES, TELEOPERATORS, VIBRATION ISOLATORS

N88-21498*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
NONLINEAR CONSTITUTIVE RELATIONS FOR HIGH TEMPERATURE APPLICATIONS, 1986
Apr. 1988 482 p Symposium held in Akron, Ohio, 11-13 Jun. 1986; sponsored by NASA, Lewis Research Center, Cleveland, Ohio and Akron Univ., Ohio
(NASA-CP-10010; E-3956; NAS 1.55:10010) Avail: NTIS HC A21/MF A03 CSCL 20K
CONSTITUTIVE EQUATIONS, MATHEMATICAL MODELS, REFRACTORY MATERIALS, STRESS ANALYSIS, STRUCTURAL ANALYSIS, VISCOPLASTICITY

N88-22382*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LEWIS STRUCTURES TECHNOLOGY, 1988. VOLUME 2: STRUCTURAL MECHANICS
May 1988 307 p Symposium held in Cleveland, Ohio, 24-25 May 1988
(NASA-CP-3003-VOL-2; E-3970-VOL-2; NAS 1.55:3003-VOL-2) Avail: NTIS HC A14/MF A02 CSCL 20K
AIRCRAFT ENGINES, DYNAMIC STRUCTURAL ANALYSIS, FATIGUE (MATERIALS), FRACTURE MECHANICS, STRESS ANALYSIS

N88-22408*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LEWIS STRUCTURES TECHNOLOGY, 1988. VOLUME 3: STRUCTURAL INTEGRITY FATIGUE AND FRACTURE WIND TURBINES HOST
May 1988 366 p Symposium held in Cleveland, Ohio, 24-25 May 1988
(NASA-CP-3003-VOL-3; E-3970-VOL-3; NAS 1.55:3003-VOL-3) Avail: NTIS HC A16/MF A03 CSCL 20K
CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, FRACTURE MECHANICS, METAL FATIGUE, NONDESTRUCTIVE TESTS, PARALLEL PROCESSING (COMPUTERS), WIND TURBINES

N88-23226*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
LEWIS STRUCTURES TECHNOLOGY, 1988. VOLUME 1: STRUCTURAL DYNAMICS
May 1988 463 p Symposium held in Cleveland, Ohio, 24-25 May 1988
(NASA-CP-3003-VOL-1; E-3970-VOL-1; NAS 1.55:3003-VOL-1) Avail: NTIS HC A20/MF A03 CSCL 20K
AEROELASTICITY, COMPUTER TECHNIQUES, CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, NASTRAN, PARALLEL PROCESSING (COMPUTERS), SPACECRAFT STRUCTURES, STRUCTURAL VIBRATION, TURBINE BLADES, VIBRATION DAMPING, WIND TURBINES

N88-23988*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
DYNAMIC CHARACTERISTICS OF A VIBRATING BEAM WITH PERIODIC VARIATION IN BENDING STIFFNESS
JOHN S. TOWNSEND Feb. 1987 23 p Previously announced as N87-22726
(NASA-TP-2697; NAS 1.60:2697) Avail: NTIS HC A03/MF A01 CSCL 20K
BEAMS (SUPPORTS), BENDING, BENDING VIBRATION, DYNAMIC CHARACTERISTICS, MODAL RESPONSE, MODULATION, PERIODIC VARIATIONS, STIFFNESS

N88-25013*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SRM PROPELLANT AND POLYMER MATERIALS STRUCTURAL TEST PROGRAM
CARLETON J. MOORE May 1988 16 p
(NASA-TP-2821; NAS 1.60:2821) Avail: NTIS HC A03/MF A01 CSCL 20K
DYNAMIC STRUCTURAL ANALYSIS, PERFORMANCE TESTS, SOLID PROPELLANT ROCKET ENGINES, SPACE SHUTTLE BOOSTERS

N88-26684*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THREE-DIMENSIONAL ANALYSIS OF A POSTBUCKLED EMBEDDED DELAMINATION

JOHN D. WHITCOMB Jul. 1988 26 p
(NASA-TP-2823; L-16453; NAS 1.60:2823) Avail: NTIS HC A03/MF A01 CSCL 20K

BUCKLING, DELAMINATING, FINITE ELEMENT METHOD, LAMINATES, STRAIN ENERGY RELEASE RATE

N88-28343*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SRM (SOLID ROCKET MOTOR) PROPELLANT AND POLYMER MATERIALS STRUCTURAL MODELING
CARLETON J. MOORE Aug. 1988 42 p
(NASA-TP-2824; NAS 1.60:2824) Avail: NTIS HC A03/MF A01 CSCL 20K

POLYMERIC FILMS, PROPELLANTS, SOLID PROPELLANT ROCKET ENGINES, STRUCTURAL ANALYSIS

N89-12876*# National Aeronautics and Space Administration. *Lewis Research Center, Cleveland, OH.*
TURBINE ENGINE HOT SECTION TECHNOLOGY 1986
Oct. 1986 488 p Workshop held in Cleveland, Ohio, 21-22 Oct. 1986
(NASA-CP-2444; E-3205; NAS 1.55:2444) Avail: NTIS HC A21/MF A03 CSCL 20K

CONFERENCES, FATIGUE (MATERIALS), FRACTURE MECHANICS, GAS TURBINE ENGINES, HEAT TRANSFER, MEASURING INSTRUMENTS, PROPELLANT COMBUSTION, STRUCTURAL ANALYSIS, THERMAL CONTROL COATINGS

N89-13814*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
EFFECTS OF VARIABLES UPON PYROTECHNICALLY INDUCED SHOCK RESPONSE SPECTRA, PART 2
JAMES LEE SMITH Nov. 1988 106 p
(NASA-TP-2872; NAS 1.60:2872) Avail: NTIS HC A06/MF A01 CSCL 20K

COMPONENT RELIABILITY, JOINTS (JUNCTIONS), PYROTECHNICS, SHAPED CHARGES, SPACECRAFT STRUCTURES

N89-16170*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
PARTITIONING STRATEGY FOR EFFICIENT NONLINEAR FINITE ELEMENT DYNAMIC ANALYSIS ON MULTIPROCESSOR COMPUTERS
AHMED K. NOOR and JEANNE M. PETERS (Joint Inst. for Advancement of Flight Sciences, Hampton, VA.) Washington, DC Jan. 1989 38 p Original contains color illustrations
(NAG1-730; AF-AFOSR-0136-88)
(NASA-TP-2850; L-16476; NAS 1.60:2850) Avail: NTIS HC A03/MF A01 CSCL 20K

DYNAMIC STRUCTURAL ANALYSIS, FINITE ELEMENT METHOD, MULTIPROCESSING (COMPUTERS), PARALLEL PROCESSING (COMPUTERS), PARTITIONS (MATHEMATICS)

N89-16183*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
THERMOVISCOPLASTIC MODEL WITH APPLICATION TO COPPER
ALAN D. FREED Dec. 1988 18 p
(NASA-TP-2845; E-4280; NAS 1.60:2845) Avail: NTIS HC A03/MF A01 CSCL 20K

COPPER, MODELS, THERMOVISCOELASTICITY, VISCOPLASTICITY

N89-16192*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
CYCLIC LOADS TESTS OF CARBON INVOLUTE SOLID ROCKET MOTOR OUTER BOOT RING SEGMENTS
RAFIQ AHMED Dec. 1988 28 p
(NASA-TP-2884; M-605; NAS 1.60:2884) Avail: NTIS HC A03/MF A01 CSCL 20K

CYCLIC LOADS, FIBER COMPOSITES, LOAD TESTS, MODULUS OF ELASTICITY, PLASTIC PROPERTIES, RESIN MATRIX COMPOSITES, SPACE SHUTTLE BOOSTERS, STRESS-STRAIN RELATIONSHIPS

N89-16196*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
CONTROL SURFACE SPANWISE PLACEMENT IN ACTIVE FLUTTER SUPPRESSION SYSTEMS
E. NISSIM and JOHN J. BURKEN Nov. 1988 19 p Prepared in cooperation with Technion - Israel Inst. of Tech., Haifa
(NASA-TP-2873; H-1492; NAS 1.60:2873) Avail: NTIS HC A03/MF A01 CSCL 20K

ACTIVE CONTROL, CONTROL SURFACES, FLUTTER ANALYSIS

N89-17298*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
TURBINE ENGINE HOT SECTION TECHNOLOGY, 1987
Oct. 1987 464 p Workshop held in Cleveland, OH, 20-21 Oct. 1987
(NASA-CP-2493; E-3745; NAS 1.55:2493) Avail: NTIS HC A20/MF A03 CSCL 20K

AIRCRAFT ENGINES, COMBUSTION, CONFERENCES, FINITE ELEMENT METHOD, FRACTURE MECHANICS, GAS TURBINE ENGINES, HEAT TRANSFER, STRUCTURAL ANALYSIS, THERMAL CONTROL COATINGS, THERMAL FATIGUE, TURBINE BLADES

N89-17892*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MEASURED AND PREDICTED ROOT-MEAN-SQUARE ERRORS IN SQUARE AND TRIANGULAR ANTENNA MESH FACETS
W. B. FICHTER Washington, DC Mar. 1989 17 p
(NASA-TP-2896; L-16525; NAS 1.60:2896) Avail: NTIS HC A03/MF A01 CSCL 20K

ANTENNA DESIGN, ANTENNA RADIATION PATTERNS, FABRICS, REFLECTORS, ROOT-MEAN-SQUARE ERRORS, STRUCTURAL ANALYSIS

N89-19579*# National Aeronautics and Space Administration, Washington, DC.
MIXED FINITE ELEMENT MODELS FOR FREE VIBRATIONS OF THIN-WALLED BEAMS
AHMED K. NOOR, JEANNE M. PETERS, and BYUNG-JIN MIN Feb. 1989 28 p Prepared in cooperation with Joint Inst. for Advancement of Flight Sciences, Hampton, VA
(NASA-TP-2868; L-16506; NAS 1.60:2868) Avail: NTIS HC A03/MF A01 CSCL 20K

BEAMS (SUPPORTS), FINITE ELEMENT METHOD, FREE VIBRATION, THIN WALLS

N89-19580*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MIXED FORMULATION FOR FRICTIONLESS CONTACT PROBLEMS
AHMED K. NOOR and KYUN O. KIM 1989 26 p Prepared in cooperation with George Washington Univ., Hampton, VA and Joint Inst. for Advancement of Flight Sciences, Hampton, VA
(NASA-TP-2897; L-16513; NAS 1.60:2897) Avail: NTIS HC A03/MF A01 CSCL 20K

CONTACT LOADS, CURVED BEAMS, DEFORMATION, FINITE ELEMENT METHOD, FRICTION FACTOR, STRESS ANALYSIS

N89-22940*# Computer Software Management and Information Center, Athens, GA.
SEVENTEENTH NASTRAN (R) USERS' COLLOQUIUM
Mar. 1989 400 p Colloquium held in San Antonio, TX, 24-28 Apr. 1989
(NASA-CP-3029; NAS 1.55:3029; AD-A226755) Avail: NTIS HC A17/MF A03; also available from COSMIC, Athens, GA 30602 CSCL 20/11

CONFERENCES, FINITE ELEMENT METHOD, NASTRAN, STRAIN ENERGY METHODS, STRUCTURAL ANALYSIS

N89-23892*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE 23RD AEROSPACE MECHANISMS SYMPOSIUM
Washington Mar. 1989 342 p Symposium held in Huntsville, AL, 3-5 May 1989; sponsored by NASA, Washington, California Inst. of Tech., Pasadena, and LMSC, Sunnyvale, CA
(NASA-CP-3032; M-611; NAS 1.55:3032) Avail: NTIS HC A15/MF A02 CSCL 20K
AEROSPACE SYSTEMS, CONFERENCES, DEPLOYMENT, LUBRICANTS, MANIPULATORS, SPACE STATIONS, SPACECRAFT DOCKING, TELEOPERATORS

N89-24626*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RESEARCH IN STRUCTURES, STRUCTURAL DYNAMICS AND MATERIALS, 1989
WILLIAM F. HUNTER, comp. and AHMED K. NOOR, comp. (George Washington Univ., Hampton, VA.) Apr. 1989 88 p Proceedings of the AIAA/ASME/ASCE/AHS/ASC 30th Structures, Structural Dynamics and Materials Conference, Mobile, AL, 3-5 Apr. 1989
(NASA-CP-10024; NAS 1.55:10024) Avail: NTIS HC A05/MF A01 CSCL 20K
ACOUSTIC EMISSION, BUCKLING, COMPOSITE STRUCTURES, CONFERENCES, CONTROL SYSTEMS DESIGN, DISPLACEMENT, DYNAMIC STRUCTURAL ANALYSIS, MATHEMATICAL MODELS

N89-24638*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPUTATIONAL METHODS FOR STRUCTURAL MECHANICS AND DYNAMICS, PART 1
W. JEFFERSON STROUD, ed., JERROLD M. HOUSNER, ed., JOHN A. TANNER, ed., and ROBERT J. HAYDUK, ed. Washington May 1989 329 p Workshop held in Hampton, VA, 19-21 Jun. 1985
(NASA-CP-3034-PT-1; L-16560-PT-1; NAS 1.55:3034-PT-1) Avail: NTIS HC A15/MF A02 CSCL 20K
COMPUTATION, COMPUTERIZED SIMULATION, CONFERENCES, SHELLS (STRUCTURAL FORMS), STRESS ANALYSIS, STRUCTURAL ANALYSIS, TIRES

N89-24654*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPUTATIONAL METHODS FOR STRUCTURAL MECHANICS AND DYNAMICS
W. JEFFERSON STROUD, ed., JERROLD M. HOUSNER, ed., JOHN A. TANNER, ed., and ROBERT J. HAYDUK, ed. Washington May 1989 256 p Workshop held in Hampton, VA, 19-21 Jun. 1985
(NASA-CP-3034-PT-2; L-16560-PT-2; NAS 1.55:3034-PT-2) Avail: NTIS HC A12/MF A02 CSCL 20K
AIRCRAFT DESIGN, COMPUTERIZED SIMULATION, CONFERENCES, DYNAMIC STRUCTURAL ANALYSIS, MANY BODY PROBLEM, STRESS ANALYSIS

N89-26255*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DERIVATION OF A TAPPERED P-VERSION BEAM FINITE ELEMENT
HOWARD E. HINNANT (Army Aviation Systems Command, Hampton, VA.) Aug. 1989 45 p
(DA PROJ. 1L1-62211-A-47-AB)
(NASA-TP-2931; L-16577; NAS 1.60:2931; AVSCOM-TR-B-002; AD-A213443) Avail: NTIS HC A03/MF A01 CSCL 20/11
BEAMS, FINITE ELEMENT METHOD, MATHEMATICAL MODELS, TAPERING

N89-27214*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
WELD STRESSES BEYOND ELASTIC LIMIT: MATERIALS DISCONTINUITY
V. VERDERAIME Washington Aug. 1989 28 p
(NASA-TP-2935; NAS 1.60:2935) Avail: NTIS HC A03/MF A01 CSCL 20L
ELASTIC PROPERTIES, STRAIN HARDENING, STRESS CONCENTRATION, STRESSES, WELDING

N89-28034*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
EVALUATION OF A STRAIN-GAGE LOAD CALIBRATION ON A LOW-ASPECT-RATIO WING STRUCTURE AT ELEVATED TEMPERATURE
LAWRENCE F. REARDON Jun. 1989 39 p
(NASA-TP-2921; H-1331; NAS 1.60:2921) Avail: NTIS HC A03/MF A01 CSCL 20K
AIRCRAFT CONFIGURATIONS, AIRCRAFT STRUCTURES, CALIBRATING, HIGH TEMPERATURE ENVIRONMENTS, LOAD TESTS, LOW ASPECT RATIO WINGS, STRAIN GAGES, WING LOADING

N89-29773*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA WORKSHOP ON COMPUTATIONAL STRUCTURAL MECHANICS 1987, PART 1
NANCY P. SYKES, ed. (Analytical Services and Materials, Inc., Hampton, VA.) Feb. 1989 383 p Workshop held in Hampton, VA, 18-20 Nov. 1987; sponsored by NASA, Langley Research Center, Hampton, VA, and NASA, Lewis Research Center, Cleveland, OH
(NASA-CP-10012-PT-1; NAS 1.55:10012-PT-1) Avail: NTIS HC A17/MF A03 CSCL 20K
ARCHITECTURE (COMPUTERS), CONFERENCES, FINITE ELEMENT METHOD, MULTIPROCESSING (COMPUTERS), PARALLEL PROCESSING (COMPUTERS), SOFTWARE ENGINEERING, STRUCTURAL ANALYSIS

N89-29789*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA WORKSHOP ON COMPUTATIONAL STRUCTURAL MECHANICS 1987, PART 2
NANCY P. SYKES, ed. (Analytical Services and Materials, Inc., Hampton, VA.) Feb. 1989 374 p Workshop held in Hampton, VA, 18-20 Nov. 1987; sponsored by NASA, Langley Research Center, Hampton, VA, and NASA, Lewis Research Center, Cleveland, OH
(NASA-CP-10012-PT-2; NAS 1.55:10012-PT-2) Avail: NTIS HC A16/MF A02 CSCL 20K
ARCHITECTURE (COMPUTERS), COMPUTER AIDED DESIGN, COMPUTER SYSTEMS PROGRAMS, COMPUTERIZED SIMULATION, CONFERENCES, FINITE ELEMENT METHOD, STRUCTURAL ANALYSIS, STRUCTURAL ENGINEERING

N89-29799*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NASA WORKSHOP ON COMPUTATIONAL STRUCTURAL MECHANICS 1987, PART 3
NANCY P. SYKES, ed. (Analytical Services and Materials, Inc., Hampton, VA.) Feb. 1989 419 p Workshop held in Hampton, VA, 18-20 Nov. 1987; sponsored by NASA, Langley Research Center, Hampton, VA, and NASA, Lewis Research Center, Cleveland, OH
(NASA-CP-10012-PT-3; NAS 1.55:10012-PT-3) Avail: NTIS HC A18/MF A03 CSCL 20K
COMPUTER TECHNIQUES, CONFERENCES, FINITE ELEMENT METHOD, LARGE SPACE STRUCTURES, SOFTWARE ENGINEERING, STRUCTURAL ANALYSIS

N89-29811*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
APPLICATION OF NEWTON'S METHOD TO THE POSTBUCKLING OF RINGS UNDER PRESSURE LOADINGS
GAYLEN A. THURSTON Oct. 1989 26 p
(NASA-TP-2941; L-16578; NAS 1.60:2941) Avail: NTIS HC A03/MF A01 CSCL 20K

BUCKLING, CYLINDRICAL SHELLS, DEFORMATION, LOADS (FORCES), NEWTON METHODS, RING STRUCTURES, STRUCTURAL FAILURE

N90-12042*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
EFFECT OF CONTROL SURFACE MASS UNBALANCE ON THE STABILITY OF A CLOSED-LOOP ACTIVE CONTROL SYSTEM
E. NISSIM (Technion - Israel Inst. of Tech., Haifa.) Oct. 1989 26 p
(NASA-TP-2952; H-1534; NAS 1.60:2952) Avail: NTIS HC A03/MF A01 CSCL 20K

ACTIVE CONTROL, AERODYNAMIC STABILITY, AERODYNAMICS, BALANCE, CONTROL SURFACES, FEEDBACK CONTROL, FLUTTER, INERTIA, MASS DISTRIBUTION

N90-18081*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
INTEGRATED FORCE METHOD VERSUS DISPLACEMENT METHOD FOR FINITE ELEMENT ANALYSIS
SURYA N. PATNAIK, LASZLO BERKE, and RICHARD H. GALLAGHER (Clarkson Univ., Potsdam, NY.) Washington Feb. 1990 33 p
(NASA-TP-2937; E-4604; NAS 1.60:2937) Avail: NTIS HC A03/MF A01 CSCL 20K

DISPLACEMENT, EQUILIBRIUM EQUATIONS, FINITE ELEMENT METHOD, LOADS (FORCES), STIFFNESS, STRUCTURAL ANALYSIS, STRUCTURAL STABILITY

N90-22079*# National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, FL.
THE 24TH AEROSPACE MECHANISMS SYMPOSIUM
Washington Apr. 1990 370 p Symposium held at Kennedy Space Center, FL, 18-20 Apr. 1990; sponsored by NASA, Washington, California Inst. of Tech., Pasadena, and LMSC, Sunnyvale, CA
(NASA-CP-3062; NAS 1.55:3062) Avail: NTIS HC A16/MF A03 CSCL 20K

ACTUATORS, AEROSPACE ENGINEERING, CONFERENCES, GROUND SUPPORT EQUIPMENT, LARGE SPACE STRUCTURES, TRIBOLOGY

N90-24637*# Computer Software Management and Information Center, Athens, GA.
EIGHTEENTH NASTRAN (R) USERS' COLLOQUIUM
Washington NASA Apr. 1990 176 p Colloquium held in Portland, OR, 23-27 Apr. 1990 Sponsored by NASA, Washington
(NASA-CP-3069; NAS 1.55:3069; AD-A226756) Avail: NTIS HC A09/MF A01; also available from COSMIC, Athens, GA 30602 CSCL 20/11

CONFERENCES, FINITE ELEMENT METHOD, NASTRAN, STRUCTURAL ANALYSIS, STRUCTURAL VIBRATION

N90-25366*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
LOADS ANALYSIS AND TESTING OF FLIGHT CONFIGURATION SOLID ROCKET MOTOR OUTER BOOT RING SEGMENTS
RAFIQ AHMED Washington Jun. 1990 47 p
(NASA-TP-3028; NAS 1.60:3028) Avail: NTIS HC A03/MF A01 CSCL 20K

BEAMS (SUPPORTS), BENDING, COMPUTER PROGRAMS, FAILURE ANALYSIS, MATHEMATICAL MODELS, SOLID PROPELLANT ROCKET ENGINES, STIFFNESS

N90-27121*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MODAL INTERACTION IN POSTBUCKLED PLATES. THEORY
GAYLEN A. THURSTON Washington Nov. 1989 21 p
(NASA-TP-2943; L-16573; NAS 1.60:2943) Avail: NTIS HC A03/MF A01 CSCL 20K

BUCKLING, FAILURE MODES, PLATES (STRUCTURAL MEMBERS), STRUCTURAL ANALYSIS, STRUCTURAL FAILURE

N90-28099*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
CERAMICS ANALYSIS AND RELIABILITY EVALUATION OF STRUCTURES (CARES). USERS AND PROGRAMMERS MANUAL
NOEL N. NEMETH (Aerospace Design and Fabrication, Inc., Brook Park, OH.), JANE M. MANDERSCHEID, and JOHN P. GYEKENYESI Washington Aug. 1990 232 p
(NASA-TP-2916; E-4722-1; NAS 1.60:2916) Avail: NTIS HC A11/MF A02 CSCL 11C

CERAMICS, COMPUTER PROGRAMS, FAILURE MODES, NASTRAN, PROBABILITY THEORY, RELIABILITY ANALYSIS, STRUCTURAL ANALYSIS

N90-28859*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
BUCKLING AND POSTBUCKLING BEHAVIOR OF *COMPRESSION-LOADED ISOTROPIC PLATES WITH* CUTOUTS
MICHAEL P. NEMETH Washington Sep. 1990 22 p Presented at the 31st AIAA/ASME/ASCE/AHS Structures, Structural Dynamics, and Materials Conference, Long Beach, CA, 2-4 Apr. 1990 Previously announced in IAA as A90-29311
(NASA-TP-3024; L-16789; NAS 1.60:3024) Avail: NTIS HC A03/MF A01 CSCL 20K

BUCKLING, METAL PLATES, OPENINGS, RECTANGULAR PLATES, STIFFNESS

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GEOSCIENCES (GENERAL)

N87-18139*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
GEOMORPHOLOGY FROM SPACE: A GLOBAL OVERVIEW OF REGIONAL LANDFORMS
NICHOLAS M. SHORT, ed. and ROBERT W. BLAIR, JR., ed. (Fort Lewis A&M Coll., Durango, Colo.) 1986 737 p Original contains color illustrations
(NASA-SP-486; NAS 1.21:486; LC-86-17974) Avail: SOD HC $41.00 as 033-000-00994-1; NTIS MF E03 CSCL 08E

This book, Geomorphology from Space: A Global Overview of Regional Landforms, was published by NASA STIF as a successor to the two earlier works on the same subject: Mission to Earth: LANDSAT views the Earth, and ERTS-1: A New Window on Our Planet. The purpose of the book is threefold: first, to serve as a stimulant in rekindling interest in descriptive geomorphology and landforms analysis at the regional scale; second, to introduce the community of geologists, geographers, and others who analyze the Earth's surficial forms to the practical value of space-acquired remotely sensed data in carrying out their research and applications; and third, to foster more scientific collaboration between geomorphologists who are studying the Earth's landforms and astrogeologists who analyze landforms on other planets and moons in the solar system, thereby strengthening the growing field of comparative planetology. F.M.R.

N88-13774*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SCIENTIFIC AND OPERATIONAL REQUIREMENTS FOR TOMS DATA
ARLIN J. KRUEGER, ed. Dec. 1987 112 p Conference held in Greenbelt, Md., 10-11 Sep. 1986
(NASA-CP-2497; REPT-87B0206; NAS 1.55:2497) Avail: NTIS HC A06/MF A01 CSCL 04A

ATMOSPHERIC CHEMISTRY, CONFERENCES, MAPPING, OZONE DEPLETION, OZONOMETRY, PHOTOCHEMICAL

REACTIONS, SATELLITE SOUNDING, TOTAL OZONE MAPPING SPECTROMETER, TROPOSPHERE

N88-17096*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
NIMBUS 7 SOLAR BACKSCATTER ULTRAVIOLET (SBUV) SPECTRAL SCAN SOLAR IRRADIANCE AND EARTH RADIANCE PRODUCT USER'S GUIDE
BARRY M. SCHLESINGER, RICHARD P. CEBULA (ST Systems Corp., Hyattsville, Md.), DONALD F. HEATH, and ALBERT J. FLEIG Feb. 1988 65 p
(NAS5-29386)
(NASA-RP-1199; NAS 1.61:1199; REPT-88-0004) Avail: NTIS HC A04/MF A01 CSCL 04A

The archived tape products from the spectral scan mode measurements of solar irradiance (SUNC tapes) and Earth radiance (EARTH tapes) by the Solar Backscatter UV (SBUV) instrument aboard Nimbus 7 are described. Incoming radiation from 160 to 400 nm is measured at intervals of 0.2 nm. The scan-to-scan repeatability of the solar irradiance measurements ranges from approximately 0.5 to 1 percent longward of 280 nm, to 2 percent around 210 nm and 4 percent near 175 nm. The repeatability of the Earth radiance values ranges from 2 to 3 percent at longer wavelengths and low zenith angles to 10 percent at shorter wavelengths and high zenith angles. The tape formats are described in detail, including file structure and contents of each type of record. Catalogs of the tapes and the time period covered are provided, along with lists of the days lacking solar irradiance measurements and the days dedicated to Earth radiance measurements. The method for production of the tapes is outlined and quality control measures are described. How radiances and irradiances are derived from the raw counts, the corrections for changes in instrument sensitivity, and related uncertainties are discussed. Author

N89-22152*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
NIMBUS-7 DATA PRODUCT SUMMARY
ARNOLD G. OAKES, DAESOO HAN, H. LEE KYLE, GENE CARL FELDMAN, ALBERT J. FLEIG, EDWARD J. HURLEY, and BARBARA A. KAUFMAN (General Sciences Corp., Laurel, MD.) Feb. 1989 103 p
(NAS5-29386)
(NASA-RP-1215; REPT-89B00074; NAS 1.61:1215) Avail: NTIS HC A06/MF A01 CSCL 04A

Data sets resulting from the first nine years of operations of the Nimbus-7 Satellite are briefly described. After a brief description of the Nimbus-7 Mission, each of the eight experiments on-board the satellite (Coastal Zone Color Scanner (CZCS), Earth Radiation Budget (ERB), Limb Infrared Monitor of the Stratosphere (MIMS), Stratospheric Aerosol Measurement II (SAM II), Stratospheric and Mesospheric Sounder (SAMS), Solar Backscatter Ultraviolet/Total Ozone Mapping Spectrometer (SBUV/TOMS), Scanning Multichannel Microwave Radiometer (SMMR) and the Temperature Humidity Infrared Radiometer (THIR) are introduced and their respective data products are described in terms of media, general format, and suggested applications. Extensive references are provided. Instructions for obtaining further information, and for ordering data products are given. Author

N89-26274*# National Aeronautics and Space Administration, Washington, DC.
PLANETARY GEOSCIENCES, 1988
MARIA T. ZUBER, ed., JEFF L. PLESCIA, ed., ODETTE B. JAMES, ed., and GLENN MACPHERSON, ed. (Smithsonian Institution, Washington, DC.) Aug. 1989 113 p Original contains color illustrations
(NASA-SP-498; NAS 1.21:498; LC-88-600456) Avail: NTIS HC A06/MF A01 CSCL 08G

Research topics within the NASA Planetary Geosciences Program are presented. Activity in the fields of planetary geology, geophysics, materials, and geochemistry is covered. The investigator's current research efforts, the importance of that work in understanding a particular planetary geoscience problem, the context of that research, and the broader planetary geoscience effort is described. As an example, theoretical modelling of the stability of water ice within the Martian regolith, the applicability of that work to understanding Martian volatiles in general, and the geologic history of Mars is discussed. Author

N89-26275*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
POLAR MICROWAVE BRIGHTNESS TEMPERATURES FROM NIMBUS-7 SMMR: TIME SERIES OF DAILY AND MONTHLY MAPS FROM 1978 TO 1987
JOSEFINO C. COMISO and H. JAY ZWALLY Jul. 1989 89 p
(NAS5-29386)
(NASA-RP-1223; REPT-89B00167; NAS 1.61:1223) Avail: NTIS HC A05/MF A01 CSCL 04A

A time series of daily brightness temperature gridded maps (October 25, 1978 through August 15, 1987) were generated from all ten channels of the Nimbus-7 Scanning Multichannel Microwave Radiometer orbital data. This unique data set can be utilized in a wide range of applications including heat flux, ocean circulation, ice edge productivity, and climate studies. Two sets of data in polar stereographic format are created for the Arctic region: one with a grid size of about 30 km on a 293 by 293 array similar to that previously utilized for the Nimbus-5 Electrically Scanning Microwave Radiometer, while the other has a grid size of about 25 km on a 448 by 304 array identical to what is now being used for the DMSP Scanning Multichannel Microwave Imager. Data generated for the Antaractic region are mapped using the 293 by 293 grid only. The general technique for mapping, and a quality assessment of the data set are presented. Monthly and yearly averages are also generated from the daily data and sample geophysical ice images and products derived from the data are given. Contour plots of monthly ice concentrations derived from the data for October 1978 through August 1987 are presented to demonstrate spatial and temporal detail which this data set can offer, and to show potential research applications. Author

N90-22824*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SEARISE: A MULTIDISCIPLINARY RESEARCH INITIATIVE TO PREDICT RAPID CHANGES IN GLOBAL SEA LEVEL CAUSED BY COLLAPSE OF MARINE ICE SHEETS
ROBERT A. BINDSCHADLER, ed. 1990 55 p Workshop held in College Park, MD, 23-25 Jan. 1990; sponsored by NASA and NSF
(NASA-CP-3075; REPT-90-077; NAS 1.55:3075) Avail: NTIS HC A04/MF A01 CSCL 08C

ANTARCTIC REGIONS, ATMOSPHERIC TEMPERATURE, CLIMATE CHANGE, ICE ENVIRONMENTS, POLAR REGIONS, PROJECT PLANNING, SEA ICE, SEA LEVEL

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EARTH RESOURCES AND REMOTE SENSING

Includes remote sensing of earth resources by aircraft and spacecraft; photogrammetry; and aerial photography.

N87-22281*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SURFACE BIDIRECTIONAL REFLECTANCE PROPERTIES OF TWO SOUTHWESTERN ARIZONA DESERTS FOR WAVELENGTHS BETWEEN 0.4 AND 2.2 MICROMETERS
CHARLES H. WHITLOCK, G. CARLTON PURGOLD, and STUART R. LECROY (PRC Kentron, Inc., Hampton, Va.) May 1987 48 p
(NASA-TP-2643; L-16159; NAS 1.60:2643) Avail: NTIS HC A03/MF A01 CSCL 20F

ALBEDO, BIDIRECTIONAL REFLECTANCE, DESERTS, DIRECTIVITY, SOLAR POSITION, ZENITH

N87-27315* National Aeronautics and Space Administration, Washington, DC.
EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES (ISSUE 54)
Aug. 1987 164 p
(NASA-SP-7041(54); NAS 1.21:7041(54)) Avail: NTIS HC A08 CSCL 05B

This bibliography lists 562 reports, articles, and other documents introduced into the NASA scientific and technical information system between April 1 and June 30, 1987. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis. Author

N87-28162*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF AEROSOLS AND SURFACE SHADOWING ON BIDIRECTIONAL REFLECTANCE MEASUREMENTS OF DESERTS
DAVID E. BOWKER and RICHARD E. DAVIS Sep. 1987 26 p
(NASA-TP-2756; L-16327; NAS 1.60:2756) Avail: NTIS HC A03/MF A01 CSCL 04A

AEROSOLS, BIDIRECTIONAL REFLECTANCE, DESERTS, DUST, REMOTE SENSING, SHADOWS, SURFACE PROPERTIES

N87-28955*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ATLAS OF ABSORPTION LINES FROM 0 TO 17900 CM (SUP)-1
J. H. PARK, L. S. ROTHMAN, C. P. RINSLAND, H. M. PICKETT, D. J. RICHARDSON, and J. S. NAMKUNG (ST Systems Corp., Hampton, Va.) Sep. 1987 197 p
(NASA-RP-1188; L-16330; NAS 1.61:1188) Avail: NTIS HC A09/MF A02 CSCL 04A

Plots of logarithm (base 10) of absorption line strength versus wavenumber from 0 to 17900/cm(sup)-1 are shown for the 28 atmospheric gases (H2O, CO2, O3, N2O, CO, CH4, O2, NO, SO2, NO2, NH3, HNO3, OH, HF, HCl, HBr, HI, ClO, OCS, H2CO, HOCl, N2, HCN, CH3Cl, H2O2, C2H2, C2H6, PH3), which appear in the 1986 Air Force Geophysics Laboratory high-resolution transmission molecular absorption data base (HITRAN) compilation, and for O(P-3), O-18 isotopic ozone, and HO2 from the 1984 JPL compilation in the 0- to 200/cm(sup)-1 region, and infrared solar CO lines at 4500 K. Also shown are plots of logarithm (base 10) of approximate infrared absorption cross sections of 11 heavy molecules versus wavenumber. The cross-section data cover 700 to 1800/cm(sup)-1 and are included as a separate data file in the 1986 HITRAN database. Author

N88-20714*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1987 AIRBORNE ANTARCTIC OZONE EXPERIMENT: THE NIMBUS-7 TOMS DATA ATLAS
ARLIN J. KRUEGER, PHILIP E. ARDANUY, FRANK S. SECHRIST, LANNING M. PENN, DAVID E. LARKO, SCOTT D. DOIRON, and REGINALD N. GALIMORE (Science Applications Research, Lanham, Md.) Mar. 1988 246 p
(NASA-RP-1201; REPT-88B0107; NAS 1.61:1201) Avail: NTIS HC A11/MF A02 CSCL 04B

Total ozone data taken by the Nimbus-7 Total Ozone Mapping Spectrometer (TOMS) played a central role in the successful outcome of the 1987 Airborne Antarctic Ozone Experiment. The near-real-time TOMS total ozone observations were suppled within hours of real time to the operations center in Punta Arenas, Chile, over a telecommunications network designed specifically for this purpose. The TOMS data preparation and method of transfer over the telecommunications links are reviewed. This atlas includes a complete set of the near-real-time TOMS orbital overpass data over regions around the Palmer Peninsula of Antarctica for the period of August 8 through September 29, 1987. Also provided are daily polar orthographic projections of TOMS total ozone measurements over the Southern Hemisphere from August through November 1987. In addition, a chronology of the salient points of the experiment, along with some latitudinal cross sections and time series at locations of interest of the TOMS total ozone observations are presented. The TOMS total ozone measurements are evaluated along the flight tracks of each of the ER-2 and DC-8 missions during the experiment. The ozone hole is shown here to develop in a monotonic progression throughout late August and September. The minimum total ozone amount was found on 5 October, when its all-time lowest value of 109 DU is recorded. The hole remains well defined, but fills gradually from mid-October through mid-November. The hole's dissolution is observed here to begin in mid-November, when it elongates and begins to rotate. By the end of November, the south pole is no longer located within the ozone hole. Author

N88-23314* National Aeronautics and Space Administration, Washington, DC.
EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES (ISSUE 57)
May 1988 129 p
(NASA-SP-7041(57); NAS 1.21:7041(57)) Avail: NTIS HC A07 CSCL 08B

This bibliography lists 451 reports, articles and other documents introduced into the NASA scientific and technical information system between January 1 and March 31, 1988. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis. Author

N89-10401*# National Aeronautics and Space Administration, Washington, DC.
SAPPING FEATURES OF THE COLORADO PLATEAU: A COMPARATIVE PLANETARY GEOLOGY FIELD GUIDE
ALAN D. HOWARD, ed., R. CRAIG KOCHEL, ed., and HENRY E. HOLT, ed. (Geological Survey, Flagstaff, Ariz.) 1987 115 p
Original contains color illustrations
(NSG-7572)
(NASA-SP-491; NAS 1.21:491; LC-87-15305) Avail: NTIS HC A06/MF A01; also available SOD HC $6.00 as 003-000-01027-3 CSCL 08H

This book is an attempt to determine geomorphic criteria to be used to distinguish between channels formed predominantly by sapping and seepage erosion and those formed principally by surface runoff processes. The geologic nature of the Colorado Plateau has resulted in geomorphic features that show similarities to some areas on Mars, especially certain valley networks within thick sandstone formations. Where spring sapping is an effective process, the valleys that develop are unique in terms of their morphology and network pattern. Author

N89-12114*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
LANDSAT-4 AND LANDSAT-5 MULTISPECTRAL SCANNER COHERENT NOISE CHARACTERIZATION AND REMOVAL
JAMES C. TILTON and WILLIAM L. ALFORD (Defense Mapping Agency, Washington, D.C.) Feb. 1988 46 p
(NASA-TP-2595-REV; NAS 1.60:2595-REV; REPT-86B0040)
Avail: NTIS HC A03/MF A01 CSCL 08B

COHERENT ELECTROMAGNETIC RADIATION, ELECTROMAGNETIC NOISE, LANDSAT 4, LANDSAT 5, MULTISPECTRAL BAND SCANNERS, NOISE REDUCTION

N89-29825* National Aeronautics and Space Administration, Washington, DC.
EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES (ISSUE 62)
Nov. 1988 146 p
(NASA-SP-7041(62); NAS 1.21:7041(62)) Avail: NTIS HC A07; NTIS standing order as PB89-903800, $15.50 domestic, $31.00 foreign CSCL 08B

This bibliography lists 544 reports, articles, and other documents introduced into the NASA scientific and technical information system between April 1 and June 30, 1989. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, hydrology and water management, data processing and distribution systems, instrumentation and sensors, and economic analysis. Author

N90-12091* National Aeronautics and Space Administration, Washington, DC.
EARTH RESOURCES: A CONTINUING BIBLIOGRAPHY WITH INDEXES (ISSUE 63)
Oct. 1989 128 p
(NASA-SP-7041(63); NAS 1.21:7041(63)) Avail: NTIS HC A07; NTIS standing order as PB89-903800, $15.50 domestic, $31.00 foreign CSCL 08B

This bibliography lists 449 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1 and September 31, 1989. Emphasis is placed on the use of remote sensing and geophysical instrumentation in spacecraft and aircraft to survey and inventory natural resources and urban areas. Subject matter is grouped according to agriculture and forestry, environmental changes and cultural resources, geodesy and cartography, geology and mineral resources, oceanography and marine resources, hydrology and water management, data processing and distribution systems, and instrumentation and sensors. Author

N90-23780*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SENSOR PERFORMANCE ANALYSIS
H. E. MONTGOMERY, H. OSTROW, and G. M. RESSLER (Ressler Associates, Inc., Laurel, MD.) Washington Jul. 1990 90 p
(NASA-RP-1241; REPT-89B00057; NAS 1.61:1241) Avail: NTIS HC A05/MF A01 CSCL 14B

The theory is described and the equations required to design are developed and the performance of electro-optical sensor systems that operate from the visible through the thermal infrared spectral regions are analyzed. Methods to compute essential optical and detector parameters, signal-to-noise ratio, MTF, and figures of merit such as NE delta rho and NE delta T are developed. A set of atmospheric tables are provided to determine scene radiance in the visible spectral region. The Planck function is used to determine radiance in the infrared. The equations developed were incorporated in a spreadsheet so that a wide variety of sensor studies can be rapidly and efficiently conducted. Author

N90-27140*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EARTH SCIENCES REQUIREMENTS FOR THE INFORMATION SCIENCES EXPERIMENT SYSTEM
DAVID E. BOWKER, ed., STEVE J. KATZBERG, ed., and R. GALE WILSON, ed. Washington Jul. 1990 220 p Workshop held in Williamsburg, VA, 1-4 May 1989
(NASA-CP-3072; L-16773; NAS 1.55:3072) Avail: NTIS HC A10/MF A02 CSCL 05B

CONFERENCES, DATA PROCESSING EQUIPMENT, EARTH OBSERVING SYSTEM (EOS), EQUIPMENT SPECIFICATIONS, REAL TIME OPERATION, SUPPORT SYSTEMS

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ENERGY PRODUCTION AND CONVERSION

Includes specific energy conversion systems, e.g., fuel cells; global sources of energy; geophysical conversion; and windpower.

N87-26413*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE PHOTOVOLTAIC RESEARCH AND TECHNOLOGY 1986. HIGH EFFICIENCY, SPACE ENVIRONMENT, AND ARRAY TECHNOLOGY
Jun. 1987 375 p Conference held in Cleveland, Ohio, 7-9 Oct. 1986
(NASA-CP-2475; E-3450; NAS 1.55:2475) Avail: NTIS HC A16/MF A03 CSCL 10B

CONFERENCES, ENERGY CONVERSION EFFICIENCY, PHOTOVOLTAIC CONVERSION, SOLAR CELLS, SPACECRAFT POWER SUPPLIES

N87-29914*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE ELECTROCHEMICAL RESEARCH AND TECHNOLOGY (SERT)
Sep. 1987 364 p Conference held in Cleveland, Ohio, 14-16 Apr. 1987
(NASA-CP-2484; E-3506; NAS 1.55:2484) Avail: NTIS HC A16/MF A03 CSCL 10C

ELECTRIC BATTERIES, ELECTROCATALYSTS, ELECTROCHEMISTRY, MATHEMATICAL MODELS, REGENERATIVE FUEL CELLS

N89-22982*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE ELECTROCHEMICAL RESEARCH AND TECHNOLOGY CONFERENCE: ABSTRACTS Abstracts Only
Washington 1989 49 p Conference held in Cleveland, OH, 11-13 Apr. 1989
(NASA-CP-10029; E-4708; NAS 1.55:10029) Avail: NTIS HC A03/MF A01 CSCL 10A

AEROSPACE SYSTEMS, CONFERENCES, ELECTROCATALYSTS, ELECTROCHEMISTRY, ELECTRODES, ENERGY STORAGE, HYDROGEN OXYGEN FUEL CELLS, STORAGE BATTERIES

N89-24704*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE PHOTOVOLTAIC RESEARCH AND TECHNOLOGY, 1988. HIGH EFFICIENCY, SPACE ENVIRONMENT, AND ARRAY TECHNOLOGY
Washington Apr. 1989 362 p Conference held in Cleveland, OH, 19-21 Apr. 1988
(NASA-CP-3030; E-4587; NAS 1.55:3030) Avail: NTIS HC A16/MF A03 CSCL 10A

CONFERENCES, PHOTOVOLTAIC EFFECT, SOLAR ARRAYS, SOLAR CELLS, SPACECRAFT POWER SUPPLIES

N90-20454*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SPACE ELECTROCHEMICAL RESEARCH AND TECHNOLOGY (SERT), 1989
RICHARD S. BALDWIN, ed. Washington Dec. 1989 351 p Conference held in Cleveland, OH, 11-13 Apr. 1989
(NASA-CP-3056; E-4708; NAS 1.55:3056) Avail: NTIS HC A16/MF A02 CSCL 10A

CONFERENCES, ELECTRIC BATTERIES, ELECTRIC ENERGY STORAGE, ELECTROCATALYSTS, ELECTROCHEMISTRY, ELECTRODE MATERIALS, HYDROGEN OXYGEN FUEL CELLS, NICKEL HYDROGEN BATTERIES, SPACECRAFT POWER SUPPLIES

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ENVIRONMENT POLLUTION

Includes atmospheric, noise, thermal, and water pollution.

N89-14503*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
POLAR OZONE WORKSHOP. ABSTRACTS
ARTHUR C. AIKIN May 1988 306 p Workshop held in Snowmass, CO, 9-13 May 1988; sponsored by NASA, NOAA, NSF, Chemical Mfgrs. Association, WMO, and the United Nations Environment Program Sponsored by NASA, Washington, DC
(NASA-CP-10014; REPT-88B0234; NAS 1.55:10014) Avail: NTIS HC A14/MF A03 CSCL 13B

ANTARCTIC REGIONS, ATMOSPHERIC CHEMISTRY, ATMOSPHERIC COMPOSITION, CONFERENCES, EARTH OBSERVATIONS (FROM SPACE), OZONE, OZONE DEPLETION, OZONOMETRY, POLAR METEOROLOGY, STRATOSPHERE

46

GEOPHYSICS

Includes aeronomy; upper and lower atmosphere studies; ionospheric and magnetospheric physics; and geomagnetism.

N87-11358*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AIRBORNE LIDAR MEASUREMENTS OF EL CHICHON STRATOSPHERIC AEROSOLS, MAY 1983
M. P. MCCORMICK and M. T. OSBORN (SASC Technologies, Inc., Hampton, Va.) Oct. 1986 91 p
(NASA-RP-1172; L-16176; NAS 1.61:1172) Avail: NTIS HC A05/MF A01

An experimental survey flight to determine the spatial distribution and aerosol characteristics of the El Chichon-produced stratospheric aerosol was conducted in May 1983. The mission included several different sensors flown abroad the NASA Convair 990 at latitudes between 72 deg. and 56 deg. S. This report presents the lidar data from that flight mission. Representative profiles of lidar backscatter ratio, plots of integrated backscattering function versus latitude, and contours of backscatter mixing ratio versus altitude and latitude are given. In addition, tables containing numerical values of the backscatter ratio and backscattering function versus altitude are supplied for each profile. By May 1983, material produced by the El Chichon eruptions of late March-early April 1982 had spread throughout the latitudes covered by this mission. However, the most massive portion of the material resided north of 33 deg. N and was concentrared below 21 km. In this latitude region (33 deg. N to 72 deg. N), peak backscatter ratios at a wavelength of 0.6943 microns varied between 3.5 and 4.5, and the peak integratred backscattering function was about 18 X 10 to the -4 power/sr, corresponding to a peak optical depth calculated to be approximately 0.08. This report presents the results of this mission in a ready-to-use format for atmospheric and climatic studies. Author

N87-13022*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DESCRIPTION OF DATA ON THE NIMBUS 7 LIMS MAP ARCHIVE TAPE: OZONE AND NITRIC ACID
E. E. REMSBERG, R. J. KURZEJA, K. V. HAGGARD, J. M. RUSSELL, III, and L. L. GORDLEY Dec. 1986 73 p
(NASA-TP-2625; L-16136; NAS 1.60:2625) Avail: NTIS HC A04/MF A01 CSCL 04A

INFRARED DETECTORS, KALMAN FILTERS, NIMBUS 7 SATELLITE, NITRIC ACID, OZONE, STRATOSPHERE

N87-15528*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FUTURE DIRECTIONS FOR H SUB X O SUB Y DETECTION
DAVID R. CROSLEY, ed. (SRI International Corp., Menlo Park, Calif.) and JAMES M. HOELL, ed. Dec. 1986 67 p Workshop held in Menlo Park, Calif., 12-15 Aug. 1985
(NASA-CP-2448; L-16216; NAS 1.55:2448) Avail: NTIS HC A04/MF A01 CSCL 04A

ATMOSPHERIC COMPOSITION, HYDROGEN PEROXIDE, HYDROXYL RADICALS, TROPOSPHERE, WATER

N87-17417*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SAGE AEROSOL MEASUREMENTS. VOLUME 3: JANUARY 1, 1981 TO NOVEMBER 18, 1981
M. PATRICK MCCORMICK Feb. 1987 274 p
(NASA-RP-1173; L-16177; NAS 1.61:1173) Avail: NTIS HC A12/MF A02 CSCL 04A

The Stratospheric Aerosol and Gas Experiment (SAGE) satellite system, launched February 18, 1979, obtained profiles of aerosol extinction at 1.00 micron and 0.45 micron ozone concentration, and nitrogen dioxide concentration. Data taken during sunset events are presented in the form of zonal and seasonal averages of aerosol extinction of 1.00 micron and 0.45 micron, ratios of aerosol extinction to molecular extinction at 1.00 micron and ratios of aerosol extinction at 0.45 micron to aerosol extinction at 1.00 micron. Averages for 1981 are shown in tables, and in profile and contour plots (as a function of altitude and latitude). In addition, temperature data provided by NOAA for the time and location of each SAGE measurement are averaged and shown in a similar format. The stratospheric aerosol distribution for 1981 shows effects of volcanically injected material from eruptions of Ulawun, Alaid, and Pagan. Peak values of aerosol extinction at 0.45 micron and 1.00 micron were 2 to 4 times higher than typical peak values observed during near background conditions. Stratospheric aerosol optical depth values at 1.00 microns increased by a factor of about 2 from near background levels in regions of volcanic activity. During the year, these values ranged from between 0.001 and 0.006. The largest were near the location of a recent eruption. The distribution of the ratio of aerosol to molecular extinction at 1.00 microns also showed that maximum values are found in the vicinity of an eruption. These maximums varied in altitude, but remained below a height of about 25 km. No attempt has been made to give detailed explanations or interpretations of these data. The intent is to provide, in a ready-to-use visual format, representative zonal and seasonal averages of aerosol extinction data for the third calendar year of the SAGE data set to facilitate atmospheric and climatic studies. Author

N87-18248*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SPACE OPPORTUNITIES FOR TROPOSPHERIC CHEMISTRY RESEARCH
JOEL S. LEVINE, ed. Feb. 1987 92 p Workshop held in New York, N.Y., 9-13 Sep. 1985
(NASA-CP-2450; L-16250; NAS 1.55:2450) Avail: NTIS HC A05/MF A01 CSCL 04A

AEROSOLS, AIR POLLUTION, ATMOSPHERIC CHEMISTRY, ATMOSPHERIC COMPOSITION, CONFERENCES, GASES, REMOTE SENSING, TROPOSPHERE

N87-20663*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AIRBORNE LIDAR MEASUREMENTS OF EL CHICHON STRATOSPHERIC AEROSOLS, JANUARY 1984
M. PATRICK MCCORMICK and M. T. OSBORN (ST Systems Corp., Hampton, Va.) Apr. 1987 49 p
(NASA-RP-1175; L-16234; NAS 1.61:1175) Avail: NTIS HC A03/MF A01 CSCL 04A

A lidar-equipped NASA Electra aircraft was flown in January 1984 between the latitude of 38 and 90 deg N. One of the primary purposes of this mission was to determine the spatial distribution and aerosol characteristics of El Chichon produced stratospheric

material. Lidar data from that portion of the flight mission between 38 deg N and 77 deg N is presented. Representative profiles of lidar backscatter ratio, a plot of the integral backscattering function versus latitude, and contours of backscatter mixing ratio versus altitude and latitude are given. In addition, tables containing numerical values of the backscatter ratio and backscattering function versus altitude are applied for each profile. These data clearly show that material produced by the El Chichon eruptions of late March-early April 1982 had spread throughout the latitudes covered by this mission, and that the most massive portion of the material resided north of 55 deg N and was concentrated below 17 km in a layer that peaked at 13 to 15 km. In this latitude region, peak backscatter ratios at a wavelength of 0.6943 microns were approximately 3 and the peak integrated backscattering function was about 15 X 10 to the -4/sr corresponding to a peak optical depth of approximately 0.07. This report presents the results of this mission in a ready-to-use format for atmospheric and climatic studies. Author

N87-20665*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
UPPER AND MIDDLE ATMOSPHERIC DENSITY MODELING REQUIREMENTS FOR SPACECRAFT DESIGN AND OPERATIONS
M. H. DAVIS, ed. (Universities Space Research Association, Boulder, Colo.), R. E. SMITH, ed., and D. L. JOHNSON, ed. Feb. 1987 290 p Workshop held in Huntsville, Ala., 19-21 1985 (NAS8-36400)
(NASA-CP-2460; M-548; NAS 1.55:2460) Avail: NTIS HC A13/MF A02 CSCL 04A

AEROSPACE ENVIRONMENTS, ATMOSPHERIC DENSITY, ATMOSPHERIC MODELS, SPACECRAFT DESIGN, THERMOSPHERE

N88-18084*# National Aeronautics and Space Administration, Washington, DC.
INTO THE THERMOSPHERE: THE ATMOSPHERE EXPLORERS
ERIC BURGESS and DOUGLASS TORR 1987 172 p *Original* document contains color illustrations
(NASA-SP-490; NAS 1.21:490; LC-87-14156) Avail: SOD HC $14.00 as 033-000-01013-3; NTIS MF A01 CSCL 04A

The need to study the lower thermosphere with the new instrument, data handling, and spacecraft technology available in the 1960s led to the formulation and establishment of the Atmospheric Explorer program. This book provides an overview of this program with particular emphasis on the AE3, AE4, and AE5 satellites, which represent early examples of problem-dedicated missions. Both the satellites and their instrumentation on the one hand and the experimental and scientific considerations in studying the thermosphere on the other are discussed. J.P.B.

N88-19037*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
CRUSTAL DYNAMICS PROJECT: CATALOGUE OF SITE INFORMATION
CAREY E. NOLL, ed. Mar. 1988 539 p
(NASA-RP-1198; REPT-88B9999; NAS 1.61:1198) Avail: NTIS HC A23/MF A03 CSCL 08G

This document represents a catalog of site information for the Crustal Dynamics Project. It contains information on and descriptions of those sites used by the Project as observing stations for making the precise geodetic measurements necessary for studies of the Earth's crustal movements and deformation. Author

N88-25094*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SAM 2 DATA USER'S GUIDE
W. P. CHU, M. T. OSBORN (ST Systems Corp., Hampton, Va.), and L. R. MCMASTER Jul. 1988 29 p
(NASA-RP-1200; L-16377; NAS 1.61:1200) Avail: NTIS HC A03/MF A01 CSCL 04A

This document is intended to serve as a guide to the use of the data products from the Stratospheric Aerosol Measurement (SAM) 2 experiment for scientific investigations of polar stratospheric aerosols. Included is a detailed description of the Beta and Aerosol Number Density Archive Tape (BANAT), which is the SAM 2 data product containing the aerosol extinction data available for these investigations. Also included are brief descriptions of the instrument operation, data collection, processing and validation, and some of the scientific analyses conducted to date. Author

N88-29233*# National Aeronautics and Space Administration, Washington, DC.
PRESENT STATE OF KNOWLEDGE OF THE UPPER ATMOSPHERE 1988: AN ASSESSMENT REPORT
R. T. WATSON, M. J. PRATHER, and M. J. KURYLO Jun. 1988 203 p
(NASA-RP-1208; NAS 1.61:1208) Avail: NTIS HC A10/MF A02 CSCL 04A

This document was issued in response to the Clean Air Act Amendments of 1977, Public Law 95-95, mandating that NASA and other key agencies submit biennial reports to Congress and EPA. NASA is to report on the state of our knowledge of the upper atmosphere, particularly the stratosphere. This is the sixth ozone assessment report submitted to Congress and the concerned regulatory agencies. Part 1 contains an outline of the NASA Upper Atmosphere Research Program and summaries of the research efforts supported during the last two years. An assessment is presented of the state of knowledge as of March 15, 1988 when the Ozone Trends Panel, organized by NASA and co-sponsored by the World Meteorological Organization, NOAA, FAA and the United Nations Environment Program released an executive summary of its findings from a critical in-depth study involving over 100 scientists from 12 countries. Chapter summaries of the International Ozone Trends Panel Report form the major part of this report. Two other sections are Model Predictions of Future Ozone Change and Chemical Kinetics and Photochemical Data for Use in Stratospheric Modeling. Each of these sections and the report in its entirety were peer reviewed. Author

N88-29234*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FORTY-EIGHT-INCH LIDAR AEROSOL MEASUREMENTS TAKEN AT THE LANGLEY RESEARCH CENTER, MAY 1974 TO DECEMBER 1987
W. H. FULLER, JR., M. T. OSBORN, and W. H. HUNT (Wyle Labs., Inc., Hampton, Va.) Oct. 1988 102 p
(NASA-RP-1209; L-16473; NAS 1.61:1209) Avail: NTIS HC A06/MF A01 CSCL 04A

A ground based lidar system located at NASA Langley Research Center in Hampton, Va., was used to obtain high resolution vertical profiles of the stratospheric and upper tropospheric aerosol since 1974. More than 200 measurements obtained at a wavelength of 0.6943 microns during 1974 to 1987 are summarized. Plots of peak backscatter mixing ratio and integrated backscatter vs time are presented for the entire measurement sequence. The plots highlight the influence of several major volcanic eruptions on the long term stratospheric aerosol layer. In particular, the eruptions of El Chichon in late Mar. to early Apr. 1982, produced a massive aerosol layer. Aerosol enhancement from El Chichon reached Hampton, Va. by May 1982, with a scattering ratio of approx. 50 detected on Jul. 1, 1982. In addition, scattering ratio profiles for June 1982 to December 1987, along with tables containing numerical values of the backscatter ratio and backscattering function versus altitude, are included to further describe the upper tropospheric and stratospheric aerosol layer. A 14 year summary is presented, in a ready to use format, of lidar observations at a fixed midlatitude location to be used for further study. Author

N89-10420*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPILATION OF METHODS IN ORBITAL MECHANICS AND SOLAR GEOMETRY

JAMES J. BUGLIA Washington Oct. 1988 81 p
(NASA-RP-1204; L-16451; NAS 1.61:1204) Avail: NTIS HC A05/MF A01 CSCL 04A

This paper contains a collection of computational algorithms for determining geocentric ephemerides of Earth satellites, useful for both mission planning and data reduction applications. Special emphasis is placed on the computation of sidereal time, and on the determination of the geocentric coordinate of the center of the Sun, all to the accuracy found in the Astronomical Almanac. The report is completely self-contained in that no requirement is placed on any external source of information, and hence, these methods are ideal for computer application. Author

N89-25540*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.

COMPARISON OF SATELLITE-DERIVED DYNAMICAL QUANTITIES FOR THE STRATOSPHERE OF THE SOUTHERN HEMISPHERE

THOMAS MILES, ed. and ALAN ONEILL, ed. Washington Jul. 1989 39 p Presented at the Workshop on the Middle Atmosphere in the Southern Hemisphere, Williamsburg, VA, 14-17 Apr. 1986; sponsored by NASA, Washington, DC
(NASA-CP-3044; L-16593; NAS 1.55:3044) Avail: NTIS HC A03/MF A01 CSCL 04A

ATMOSPHERIC CIRCULATION, GEOPOTENTIAL HEIGHT, SATELLITE OBSERVATION, STRATOSPHERE, ZONAL FLOW (METEOROLOGY)

N89-26304*# Oxford Univ. (England). Dept. of Atmospheric Physics.

NIMBUS-7 STRATOSPHERIC AND MESOSPHERIC SOUNDER (SAMS) EXPERIMENT DATA USER'S GUIDE

F. W. TAYLOR, C. D. RODGERS, S. T. NUTTER, and N. OSLIK (ST Systems Corp., Lanham, MD.) Washington May 1989 149 p
(NAS5-28063)
(NASA-RP-1221; NAS 1.61:1221; REPT-89B00074) Avail: NTIS HC A07/MF A01 CSCL 08G

The Stratospheric and Mesospheric Sounder (SAMS) aboard Nimbus-7 observes infrared radiation from the atmospheric limb. Global upper atmosphere temperature profiles and vertical concentrations of H2O, NO, N2O, CH4 and CO2 are derived from these measurements. The status of all channels was carefully monitored. Temperature and composition were retrieved from the measurements by linearizing the direct equation about an a priori profile and using an optimum statistical estimator to find the most likely solution. The derived temperature and composition profiles are archived on two tape products whose file structure and record formats are described in detail. The gridded retrieved temperature tape (GRID-T) contains daily day and night average temperatures at 62 pressure levels in a 2.5 degree latitude by 10 degree longitude grid extending from 67.5 degrees N to 50 degrees S. The zonal mean methane and nitrous oxide composition tape (ZMT-G) contains zonal mean day and night average CH4 and N2O mixing ratios at 31 pressure levels for 2.5 degrees latitude zones extending from 67.5 degrees N to 50 degrees S. Author

N89-28969*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

A HIGH-RESOLUTION ATLAS OF THE INFRARED SPECTRUM OF THE SUN AND THE EARTH ATMOSPHERE FROM SPACE. A COMPILATION OF ATMOS SPECTRA OF THE REGION FROM 650 TO 4800 CM-1 (2.3 TO 16 MICRONS). VOLUME 2: STRATOSPHERE AND MESOSPHERE, 650 TO 3350 CM-1

CROFTON B. FARMER and ROBERT H. NORTON Washington 1989 688 p
(NAS7-918)
(NASA-RP-1224-VOL-2; JPL-400-370-VOL-2; NAS 1.61:1224-VOL-2; LC-89-600203) Avail: NTIS HC A99/MF A04 CSCL 04A

During the period April 29 to May 2, 1985, the Atmospheric Trace Molecule Spectroscopy (ATMOS) experiment was operated for the first time, as part of the Spacelab-3 payload of the shuttle Challenger. The principal purpose of this experiment was to study the distributions of the atmosphere's minor and trace molecular constituents. The instrument, a modified Michelson interferometer covering the frequency range from 600 to 5000/cm-1 at a spectral resolution of 0.01/cm-1, recorded infrared absorption spectra of the sun and of the earth's atmosphere at times close to entry into and exit from occultation by the earth's limb. Spectra were obtained that are free from absorptions due to constituents of the atmosphere (i.e., they are pure solar spectra), as well as spectra of the atmosphere itself, covering line-of-sight tangent altitudes that span the range from the lower thermosphere to the bottom of the troposphere. This atlas presents a compilation of these spectra arranged in a hardcopy format suitable for quick-look reference purposes. Volume 2 covers the stratosphere and mesosphere (i.e., tangent altitudes from 20 to 80 km) for frequencies from 650 to 3350/cm-1. Author

N90-11405*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

TWO-DIMENSIONAL INTERCOMPARISON OF STRATOSPHERIC MODELS

CHARLES H. JACKMAN, ed., ROBERT K. SEALS, JR., ed., and MICHAEL J. PRATHER, ed. (National Aeronautics and Space Administration. Goddard Inst. for Space Studies, New York, NY.) Aug. 1989 606 p Workshop held in Virginia Beach, VA, 11-16 Sep. 1988; sponsored by NASA, Washington
(NASA-CP-3042; REPT-89B00192; NAS 1.55:3042) Avail: NTIS HC A99/MF A04 CSCL 04A

ATMOSPHERIC MODELS, CONFERENCES, DATA BASES, PHOTOCHEMICAL REACTIONS, RADIATIVE TRANSFER, STRATOSPHERE, TWO DIMENSIONAL MODELS

N90-13893*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

A HIGH-RESOLUTION ATLAS OF THE INFRARED SPECTRUM OF THE SUN AND THE EARTH ATMOSPHERE FROM SPACE: A COMPILATION OF ATMOS SPECTRA OF THE REGION FROM 650 TO 4800 CM (2.3 TO 16 MICRON). VOLUME 1: THE SUN

CROFTON B. FARMER and ROBERT H. NORTON 1989 535 p
(NAS7-918)
(NASA-RP-1224-VOL-1; NAS 1.61:1224-VOL-1; JPL-400-370-VOL-1) Avail: NTIS HC A23/MF A03 CSCL 04A

During the period April 29 through May 2, 1985, the Atmospheric Trace Molecular Spectroscopy experiment was operated as part of the Spacelab-3 payload of the shuttle Challenger. The instrument, a modified Michelson Interferometer covering the frequency range from 600 to 5000/cm, at a spectral resolution of 0.01/cm, recorded infrared spectra of the Sun and of the Earth's atmosphere at times close to entry into and exit from occultation by the Earth's limb as seen from the shuttle orbit of 360 km. Spectra were obtained that are free from absorptions due to constituents of the atmosphere (i.e., solar pure spectra), as well as spectra of the atmosphere itself, covering line-of-sight tangent altitudes that span the range from the lower thermosphere to the bottom of the troposphere. This atlas, believed to be the first record of observations of the continuous high resolution infrared spectrum of the Sun and the Earth's atmosphere from space, provides a compilation of these spectra arranged in a hardcopy format suitable for quick-look reference purposes; the data are also available in digital form. Author

N90-17227*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.

NIMBUS 7 SOLAR BACKSCATTER ULTRAVIOLET (SBUV) OZONE PRODUCTS USER'S GUIDE

ALBERT J. FLEIG, R. D. MCPETERS, P. K. BHARTIA, BARRY M. SCHLESINGER, RICHARD P. CEBULA, K. F. KLENK, STEVEN L. TAYLOR (ST Systems Corp., Lanham, MD.), and DONALD F. HEATH Jan. 1990 117 p
(NAS5-29386)

(NASA-RP-1234; REPT-636; NAS 1.61:1234) Avail: NTIS HC A06/MF A01 CSCL 04A

Three ozone tape products from the Solar Backscatter Ultraviolet (SBUV) experiment aboard Nimbus 7 were archived at the National Space Science Data Center. The experiment measures the fraction of incoming radiation backscattered by the Earth's atmosphere at 12 wavelengths. In-flight measurements were used to monitor changes in the instrument sensitivity. Total column ozone is derived by comparing the measurements with calculations of what would be measured for different total ozone amounts. The altitude distribution is retrieved using an optimum statistical technique for the inversion. The estimated initial error in the absolute scale for total ozone is 2 percent, with a 3 percent drift over 8 years. The profile error depends on latitude and height, smallest at 3 to 10 mbar; the drift increases with increasing altitude. Three tape products are described. The High Density SBUV (HDSBUV) tape contains the final derived products - the total ozone and the vertical ozone profile - as well as much detailed diagnostic information generated during the retrieval process. The Compressed Ozone (CPOZ) tape contains only that subset of HDSBUV information, including total ozone and ozone profiles, considered most useful for scientific studies. The Zonal Means Tape (ZMT) contains daily, weekly, monthly and quarterly averages of the derived quantities over 10 deg latitude zones. Author

N90-20562*# *National Aeronautics and Space Administration.* Goddard Space Flight Center, Greenbelt, MD.

SATELLITE RADAR ALTIMETRY OVER ICE. VOLUME 1: PROCESSING AND CORRECTIONS OF SEASAT DATA OVER GREENLAND

H. JAY ZWALLY, ANITA C. BRENNER, JUDITH A. MAJOR, THOMAS V. MARTIN (Van Martin Consulting, Inc., Rockville, MD.), and ROBERT A. BINDSCHADLER Jan. 1990 147 p (NASA-RP-1233-VOL-1; REPT-89B00239; NAS 1.61:1233-VOL-1) Avail: NTIS HC A07/MF A01 CSCL 08C

The data-processing methods and ice data products derived from Seasat radar altimeter measurements over the Greenland ice sheet and surrounding sea ice are documented. The corrections derived and applied to the Seasat radar altimeter data over ice are described in detail, including the editing and retracking algorithm to correct for height errors caused by lags in the automatic range tracking circuit. The methods for radial adjustment of the orbits and estimation of the slope-induced errors are given. Author

N90-20563*# *National Aeronautics and Space Administration.* Goddard Space Flight Center, Greenbelt, MD.

SATELLITE RADAR ALTIMETRY OVER ICE. VOLUME 2: USERS' GUIDE FOR GREENLAND ELEVATION DATA FROM SEASAT

H. JAY ZWALLY, JUDITH A. MAJOR, ANITA C. BRENNER, ROBERT A. BINDSCHADLER, and THOMAS V. MARTIN (Van Martin Consulting, Inc., Rockville, MD.) Jan. 1990 84 p (NASA-RP-1233-VOL-2; REPT-89B00240; NAS 1.61:1233-VOL-2) Avail: NTIS HC A05/MF A01 CSCL 08C

A gridded surface-elevation data set and a geo-referenced data base for the Seasat radar altimeter data over Antarctica are described. It is intended to be a user's guide to accompany the data provided to data centers and other users. The grid points are on a polar stereographic projection with a nominal spacing of 20 km. The gridded elevations are derived from the elevation data in the geo-referenced data base by a weighted fitting of a surface in the neighborhood of each grid point. The gridded elevations are useful for the creating smaller-scale contour maps, and examining individual elevation measurements in specific geographic areas. Tape formats are described, and a FORTRAN program for reading the data tape is listed and provided on the tape. Author

N90-20564*# *National Aeronautics and Space Administration.* Goddard Space Flight Center, Greenbelt, MD.

SATELLITE RADAR ALTIMETRY OVER ICE. VOLUME 4: USERS' GUIDE FOR ANTARCTICA ELEVATION DATA FROM SEASAT

H. JAY ZWALLY, JUDITH A. MAJOR, ANITA C. BRENNER, ROBERT A. BINDSCHADLER, and THOMAS V. MARTIN (Van Martin Consulting, Inc., Rockville, MD.) Jan. 1990 57 p (NASA-RP-1233-VOL-4; REPT-89B00241; NAS 1.61:1233-VOL-4) Avail: NTIS HC A04/MF A01 CSCL 08C

A gridded surface-elevation data set and a geo-referenced data base for the Seasat radar altimeter data over Greenland are described. This is a user guide to accompany the data provided to data centers and other users. The grid points are on a polar stereographic projection with a nominal spacing of 20 km. The gridded elevations are derived from the elevation data in the geo-referenced data base by a weighted fitting of a surface in the neighborhood of each grid point. The gridded elevations are useful for the creating of large-scale contour maps, and the geo-referenced data base is useful for regridding, creating smaller-scale contour maps, and examinating individual elevation measurements in specific geographic areas. Tape formats are described, and a FORTRAN program for reading the data tape is listed and provided on the tape. Author

N90-22850*# National Aeronautics and Space Administration. *Goddard Space Flight Center, Greenbelt, MD.*

SURFACE TOPOGRAPHY OF THE GREENLAND ICE SHEET FROM SATELLITE RADAR ALTIMETRY

ROBERT A. BINDSCHADLER, H. JAY ZWALLY, JUDITH A. MAJOR, and ANITA C. BRENNER (ST Systems Corp., Greenbelt, MD.) 1989 127 p Original contains color illustrations (NASA-SP-503; REPT-89B00170; NAS 1.21:503; LC-89-600282) Avail: NTIS HC A16/MF A02; 3 functional color pages CSCL 08E

Surface elevation maps of the southern half of the Greenland subcontinent are produced from radar altimeter data acquired by the Seasat satellite. A summary of the processing procedure and examples of return waveform data are given. The elevation data are used to generate a regular grid which is then computer contoured to provide an elevation contour map. Ancillary maps show the statistical quality of the elevation data and various characteristics of the surface. The elevation map is used to define ice flow directions and delineate the major drainage basins. Regular maps of the Jakobshavns Glacier drainage basin and the ice divide in the vicinity of Crete Station are presented. Altimeter derived elevations are compared with elevations measured both by satellite geoceivers and optical surveying. Author

N90-28929*# National Aeronautics and Space Administration, Washington, DC.

PRESENT STATE OF KNOWLEDGE OF THE UPPER ATMOSPHERE 1990: AN ASSESSMENT REPORT Report to the Congress

R. T. WATSON, M. J. KURYLO, M. J. PRATHER, and F. M. ORMOND Sep. 1990 145 p (NASA-RP-1242; NAS 1.61:1242) Avail: NTIS HC A07/MF A01 CSCL 04A

NASA is charged with the responsibility to report on the state of the knowledge of the Earth's upper atmosphere, particularly the stratosphere. Part 1 of this report, issued earlier this year, summarized the objectives, status, and accomplishments of the research tasks supported under NASA's Upper Atmosphere Research Program during the last two years. New findings since the last report to Congress was issued in 1988 are presented. Several scientific assessments of the current understanding of the chemical composition and physical structure of the stratosphere are included, in particular how the abundance and distribution of ozone is predicted to change in the future. These reviews include: a summary of the most recent international assessment of stratospheric ozone; a study of future chlorine and bromine loading of the atmosphere; a review of the photochemical and chemical kinetics data that are used as input parameters for the atmospheric models; a new assessment of the impact of Space Shuttle launches on the stratosphere; a summary of the environmental issues and needed research to evaluate the impact of the newly re-proposed fleet of stratospheric supersonic civil aircraft; and a list of the

contributors to this report and the science assessments which have formed our present state of knowledge of the upper atmosphere and ozone depletion. Author

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METEOROLOGY AND CLIMATOLOGY

Includes weather forecasting and modification.

N87-12086*# National Aeronautics and Space Administration. Wallops Flight Center, Wallops Island, VA.
PRELIMINARY ESTIMATES OF RADIOSONDE THERMISTOR ERRORS
F. J. SCHMIDLIN, J. K. LUERS (Dayton Univ., Ohio.), and P. D. HUFFMAN Washington, D.C. Sep. 1986 19 p
(NASA-TP-2637; NAS 1.60:2637) Avail: NTIS HC A03/MF A01 CSCL 04B
ERROR ANALYSIS, RADIOSONDES, THERMISTORS

N87-13043*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
NASA/MSFC FY-85 ATMOSPHERIC PROCESSES RESEARCH REVIEW
W. W. VAUGHAN, comp. and F. PORTER, comp. Oct. 1985 143 p Review held in Huntsville, Ala. 7-9 May 1985 and in Columbia, Md., 8-12 Jul. 1985
(NASA-CP-2402; M-503; NAS 1.55:2402) Avail: NTIS HC A07/MF A02 CSCL 04B
ATMOSPHERIC ELECTRICITY, ATMOSPHERIC SOUNDING, DATA PROCESSING, DOPPLER RADAR, GEOPHYSICS, MESOSCALE PHENOMENA, OPTICAL RADAR, SATELLITE IMAGERY, THUNDERSTORMS, WIND (METEOROLOGY)

N87-20701*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
ON REQUIREMENTS FOR A SATELLITE MISSION TO MEASURE TROPICAL RAINFALL
OTTO W. THIELE, ed. Apr. 1987 67 p
(NASA-RP-1183; NAS 1.61:1183) Avail: NTIS HC A04/MF A01 CSCL 04B
Tropical rainfall data are crucial in determining the role of tropical latent heating in driving the circulation of the global atmosphere. Also, the data are particularly important for testing the realism of climate models, and their ability to simulate and predict climate accurately on the seasonal time scale. Other scientific issues such as the effects of El Nino on climate could be addressed with a reliable, extended time series of tropical rainfall observations. A passive microwave sensor is planned to provide information on the integrated column precipitation content, its areal distribution, and its intensity. An active microwave sensor (radar) will define the layer depth of the precipitation and provide information about the intensity of rain reaching the surface, the key to determining the latent heat input to the atmosphere. A visible/infrared sensor will provide very high resolution information on cloud coverage, type, and top temperatures and also serve as the link between these data and the long and virtually continuous coverage by the geosynchronous meteorological satellites. The unique combination of sensor wavelengths, coverages, and resolving capabilities together with the low-altitude, non-Sun synchronous orbit provide a sampling capability that should yield monthly precipitation amounts to a reasonable accuracy over a 500- by 500-km grid. Author

N87-22341*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ATMOSPHERIC TURBULENCE RELATIVE TO AVIATION, MISSILE, AND SPACE PROGRAMS
DENNIS W. CAMP, ed. and WALTER FROST, ed. (FWG Associates, Inc., Tullahoma, Tenn.) Apr. 1987 257 p Workshop held in Hampton, Va., 2-4 Apr. 1986
(NASA-CP-2468; L-16296; NAS 1.55:2468) Avail: NTIS HC A12/MF A02 CSCL 04B
AIRCRAFT SAFETY, ATMOSPHERIC MODELS, ATMOSPHERIC TURBULENCE, CONFERENCES, MISSILES, SPACE PROGRAMS, WEATHER FORECASTING

N87-26489*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ATLAS OF WIDE-FIELD-OF-VIEW OUTGOING LONGWAVE RADIATION DERIVED FROM NIMBUS 6 EARTH RADIATION BUDGET DATA SET, JULY 1975 TO JUNE 1978
T. DALE BESS and G. LOUIS SMITH Aug. 1987 80 p
(NASA-RP-1185; L-16325; NAS 1.61:1185) Avail: NTIS HC A05/MF A01 CSCL 04B
An atlas of monthly mean outgoing longwave radiation global contour maps and associated spherical harmonic coefficients is presented. The atlas contains 36 months of continuous data from July 1975 to June 1978. The data were derived from the first Earth radiation budget experiment, which was flown on the Nimbus-6 Sun-synchronous satellite in 1975. Only the wide-field-of-view longwave measurements are cataloged in this atlas. The contour maps along with the associated sets of spherical harmonic coefficients form a valuable data set for studying different aspects of our changing climate over monthly, annual, and interannual scales in the time domain, and over regional, zonal, and global scales in the spatial domain. Author

N87-26491*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CALIBRATION OF THE SPIN-SCAN OZONE IMAGER ABOARD THE DYNAMICS EXPLORER 1 SATELLITE
WALTER E. BRESSETTE, GERALD M. KEATING, and DAVID F. YOUNG (ST Systems Corp., Hampton, Va.) Aug. 1987 44 p
(NASA-TP-2723; L-16150; NAS 1.60:2723) Avail: NTIS HC A03/MF A01 CSCL 04B
ALGORITHMS, CALIBRATING, DYNAMICS EXPLORER 1 SATELLITE, OZONE, REGRESSION ANALYSIS, ULTRAVIOLET SPECTROMETERS

N87-29996*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FIVE YEAR GLOBAL DATASET: NMC OPERATIONAL ANALYSES (1978 TO 1982)
DAVID STRAUS and JOSEPH ARDIZZONE Sep. 1987 50 p Prepared in cooperation with Sigma Data Services Corp., Rockville, Md.
(NASA-RP-1194; REPT-87B0273; NAS 1.61:1194) Avail: NTIS HC A03/MF A01 CSCL 04B
This document describes procedures used in assembling a five year dataset (1978 to 1982) using NMC Operational Analysis data. These procedures entailed replacing missing and unacceptable data in order to arrive at a complete dataset that is continuous in time. In addition, a subjective assessment on the integrity of all data (both preliminary and final) is presented. Documentation on tapes comprising the Five Year Global Dataset is also included. Author

N88-10451*# National Aeronautics and Space Administration, Washington, DC.
ATLAS OF WIDE-FIELD-OF-VIEW OUTGOING LONGWAVE RADIATION DERIVED FROM NIMBUS 7 EARTH RADIATION BUDGET DATA SET - NOVEMBER 1978 TO OCTOBER 1985
T. DALE BESS and G. LOUIS SMITH Aug. 1987 176 p
(NASA-RP-1186; L-16326; NAS 1.61:1186) Avail: NTIS HC A09/MF A01 CSCL 04B
An atlas of monthly mean outgoing longwave radiation global contour maps and associated spherical harmonic coefficients is presented. The atlas contains 84 months of continuous data from November 1978 to October 1985. The data were derived from the second Earth radiation budget experiment, which was flown on the Nimbus 7 Sun-synchronous satellite in 1978. This data set is a companion set and extension to a similar report of the Nimbus

6 satellite. Together these two reports give a data set covering a 10 year time period and will be very valuable in studying different aspects of our changing climate over monthly, annual, and interannual scales in the time domain and over regional, zonal, and global scales in the spatial domain. Author

N88-14572*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DESCRIPTION OF DATA ON THE NIMBUS 7 LIMS MAP ARCHIVE TAPE: WATER VAPOR AND NITROGEN DIOXIDE
KENNETH V. HAGGARD, B. T. MARSHALL (G and A Technical Software, Hampton, Va.), ROBERT J. KURZEJA (Du Pont de Nemours, E. I. and Co., Aiken, S.C), ELLIS E. REMSBERG, and JAMES M. RUSSELL, III Feb. 1988 69 p
(NASA-TP-2761; L-16313; NAS 1.60:2761) Avail: NTIS HC A04/MF A01 CSCL 04B

ATMOSPHERIC COMPOSITION, EARTH LIMB, INFRARED DETECTORS, MAPPING, NIMBUS 7 SATELLITE, STRATOSPHERE

N88-20772*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SUMMARY OF ALONG-TRACK DATA FROM THE EARTH RADIATION BUDGET SATELLITE FOR SEVERAL MAJOR DESERT REGIONS
DAVID R. BROOKS and MARTA A. FENN May 1988 147 p
(NASA-RP-1197; L-16401; NAS 1.61:1197) Avail: NTIS HC A07/MF A01 CSCL 04B

For several days in January and August 1985, the Earth Radiation Budget Satellite, a component of the Earth Radiation Budget Experiment (ERBE), was operated in an along-track scanning mode. A survey of radiance measurements is given for four desert areas in Africa, the Arabian Peninsula, Australia, and the Sahel region of Africa. Each overflight provides radiance information for four scene categories: clear, partly cloudy, mostly cloudy, and overcast. The data presented include the variation of radiance in each scene classification as a function of viewing zenith angle during each overflight of the five target areas. Several features of interest in the development of anisotropic models are evident, including day-night differences in longwave limb darkening and the azimuthal dependence of short wave radiance. There is some evidence that surface features may introduce thermal or visible shadowing that is not incorporated in the usual descriptions of the anisotropic behavior of radiance as viewed from space. The data also demonstrate that the ERBE scene classification algorithms give results that, at least for desert surfaces, are a function of viewing geometry. Author

N88-25105*# Tennessee Univ. Space Inst., Tullahoma.
METEOROLOGICAL AND ENVIRONMENTAL INPUTS TO AVIATION SYSTEMS
DENNIS W. CAMP, ed. and WALTER FROST, ed. Jun. 1988 226 p Workshop held in Tullahoma, Tenn., 12-14 Mar. 1985; sponsored by NASA, Washington, NOAA, FAA, DOD, and Office of the Federal Coordinator for Meteorology
(NASA-CP-2498; L-16338; NAS 1.55:2498) Avail: NTIS HC A11/MF A02 CSCL 04B

AVIATION METEOROLOGY, FLIGHT SAFETY, WEATHER

N88-27677*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANGULAR RADIATION MODELS FOR EARTH-ATMOSPHERE SYSTEM. VOLUME 1: SHORTWAVE RADIATION
J. T. SUTTLES, R. N. GREEN, P. MINNIS, G. L. SMITH, W. F. STAYLOR, B. A. WIELICKI, I. J. WALKER, D. F. YOUNG, V. R. TAYLOR, and L. L. STOWE (National Oceanic and Atmospheric Administration, Washington, D. C.) Jul. 1988 148 p
(NASA-RP-1184; L-16414; NAS 1.61:1184) Avail: NTIS HC A07/MF A01 CSCL 04B

Presented are shortwave angular radiation models which are required for analysis of satellite measurements of Earth radiation, such as those fro the Earth Radiation Budget Experiment (ERBE). The models consist of both bidirectional and directional parameters. The bidirectional parameters are anisotropic function, standard deviation of mean radiance, and shortwave-longwave radiance correlation coefficient. The directional parameters are mean albedo as a function of Sun zenith angle and mean albedo normalized to overhead Sun. Derivation of these models from the Nimbus 7 ERB (Earth Radiation Budget) and Geostationary Operational Environmental Satellite (GOES) data sets is described. Tabulated values and computer-generated plots are included for the bidirectional and directional modes. Author

N89-14634*# National Aeronautics and Space Administration, Washington, DC.
SUMMARY OF ALONG-TRACK DATA FROM THE EARTH RADIATION BUDGET SATELLITE FOR SEVERAL REPRESENTATIVE OCEAN REGIONS
DAVID R. BROOKS and MARTA A. FENN (Planning Research Corp., Hampton, Va.) Nov. 1988 216 p
(NASA-RP-1206; L-16449; NAS 1.61:1206) Avail: NTIS HC A10/MF A02 CSCL 04B

For several days in January and August 1985, the Earth Radiation Budget Satellite, a component of the Earth Radiation Budget Experiment (ERBE), was operated in an along-track scanning mode. A survey of radiance measurements taken in this mode is given for five ocean regions: the north and south Atlantic, the Arabian Sea, the western Pacific north of the Equator, and part of the Intertropical Convergence Zone. Each overflight contains information about the clear scene and three cloud categories: partly cloudy, mostly cloudy, and overcast. The data presented include the variation of longwave and shortwave radiance in each scene classification as a function of viewing zenity angle during each overflight of one of the five target regions. Several features of interest in the development of anisotropic models are evident, including the azimuthal dependence of shortwave radiance that is an essential feature of shortwave bidirectional models. The data also demonstrate that the scene classification algorithm employed by the ERBE results in scene classifications that are a function of viewing geometry. Author

N89-14648*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
USER'S GUIDE FOR THE NIMBUS 7 SCANNING MULTICHANNEL MICROWAVE RADIOMETER (SMMR) CELL-ALL TAPE
C. C. CU, D. HAN, S. T. KIM (ST Systems Corp., Lanham, Md.), and P. GLOERSEN Oct. 1988 152 p
(NAS5-29386)
(NASA-RP-1210; REPT-88-181; NAS 1.61:1210) Avail: NTIS HC A08/MF A01 CSCL 04B

The SMMR instrument onboard the Nimbus-7 satellite has been in operation since October 1978. It provided global coverage of passive microwave observations at 6.6, 10.7, 18, 21, and 37 GHz. The oberved brightness temperature can be used to retrieve geophysical parameters, principally sea surface temperature, atmospheric water vapor and liquid water content over oceans, sea ice concentration, and snow cover over land. The SMME CELL-ALL Tape contains earth-located calibrated brightness temperature data which have been appropriately binned into cells of various grid sizes, allowing intercomparisons of observations made at different frequencies (with corresponding different footprint sizes). This user's guide describes the operation of the instrument, the flow of the data processing the calibration procedure, and the characteristics of the calibrated brightness temperatures and how they are binned. Detailed tape specifications and lists of available data are also provided. Author

N89-17374*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LIMB-DARKENING FUNCTIONS AS DERIVED FROM ALONG-TRACK OPERATION OF THE ERBE SCANNING RADIOMETER FOR JANUARY 1985
G. LOUIS SMITH, NATIVIDAD MANALO, JOHN T. SUTTLES, and IRA WALKER (Planning Research Corp., Hampton, VA.)

Washington, DC Mar. 1989 26 p
(NASA-RP-1214; L-16487; NAS 1.61:1214) Avail: NTIS HC A03/MF A01 CSCL 04B

During January 1985, the scanning radiometer aboard the Earth Radiation Budget Satellite was operated to scan along-track. These data have been analyzed to produce limb-darkening functions for Earth emitted radiation, which relate the radiance in any given direction to the radiant exitance. Limb-darkening functions are presented in tabular form and shown as figures for 10 day cases and 12 night cases, corresponding to various scene types and latitude zones. The scene types were computed using measurements within 10 deg of zenith. The limb-darkening functions have values of 1.03 to 1.09 at zenith, with 1.06 being typical. It is found that latitude causes a variation on the order of 1 percent, except for zenith angles greater than 70 deg. These limb-darkening models are about 2 percent higher at zenith than the models derived from Nimbus 7 data. Author

N89-20587*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANGULAR RADIATION MODELS FOR EARTH-ATMOSPHERE SYSTEM. VOLUME 2: LONGWAVE RADIATION
J. T. SUTTLES, R. N. GREEN, G. L. SMITH, B. A. WIELICKI, I. J. WALKER, V. R. TAYLOR, and L. L. STOWE (National Oceanic and Atmospheric Administration, Washington, DC.) Apr. 1989 88 p
(NASA-RP-1184-VOL-2; L-16503; NAS 1.61:1184-VOL-2) Avail: NTIS HC A05/MF A01 CSCL 04B

The longwave angular radiation models that are required for analysis of satellite measurements of Earth radiation, such as those from the Earth Radiation Budget Experiment (ERBE) are presented. The models contain limb-darkening characteristics and mean fluxes. Limb-darkening characteristics are the longwave anisotropic factor and the standard deviation of the longwave radiance. Derivation of these models from the Nimbus 7 ERB (Earth Radiation Budget) data set is described. Tabulated values and computer-generated plots are included for the limb-darkening and mean-flux models. Author

N89-20588*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
AN ASSESSMENT MODEL FOR ATMOSPHERIC COMPOSITION
MICHAEL J. PRATHER, ed. Jan. 1988 56 p Proceedings of a workshop held at NASA Goddard Inst. for Space Studies, New York, NY, 10-13 Jan. 1988
(NASA-CP-3023; REPT-89-31; NAS 1.55:3023) Avail: NTIS HC A04/MF A01 CSCL 04B

AIR QUALITY, ATMOSPHERIC COMPOSITION, EARTH ATMOSPHERE, ENVIRONMENTAL MONITORING, PHOTOCHEMICAL OXIDANTS

N89-27302*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1989 AIRBORNE ARCTIC STRATOSPHERIC EXPEDITION NIMBUS-7 TOMS DATA ATLAS
ARLIN J. KRUEGER, LANNING M. PENN, DAVID E. LARKO, SCOTT D. DOIRON, and PATRICIA T. GUIMARAES (ST Systems Corp., Vienna, VA.) Washington Jul. 1989 154 p
(NAS5-29373)
(NASA-RP-1227; REPT-89B00188; NAS 1.61:1227) Avail: NTIS HC A08/MF A01 CSCL 04B

Over the past several years, world scientific attention was focused on the rapid and unanticipated decrease in the abundance of ozone over Antarctica during the Austral spring. A major aircraft campaign was conducted from December 1988 to February 1989 in response to the recently published Ozone Trends Panel Report which found that the largest decreases in Arctic ozone occurred during January to February at latitudes near the edge of the Arctic vortex. This atlas provides a complete set of TOMS ozone measurements over Europe and the North Atlantic for the duration of the experiment. These were the orbital TOMS measurements provided to the experimenters in near-real-time. In addition, a set of Northern Hemisphere TOMS ozone measurements for the period December 26, 1988 to March 20, 1989 is presented. A comparison of January and February 1989 mean ozone values to prior years is also presented. Author

N89-28983*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1988 ANTARCTIC OZONE MONITORING NIMBUS-7 TOMS DATA ATLAS
ARLIN J. KRUEGER, LANNING M. PENN, DAVID E. LARKO, SCOTT D. DOIRON, and PATRICIA T. GUIMARAES (ST Systems Corp., Vienna, VA.) Aug. 1989 153 p
(NAS5-29375)
(NASA-RP-1225; REPT-89B00176; NAS 1.61:1225) Avail: NTIS HC A08/MF A01 CSCL 04B

Because of the great environmental significance of ozone and to support continuing research at McMurdo, Syowa, and other Southern Hemisphere stations, the development of the 1988 ozone hole was monitored using data from the Nimbus-7 Total Ozone Mapping Spectrometer (TOMS) instrument, produced in near-real-time. This Atlas provides a complete set of daily polar orthographic projections of the TOMS total ozone measurements over the Southern Hemisphere for the period August 1 through November 17, 1988. Although total ozone in mini-holes briefly dropped below 150 DU in late August, the main ozone hole is seen to be much less pronounced than in 1987. Minimum values, observed in late September and early October 1988, were seldom less than 175 DU. Compared with the same period in 1987, when a pronounced ozone hole whose minimum value of 109 Dobson Units (DU) was the lowest total ozone ever observed, the 1988 ozone hole is displaced from the South Pole, opposing a persistent maximum with values consistently above 500 DU. Daily ozone values above selected Southern Hemisphere stations are presented, along with comparisons of the 1988 ozone distribution to that of other years. Author

N90-14741*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ATLAS OF ALBEDO AND ABSORBED SOLAR RADIATION DERIVED FROM NIMBUS 6 EARTH RADIATION BUDGET DATA SET, JULY 1975 TO MAY 1978
G. LOUIS SMITH, T. DALE BESS, and DAVID RUTAN (PRC Kentron, Inc., Hampton, VA.) 1989 88 p
(NASA-RP-1230; L-16601; NAS 1.61:1230) Avail: NTIS HC A05/MF A01 CSCL 04B

An atlas of monthly mean global contour maps of albedo and absorbed solar radiation is presented. The atlas is based on 35 months of continuous measurements from July 1975 through May 1978. The data were retrieved from measurements made by the shortwave wide field-of-view radiometer of the first Earth Radiation Budget (ERB) instrument, which flew on the Nimbus 6 spacecraft in 1975. Profiles of zonal mean albedos and absorbed solar radiation are tabulated. These geographical distributions are provided as a resource for studying the radiation budget of the earth. This atlas of albedo and absorbed solar radiation complements the atlases of outgoing longwave radiation by Bess and Smith in NASA-RP-1185 and RP-1186, also based on the Nimbus 6 and 7 ERB data. Author

N90-17233*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ATLAS OF ALBEDO AND ABSORBED SOLAR RADIATION DERIVED FROM NIMBUS 7 EARTH RADIATION BUDGET DATA SET, NOVEMBER 1978 TO OCTOBER 1985
G. LOUIS SMITH, DAVID RUTAN (PRC Kentron, Inc., Hampton, VA.), and T. DALE BESS Washington Jan. 1990 213 p
(NASA-RP-1231; L-16591; NAS 1.61:1231) Avail: NTIS HC A10/MF A02 CSCL 04B

An atlas of monthly mean global contour maps of albedo and absorbed solar radiation is presented. This atlas contains 7 years of continuous data from November 1978 through October 1985. The data were retrieved from measurements made by the second Earth Radiation Budget (ERB) wide field-of-view instrument, which

flew on the Nimbus 7 spacecraft in 1978. The deconvolution method used to produce these data is briefly discussed here so that the user may understand their generation and limitations. These geographical distributions of albedo and absorbed solar radiation are provided as a resource for researchers studying the radiation budget of the Earth. This atlas of albedo and absorbed solar radiation complements the atlases of outgoing longwave radiation by Bess and Smith, also based on the Nimbus 6 and 7 ERB data. Author

N90-19718*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SPANWISE MEASUREMENTS OF VERTICAL COMPONENTS OF ATMOSPHERIC TURBULENCE
ROBERT K. SLEEPER Washington Apr. 1990 67 p
(NASA-TP-2963; L-16550; NAS 1.60:2963) Avail: NTIS HC A04/MF A01 CSCL 04B

AUTOCORRELATION, CROSS CORRELATION, FLOW DISTRIBUTION, GUSTS, VERTICAL AIR CURRENTS, WIND VELOCITY

N90-23837*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
NIMBUS-7 TOMS ANTARCTIC OZONE ATLAS: AUGUST THROUGH NOVEMBER, 1989
ARLIN J. KRUEGER, LANNING M. PENN, DAVID E. LARKO, SCOTT D. DOIRON, and PATRICIA T. GUIMARAES (ST Systems Corp., Vienna, VA.) Jul. 1990 176 p
(NAS5-29373)
(NASA-RP-1237; NAS 1.61:1237; REPT-90B00114) Avail: NTIS HC A09/MF A01 CSCL 04B

Because of the great environmental significance of ozone and to support continuing research at the Antarctic and other Southern Hemisphere stations, the development of the 1989 ozone hole was monitored using data from the Nimbus-7 Total Ozone Mapping Spectrometer (TOMS) instrument, produced in near-real-time. This Atlas provides a complete set of daily polar orthographic projections of the TOMS total ozone measurements over the Southern Hemisphere for the period August 1 through November 30, 1989. The 1989 ozone hole developed in a manner similar to that of 1987, reaching a comparable depth in early October. This was in sharp contrast to the much weaker hole of 1988. The 1989 ozone hole remained at polar latitudes as it filled in November, in contrast to other recent years when the hole drifted to mid-latitudes before disappearing. Daily ozone values above selected Southern Hemisphere stations are presented, along with comparisons of the 1989 ozone distribution to that of other years. Author

N90-28224*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FIRE SCIENCE RESULTS 1989
DAVID S. MCDOUGAL, ed. Washington Jul. 1990 434 p Meeting held in Monterey, CA, 10-14 Jul. 1989; sponsored in cooperation with NASA, NSF, ONR, DOE, AFGL, and NOAA
(NASA-CP-3079; L-16792; NAS 1.55:3079) Avail: NTIS HC A19/MF A03 CSCL 04B

CIRRUS CLOUDS, CLIMATOLOGY, CLOUDS (METEOROLOGY), CONFERENCES, MARINE METEOROLOGY, OPTICAL PROPERTIES, REMOTE SENSING, STRATOCUMULUS CLOUDS, THERMODYNAMIC PROPERTIES

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OCEANOGRAPHY

Includes biological, dynamic, and physical oceanography; and marine resources.

N87-24870* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
ARCTIC SEA ICE, 1973-1976: SATELLITE PASSIVE-MICROWAVE OBSERVATIONS
CLAIRE L. PARKINSON, JOSEFINO C. COMISO, H. JAY ZWALLY, DONALD J. CAVALIERI, PER GLOERSEN, and WILLIAM J. CAMPBELL (Puget Sound Univ., Tacoma, Wash.) Jan. 1987 301 p Original contains color illustrations
(NASA-SP-489; NAS 1.21:489; LC-86-23876) Avail: NTIS HC A14 CSCL 08L

The Arctic region plays a key role in the climate of the earth. The sea ice cover affects the radiative balance of the earth and radically changes the fluxes of heat between the atmosphere and the ocean. The observations of the Arctic made by the Electrically Scanning Microwave Radiometer (ESMR) on board the Nimbus 5 research satellite are summarized for the period 1973 through 1976. B.G.

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LIFE SCIENCES (GENERAL)

N87-20727*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
LIQUID DROP STABILITY FOR PROTEIN CRYSTAL GROWTH IN MICROGRAVITY
ROBERT B. OWEN, BETH H. BROOM, ROBERT S. SNYDER, and RON DANIEL Apr. 1987 17 p
(NASA-TP-2724; NAS 1.60:2724) Avail: NTIS HC A03/MF A01 CSCL 06B

DROPS (LIQUIDS), MICROGRAVITY APPLICATIONS, PROTEIN CRYSTAL GROWTH, PROTEIN SYNTHESIS, STABILITY

N88-15354*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
MICROGRAVITY PARTICLE RESEARCH ON THE SPACE STATION
STEVEN W. SQUYRES, ed., CHRISTOPHER P. MCKAY, ed., and DEBORAH E. SCHWARTZ, ed. Dec. 1987 48 p Workshop held in Moffett Field, Calif., 22-24 Aug. 1985
(NASA-CP-2496; A-87361; NAS 1.55:2496) Avail: NTIS HC A03/MF A01 CSCL 06B

PARTICLES, REDUCED GRAVITY, SPACE STATION PAYLOADS, SPACEBORNE EXPERIMENTS

N88-17168*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
SPACE BIOREACTOR SCIENCE WORKSHOP
DENNIS R. MORRISON, ed. Dec. 1987 183 p Workshop held in Houston, Tex., 22-23 Aug. 1985
(NASA-CP-2485; S-564; NAS 1.55:2485) Avail: NTIS HC A09/MF A02 CSCL 06B

BIOPROCESSING, BIOREACTORS, BIOTECHNOLOGY, CELLS (BIOLOGY), CONFERENCES, CULTURE TECHNIQUES, REDUCED GRAVITY, SPACE PROCESSING, TISSUES (BIOLOGY)

N88-19883*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
SPACE STATION HUMAN FACTORS RESEARCH REVIEW. VOLUME 3: SPACE STATION HABITABILITY AND FUNCTION: ARCHITECTURAL RESEARCH
MARC M. COHEN, ed., ALICE EICHOLD, ed., and SUSAN HEERS, ed. Oct. 1987 211 p Workshop held at Moffett Field, Calif., 3-6 Dec. 1985
(NASA-CP-2426-VOL-3; A-86263-VOL-3; NAS 1.55:2426-VOL-3) Avail: NTIS HC A10/MF A02 CSCL 05H
ARCHITECTURE, HUMAN FACTORS ENGINEERING, SPACE STATIONS, SPACECRAFT DESIGN

N88-24145*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
SPACE STATION HUMAN FACTORS RESEARCH REVIEW. VOLUME 1: EVA RESEARCH AND DEVELOPMENT
MARC M. COHEN, ed. and H. C. VYKUKAL, ed. Apr. 1988 136 p Workshop held at Moffett Field, Calif., 3-6 Dec. 1985
(NASA-CP-2426-VOL-1; A-87163-VOL-1; NAS 1.55:2426-VOL-1) Avail: NTIS HC A07/MF A01 CSCL 06B
CONFERENCES, EXTRAVEHICULAR ACTIVITY, HUMAN FACTORS ENGINEERING, SPACE STATIONS

N88-24148*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
SPACE STATION HUMAN FACTORS RESEARCH REVIEW. VOLUME 4: INHOUSE ADVANCED DEVELOPMENT AND RESEARCH
TRIEVE TANNER, ed., YVONNE A. CLEARWATER, ed., and MARC M. COHEN, ed. May 1988 135 p Workshop held at Moffett Field, Calif., 3-6 Dec. 1985
(NASA-CP-2426-VOL-4; A-87247-VOL-4; NAS 1.55:2426-VOL-4) Avail: NTIS HC A07/MF A01 CSCL 06B
HUMAN FACTORS ENGINEERING, SPACE STATIONS, SPACECRAFT DESIGN

N89-17997*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
PROCEEDINGS OF A CONFERENCE ON CARDIOVASCULAR BIOINSTRUMENTATION
RODNEY W. BALLARD, CHARLES A. FULLER, RICHARD MAINS, and HERBERT J. FINGER Dec. 1988 71 p Conference held at Moffett Field, CA, 21-22 Jul. 1987
(NASA-CP-10022; A-88120; NAS 1.55:10022) Avail: NTIS HC A04/MF A01 CSCL 06C
BIOINSTRUMENTATION, CARDIOVASCULAR SYSTEM, CONFERENCES, GROUND SUPPORT SYSTEMS, MANNED SPACE FLIGHT

N89-24022*# General Electric Co., Moffett Field, CA.
GAS-GRAIN SIMULATION FACILITY: FUNDAMENTAL STUDIES OF PARTICLE FORMATION AND INTERACTIONS. VOLUME 1: EXECUTIVE SUMMARY AND OVERVIEW
GUY FOGLEMAN, ed., JUDITH L. HUNTINGTON, ed. (Search for Extraterrestrial Intelligence Inst., Los Altos, CA.), DEBORAH E. SCHWARTZ, ed., and MARK L. FONDA, ed. Mar. 1989 38 p Presented at the Gas-Grain Simulation Facility Experiments Workshop, Sunnyvale, CA, 31 Aug. - 1 Sep. 1987; sponsored by the Exobiology Flight Program
(NASA-CP-10026-VOL-1; A-88256-VOL-1; NAS 1.55:10026-VOL-1) Avail: NTIS HC A03/MF A01 CSCL 06C
AEROSOLS, CLOUDS, COSMIC DUST, GRAINS, GRAVITATIONAL EFFECTS, NUCLEATION, PARTICLE INTERACTIONS, PARTICLES, PARTICULATES, REDUCED GRAVITY, SPACE LABORATORIES, SPACE STATION PAYLOADS, SPACEBORNE EXPERIMENTS

N89-24023*# General Electric Co., Moffett Field, CA.
GAS-GRAIN SIMULATION FACILITY: FUNDAMENTAL STUDIES OF PARTICLE FORMATION AND INTERACTIONS. VOLUME 2: ABSTRACTS, CANDIDATE EXPERIMENTS AND FEASIBILITY STUDY
GUY FOGLEMAN, ed., JUDITH L. HUNTINGTON, ed. (Search for Extraterrestrial Intelligence Inst., Los Altos, CA.), DEBORAH E. SCHWARTZ, ed., and MARK L. FONDA, ed. Mar. 1989 199 p Presented at the Gas-Grain Simulation Facility Experiments Workshop, Sunnyvale, CA, 31 Aug. - 1 Sep. 1987; sponsored by the Exobiology Flight Program
(NASA-CP-10026-VOL-2; A-88256-VOL-2; NAS 1.55:10026-VOL-2) Avail: NTIS HC A09/MF A02 CSCL 06C
AEROSOLS, CLOUDS, COSMIC DUST, GRAINS, PARTICLE INTERACTIONS, PARTICLES, PARTICULATES, REDUCED GRAVITY, SPACEBORNE EXPERIMENTS

N89-26334*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
EXOBIOLOGY AND FUTURE MARS MISSIONS
CHRISTOPHER P. MCKAY, ed. and WANDA DAVIS, L., ed. Washington Mar. 1989 73 p Workshop held in Sunnyvale, CA, Mar. 1988
(NASA-CP-10027; A-89098; NAS 1.55:10027) Avail: NTIS HC A04/MF A01 CSCL 03B
BIOLOGICAL EVOLUTION, CHEMICAL EVOLUTION, CONFERENCES, ECOLOGY, EXOBIOLOGY, FOSSILS, MARS SAMPLE RETURN MISSIONS, SOILS

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AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

N87-18976* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CUMULATIVE INDEX TO THE 1986 ISSUES (SUPPLEMENT 293)
Jan. 1987 251 p
(NASA-SP-7011(293); NAS 1.21:7011(293)) Avail: NTIS HC A12 CSCL 06E
This publication is a cumulative index to the abstracts contained in the Supplements 281 through 292 of Aerospace Medicine and Biology: A Continuing Bibliography. It includes seven indexes - subject, personal author, corporate source, foreign technology, contract number, report number, and accession number. Author

N87-30041* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 302)
Oct. 1987 55 p
(NASA-SP-7011(302); NAS 1.21:7011(302)) Avail: HC A04 CSCL 06E
This bibliography lists 131 reports, articles, and other documents introduced into the NASA scientific and technical information system in September, 1987. Author

N88-14623*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
AIRBORNE PARTICULATE MATTER IN SPACECRAFT
Feb. 1988 15 p Presented at a Panel Discussion held in Houston, Tex., 23-24 Jul. 1987
(NAS9-17200)
(NASA-CP-2499; S-570; NAS 1.55:2499) Avail: NTIS HC A03/MF A01 CSCL 06K
AEROSOLS, AEROSPACE ENVIRONMENTS, AIR PURIFICATION, AIR QUALITY, SPACECRAFT DESIGN

N88-18180* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CUMULATIVE INDEX TO A CONTINUING BIBLIOGRAPHY (SUPPLEMENT 306)
Jan. 1988 210 p
(NASA-SP-7011(306); NAS 1.21:7011(306)) Avail: NTIS HC A10 CSCL 06E

This publication is a cumulative index to the abstracts contained in the Supplements 294 through 305 of Aerospace Medicine and Biology: A Continuing Bibliography. It includes seven indexes - *subject, personal author, corporate source, foreign technology,* contract number, report number, and accession number. Author

N88-30281* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 315)
Oct. 1988 71 p
(NASA-SP-7011(315); NAS 1.21:7011(315)) Avail: NTIS HC A04; NTIS standing order as PB88-912300. $9.00 domestic, $18.00 foreign CSCL 06E

This bibliography lists 211 reports, articles and other documents introduced into the NASA scientific and technical information system in September, 1988. Author

N89-29951* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 327)
Feb. 1989 53 p
(NASA-SP-7011(327); NAS 1.21:7011(327)) Avail: NTIS HC A04; NTIS standing order as PB89-912300, $10.50 domestic, $21.00 foreign CSCL 06E

This bibliography lists 127 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during August, 1989. Subject coverage includes: aerospace medicine and psychology, life support systems and controlled environments, safety equipment, exobiology and extraterrestrial life, and flight crew behavior and performance. Author

N90-28963* National Aeronautics and Space Administration, Washington, DC.
AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES (SUPPLEMENT 340)
Feb. 1989 64 p
(NASA-SP-7011(340); NAS 1.21:7011(340)) Avail: NTIS HC A03; NTIS standing order as PB90-912300, $11.50 domestic, $23.00 foreign CSCL 06E

This bibliography lists 157 reports, articles and other documents introduced into the NASA Scientific and Technical Information System during August 1990. Subject coverage includes: aerospace medicine and psychology, life support systems and controlled environments, safety equipment, exobiology and extraterrestrial life, and flight crew behavior and performance. Author

N90-28965*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
JOINT US/USSR STUDY: COMPARISON OF EFFECTS OF HORIZONTAL AND HEAD-DOWN BED REST
HAROLD SANDLER and ANATOLI I. GRIGORIEV (Institute of Biomedical Problems, Moscow, USSR) Washington Aug. 1990 102 p
(NASA-TP-3037; A-85177; NAS 1.60:3037) Avail: NTIS HC A06/MF A01 CSCL 06S

BED REST, BIOCHEMISTRY, HEAD DOWN TILT, HYPOKINESIA, LOWER BODY NEGATIVE PRESSURE, PHYSICAL EXERCISE, PHYSIOLOGY, SPACE FLIGHT

53

BEHAVIORAL SCIENCES

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

N88-23370*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MENTAL-STATE ESTIMATION, 1987
J. RAYMOND COMSTOCK, JR., comp. May 1988 393 p Workshop held in Williamsburg, Va., 3-4 Jun. 1987; sponsored by NASA, Langley Research Center, Hampton, Va. and Old Dominion Univ., Norfolk, Va. Sponsored by NASA, Washington
(NASA-CP-2504; L-16420; NAS 1.55:2504) Avail: NTIS HC A17/MF A03 CSCL 05J

BIOMETRICS, ESTIMATING, HUMAN PERFORMANCE, MENTAL PERFORMANCE, OPERATOR PERFORMANCE, PSYCHOMOTOR PERFORMANCE, STRESS (PSYCHOLOGY), WORKLOADS (PSYCHOPHYSIOLOGY), WORKSTATIONS

54

MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing.

N88-12251*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
CONTROLLED ECOLOGICAL LIFE SUPPORT SYSTEM: REGENERATIVE LIFE SUPPORT SYSTEMS IN SPACE
ROBERT D. MACELROY and DAVID T. SMERNOFF (New Hampshire Univ., Durham.) Sep. 1987 153 p The 26th COSPAR Meeting held in Toulouse, France, Jul. 1986 (NCC2-231)
(NASA-CP-2480; A-87256; NAS 1.55:2480) Avail: NTIS HC A08/MF A01 CSCL 06K

ALGAE, CLOSED ECOLOGICAL SYSTEMS, GAS EXCHANGE, VEGETATION GROWTH

N88-13852*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
CONTROLLED ECOLOGICAL LIFE SUPPORT SYSTEM. DESIGN, DEVELOPMENT, AND USE OF A GROUND-BASED PLANT GROWTH MODULE
ROBERT D. MACELROY, DAVID T. SMERNOFF (New Hampshire Univ., Durham.), and JOHN D. RUMMEL Sep. 1987 83 p Meeting held at Moffett Field, Calif., Sep. 1984, in Cocoa Beach, Fla., Apr. 1985 and in Carmel, Calif., 23-25 Apr. 1986 (NCC2-27)
(NASA-CP-2479; A-87255; NAS 1.55:2479) Avail: NTIS HC A05/MF A01 CSCL 06K

CLOSED ECOLOGICAL SYSTEMS, CROP GROWTH, EXPERIMENT DESIGN, FOOD, LABORATORY EQUIPMENT, PLANTS (BOTANY)

N89-13898*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
REPORT OF THE 1ST PLANNING WORKSHOP FOR CELSS FLIGHT EXPERIMENTATION
JOHN W. TREMOR and ROBERT D. MACELROY 1988 28 p Workshop held at Moffett Field, Calif., 23-24 Mar. 1987
(NASA-CP-10020; A-88265; NAS 1.55:10020) Avail: NTIS HC A03/MF A01 CSCL 05H

BIOASTRONAUTICS, CLOSED ECOLOGICAL SYSTEMS,

CONFERENCES, PLANTS (BOTANY), SPACECRAFT ENVIRONMENTS

N89-18039*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
INTERACTIVE ORBITAL PROXIMITY OPERATIONS PLANNING SYSTEM
ARTHUR J. GRUNWALD and STEPHEN R. ELLIS Nov. 1988 48 p
(NASA-TP-2839; A-88091; NAS 1.60:2839) Avail: NTIS HC A03/MF A01 CSCL 05H
COMPUTER GRAPHICS, ORBITAL MANEUVERS, PROXIMITY, SPACE STATIONS, SPACECRAFT TRAJECTORIES

N90-22918*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
SPATIAL DISPLAYS AND SPATIAL INSTRUMENTS
STEPHEN R. ELLIS, ed., MARY K. KAISER, ed., and ARTHUR J. GRUNWALD, ed. (Technion - Israel Inst. of Tech., Haifa.) Jul. 1989 623 p Conference held in Pacific Grove, CA, 31 Aug. - 3 Sep. 1987; sponsored by NASA, Ames Research Center, Moffett Field, CA and California Univ., Berkeley
(NASA-CP-10032; A-88090; NAS 1.55:10032) Avail: NTIS HC A99/MF A04 CSCL 05H
COMPUTER GRAPHICS, CONFERENCES, DISPLAY DEVICES, IMAGE ANALYSIS, SPATIAL RESOLUTION, VISUAL PERCEPTION

N90-22965*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DETERMINATION OF DEPTH-VIEWING VOLUMES FOR STEREO THREE-DIMENSIONAL GRAPHIC DISPLAYS
RUSSELL V. PARRISH and STEVEN P. WILLIAMS (Army Aviation Systems Command, Saint Louis, MO.) Washington Jun. 1990 21 p
(DA PROJ. 1L1-61102-AH-45)
(NASA-TP-2999; L-16655; NAS 1.60:2999; AVSCOM-TM-90-B-016) Avail: NTIS HC A03/MF A01 CSCL 05H
COMPUTER GRAPHICS, DEPTH, SPACE PERCEPTION, STEREOSCOPIC VISION, VISUAL SIGNALS

55

SPACE BIOLOGY

Includes exobiology; planetary biology; and extraterrestrial life.

N90-13939*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
CELLS IN SPACE
JEAN D. SIBONGA, ed., RICHARD C. MAINS, ed., THOMAS N. FAST, ed. (Santa Clara Univ., CA.), PAUL X. CALLAHAN, ed., and CHARLES M. WINGET, ed. Aug. 1989 310 p Conference held in San Juan Bautista, CA, 31 Oct. - 4 Nov. 1988
(NASA-CP-10034; A-89131; NAS 1.55:10034) Avail: NTIS HC A14/MF A02 CSCL 06C
CELLS (BIOLOGY), CONFERENCES, EXPERIMENT DESIGN, GRAVITATIONAL EFFECTS, GRAVITATIONAL PHYSIOLOGY, MANNED SPACE FLIGHT, SPACEBORNE EXPERIMENTS

59

MATHEMATICAL AND COMPUTER SCIENCES (GENERAL)

N88-14629*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
A GENERAL SOLUTION TO THE SILHOUETTE PROBLEM
DAVID R. HEDGLEY, JR. Feb. 1987 9 p
(NASA-TP-2695; H-1348; NAS 1.60:2695) Avail: NTIS HC A02/MF A01 CSCL 12A
COMPUTER GRAPHICS, DISPLAY DEVICES, IMAGE ENHANCEMENT, IMAGE PROCESSING

N88-17206*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
FIRST ANNUAL WORKSHOP ON SPACE OPERATIONS AUTOMATION AND ROBOTICS (SOAR 87)
SANDY GRIFFIN, ed. Oct. 1987 530 p Workshop held in Houston, Tex., 5-7 Aug. 1987; sponsored by NASA, Johnson Space Flight Center and the US Air Force
(NASA-CP-2491; S-567; NAS 1.55:2491) Avail: NTIS HC A23/MF A04 CSCL 12B
ARCHITECTURE (COMPUTERS), AUTOMATIC CONTROL, COMPUTER AIDED DESIGN, CONFERENCES, DISTRIBUTED PROCESSING, EXPERT SYSTEMS, LOGISTICS, MAN MACHINE SYSTEMS, NEURAL NETS, PARALLEL PROCESSING (COMPUTERS), ROBOTICS

N88-21646*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CARE 3 USER'S WORKSHOP
Apr. 1988 160 p Workshop held in Hampton, Va., 6-7 Oct. 1987; sponsored by NASA, Washington
(NASA-CP-10011; NAS 1.55:10011) Avail: NTIS HC A08/MF A01 CSCL 12A
COMPUTER PROGRAMS, CONFERENCES, FAULT TOLERANCE, RELIABILITY ANALYSIS

N89-19817*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
SECOND ANNUAL WORKSHOP ON SPACE OPERATIONS AUTOMATION AND ROBOTICS (SOAR 1988)
SANDY GRIFFIN, ed./comp. Washington, DC Nov. 1988 517 p Workshop held in Dayton, OH, 20-23 Jul. 1988; sponsored by NASA, Johnson Space Flight Center, USAF, Washington, DC, and Wright State Univ., Dayton, OH
(NASA-CP-3019; S-585; NAS 1.55:3019) Avail: NTIS HC A22/MF A04 CSCL 12A
COMPUTER ASSISTED INSTRUCTION, COMPUTER TECHNIQUES, EXPERT SYSTEMS, HUMAN FACTORS ENGINEERING, INFORMATION SYSTEMS, KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE), ROBOTICS, SYSTEMS INTEGRATION, TELEOPERATORS

N90-21524*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A TIME-ACCURATE ADAPTIVE GRID METHOD AND THE NUMERICAL SIMULATION OF A SHOCK-VORTEX INTERACTION
MICHAEL J. BOCKELIE and PETER R. EISEMAN (Columbia Univ., New York, NY.) Washington Jun. 1990 20 p
(NAG1-427; AF-AFOSR-0307-86)
(NASA-TP-2998; L-16727; NAS 1.60:2998) Avail: NTIS HC A03/MF A01 CSCL 12A
COMPUTATIONAL GRIDS, COMPUTERIZED SIMULATION, GRID GENERATION (MATHEMATICS), SHOCK WAVE INTERACTION, VORTICES

N90-25503*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
THIRD ANNUAL WORKSHOP ON SPACE OPERATIONS AUTOMATION AND ROBOTICS (SOAR 1989)
SANDY GRIFFIN, ed. Washington Mar. 1990 651 p Workshop held in Houston, TX, 25-27 Jul. 1989; sponsored by NASA, Washington, the AF, and Houston-Clear Lake Univ.
(NASA-CP-3059; S-599; NAS 1.55:3059) Avail: NTIS HC A99/MF A04 CSCL 12A
AEROSPACE ENVIRONMENTS, AUTOMATIC CONTROL, CONFERENCES, END EFFECTORS, EXPERT SYSTEMS, HUMAN FACTORS ENGINEERING, KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE), MANIPULATORS, ROBOTICS, ROBOTS, SPACE STATIONS, SPACECRAFT CONTAMINATION, TELEOPERATORS

60

COMPUTER OPERATIONS AND HARDWARE

Includes hardware for computer graphics, firmware, and data processing.

N78-74659* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE MSFC/UAH DATA MANAGEMENT SYMPOSIUM
A. CASTELLI, ed. 16 Feb. 1978 423 p refs Symp. held at Huntsville, Ala., 18-19 Oct. 1977
(NASA-CP-2040)
ALABAMA, CONFERENCES, DATA MANAGEMENT, NASA PROGRAMS, UNIVERSITIES

N88-20833*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DIGITAL ENHANCEMENT OF FLOW FIELD IMAGES
ROBERT A. KUDLINSKI and STEPHEN K. PARK Mar. 1988 25 p Original contains color illustrations
(NASA-TP-2770; L-16318; NAS 1.60:2770) Avail: NTIS HC A03/MF A01 CSCL 09B
DIGITAL TECHNIQUES, FLOW VISUALIZATION, IMAGE ENHANCEMENT, IMAGE PROCESSING, PHOTOGRAPHIC PROCESSING

N90-20651*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
GRAPHICS TECHNOLOGY IN SPACE APPLICATIONS (GTSA 1989)
SANDY GRIFFIN, ed. Aug. 1989 247 p Workshop held in Houston, TX, 12-14 Apr. 1989; sponsored by NASA, Washington and Houston Univ., Clear Lake
(NASA-CP-3045; S-594; NAS 1.55:3045) Avail: NTIS HC A11/MF A02 CSCL 09B
COMPUTER ANIMATION, COMPUTER GRAPHICS, CONFERENCES, DISPLAY DEVICES, MAN MACHINE SYSTEMS, SPACE SHUTTLES, SPACE STATIONS, SYSTEMS SIMULATION, TELEOPERATORS, TRAINING SIMULATORS

61

COMPUTER PROGRAMMING AND SOFTWARE

Includes computer programs, routines, and algorithms, and specific applications, e.g., CAD/CAM.

N87-10720*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
PROCEEDINGS OF THE 5TH ANNUAL USERS' CONFERENCE
M. SZCZUR, ed. and E. HARRIS, ed. 1985 400 p Conference held at Greenbelt, Md., 4-6 Jun. 1985
(NASA-CP-2399; NAS 1.55:2399) Avail: NTIS HC A17/MF A03 CSCL 09B
ACCESS CONTROL, COMPUTER NETWORKS, FORMAT, IMAGE PROCESSING, SOFTWARE ENGINEERING, SOFTWARE TOOLS, SPACE STATIONS

N87-19931*# National Aeronautics and Space Administration, Washington, DC.
COMPUTER SCIENCES AND DATA SYSTEMS, VOLUME 1
Mar. 1987 356 p Proceedings of a Symposium held in Williamsburg, Va., 18-20 Nov. 1986
(NASA-CP-2459-VOL-1; NAS 1.55:2459-VOL-1) Avail: NTIS HC A16/MF A02 CSCL 09B
ARCHITECTURE (COMPUTERS), CONCURRENT PROCESSING, CONFERENCES, DATA MANAGEMENT, DISTRIBUTED PROCESSING, EXPERT SYSTEMS, SOFTWARE ENGINEERING

N87-19932*# National Aeronautics and Space Administration, Washington, DC.
COMPUTER SCIENCES AND DATA SYSTEMS, VOLUME 2
Mar. 1987 339 p Proceedings of a Symposium held in Williamsburg, Va., 18-20 Nov. 1986
(NASA-CP-2459-VOL-2; NAS 1.55:2459-VOL-2) Avail: NTIS HC A15/MF A02 CSCL 09B
CONFERENCES, DATA STORAGE, DISTRIBUTED PROCESSING, FIBER OPTICS, MASSIVELY PARALLEL PROCESSORS, OPTICAL DATA PROCESSING, PARALLEL PROCESSING (COMPUTERS), VHSIC (CIRCUITS)

N87-23156*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SIXTH ANNUAL USERS' CONFERENCE
MARTHA SZCZUR, ed. and ELFRIEDA HARRIS, ed. (Science Applications Research, Lanham, Md.) Oct. 1986 228 p Conference held in Pasadena, Calif., 8-10 Oct. 1986; sponsored by JPL and NASA. Goddard Space Flight Center
(NASA-CP-2463; REPT-87B0176; NAS 1.55:2463) Avail: NTIS HC A11/MF A02 CSCL 09B
APPLICATIONS PROGRAMS (COMPUTERS), COMPUTER SYSTEMS PROGRAMS, CONFERENCES, IMAGE PROCESSING, INFORMATION SYSTEMS, MAN-COMPUTER INTERFACE, OPERATING SYSTEMS (COMPUTERS)

N87-26531*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FRONTIERS OF MASSIVELY PARALLEL SCIENTIFIC COMPUTATION
JAMES R. FISCHER, ed. Jul. 1987 293 p Symposium held in Greenbelt, Md., 24-25 Sep. 1986; sponsored by NASA Goddard Space Flight Center and Goodyear Aerospace Corp.
(NASA-CP-2478; REPT-87B9876; NAS 1.55:2478) Avail: NTIS HC A13/MF A02 CSCL 09B
ALGORITHMS, COMPUTER GRAPHICS, COMPUTER SYSTEMS PERFORMANCE, COMPUTERIZED SIMULATION, MASSIVELY PARALLEL PROCESSORS, PARALLEL PROCESSING (COMPUTERS)

N88-16360*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THIRD CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR SPACE APPLICATIONS, PART 1
JUDITH S. DENTON, comp., MICHAEL S. FREEMAN, comp., and MARY VEREEN, comp. Nov. 1987 421 p Conference held in Huntsville, Ala., 2-3 Nov. 1987; sponsored by NASA, Marshall Space Flight Center, Huntsville, Ala. and Alabama Univ., Huntsville
(NASA-CP-2492-Pt-1; M-575-PT-1; NAS 1.55:2492-Pt-1) Avail: NTIS HC A18/MF A03 CSCL 09B
COMPUTER PROGRAMS, CONFERENCES, DATA BASE

MANAGEMENT SYSTEMS, EXPERT SYSTEMS, KNOWLEDGE, MAN MACHINE SYSTEMS, ROBOTICS, SCHEDULING, SPACE SHUTTLES, SPACE STATIONS, SPACECRAFT CONTROL

N88-24188*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THIRD CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR SPACE APPLICATIONS, PART 2
JUDITH S. DENTON, comp., MICHAEL S. FREEMAN, comp., and MARY VEREEN, comp. Jun. 1988 66 p Conference held in Huntsville, Ala., 2-3 Nov. 1987; sponsored by NASA, Marshall Space Flight Center, Huntsville, Ala. and Alabama Univ., Huntsville Sponsored by NASA, Washington
(NASA-CP-2492-PT-2; M-576-PT-2; NAS 1.55:2492-PT-2) Avail: NTIS HC A04/MF A01 CSCL 09B
COMPUTER PROGRAMS, CONFERENCES, EXPERT SYSTEMS, SOFTWARE TOOLS, SPACE STATIONS

N88-29351*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SECOND CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR SPACE APPLICATIONS
THOMAS DOLLMAN, comp. Aug. 1988 709 p Conference held in Huntsville, Ala., 13-14 Nov. 1986; sponsored by NASA, Marshall Space Flight Center, Huntsville, Ala. and Alabama Univ., Huntsville Sponsored by NASA, Washington, D.C.
(NASA-CP-3007; M-577; NAS 1.55:3007) Avail: NTIS HC A99/MF A04 CSCL 09B
AUTOMATIC CONTROL, COMPUTER AIDED DESIGN, COMPUTER VISION, EXPERT SYSTEMS, ROBOTICS, SPACE STATIONS

N89-11407*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
OEXP ANALYSIS TOOLS WORKSHOP
L. BERNARD GARRETT, ROBERT L. WRIGHT, DEBORAH BADI, and JOHN T. FINDLAY (Flight Mechanics and Control, Inc., Hampton, Va.) Aug. 1988 146 p Workshop held in Hampton, Va., 21-22 Jun. 1988 Sponsored by NASA, Washington, D.C.
(NASA-CP-10013; NAS 1.55:10013) Avail: NTIS HC A07/MF A01 CSCL 09B
COMPUTER PROGRAMS, LUNAR EXPLORATION, MARS LANDING, MISSION PLANNING, SOFTWARE TOOLS

N89-12237*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANALYSIS OF POSITRON LIFETIME SPECTRA IN POLYMERS
JAG J. SINGH, GERALD H. MALL (Computer Sciences Corp., Hampton, Va.), and DANNY R. SPRINKLE Dec. 1988 61 p
(NASA-TP-2853; L-16468; NAS 1.60:2853) Avail: NTIS HC A04/MF A01 CSCL 09B
COMPUTER PROGRAMS, EPOXY COMPOUNDS, HALF LIFE, POSITRONS, RADIATION SPECTRA

N89-13994*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
THE ESTIMATION ERROR COVARIANCE MATRIX FOR THE IDEAL STATE RECONSTRUCTOR WITH MEASUREMENT NOISE
MICHAEL E. POLITES Dec. 1988 19 p
(NASA-TP-2881; NAS 1.60:2881) Avail: NTIS HC A03/MF A01 CSCL 09B
COVARIANCE, ERROR ANALYSIS, MATRICES (MATHEMATICS), RECONSTRUCTION, STATE ESTIMATION

N89-15549*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
FOURTH CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR SPACE APPLICATIONS
STEPHEN L. ODELL, comp., JUDITH S. DENTON, comp., and MARY VEREEN, comp. Oct. 1988 485 p Conference held in Huntsville, AL, 15-16 Nov. 1988; sponsored by NASA and Alabama Univ., Huntsville
(NASA-CP-3013; M-599; NAS 1.55:3013) Avail: NTIS HC A21/MF A03 CSCL 09B
AEROSPACE SCIENCES, ARTIFICIAL INTELLIGENCE, EXPERT SYSTEMS, ROBOTICS

N89-22332*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
PROCEEDINGS OF THE SCIENTIFIC DATA COMPRESSION WORKSHOP
H. K. RAMAPRIYAN, ed. Washington, DC Feb. 1989 448 p Workshop held in Snowbird, UT, 3-5 May 1988; sponsored by NASA, Washington
(NASA-CP-3025; REPT-89B0038; NAS 1.55:3025) Avail: NTIS HC A19/MF A03 CSCL 09B
CONFERENCES, DATA COMPRESSION, DATA MANAGEMENT, DATA TRANSMISSION, IMAGE PROCESSING, IMAGING TECHNIQUES, SIGNAL PROCESSING, TELEMETRY, VECTORS (MATHEMATICS)

N89-23181*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A KNOWLEDGE-BASED TOOL FOR MULTILEVEL DECOMPOSITION OF A COMPLEX DESIGN PROBLEM
JAMES L. ROGERS Washington May 1989 23 p
(NASA-TP-2903; L-16557; NAS 1.60:2903) Avail: NTIS HC A03/MF A01 CSCL 09B
COMPUTER AIDED DESIGN, KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE), SCHEDULING, SOFTWARE TOOLS, SYSTEMS ENGINEERING

N90-11454*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
APPLICATIONS OF THE HYBRID AUTOMATED RELIABILITY PREDICTOR: REVISED EDITION
SALVATORE J. BAVUSO, JOANNE BECHTA DUGAN, KISHOR TRIVEDI, BETH ROTHMANN, and MARK BOYD (Duke Univ., Durham, NC.) Dec. 1988 30 p
(NASA-TP-2760-REV; L-16304; NAS 1.60:2760-REV) Avail: NTIS HC A03/MF A01 CSCL 09B
APPLICATIONS PROGRAMS (COMPUTERS), COMPUTER TECHNIQUES, FAULT TOLERANCE, PREDICTIONS, RELIABILITY

N90-14789*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SOFTWARE REUSE ISSUES
SUSAN J. VOIGT, ed. and KATHRYN A. SMITH, ed. Washington Dec. 1989 168 p Workshop held in Melbourne, FL, 17-18 Nov. 1988
(NASA-CP-3057; L-16667; NAS 1.55:3057) Avail: NTIS HC A08/MF A01 CSCL 09B
COMPUTER PROGRAMS, CONFERENCES, SOFTWARE ENGINEERING, SOFTWARE TOOLS, SPACE STATIONS

N90-18882*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LOW-ENERGY GAMMA RAY ATTENUATION CHARACTERISTICS OF AVIATION FUELS
JAG J. SINGH, CHIH-PING SHEN (Old Dominion Univ., Norfolk, VA.), and DANNY R. SPRINKLE Washington Mar. 1990 40 p
(NASA-TP-2974; L-16719; NAS 1.60:2974) Avail: NTIS HC A03/MF A01 CSCL 09B
AIRCRAFT FUELS, AIRPORTS, ENERGY ABSORPTION, FUEL SYSTEMS, GAMMA RAY ABSORPTION, GAMMA RAYS

N90-27275*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
FIFTH CONFERENCE ON ARTIFICIAL INTELLIGENCE FOR SPACE APPLICATIONS
STEVE L. ODELL, comp. Washington May 1990 587 p Conference held in Huntsville, AL, 22-23 May 1990; sponsored in cooperation with Alabama Univ., Huntsville, IEEE, and AIAA

(NASA-CP-3073; M-627; NAS 1.55:3073) Avail: NTIS HC A25/MF A04 CSCL 09B

ARTIFICIAL INTELLIGENCE, AUTOMATIC CONTROL, CONFERENCES, KNOWLEDGE BASES (ARTIFICIAL INTELLIGENCE), ROBOTICS

62

COMPUTER SYSTEMS

Includes computer networks and special application computer systems.

N87-23202*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
APPLICATIONS AND REQUIREMENTS FOR REAL-TIME SIMULATORS IN GROUND-TEST FACILITIES
DALE J. ARPASI and RICHARD A. BLECH Dec. 1986 26 p
(NASA-TP-2672; E-3189; NAS 1.60:2672) Avail: NTIS HC A03/MF A01 CSCL 09B

GROUND TESTS, REAL TIME OPERATION, SIMULATORS, TEST FACILITIES

N89-17422*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
PARALLEL GAUSSIAN ELIMINATION OF A BLOCK TRIDIAGONAL MATRIX USING MULTIPLE MICROCOMPUTERS
RICHARD A. BLECH Washington, DC Feb. 1989 35 p
(NASA-TP-2892; E-4199; NAS 1.60:2892) Avail: NTIS HC A03/MF A01 CSCL 09B

GAUSSIAN ELIMINATION, MATRICES (MATHEMATICS), MICROCOMPUTERS, MULTIPROCESSING (COMPUTERS), PARALLEL PROGRAMMING

N89-24815*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THE FAULT TREE COMPILER (FTC): PROGRAM AND MATHEMATICS
RICKY W. BUTLER and ANNA L. MARTENSEN (PRC Kentron, Inc., Hampton, VA.) Washington Jul. 1989 40 p
(NASA-TP-2915; L-16529; NAS 1.60:2915) Avail: NTIS HC A03/MF A01 CSCL 09B

COMPUTER PROGRAMS, COMPUTER TECHNIQUES, FAULT TOLERANCE, FAULT TREES, PROBABILITY THEORY, RELIABILITY ANALYSIS

63

CYBERNETICS

Includes feedback and control theory, artificial intelligence, robotics and expert systems.

N88-30330*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1988 GODDARD CONFERENCE ON SPACE APPLICATIONS OF ARTIFICIAL INTELLIGENCE
JAMES RASH, ed. and PETER HUGHES, ed. Aug. 1988 437 p Conference held in Greenbelt, Md., 24 May 1988 Sponsored by NASA, Washington, D.C.
(NASA-CP-3009; REPT-88B0212; NAS 1.55:3009) Avail: NTIS HC A19/MF A03 CSCL 09B

AEROSPACE ENGINEERING, ARTIFICIAL INTELLIGENCE, COMPUTERIZED SIMULATION, CONFERENCES, EXPERT SYSTEMS, IMAGE PROCESSING, MISSION PLANNING

N89-26578*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1989 GODDARD CONFERENCE ON SPACE APPLICATIONS OF ARTIFICIAL INTELLIGENCE
JAMES RASH, ed. Washington Apr. 1989 385 p Conference held in Greenbelt, MD, 16-17 May 1989
(NASA-CP-3033; REPT-89B00099; NAS 1.55:3033) Avail: NTIS HC A17/MF A03 CSCL 09B

ARTIFICIAL INTELLIGENCE, COMPUTER VISION, COMPUTERIZED SIMULATION, CONFERENCES, DATA MANAGEMENT, EXPERT SYSTEMS, FAILURE ANALYSIS, IMAGE PROCESSING, MISSION PLANNING

N90-10618*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
OPTIMIZED RESOLVED RATE CONTROL OF SEVEN-DEGREE-OF-FREEDOM LABORATORY TELEROBOTIC MANIPULATOR (LTM) WITH APPLICATION TO THREE-DIMENSIONAL GRAPHICS SIMULATION
L. KEITH BARKER and WILLIAM S. MCKINNEY, JR. Washington Oct. 1989 80 p
(NASA-TP-2938; L-16562; NAS 1.60:2938) Avail: NTIS HC A05/MF A01 CSCL 09B

DEGREES OF FREEDOM, MANIPULATORS, OPTIMAL CONTROL, REAL TIME OPERATION, ROBOT CONTROL, ROBOTICS, TELEROBOTICS

N90-22294*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE 1990 GODDARD CONFERENCE ON SPACE APPLICATIONS OF ARTIFICIAL INTELLIGENCE
JAMES L. RASH, ed. May 1990 342 p Conference held in Greenbelt, MD, 1-2 May 1990
(NASA-CP-3068; REPT-90B00078; NAS 1.55:3068) Avail: NTIS HC A15/MF A02 CSCL 09B

ARCHITECTURE (COMPUTERS), ARTIFICIAL INTELLIGENCE, CONFERENCES, FAULT TOLERANCE, PLANNING, SCHEDULING

64

NUMERICAL ANALYSIS

Includes iteration, difference equations, and numerical approximation.

N87-14054*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SOME PATH-FOLLOWING TECHNIQUES FOR SOLUTION OF NONLINEAR EQUATIONS AND COMPARISON WITH PARAMETRIC DIFFERENTIATION
R. L. BARGER and R. W. WALTERS (Virginia Polytechnic Inst. and State Univ., Blacksburg.) 1986 16 p
(NASA-TP-2654; L-16199; NAS 1.60:2654) Avail: NTIS HC A03/MF A01 CSCL 12A

COMPUTER PROGRAMMING, CRITICAL PATH METHOD, DIFFERENTIAL EQUATIONS, NONLINEAR EQUATIONS, PARAMETER IDENTIFICATION

N87-14918*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
SOLUTION OF ELLIPTIC PARTIAL DIFFERENTIAL EQUATIONS BY FAST POISSON SOLVERS USING A LOCAL RELAXATION FACTOR. 2: TWO-STEP METHOD
S. C. CHANG May 1986 17 p
(NASA-TP-2530; E-2528-1; NAS 1.60:2530) Avail: NTIS HC A03/MF A01 CSCL 12A

ELLIPTIC DIFFERENTIAL EQUATIONS, ELLIPTIC FUNCTIONS, PARTIAL DIFFERENTIAL EQUATIONS, PROBLEM SOLVING

N87-22441*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
QUANTITATIVE ANALYSIS OF THE RECONSTRUCTION PERFORMANCE OF INTERPOLANTS
DONALD L. LANSING and STEPHEN K. PARK (College of William and Mary, Williamsburg, Va.) May 1987 35 p
(NASA-TP-2688; L-16164; NAS 1.60:2688) Avail: NTIS HC A03/MF A01 CSCL 12A
INTERPOLATION, QUANTITATIVE ANALYSIS, RECONSTRUCTION

N87-22447*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AN ALGORITHM FOR SURFACE SMOOTHING WITH RATIONAL SPLINES
JAMES R. SCHIESS Jun. 1987 17 p
(NASA-TP-2708; L-16272; NAS 1.60:2708) Avail: NTIS HC A03/MF A01 CSCL 12A
ALGORITHMS, RATIONAL FUNCTIONS, SMOOTHING, SPLINE FUNCTIONS, SURFACE ROUGHNESS

N87-28367*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EXPERIMENTS IN ENCODING MULTILEVEL IMAGES AS QUADTREES
DONALD L. LANSING Sep. 1987 60 p
(NASA-TP-2722; L-16292; NAS 1.60:2722) Avail: NTIS HC A04/MF A01 CSCL 12A
CODING, DATA COMPRESSION, DATA STORAGE, GRAY SCALE, IMAGE PROCESSING

N89-12316*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THREE-DIMENSIONAL MULTIGRID ALGORITHMS FOR THE FLUX-SPLIT EULER EQUATIONS
W. KYLE ANDERSON, JAMES L. THOMAS, and DAVID L. WHITFIELD (Mississippi State Univ., Mississippi State.) Nov. 1988 41 p
(NASA-TP-2829; L-16416; NAS 1.60:2829) Avail: NTIS HC A03/MF A01 CSCL 12A
APPROXIMATION, COMPUTATIONAL FLUID DYNAMICS, EULER EQUATIONS OF MOTION, FLUX VECTOR SPLITTING, THREE DIMENSIONAL FLOW

N89-16415*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECT OF EPHEMERIS ERRORS ON THE ACCURACY OF THE COMPUTATION OF THE TANGENT POINT ALTITUDE OF A SOLAR SCANNING RAY AS MEASURED BY THE SAGE 1 AND 2 INSTRUMENTS
JAMES J. BUGLIA Washington, DC Feb. 1989 29 p
(NASA-TP-2866; L-16485; NAS 1.60:2866) Avail: NTIS HC A03/MF A01 CSCL 12A
ALTITUDE, APPROXIMATION, EPHEMERIDES, POSITION ERRORS, SAGE SATELLITE, SCANNING, SPACECRAFT ORBITS, SUN, TANGENTS

65

STATISTICS AND PROBABILITY

Includes data sampling and smoothing; Monte Carlo method; and stochastic processes.

N87-23244*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DEVELOPMENT OF CONFIDENCE LIMITS BY PIVOTAL FUNCTIONS FOR ESTIMATING SOFTWARE RELIABILITY
KELLY J. DOTSON Jun. 1987 12 p
(NASA-TP-2709; L-16264; NAS 1.60:2709) Avail: NTIS HC A03/MF A01 CSCL 12A
CONFIDENCE LIMITS, FAILURE ANALYSIS, PREDICTIONS, RELIABILITY ANALYSIS, SOFTWARE ENGINEERING

N87-27474*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
PROBABILISTIC RISK ANALYSIS OF FLYING THE SPACE SHUTTLE WITH AND WITHOUT FUEL TURBINE DISCHARGE TEMPERATURE REDLINE PROTECTION
LEONARD HOWELL Aug. 1987 22 p
(NASA-TP-2759; NAS 1.60:2759) Avail: NTIS HC A03/MF A01 CSCL 12A
ENGINE FAILURE, MATHEMATICAL MODELS, SPACE SHUTTLE MAIN ENGINE, SPACECRAFT RELIABILITY, STOCHASTIC PROCESSES, TEMPERATURE SENSORS

N88-17380*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SURE RELIABILITY ANALYSIS: PROGRAM AND MATHEMATICS
RICKY W. BUTLER and ALLAN L. WHITE Mar. 1988 77 p
(NASA-TP-2764; L-16263; NAS 1.60:2764) Avail: NTIS HC A05/MF A01 CSCL 12A
APPLICATIONS PROGRAMS (COMPUTERS), FAULT TOLERANCE, MARKOV PROCESSES, MATHEMATICAL MODELS, RELIABILITY ANALYSIS

N88-22653*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANALYSIS AND TESTING OF THE SURE PROGRAM
KELLY J. DOTSON 1988 1 p
(NASA-TP-2817; L-16413; NAS 1.60:2817) PREVIEW CSCL 12A
COMPUTER PROGRAMS, ERROR ANALYSIS, FAULT TOLERANCE, MARKOV PROCESSES, MATHEMATICAL MODELS, RELIABILITY ANALYSIS

66

SYSTEMS ANALYSIS

Includes mathematical modeling; network analysis; and operations research.

N88-21740*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, CA.
USER'S MANUAL FOR LINEAR, A FORTRAN PROGRAM TO DERIVE LINEAR AIRCRAFT MODELS
EUGENE L. DUKE, BRIAN P. PATTERSON, and ROBERT F. ANTONIEWICZ Dec. 1987 109 p
(NASA-TP-2768; H-1259; NAS 1.60:2768) Avail: NTIS HC A06/MF A01 CSCL 12B
AIRCRAFT MODELS, COMPUTER PROGRAMS, FORTRAN, LINEARIZATION

N89-16437*# National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Facility, Edwards, CA.
USER'S MANUAL FOR INTERACTIVE LINEAR: A FORTRAN PROGRAM TO DERIVE LINEAR AIRCRAFT MODELS
ROBERT F. ANTONIEWICZ, EUGENE L. DUKE, and BRIAN P. PATTERSON Sep. 1988 126 p
(NASA-TP-2835; H-1443; NAS 1.60:2835) Avail: NTIS HC A07/MF A01 CSCL 12B
AIRCRAFT DESIGN, FORTRAN, INTERACTIVE CONTROL, LINEAR SYSTEMS, USER MANUALS (COMPUTER PROGRAMS)

67

THEORETICAL MATHEMATICS

Includes topology and number theory.

N89-14052*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
AN ECONOMICAL SEMI-ANALYTICAL ORBIT THEORY FOR MICRO-COMPUTER APPLICATIONS
R. A. GORDON Washington, D.C. Mar. 1988 46 p
(NASA-TP-2811; REPT-86B0451; NAS 1.60:2811) Avail: NTIS HC A03/MF A01 CSCL 12A
AERODYNAMIC DRAG, COMPUTER TECHNIQUES, ORBIT CALCULATION, ORBIT PERTURBATION, ZONAL HARMONICS

70

PHYSICS (GENERAL)

N89-14053*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A GENERAL FORMALISM FOR PHASE SPACE CALCULATIONS
JOHN W. NORBURY, PHILIP A. DEUTCHMAN, LAWRENCE W. TOWNSEND, and FRANCIS A. CUCINOTTA (Old Dominion Univ., Norfolk, Va.) Nov. 1988 23 p
(NSF PHY-84-11009)
(NASA-TP-2843; L-16463; NAS 1.60:2843) Avail: NTIS HC A03/MF A01 CSCL 20C
GALACTIC COSMIC RAYS, NORMALITY, PHASE-SPACE INTEGRAL

N90-12282*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
PARAMETRIC STUDY OF POWER ABSORPTION FROM ELECTROMAGNETIC WAVES BY SMALL FERRITE SPHERES
GERALD W. ENGLERT Nov. 1989 22 p
(NASA-TP-2949; E-4601; NAS 1.60:2949) Avail: NTIS HC A03/MF A01 CSCL 20C
EDDY CURRENTS, ELECTROMAGNETIC RADIATION, FERRITES, HYSTERESIS, RADIATION ABSORPTION, SPHERES

N90-18957*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
ANNIHILATION IN GASES AND GALAXIES
RICHARD J. DRACHMAN, ed. Washington Jan. 1990 271 p Workshop held in Greenbelt, MD, 19-21 Jul. 1989
(NASA-CP-3058; REPT-90B00019; NAS 1.55:3058) Avail: NTIS HC A12/MF A02 CSCL 20H
ANNIHILATION REACTIONS, ANTIMATTER, POSITRONIUM, POSITRONS, SCATTERING CROSS SECTIONS

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ACOUSTICS

Includes sound generation, transmission, and attenuation.

N87-14120*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EFFECTS OF BACKGROUND NOISE ON TOTAL NOISE ANNOYANCE
K. F. WILLSHIRE Jan. 1987 59 p
(NASA-TP-2630; L-16153; NAS 1.60:2630) Avail: NTIS HC A04/MF A01 CSCL 46A
BACKGROUND NOISE, EFFECTIVE PERCEIVED NOISE LEVELS, NOISE INTENSITY, NOISE POLLUTION, NOISE TOLERANCE

N87-17479*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
POWER CEPSTRUM TECHNIQUE WITH APPLICATION TO MODEL HELICOPTER ACOUSTIC DATA
R. M. MARTIN and C. L. BURLEY Washington Jun. 1986 68 p
(NASA-TP-2586; L-16070; NAS 1.60:2586) Avail: NTIS HC A04/MF A01 CSCL 20A
ACOUSTIC MEASUREMENT, CEPSTRAL ANALYSIS, HELICOPTERS, MODELS, SIGNAL REFLECTION

N87-18399*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CORRELATION OF HELICOPTER IMPULSIVE NOISE FROM BLADE-VORTEX INTERACTION WITH ROTOR MEAN INFLOW
ANDREW B. CONNOR and R. M. MARTIN Mar. 1987 23 p
(NASA-TP-2650; L-16145; NAS 1.60:2650) Avail: NTIS HC A03/MF A01 CSCL 20A
BLADE SLAP NOISE, BLADE-VORTEX INTERACTION, ROTOR BLADES (TURBOMACHINERY), VORTICES, WIND TUNNEL TESTS

N87-20798*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EXPERIMENTAL VALIDATION OF A TWO-DIMENSIONAL SHEAR-FLOW MODEL FOR DETERMINING ACOUSTIC IMPEDANCE
TONY L. PARROTT, WILLIE R. WATSON, and MICHAEL G. JONES (PRC Kentron, Inc., Hampton, Va.) May 1987 50 p
(NASA-TP-2679; L-16203; NAS 1.60:2679) Avail: NTIS HC A03/MF A01 CSCL 20A
ACOUSTIC IMPEDANCE, MODELS, SHEAR FLOW, TWO DIMENSIONAL FLOW, TWO DIMENSIONAL MODELS

N87-24161*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANNOYANCE RESPONSE TO SIMULATED ADVANCED TURBOPROP AIRCRAFT INTERIOR NOISE CONTAINING TONAL BEATS
JACK D. LEATHERWOOD Jul. 1987 28 p
(NASA-TP-2689; L-16184; NAS 1.60:2689) Avail: NTIS HC A03/MF A01 CSCL 20A
AIRCRAFT COMPARTMENTS, AIRCRAFT NOISE, HUMAN TOLERANCES, PSYCHOLOGICAL EFFECTS, RESPONSES

N88-11450*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EVALUATION OF A SCALE-MODEL EXPERIMENT TO INVESTIGATE LONG-RANGE ACOUSTIC PROPAGATION
TONY L. PARROTT, GERRY L. MCANINCH, and INGRID A. CARLBERG Nov. 1987 55 p
(NASA-TP-2748; L-16300; NAS 1.60:2748) Avail: NTIS HC A04/MF A01 CSCL 20A
ACOUSTICS, FEASIBILITY ANALYSIS, MATHEMATICAL MODELS, SCALE MODELS, TERRAIN, WAVE PROPAGATION

N88-13002*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MEASUREMENT OF VELOCITY AND VORTICITY FIELDS IN THE WAKE OF AN AIRFOIL IN PERIODIC PITCHING MOTION
EARL R. BOOTH, JR. Dec. 1987 31 p
(NASA-TP-2780; L-16339; NAS 1.60:2780) Avail: NTIS HC A03/MF A01 CSCL 20A
AIRFOILS, PITCH (INCLINATION), VORTICES, VORTICITY, WAKES

N88-16510*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SHOCK STRUCTURE AND NOISE OF SUPERSONIC JETS IN SIMULATED FLIGHT TO MACH 0.4
THOMAS D. NORUM and JOHN G. SHEARIN Feb. 1988 187 p
(NASA-TP-2785; L-16341; NAS 1.60:2785) Avail: NTIS HC A09/MF A01 CSCL 20A
JET AIRCRAFT NOISE, MACH NUMBER, SHOCK WAVES, SUPERSONIC AIRCRAFT

N88-17440*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
MEASURED AND CALCULATED ACOUSTIC ATTENUATION RATES OF TUNED RESONATOR ARRAYS FOR TWO SURFACE IMPEDANCE DISTRIBUTION MODELS WITH FLOW
TONY L. PARROTT, A. LOUIS ABRAHAMSON, and MICHAEL G. JONES (PRC Kentron, Inc., Hampton, Va.) Jan. 1988 51 p
(NASA-TP-2766; L-16352; NAS 1.60:2766) Avail: NTIS HC A04/MF A01 CSCL 20A
ACOUSTIC ATTENUATION, ACOUSTIC IMPEDANCE, CAVITY RESONATORS, ENGINE NOISE, FINITE ELEMENT METHOD, GRAZING FLOW, NOISE REDUCTION

N88-17441*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANNOYANCE CAUSED BY ADVANCED TURBOPROP AIRCRAFT FLYOVER NOISE: SINGLE-ROTATING PROPELLER CONFIGURATION
DAVID A. MCCURDY Mar. 1988 43 p
(NASA-TP-2782; L-16301; NAS 1.60:2782) Avail: NTIS HC A03/MF A01 CSCL 20A
ENGINE NOISE, JET AIRCRAFT NOISE, NOISE INTENSITY, NOISE TOLERANCE, PROPELLER FANS, TOLERANCES (PHYSIOLOGY)

N88-22710*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ADVANCING-SIDE DIRECTIVITY AND RETREATING-SIDE INTERACTIONS OF MODEL ROTOR BLADE-VORTEX INTERACTION NOISE
R. M. MARTIN, W. R. SPLETTSTOESSER, J. W. ELLIOTT, and K.-J. SCHULTZ (Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Brunswick, West Germany) May 1988 43 p
(NASA-TP-2784; L-16354; NAS 1.60:2784; AVSCOM-TR-87-B-3) Avail: NTIS HC A03/MF A01 CSCL 20A
BLADE-VORTEX INTERACTION, ROTOR AERODYNAMICS

N88-26907*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
HELICOPTER MAIN-ROTOR NOISE: DETERMINATION OF SOURCE CONTRIBUTIONS USING SCALED MODEL DATA
THOMAS F. BROOKS, J. RALPH JOLLY, JR. (Planning Research Corp., Hampton, Va.), and MICHAEL A. MARCOLINI Aug. 1988 66 p
(NASA-TP-2825; L-16399; NAS 1.60:2825) Avail: NTIS HC A04/MF A01 CSCL 20A
AIRCRAFT NOISE, BLADE SLAP NOISE, BO-105 HELICOPTER, ROTARY WINGS, WIND TUNNEL TESTS

N89-25673*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AIRFOIL SELF-NOISE AND PREDICTION
THOMAS F. BROOKS, D. STUART POPE (PRC Kentron, Inc., Hampton, VA.), and MICHAEL A. MARCOLINI Jul. 1989 145 p
(NASA-RP-1218; L-16528; NAS 1.61:1218) Avail: NTIS HC A07/MF A01 CSCL 20A
A prediction method is developed for the self-generated noise of an airfoil blade encountering smooth flow. The prediction methods for the individual self-noise mechanisms are semiempirical and are based on previous theoretical studies and data obtained from tests of two- and three-dimensional airfoil blade sections. The self-noise mechanisms are due to specific boundary-layer phenomena, that is, the boundary-layer turbulence passing the trailing edge, separated-boundary-layer and stalled flow over an airfoil, vortex shedding due to laminar boundary layer instabilities, vortex shedding from blunt trailing edges, and the turbulent vortex flow existing near the tip of lifting blades. The predictions are compared successfully with published data from three self-noise studies of different airfoil shapes. An application of the prediction method is reported for a large scale-model helicopter rotor, and the predictions compared well with experimental broadband noise measurements. A computer code of the method is given. Author

N90-10680*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FLUCTUATING PRESSURES MEASURED BENEATH A HIGH-TEMPERATURE, TURBULENT BOUNDARY LAYER ON A FLAT PLATE AT MACH NUMBER OF 5
TONY L. PARROTT, MICHAEL G. JONES (Planning Research Corp., Hampton, VA.), and CINDY W. ALBERTSON Washington Nov. 1989 39 p
(NASA-TP-2947; L-16596; NAS 1.60:2947) Avail: NTIS HC A03/MF A01 CSCL 20A
HIGH TEMPERATURE, MACH NUMBER, PIEZORESISTIVE TRANSDUCERS, PRESSURE MEASUREMENT, SIGNAL PROCESSING, TURBULENT BOUNDARY LAYER

N90-24853*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
FAA/NASA EN ROUTE NOISE SYMPOSIUM
CLEMANS A. POWELL, comp. Washington Apr. 1990 301 p Symposium held in Hampton, VA, 12-13 Sep. 1989
(NASA-CP-3067; L-16763; NAS 1.55:3067) Avail: NTIS HC A14/MF A02 CSCL 20A
AIRCRAFT NOISE, AIRPORTS, CONFERENCES, NASA PROGRAMS, NOISE POLLUTION, NOISE TOLERANCE, PROPELLERS, ROUTES

N90-29166* National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ANNOYANCE CAUSED BY ADVANCED TURBOPROP AIRCRAFT FLYOVER NOISE: COUNTER-ROTATING-PROPELLER CONFIGURATION
DAVID A. MCCURDY Washington Sep. 1990 88 p
(NASA-TP-3027; L-16780; NAS 1.60:3027) Avail: NTIS HC A05/MF A01 CSCL 20A
HUMAN TOLERANCES, NOISE INTENSITY, NOISE TOLERANCE, PROPELLER NOISE, PSYCHOACOUSTICS, SOUND PRESSURE

72

ATOMIC AND MOLECULAR PHYSICS

Includes atomic structure, electron properties, and molecular spectra.

N89-30022*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
AUGER ELECTRON INTENSITY VARIATIONS IN OXYGEN-EXPOSED LARGE GRAIN POLYCRYSTALLINE SILVER
W. S. LEE, R. A. OUTLAW, G. B. HOFLUND, and M. R. DAVIDSON (Florida Univ., Gainesville.) 1989 18 p
(NASA-TP-2930; L-16579; NAS 1.60:2930) Avail: NTIS HC A03/MF A01 CSCL 20H
AUGER SPECTROSCOPY, CRYSTALLOGRAPHY, ELECTRON FLUX DENSITY, OXYGEN RECOMBINATION, POLYCRYSTALS, SILVER

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NUCLEAR AND HIGH-ENERGY PHYSICS

Includes elementary and nuclear particles; and reactor theory.

N87-17487*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
DOUBLY DIFFERENTIAL CROSS SECTIONS FOR GALACTIC HEAVY-ION FRAGMENTATION
FRANCIS A. CUCINOTTA (Old Dominion Univ., Norfolk, Va.), JOHN W. NORBURY, GOVIND S. KHANDELWAL, and LAWRENCE W. TOWNSEND Feb. 1987 23 p
(NASA-TP-2659; L-16187; NAS 1.60:2659) Avail: NTIS HC A03/MF A01 CSCL 20H
COLLISION PARAMETERS, GALAXIES, HEAVY IONS, PARTICLE COLLISIONS, SCATTERING CROSS SECTIONS

N87-24977*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
POSSIBLE COMPLEMENTARY COSMIC-RAY SYSTEMS: NUCLEI AND ANTINUCLEI
WARREN W. BUCK, JOHN W. WILSON, LAWRENCE W. TOWNSEND, and JOHN W. NORBURY (Idaho Univ., Moscow.) Jul. 1987 47 p
(NASA-TP-2741; L-16275; NAS 1.60:2741) Avail: NTIS HC A03/MF A01 CSCL 20H
ANTIMATTER, ANTIPARTICLES, GALACTIC COSMIC RAYS, HEAVY IONS, NUCLEI (NUCLEAR PHYSICS)

N88-13015*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
NUCLEAR TECHNIQUES IN STUDIES OF CONDENSED MATTER
JAG J. SINGH Aug. 1987 22 p
(NASA-RP-1195; L-16361; NAS 1.61:1195) Avail: NTIS HC A03/MF A01 CSCL 20H
Nuclear techniques have played an important role in the studies of materials over the past several decades. For example, X-ray diffraction, neutron diffraction, neutron activation, and particle- or photon-induced X-ray emission techniques have been used extensively for the elucidation of structural and compositional details of materials. Several new techniques have been developed recently. Four such techniques are briefly reviewed which have great potential in the study and development of new materials. Of these four, Mossbauer spectroscopy, muon spin rotation, and positron annihilation spectroscopy techniques exploit their great sensitivity to the local atomic environments in the test materials. Interest in synchrotron radiation, on the other hand, stems from its special properties, such as high intensity, high degree of polarization, and high monochromaticity. It is hoped that this brief review will stimulate interest in the exploitation of these newer techniques for the development of improved materials. Author

N88-30402*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
EIKONAL SOLUTIONS TO OPTICAL MODEL COUPLED-CHANNEL EQUATIONS
FRANCIS A. CUCINOTTA, GOVIND S. KHANDELWAL, KHIN M. MAUNG (Old Dominion Univ., Norfolk, Va.), LAWRENCE W. TOWNSEND, and JOHN W. WILSON Nov. 1988 30 p
(NASA-TP-2830; L-16462; NAS 1.60:2830) Avail: NTIS HC A03/MF A01 CSCL 20H
EIKONAL EQUATION, ELASTIC SCATTERING, HEAVY IONS, INELASTIC SCATTERING, IONIC COLLISIONS, NUCLEAR SCATTERING, SCATTERING AMPLITUDE

N90-14890*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CALCULATION OF TWO-NEUTRON MULTIPLICITY IN PHOTONUCLEAR REACTIONS
JOHN W. NORBURY (Rider Coll., Lawrenceville, NJ.) and LAWRENCE W. TOWNSEND Jan. 1990 11 p
(NASA-TP-2968; L-16610; NAS 1.60:2968) Avail: NTIS HC A03/MF A01 CSCL 20H
EJECTION, EXCITATION, PARTICLE COLLISIONS, PARTICLE EMISSION, PHOTONUCLEAR REACTIONS

74

OPTICS

Includes light phenomena; and optical devices.

N87-13264*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
THEORY FOR COMPUTING THE FIELD SCATTERED FROM A SMOOTH INFLECTED SURFACE
R. L. BARGER and A. K. DOMINEK 1986 23 p
(NASA-TP-2632; L-16157; NAS 1.60:2632) Avail: NTIS HC A03/MF A01 CSCL 20F
BODIES OF REVOLUTION, ELECTROMAGNETIC RADIATION, MICROWAVES, REFLECTANCE, SURFACE PROPERTIES, WAVE SCATTERING

N90-25673*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
MODE-MEDIUM INSTABILITY AND ITS CORRECTION WITH A GAUSSIAN REFLECTIVITY MIRROR
K. L. WEBSTER and C. C. SUNG (Alabama Univ., Huntsville.) Washington Jun. 1990 26 p
(NASA-TP-3023; NAS 1.60:3023) Avail: NTIS HC A03/MF A01 CSCL 20F
CARBON DIOXIDE LASERS, HIGH POWER LASERS, LASER BEAMS, LASER STABILITY, LASING, MIRRORS, REFLECTANCE

75

PLASMA PHYSICS

Includes magnetohydrodynamics and plasma fusion.

N87-10764*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LASER-POWERED MHD GENERATORS FOR SPACE APPLICATION
N. W. JALUFKA Oct. 1986 15 p
(NASA-TP-2621; NAS 1.60:2621) Avail: NTIS HC A03/MF A01 CSCL 20I
ENERGY CONVERSION EFFICIENCY, LASER PLASMA INTERACTIONS, MAGNETOHYDRODYNAMIC GENERATORS

N87-14998*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.
ASYMPTOTIC ANALYSIS OF CORONA DISCHARGE FROM THIN ELECTRODES
P. A. DURBIN Sep. 1986 7 p
(NASA-TP-2645; E-3151; NAS 1.60:2645) Avail: NTIS HC A02/MF A01 CSCL 20I
ASYMPTOTIC METHODS, ELECTRIC CORONA, ELECTRIC DISCHARGES, ELECTRODES

N88-18443*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
LASER PRODUCTION AND HEATING OF PLASMA FOR MHD APPLICATION
N. W. JALUFKA Mar. 1988 11 p

(NASA-TP-2798; L-16373; NAS 1.60:2798) Avail: NTIS HC A03/MF A01 CSCL 20I

ELECTRIC GENERATORS, ENERGY CONVERSION EFFICIENCY, MAGNETOHYDRODYNAMIC GENERATORS, PLASMA HEATING

N89-14842*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

LUNAR HELIUM-3 AND FUSION POWER

Washington, DC Sep. 1988 234 p Workshop held in Cleveland, Ohio, 25-26 Apr. 1988

(NASA-CP-10018; E-4254; NAS 1.55:10018) Avail: NTIS HC A11/MF A02 CSCL 20I

HELIUM ISOTOPES, LUNAR SOIL, MINING, NUCLEAR FUSION, REGOLITH

76

SOLID-STATE PHYSICS

Includes superconductivity.

N90-12348*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, OH.

FORTRAN PROGRAM FOR X RAY PHOTOELECTRON SPECTROSCOPY DATA REFORMATTING

PHILLIP B. ABEL Nov. 1989 10 p

(NASA-TP-2957; E-4867; NAS 1.60:2957) Avail: NTIS HC A02/MF A01 CSCL 20L

BINARY DATA, COMPUTER PROGRAMS, ELECTRON SPECTROSCOPY, FORMAT, FORTRAN, X RAY SPECTROSCOPY

81

ADMINISTRATION AND MANAGEMENT

Includes management planning and research.

N87-20833* National Aeronautics and Space Administration, Washington, DC.

MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS (SUPPLEMENT 21)

Apr. 1987 70 p

(NASA-SP-7500(21); NAS 1.21:7500(21)) Avail: NTIS HC A04 CSCL 05A

This bibliography lists 664 reports, articles and other documents introduced into the NASA scientific and technical information system in 1986. Items are selected and grouped according to their usefulness to the manager as manager. Citations are grouped into ten subject categories: human factors and personnel issues; management theory and techniques; industrial management and manufacturing; robotics and expert systems; computers and information management; research and development; economics, costs, and markets; logistics and operations management; reliability and quality control; and legality, legislation, and policy. Author

N88-21867* National Aeronautics and Space Administration, Washington, DC.

MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS

Apr. 1988 158 p

(NASA-SP-7500(22); NAS 1.21:7500(22)) Avail: NTIS HC A08 CSCL 05A

This bibliography lists 653 reports, articles and other documents introduced into the NASA scientific and technical information system in 1987. Items are selected and grouped according to their usefulness to the manager as manager. Citiations are grouped into ten subject categories; human factors and personnel issues; management theory and techniques; industrial management and manufacturing; robotics and expert systems; computers and information management; research and development; economics, costs and markets; logistics and operations management, reliability and quality control; and legality, legislation, and policy. Author

N89-12479*# National Aeronautics and Space Administration, Washington, DC.

ISSUES IN NASA PROGRAM AND PROJECT MANAGEMENT

FRANCIS T. HOBAN, ed. Oct. 1988 51 p

(NASA-SP-6101; NAS 1.21:6101) Avail: NTIS HC A04/MF A01 CSCL 05A

This collection of papers and resources on aerospace management issues is inspired by a desire to benefit from the lessons learned from past projects and programs. Inherent in the NASA culture is a respect for divergent viewpoints and innovative ways of doing things. This publication presents a wide variety of views and opinions. Good management is enhanced when program and project managers examine the methods of veteran managers, considering the lessons they have learned and reflected on their own guiding principles. Author

N89-26766* National Aeronautics and Space Administration, Washington, DC.

MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS

Apr. 1989 198 p

(NASA-SP-7500(23); NAS 1.21:7500(23)) Avail: NTIS HC A09 CSCL 05A

This bibliography lists 822 reports, articles and other documents introduced into the NASA Scientific and Technical Information System in 1988. Items are selected and grouped according to their usefulness to the manager as manager. Citations are grouped into ten subject categories: human factors and personnel issues; management theory and techniques; industrial management and manufacturing; robotics and expert systems; computers and information management; research and development; economics, costs and markets; logistics and operations management; reliability and quality control; and legality, legislation, and policy. Author

N90-12385*# National Aeronautics and Space Administration, Washington, DC.

WORKING WITH PEOPLE TO IMPROVE PRODUCTIVITY AND QUALITY: A BIBLIOGRAPHY WITH INDEXES, 1984-1988

Oct. 1989 72 p

(NASA-SP-7078; NAS 1.21:7078) Avail: NTIS HC A04 CSCL 05A

This bibliography contains 253 anotated references to reports and journal articles entered into the NASA scientific and technical information database 1984 to 1988. Author

N90-13277*# National Aeronautics and Space Administration, Washington, DC.

ISSUES IN NASA PROGRAM AND PROJECT MANAGEMENT

FRANCIS T. HOBAN, ed. 1989 57 p

(NASA-SP-6101(02); NAS 1.21:6101(02)) Avail: NTIS HC A04/MF A01; SOD HC $15.00 as 033-000-010-64-8 CSCL 05A

This new collection of papers on aerospace management issues contains a history of NASA program and project management, some lessons learned in the areas of management and budget from the Space Shuttle Program, an analysis of tools needed to keep large multilayer programs organized and on track, and an update of resources for NASA managers. A wide variety of opinions and techniques are presented. Author

N90-24174* National Aeronautics and Space Administration, Washington, DC.

MANAGEMENT: A BIBLIOGRAPHY FOR NASA MANAGERS

Mar. 1990 190 p

(NASA-SP-7500(24); NAS 1.21:7500(24)) Avail: NTIS HC A09 CSCL 05A

This bibliography lists 755 reports, articles and other documents introduced into the NASA Scientific and Technical Information

System in 1989. Items are selected and grouped according to their usefulness to the manager as manager. Citations are grouped into ten subject categories: human factors and personnel issues; management theory and techniques; industrial management and manufacturing; robotics and expert systems; computers and information management; research and development; economics, costs and markets; logistics and operations management; reliability and quality control; and legality, legislation, and policy. Author

82

DOCUMENTATION AND INFORMATION SCIENCE

Includes information management; information storage and retrieval technology; technical writing; graphic arts; and micrography.

N87-25023* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 31)
Jul. 1987 45 p
(NASA-SP-7039(31)-Sect-1; NAS 1.21:7039(31)-Sect-1) Avail: NTIS HC A03; NTIS standing order as PB86-911100, $11.50 domestic, $23.00 foreign CSCL 05B

Abstracts are provided for 85 patents and patent applications entered into the NASA scientific and technical information system during the period January 1987 through June 1987. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

N87-26689* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 31)
Jul. 1987 493 p
(NASA-SP-7039(31)-SECT-2; NAS 1.21:7039(31)-SECT-2) Avail: NTIS HC A21 CSCL 05B

A subject index is provided for over 4600 patents and patent applications for the period May 1969 through June 1987. Additional indexes list personal authors, corporate authors, contract numbers, NASA case numbers, U.S. patent class numbers, and NASA accession numbers. Author

N87-27557* National Aeronautics and Space Administration, Washington, DC.
NASA THESAURUS SUPPLEMENT: A FOUR PART CUMULATIVE SUPPLEMENT TO THE 1985 EDITION OF THE NASA THESAURUS (SUPPLEMENT 3)
Jul. 1987 325 p
(NASA-SP-7053-SUPPL-3; NAS 1.21:7053-SUPPL-3) Avail: NTIS HC A14 CSCL 05B

The four part cumulative NASA Thesaurus Supplement to the 1985 edition of the NASA Thesaurus includes Part 1, Hierarchical Listing, Part 2, Access Vocabulary, Part 3, NASA Thesaurus Definitions, and Part 4, Changes. The semiannual supplement gives complete hierarchies for new terms. Author

N87-30218*# National Aeronautics and Space Administration, Washington, DC.
NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS, 1977-1986
Sep. 1987 390 p
(NASA-SP-7063(01); NAS 1.21:7063(01)) Avail: NTIS HC free as PR-655B; NASA Scientific and Technical Information Facility, P.O. Box 8757, BWI Airport, Md. 21240 HC free CSCL 05B

This catalog lists 2311 citations of all NASA Special Publications, NASA Reference Publications, NASA Conference Publications, and NASA Technical Papers that were entered into the NASA scientific and technical database during the decade 1977 through 1986. The entries are grouped by subject category. Indexes of subject terms, personal authors, and NASA report numbers are provided. Author

N88-15732* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 32)
Jan. 1988 61 p
(NASA-SP-7039(32)-SECT-1; NAS 1.21:7039(32)-SECT-1) Avail: NTIS HC A04; NTIS standing order as PB 88-911100, $12.50 domestic, $25.00 foreign CSCL 05B

Abstracts are provided for 136 patents and patent applications entered into the NASA scientific and technical information system during the period July through December 1987. Each entry consists of a citation , an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

N88-18511* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 32)
Jan. 1988 499 p
(NASA-SP-7039(32)-SECT-2; NAS 1.21:7039(32)-SECT-2) Avail: NTIS HC A21; NTIS standing order as PB88-911100, $26.50 domestic, $53.00 foreign CSCL 05B

A subject index is provided for over 4700 patents and patent applications for the period May 1969 through December 1987. Additional indexes list personal authors, corporate authors, contract numbers, NASA case numbers, U.S. patent class numbers, U.S. patent numbers, and NASA accession numbers. Author

N88-22830*# National Aeronautics and Space Administration, Washington, DC.
NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS, 1987
Mar. 1988 69 p
(NASA-SP-7063(02); NAS 1.21:7063(02)) Avail: NTIS HC free as PR-828; NASA Scientific and Technical Information Facility, P.O. Box 8757, BWI Airport, Md. 21240 HC free CSCL 05B

This catalog lists 239 citations of all NASA Special Publications, NASA Reference Publications, NASA Conference Publications, and NASA Technical Papers that were entered in the NASA scientific and technical information database during accession year 1987. The entries are grouped by subject category. Indexes of subject terms, personal authors, and NASA report numbers are provided. Author

N89-13301*# National Aeronautics and Space Administration, Washington, DC.
NASA THESAURUS. VOLUME 3: DEFINITIONS
Jul. 1988 148 p
(NASA-SP-7064-VOL-3; NAS 1.21:7064-VOL-3) Avail: NTIS HC A07 CSCL 05B

Publication of NASA Thesaurus definitions began with Supplement 1 to the 1985 NASA Thesaurus. The definitions given here represent the complete file of over 3,200 definitions, complimented by nearly 1,000 use references. Definitions of more common or general scientific terms are given a NASA slant if one exists. Certain terms are not defined as a matter of policy: common names, chemical elements, specific models of computers, and nontechnical terms. The NASA Thesaurus predates by a number of years the systematic effort to define terms, therefore not all Thesaurus terms have been defined. Nevertheless, definitions of older terms are continually being added. The following data are provided for each entry: term in uppercase/lowercase form, definition, source, and year the term (not the definition) was added to the NASA Thesaurus. The NASA History Office is the authority for capitalization in satellite and spacecraft names. Definitions with no source given were constructed by lexicographers at the NASA

Scientific and Technical Information (STI) Facility who rely on the following sources for their information: experts in the field, literature searches from the NASA STI database, and specialized references. Author

N89-15779*# National Aeronautics and Space Administration, Washington, DC.
THE NASA SCIENTIFIC AND TECHNICAL INFORMATION SYSTEM: ITS SCOPE AND COVERAGE
Dec. 1988 216 p
(NASA-SP-7065; NAS 1.21:7065) Avail: NTIS HC A10/MF A02 CSCL 05B

A general description of the subject areas covered in the NASA scientific and technical information system is presented. In addition, it establishes subject-based selection criteria for guiding decisions related to the addition of new documents to the NASA collection. Author

N89-25775* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 35)
Jun. 1989 38 p
(NASA-SP-7039(35)-SECT-1; NAS 1.21:7039(35)-SECT-1) Avail: NTIS HC A03; NTIS standing order as PB89-911100, $13.75 domestic, $27.50 foreign CSCL 05B

Abstracts are provided for 58 patents and patent applications entered into the NASA scientific and technical information systems during the period January 1989 through June 1989. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

N89-29264* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 35)
Jan. 1989 512 p
(NASA-SP-7039(35)-SECT-2; NAS 1.21:7039(35)-SECT-2) Avail: NTIS HC A22; NTIS standing order as PB89-911100, $29.00 domestic, $58.00 foreign CSCL 05B

A subject index is provided for over 4600 patents and patent applications for the period May 1969 through June 1989. Additional indexes list personal authors, corporate authors, contract numbers, NASA case numbers, U.S. patent class numbers, U.S. patent numbers, and NASA accession numbers. Author

N90-10782*# National Aeronautics and Space Administration, Washington, DC.
NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS: A CATALOG OF SPECIAL PUBLICATIONS, REFERENCE PUBLICATIONS, CONFERENCE PUBLICATIONS, AND TECHNICAL PAPERS, 1988
Feb. 1989 57 p
(NASA-SP-7063(03); NAS 1.21:7063(03)) Avail: NTIS HC free as PR-849; NASA Scientific and Technical Information Facility, BWI Airport, MD free CSCL 05B

This catalog lists 179 citations of all NASA Special Publications, NASA Reference Publications, NASA Conference Publications, and NASA Technical Papers that were entered into the NASA scientific and technical information database during accession year 1988. The entries are grouped by subject category. Indexes of subject terms, personal authors, and NASA report numbers are provided. Author

N90-22438*# National Aeronautics and Space Administration, Washington, DC.
NASA THESAURUS SUPPLEMENT: A FOUR PART CUMULATIVE SUPPLEMENT TO THE 1988 EDITION OF THE NASA THESAURUS (SUPPLEMENT 3) Semiannual Report
Mar. 1989 33 p
(NASA-SP-7064-SUPPL-3; NAS 1.21:7064-SUPPL-3) Avail: NTIS HC A03/MF A01 CSCL 05B

The four-part cumulative supplement to the 1988 edition of the NASA Thesaurus includes the Hierarchical Listing (Part 1), Access Vocabulary (Part 2), Definitions (Part 3), and Changes (Part 4). The semiannual supplement gives complete hierarchies and accepted upper/lowercase forms for new terms. Author

N90-25698* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS (SUPPLEMENT 37)
Jan. 1989 43 p
(NASA-SP-7039(37)-SECT-1; NAS 1.21:7039(37)-SECT-1) Avail: NTIS HC A04; NTIS standing order as PB89-911100, $15.00 domestic, $30.00 foreign CSCL 05B

Abstracts are provided for 76 patents and patent applications entered into the NASA scientific and technical information systems during the period January 1990 through June 1990. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or patent application. Author

N90-26700* National Aeronautics and Space Administration, Washington, DC.
NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES (SUPPLEMENT 37)
Jan. 1989 507 p
(NASA-SP-7039(37)-SECT-2; NAS 1.21:7039(37)-SECT-2) Avail: NTIS HC A22; NTIS standing order as PB90-911100, $32.00 domestic, $64.00 foreign CSCL 05B

A subject index is provided for over 4600 patents and patent applications for the period May 1969 through June 1990. Additional indexes list personal authors, corporate authors, contract numbers, NASA case numbers, U.S. patent class numbers, U.S. patent numbers, and NASA accession numbers. Author

N90-26710*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
GRAMMAR, PUNCTUATION, AND CAPITALIZATION: A HANDBOOK FOR TECHNICAL WRITERS AND EDITORS
MARY K. MCCASKILL Washington 1990 112 p
(NASA-SP-7084; L-16617; NAS 1.21:7084) Avail: NTIS HC A06/MF A01 CSCL 05B

Writing problems are addressed which are often encountered in technical documents and preferences are indicated (Langley's) when authorities do not agree. It is directed toward professional writers, editors, and proofreaders. Those whose profession lies in other areas (for example, research or management), but who have occasion to write or review others' writing will also find this information useful. A functional attitude toward grammar and punctuation is presented. Chapter 1 on grammar presents grammatical problems related to each part of speech. Chapter 2 on sentence structure concerns syntax, that is, effective arrangement of words, with emphasis on methods of revision to improve writing effectiveness. Chapter 3 addresses punctuation marks, presenting their function, situations when they are required or incorrect, and situations when they are appropriate but optional. Chapter 4 presents capitalization, which is mostly a matter of editorial style and preference rather than a matter of generally accepted rules. An index and glossary are included. Author

N90-27548*# National Aeronautics and Space Administration, Washington, DC.
INFORMATION RESOURCES MANAGEMENT, 1984-1989: A BIBLIOGRAPHY WITH INDEXES
May 1990 202 p
(NASA-SP-7079; NAS 1.21:7079) Avail: NTIS HC A10 CSCL 05B

This bibliography contains 768 annotated references to reports and journal articles entered into the NASA scientific and technical information database 1984 to 1989. Author

84

LAW, POLITICAL SCIENCE AND SPACE POLICY

Includes NASA appropriation hearings; aviation law; space law and policy; international law; international cooperation; and patent policy.

N88-19375*# National Aeronautics and Space Administration, Washington, DC.
SPACELAB: AN INTERNATIONAL SUCCESS STORY
DOUGLAS R. LORD (Science Applications International Corp., Washington, D.C.) 1987 565 p Original contains color illustrations
(NASW-4092)
(NASA-SP-487; NAS 1.21:487; LC-86-17979) Avail: NTIS HC A24/MF A03 CSCL 05D

Spacelab is a European-developed and U.S.-operated space laboratory carried in the cargo bay of the Space Shuttle Orbiter. This story of the Spacelab Development Program traces the program from the origin of the Spacelab concept, describing negotiations and agreements for European participation and the role of Europe and the United States in system development, operational capability development, and utilization planning. It also considers the joint management structure, coordination, and experience in solving management and technical interface problems. The book is not an exhaustive historical treatise, but an informative and readable story of the evolution and technical accomplishments of this unique program in manned space flight and of some of the unusual political and human interest aspects of the program from the viewpoint of one of the key participants.
Author

85

URBAN TECHNOLOGY AND TRANSPORTATION

Includes applications of space technology to urban problems; technology transfer; technology assessment; and surface and mass transportation.

N87-70425* National Aeronautics and Space Administration, Washington, DC.
SIGNIFICANT NASA INVENTIONS. AVAILABLE FOR LICENSING IN FOREIGN COUNTRIES
1977 103 p
(NASA-SP-7038(04); NAS 1.21:7038(04)) Avail: SOD HC $5.00 as 003-000-00986-1; NTIS MF A01

88

SPACE SCIENCES (GENERAL)

N87-23313*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
DOUBLE LAYERS IN ASTROPHYSICS
ALTON C. WILLIAMS, ed. and TAUNA W. MOOREHEAD, ed. May 1987 321 p Workshop held in Huntsville, Ala., 17-19 Mar. 1986; sponsored by NASA, Washington and USRA
(NASA-CP-2469; M-560; NAS 1.55:2469) Avail: NTIS HC A14/MF A02 CSCL 03B

CONFERENCES, ELECTRIC FIELDS, ENERGY TRANSFER, MATHEMATICAL MODELS, PLASMA LAYERS, PLASMA PHYSICS, SPACE PLASMAS

N87-24247*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
ESSAYS IN SPACE SCIENCE
REUVEN RAMATY, ed., THOMAS L. CLINE, ed., and JONATHAN F. ORMES, ed. Jun. 1987 424 p Symposium held in Greenbelt, Md., 23 Apr. 1985
(NASA-CP-2464; REPT-87B0055; NAS 1.55:2464) Avail: NTIS HC A18/MF A03 CSCL 03B

ASTROPHYSICS, CONFERENCES, COSMIC RAYS, GAMMA RAY ASTRONOMY, INFRARED ASTRONOMY, X RAY ASTRONOMY

N87-28471*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CALCULATION AND ACCURACY OF ERBE SCANNER MEASUREMENT LOCATIONS
LAWRENCE H. HOFFMAN, WILLIAM L. WEAVER, and JAMES F. KIBLER Sep. 1987 34 p
(NASA-TP-2670; L-16218; NAS 1.60:2670) Avail: NTIS HC A03/MF A01 CSCL 03B

COMPUTATION, EARTH ATMOSPHERE, EARTH RADIATION BUDGET EXPERIMENT, POSITION (LOCATION), REMOTE SENSING, SCANNING

N88-25390*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
A STUDY OF SPACE STATION CONTAMINATION EFFECTS
M. R. TORR, ed., J. F. SPANN, ed., and T. W. MOOREHEAD, ed. May 1988 141 p Workshop held in Hilton Head Island, S.C., 29-30 Oct. 1987 Sponsored by NASA, Washington
(NASA-CP-3002; M-586; NAS 1.55:3002) Avail: NTIS HC A07/MF A01 CSCL 22B

CONFERENCES, CONTAMINANTS, EARTH ORBITAL ENVIRONMENTS, SPACE STATIONS, SPACECRAFT CONTAMINATION

N89-14188*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
REPORT OF THE IN SITU RESOURCES UTILIZATION WORKSHOP
KYLE FAIRCHILD, ed. and WENDELL W. MENDELL, ed. Nov. 1988 85 p Workshop held in Lake Buena Vista, Fla., 28-30 Jan. 1987; sponsored by NASA, DOE, Large Scale Programs Inst., United Technologies Corp., Kraft Foods and Disney Imagineering
(NASA-CP-3017; S-581; NAS 1.55:3017) Avail: NTIS HC A05/MF A01 CSCL 03B

LUNAR EXPLORATION, SPACE COMMERCIALIZATION, SPACE HABITATS, TECHNOLOGY ASSESSMENT

N89-14189*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
REMOTE SENSING IN POLARIZED LIGHT
VICTOR S. WHITEHEAD and KINSELL L. COULSON (California Univ., Davis.) Oct. 1988 40 p Proceedings of Workshop held in Houston, Tex., 3-5 Nov. 1987
(NASA-CP-3014; S-577; NAS 1.55:3014) Avail: NTIS HC A03/MF A01 CSCL 05B

CAMERAS, EARTH OBSERVATIONS (FROM SPACE), IMAGING TECHNIQUES, POLARIZATION (WAVES), RADIATIVE TRANSFER, SPACE SHUTTLE PAYLOADS

N89-14998*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
EXPERIMENTS IN PLANETARY AND RELATED SCIENCES AND THE SPACE STATION
RONALD GREELEY, ed. (Arizona State Univ., Tempe.) and RICHARD J. WILLIAMS, ed. Washington, DC Nov. 1987 188 p Workshop held in Tempe, AZ, 15-16 Sep. 1986
(NCC9-14; NAS9-17023)
(NASA-CP-2494; S-566; NAS 1.55:2494) Avail: NTIS HC A09/MF A02 CSCL 03B

ASTROPHYSICS, CONFERENCES, INTERSTELLAR CHEMISTRY, PARTICLE INTERACTIONS, ROBOTICS, SPACE STATION PAYLOADS, SPACEBORNE EXPERIMENTS

N89-15790*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SPACE STATION INDUCED MONITORING
JAMES F. SPANN, ed. and MARSHA R. TORR, ed. Washington, DC Nov. 1988 85 p Conference held in Huntsville, AL, 10-11 May 1988 Sponsored by NASA, Washington
(NASA-CP-3021; M-602; NAS 1.55:3021) Avail: NTIS HC A05/MF A01 CSCL 22B

AEROSPACE ENVIRONMENTS, ENVIRONMENTAL MONITORING, SPACE STATIONS, SPACECRAFT CHARGING

N90-18329*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
SOLAR-TERRESTRIAL SCIENCE STRATEGY WORKSHOP
PETER M. BANKS, ed., WILLIAM T. ROBERTS, ed., and JACK KROPP, ed. (TRW, Inc., Redondo Beach, CA.) Washington Sep. 1989 73 p Workshop held in Stanford, CA, 12-16 Sep. 1988 Original contains color illustrations
(NASA-CP-3048; M-617; NAS 1.55:3048) Avail: NTIS HC A04/MF A01; 4 functional color pages CSCL 03B

CONFERENCES, MISSION PLANNING, NASA PROGRAMS, SOLAR TERRESTRIAL INTERACTIONS, SPACEBORNE EXPERIMENTS, STRATEGY, TECHNOLOGY ASSESSMENT

N90-27562*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
CARBON IN THE GALAXY: STUDIES FROM EARTH AND SPACE
JILL C. TARTER, ed., SHERWOOD CHANG, ed., and DOUG J. DEFREES, ed. (Molecular Research Inst., Palo Alto, CA.) Washington Apr. 1990 350 p Meeting held at Moffett Field, CA, 5-6 Nov. 1987
(NASA-CP-3061; A-90031; NAS 1.55:3061) Avail: NTIS HC A15/MF A02 CSCL 03B

CARBON, COMETS, CONFERENCES, INTERPLANETARY DUST, INTERSTELLAR CHEMISTRY, METEORITIC DIAMONDS, MILKY WAY GALAXY

89

ASTRONOMY

Includes radio, gamma-ray, and infrared astronomy; and astrometry.

N87-14219*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
TEN YEAR PLANETARY EPHEMERIS: 1986-1995
F. ESPENAK Nov. 1986 249 p
(NASA-RP-1176; NAS 1.61:1176; REPT-86B0471) Avail: NTIS HC A11/MF A02 CSCL 03A

Accurate geocentric positions are tabulated at five day intervals for the Sun, Mercury, Venus, Mars, Jupiter, Saturn, Uranus and Neptune during the ten year period 1986 through 1995. The apparent angular diameters, radial velocities, declinations and mean times of meridian transit of the seven planets and the Sun are graphically depicted for each year in the interval. Appendices are included which discuss the theory of planetary orbits and a FORTRAN program for calculating planetary ephemerides.
Author

N87-22573*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
INFRARED SOURCE CROSS-INDEX, FIRST EDITION
MARION SCHMITZ (Computer Sciences Corp., Beltsville, Md.), JAYLEE M. MEAD, and DANIEL Y. GEZARI Apr. 1987 323 p (NASA-RP-1182; REPT-87B0058; NAS 1.61:1182) Avail: NTIS HC A14/MF A02 CSCL 03A

The Infrared Source Cross-Index is a listing of correlated infrared source names (and positions) for astronomical objects observed at 1-1000 microns. The source names have been obtained from the database of the first edition of the Catalog of Infrared Observations (CIO: NASA RP 1118), covering observations published through 1982. Additional identifications were located by correlating these names with identifications contained in other machine-readable astronomical catalogs in the NASA National Space Science Data Center (NSSDC). There are some 80,000 different source names in the Cross-Index, corresponding to over 27,000 unique infrared sources. Author

N87-24266*# National Aeronautics and Space Administration, Washington, DC.
STAR FORMATION IN GALAXIES
May 1987 755 p Conference held in Pasadena, Calif., 16-19 Jun. 1986
(NASA-CP-2466; NAS 1.55:2466) Avail: NTIS HC A99/MF E06 CSCL 03A

CONFERENCES, GALACTIC STRUCTURE, GALAXIES, INFRARED ASTRONOMY, MOLECULAR CLOUDS, RADIO ASTRONOMY, STAR FORMATION, STELLAR LUMINOSITY

N87-25906*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FIFTY YEAR CANON OF SOLAR ECLIPSES: 1986 - 2035
FRED ESPENAK Jul. 1987 272 p
(NASA-RP-1178-REV; REPT-87B0252; NAS 1.61:1178-REV) Avail: NTIS HC A12/MF A02 CSCL 03A

A complete catalog is presented, listing the general characteristics of every solar eclipse from 1901 through 2100. To complement this catalog, a detailed set of cylindrical projection world maps shows the umbral paths of every solar eclipse over the 200 year interval. Focusing in on the next 50 years, accurate geodetic path coordinates and local circumstances for the 71 central eclipses from 1987 through 2035 are tabulated. Finally, the geodetic paths of the umbral and penumbral shadows of all 109 solar eclipses in this period are plotted on orthographic projection maps of the Earth. Appendices are included which discuss eclipse geometry, eclipse frequency and occurrence, modern eclipse prediction and time determination. Finally, code for a simple Fortran program is given to predict the occurrence and characteristics of solar eclipses. Author

N88-15738*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
CATALOG OF INFRARED OBSERVATIONS. PART 1: DATA Second Edition
DANIEL Y. GEZARI, MARION SCHMITZ (Computer Sciences Corp., Beltsville, Md.), and JAYLEE M. MEAD Dec. 1987 625 p
(NASA-RP-1196-PT-1-ED-2; NAS 1.61:1196-PT-1-ED-2) Avail: NTIS HC A99/MF A04 CSCL 03A

The Catalog of Infrared Observations (CIO) is a compilation of infrared astronomical observational data obtained from an extensive literature search of astronomical journals and major astronomical catalogs and surveys. The literature searches are complete for 1965 through 1986 in this Second Edition. The Catalog is published in two parts, with the observational data (roughly 200,000 observations of 20,000 individual sources) listed in Part I, and supporting appendices in Part II. The expanded Second Edition contains a new feature: complete IRAS 4-band data for all CIO sources detected, listed with the main Catalog observations, as well as in complete detail in the Appendix. The appendices include an atlas of infrared source positions, two bibliographies of infrared literature upon which the search was based, and, keyed to the main Catalog listings (organized alphabetically by author and then chronologically), an atlas of infrared spectral ranges, and IRAS data from the CIO sources. The complete CIO database is available to qualified users in printed microfiche and magnetic tape formats. Author

N88-16615*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
CATALOG OF INFRARED OBSERVATIONS. PART 2: APPENDIXES Second Edition
DANIEL Y. GEZARI, MARION SCHMITZ, and JAYLEE M. MEAD Dec. 1987 343 p
(NASA-RP-1196-PT-2-ED-2; NAS 1.61:1196-PT-2-ED-2) Avail: NTIS HC A15/MF A02 CSCL 03A

The Catalog of Infrared Observations (CIO) is a compilation of infrared astronomical observational data obtained from an extensive literature search of astronomical journals and major astronomical catalogs and surveys. The literature searches are complete for years 1965 to 1986. Supporting appendixes are published in this part. The appendices include an atlas of infrared source positions, two bibliographies of infrared literature upon which the search was based, and, keyed to the main Catalog listings (organized alphabetically by first author, and by date), an atlas of infrared spectral ranges, and IRAS data for the CIO sources. The complete CIO database is available to qualified users in printed microfiche and magnetic tape formats. Author

N88-24553*# National Aeronautics and Space Administration, Washington, DC.
NASA THESAURUS: ASTRONOMY VOCABULARY
1988 112 p Presented at the International Astronomical Union Conference, Baltimore, Md., 27-31 Jul. 1988
(NASA-SP-7069; NAS 1.21:7069) Avail: NTIS HC A06 CSCL 03A

A terminology of descriptors used by the NASA Scientific and Technical information effort to index documents in the area of astronomy is presented. The terms are listed in hierarchical format derived from the 1988 edition of the NASA Thesaurus Volume 1 -- Hierarchical Listing. Over 1600 terms are included. In addition to astronomy, space sciences covered include astrophysics, cosmology, lunar flight and exploration, meteors and meteorites, celestial mechanics, planetary flight and exploration, and planetary science. Author

N88-30545*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FAR INFRARED SUPPLEMENT: CATALOG OF INFRARED OBSERVATIONS, SECOND EDITION
DANIEL Y. GEZARI, MARION SCHMITZ (Computer Sciences Corp., Beltsville, Md.), and JAYLEE M. MEAD Aug. 1988 233 p
(NASA-RP-1205; REPT-88B-121; NAS 1.61:1205) Avail: NTIS HC A11/MF A02 CSCL 03A

The Far Infrared Supplement: Catalog of Infrared Observations summarizes all infrared astronomical observations at far infrared wavelengths (5 to 1000 microns) published in the scientific literature from 1965 through 1986. The Supplement list contain 25 percent of the observations in the full Catalog of Infrared Observations (CIO), and essentially eliminates most visible stars from the listings. The Supplement is thus more compact than the main catalog, and is intended for easy reference during astronomical observations. The Far Infrared Supplement (2nd Edition) includes the Index of Infrared Source Positions and the Bibliography of Infrared Astronomy for the subset of far infrared observations listed. Author

N89-11657*# National Aeronautics and Space Administration, Washington, DC.
O STARS AND WOLF-RAYET STARS
PETER S. CONTI, ANNE B. UNDERHILL, STUART JORDAN, ed., and RICHARD THOMAS, ed. 1988 508 p Prepared in cooperation with Centre National de la Recherche Scientifique, Paris (France)
(NASA-SP-497; NAS 1.21:497) Avail: SOD HC $24.00 as 033-000-01021-4; NTIS A01 CSCL 03A

Basic information is given about O and Wolf-Rayet stars indicating how these stars are defined and what their chief observable properties are. Part 2 of the volume discussed four related themes pertaining to the hottest and most luminous stars. Presented are: an observational overview of the spectroscopic classification and extrinsic properties of O and Wolf-Rayet stars; the intrinsic parameters of luminosity, effective temperature, mass, and composition of the stars, and a discussion of their viability; stellar wind properties; and the related issues concerning the efforts of stellar radiation and wind on the immediate interstellar environment are presented. B.G.

N89-12513* National Aeronautics and Space Administration, Washington, DC.
ATLAS OF GALAXIES USEFUL FOR MEASURING THE COSMOLOGICAL DISTANCE SCALE
ALLAN SANDAGE and JOHN BEDKE (Space Telescope Science Inst., Baltimore, Md.) 1988 462 p Prepared for Computer Sciences Corp., Baltimore, Md. Prepared in cooperation with Johns Hopkins Univ., Baltimore, Md.
(NASA-SP-496; NAS 1.21:496; LC-88-600056) Avail: NTIS HC A20; also available SOD HC $80.00 as 033-000-01020-6 CSCL 03A

A critical first step in determining distances to galaxies is to measure some property of primary objects such as stars of specific types, H II regions, and supernovae remnants that are resolved out of the general galactic star content. With the completion of the Mount Wilson/Palomar/Las Campanas survey of bright galaxies in 1985, excellent large-scale photographs of the complete Shapley-Ames sample were on hand. Most of the galaxies useful for distance scale calibration are in this collection. This atlas contains photographs of 322 galaxies including the majority of all Shapley-Ames bright galaxies, plus cluster members in the Virgo Cluster core that might be usefully resolved by the Hubble Space Telescope (HST). Because of crowding and high background-disk surface brightness, the choice of field position is crucial for programs involving resolution of particular galaxies into stars. The purpose of this atlas is to facilitate this choice. Enough information is given herein (coordinates of the galaxy centers and the scale of the photography) to allow optimum placement of the HST wide-field planetary camera format of approximately 150 arc-seconds on a side. Author

N89-13310*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
SECOND WORKSHOP ON IMPROVEMENTS TO PHOTOMETRY
WILLIAM J. BORUCKI, ed. Sep. 1988 314 p Workshop held in Gaithersburg, Md., 5-6 Oct. 1987; sponsored by NASA, Ames Research Center, Moffett Field, Calif. and NBS, Gaithersburg, Md.
(NASA-CP-10015; A-88125; NAS 1.55:10015) Avail: NTIS HC A14/MF A02 CSCL 03A

ASTRONOMICAL PHOTOMETRY, CONFERENCES, FIBER OPTICS, PHOTOMETERS

N89-13330*# National Aeronautics and Space Administration, Washington, DC.
INFRARED OBSERVATIONS OF COMETS HALLEY AND WILSON AND PROPERTIES OF THE GRAINS
MARTHA S. HANNER, ed. (Jet Propulsion Lab., California Inst. of Tech., Pasadena.) Sep. 1988 200 p Workshop held at Ithaca, N.Y., 10-12 Aug. 1987
(NASA-CP-3004; NAS 1.55:3004) Avail: NTIS HC A09/MF A02 CSCL 03A

COMETARY ATMOSPHERES, COSMIC DUST, HALLEY'S COMET, INFRARED SPECTRA

N89-15810*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
FUTURE ASTRONOMICAL OBSERVATORIES ON THE MOON
JACK O. BURNS, ed. (New Mexico Univ., Albuquerque.) and WENDELL W. MENDELL, ed. Washington, DC Mar. 1988 129 p Workshop held in Houston, TX, 10 Jan. 1986; sponsored by NASA, Johnson Space Flight Center, Houston, TX and American Astronomical Society, Washington, DC
(NASA-CP-2489; S-569; NAS 1.55:2489) Avail: NTIS HC A07/MF A01 CSCL 03A

ASTRONOMICAL OBSERVATORIES, LUNAR BASES, LUNAR OBSERVATORIES, RADIO ASTRONOMY, RADIO TELESCOPES

N90-10805*# New Mexico Univ., Albuquerque. Inst. for Astrophysics.
A LUNAR FAR-SIDE VERY LOW FREQUENCY ARRAY
JACK O. BURNS, ed., NEBOJSA DURIC, ed., STEWART JOHNSON, ed. (BDM Corp., Albuquerque, NM.), and G. JEFFREY TAYLOR, ed. Nov. 1989 75 p Workshop held in Albuquerque, NM, 18-19 Feb. 1988; sponsored by NASA, Washington, New Mexico Univ., Albuquerque, and BDM Corp., Albuquerque, NM Sponsored by NASA, Washington
(NASA-CP-3039; NAS 1.55:3039) Avail: NTIS HC A04/MF A01 CSCL 03A

ARRAYS, CONFERENCES, LIBRATION, LUNAR BASES, MOON, RADIO ASTRONOMY, STRUCTURAL DESIGN, VERY LOW FREQUENCIES

N90-10807*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
AUTOMATIC CLASSIFICATION OF SPECTRA FROM THE INFRARED ASTRONOMICAL SATELLITE (IRAS)
PETER CHEESEMAN, JOHN STUTZ, MATTHEW SELF, WILLIAM TAYLOR (Sterling Federal Systems, Inc., Palo Alto, CA.), JOHN GOEBEL, KEVIN VOLK, and HELEN WALKER Mar. 1989 595 p
(NASA-RP-1217; NAS 1.61:1217) Avail: NTIS HC A25/MF A04 CSCL 03A

A new classification of Infrared spectra collected by the Infrared Astronomical Satellite (IRAS) is presented. The spectral classes were discovered automatically by a program called Auto Class 2. This program is a method for discovering (inducing) classes from a data base, utilizing a Bayesian probability approach. These classes can be used to give insight into the patterns that occur in the particular domain, in this case, infrared astronomical spectroscopy. The classified spectra are the entire Low Resolution Spectra (LRS) Atlas of 5,425 sources. There are seventy-seven classes in this classification and these in turn were meta-classified to produce nine meta-classes. The classification is presented as spectral plots, IRAS color-color plots, galactic distribution plots and class commentaries. Cross-reference tables, listing the sources by IRAS name and by Auto Class class, are also given. These classes show some of the well known classes, such as the black-body class, and silicate emission classes, but many other classes were unsuspected, while others show important subtle differences within the well known classes. Author

N90-18342*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FIFTY YEAR CANON OF LUNAR ECLIPSES: 1986-2035
FRED ESPENAK Mar. 1989 221 p
(NASA-RP-1216; REPT-89B00056; NAS 1.61:1216) Avail: NTIS HC A10/MF A02 CSCL 03A

A complete catalog is presented, listing the general circumstances of every lunar eclipse from 1901 through 2100. To compliment this catalog, a set of figures illustrate the basic Moon-shadow geometry and global visibility for every lunar eclipse over the 200 year interval. Focusing in on the next fifty years, 114 detailed diagrams show the Moon's path through Earth's shadow during every eclipse, including contact times at each phase. The accompanying cylindrical projection maps of Earth show regions of hemispheric visibility for all phases. The appendices discuss eclipse geometry, eclipse frequency and recurrence, enlargement of Earth's shadow, crater timings, eclipse brightness and time determination. Finally, a simple FORTRAN program is provided which can be used to predict the occurrence and general characteristics of lunar eclipses. This work is a companion volume to NASA Reference Publication 1178: Fifty Year Canon of Solar Eclipses: 1986-2035. Author

N90-28470*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
SPATIAL INTERFEROMETRY IN OPTICAL ASTRONOMY
DANIEL Y. GEZARI, FRANCOIS RODDIER, and CLAUDE RODDIER (Hawaii Univ., Honolulu.) Washington Sep. 1990 249 p
(NASA-RP-1245; REPT-90-069; NAS 1.61:1245) Avail: NTIS HC A11/MF A02 CSCL 03A

A bibliographic guide is presented to publications of spatial interferometry techniques applied to optical astronomy. Listings appear in alphabetical order, by first author, as well as in specific subject categories listed in chronological order, including imaging theory and speckle interferometry, experimental techniques, and observational results of astronomical studies of stars, the Sun, and the solar system. Author

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ASTROPHYSICS

Includes cosmology; celestial mechanics; space plasmas; and interstellar and interplanetary gases and dust.

N87-30235*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
ATLAS OF COMET HALLEY 1910 II
BERTRAM DONN, JUERGEN RAHE, and JOHN C. BRANDT 1986 597 p
(NASA-SP-488; NAS 1.21:488; LC-86-16341) Avail: SOD HC $48.00 as 033-000-00991-7; NTIS MF A01 CSCL 03B

With the impending return of Halley's Comet in 1986, a major effort began to collect the material obtained at its last appearance in 1910. This material displays the evolving coma and tail phenomena, and is useful for comparison with the present quantitative studies of spectroscopic and structural phenomena. Images in the atlas are arranged in chronological order by day. Days that have multiple images with varying scale are arranged in two sequences. Photographs showing tail phenomena are first, followed by photographs obtained with longer focus instruments showing the head or near-nuclear region. Drawings of Comet Halley, made from visual observations in 1835 and 1910, also are included. B.G.

N88-11592*# National Aeronautics and Space Administration, Washington, DC.
THE M-TYPE STARS
HOLLIS RALPH JOHNSON, FRANCOIS R. QUERCI, STUART JORDAN, ed., RICHARD THOMAS, ed., LEO GOLDBERG (Kitt Peak National Observatory, Tucson, Ariz.), and JEAN-CLAUDE PECKER 1987 576 p Prepared in cooperation with CNRS, Paris, France Its Monograph Series on Nonthermal Phenomena in Stellar Atmospheres, Volume 5
(NASA-SP-492; NAS 1.21:492; LC-87-11340) Avail: SOD HC $26.00 as 033-000-01007-9; NTIS MF A01 CSCL 03B

The papers in this volume cover the following topics: (1) basic properties and photometric variability of M and related stars; (2) spectroscopy and nonthermal processes; (3) circumstellar radio molecular lines; (4) circumstellar shells, the formation of grains, and radiation transfer; (5) mass loss; (6) circumstellar chemistry; (7) thermal atmospheric models; (8) quasi-thermal models; (9) observations on the atmospheres of M dwarfs; and (1) theoretical work on M dwarfs. For individual titles, see N88-11593 through N88-11602.

N88-20235*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
WORKSHOP ON TECHNOLOGY DEVELOPMENT ISSUES FOR THE LARGE DEPLOYABLE REFLECTOR (LDR)
KENJI NISHIOKA, ed. Feb. 1986 118 p Workshop held in Asilomar, Calif., 17-22 Mar. 1985
(NASA-CP-2407; A-85394; NAS 1.55:2407) Avail: NTIS HC A06/MF A01 CSCL 03B

CRYOGENIC COOLING, DEPLOYMENT, INFRARED ASTRONOMY, INFRARED TELESCOPES, LARGE DEPLOYABLE

REFLECTOR, LARGE SPACE STRUCTURES, REFLECTORS, TECHNOLOGY ASSESSMENT

N88-28843* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
INTERNATIONAL ULTRAVIOLET EXPLORER SPECTRAL ATLAS OF PLANETARY NEBULAE, CENTRAL STARS, AND RELATED OBJECTS
WALTER A. FEIBELMAN, NANCY A. OLIVERSEN, JOY NICHOLSBOHLIN, and MATTHEW P. GARHART (Computer Sciences Corp., Beltsville, Md.) Jun. 1988 380 p
(NAS5-28749)
(NASA-RP-1203; NAS 1.61:1203) Avail: NTIS HC A17 CSCL 03B

The International Ultraviolet Explorer (IUE) archives contain a wealth of information on high quality ultraviolet spectra of approximately 180 planetary nebulae, their central stars, and related objects. Selected are representative low-dispersion IUE spectra in the range 1200 to 3200 A for 177 objects arranged by Right Ascension (RA) for this atlas. For most entries, the combined short wavelength (SWP) (1200to 1900) and long wavelength (LWR) (or LWP, 1900 to 3200 A) regions are shown on 30 cm by 10 cm Calcomp plots on a uniform scale to facilitate intercomparison of the spectra. Each calibrated spectrum is also shown on an expanded vertical scale to bring out some of the weaker features. Author

N88-29652*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
CATALOG OF OPEN CLUSTERS AND ASSOCIATED INTERSTELLAR MATTER
DAVID LEISAWITZ Jun. 1988 294 p
(NASA-RP-1202; REPT-88B0152; NAS 1.61:1202) Avail: NTIS HC A13/MF A02 CSCL 03B

The Catalog of Open Clusters and Associated Interstellar Matter summarizes observations of 128 open clusters and their associated ionized, atomic, and molecular iinterstellar matter. Cluster sizes, distances, radial velocities, ages, and masses, and the radial velocities and masses of associated interstellar medium components, are given. The database contains information from approximately 400 references published in the scientific literature before 1988. Author

N89-14194*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 1: EXPLANATORY SUPPLEMENT
C. A. BEICHMAN, ed., G. NEUGEBAUER, ed., H. J. HABING, ed., P. E. CLEGG, ed., and THOMAS J. CHESTER, ed. (California Inst. of Tech., Pasadena.) Washington, D.C. 1988 455 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington
(NASA-RP-1190-VOL-1; NAS 1.61:1190-VOL-1) Avail: NTIS HC A20/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched on January 26, 1983. During its 300-day mission, IRAS surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. Volume 1 describes the instrument, the mission, and data reduction. Author

N89-14195*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 5: THE POINT SOURCE CATALOG DECLINATION RANGE -30 DEG GREATER THAN DELTA GREATER THAN -50 DEG
Washington, D.C. 1988 410 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington
(NASA-RP-1190-VOL-5; NAS 1.61:1190-VOL-5) Avail: NTIS HC A18/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, IRAS surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 5, The Point Source Catalog Declination Range -30 deg greater than delta greater than -50 deg. Author

N89-14196*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 4: THE POINT SOURCE CATALOG DECLINATION RANGE 0 DEG GREATER THAN DELTA GREATER THAN -30 DEG
Washington, D.C. 1988 596 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington
(NASA-RP-1190-VOL-4; NAS 1.61:1190-VOL-4) Avail: NTIS HC A25/MF A04; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched 26 January 1983. During its 300-day mission, it surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 4, The Point Source Catalog Declination Range 0 deg greater than delta greater than -30 deg. Author

N89-14197*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 2: THE POINT SOURCE CATALOG DECLINATION RANGE 90 DEG GREATER THAN DELTA GREATER THAN 30 DEG
Washington, D.C. 1988 555 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington
(NASA-RP-1190-VOL-2; NAS 1.61:1190-VOL-2) Avail: NTIS HC A24/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, IRAS surveyed 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 2, The Point Source Catalog Declination Range 90 deg greater than delta greater than 30 deg. Author

N89-14198*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 6: THE POINT SOURCE CATALOG DECLINATION RANGE -50 DEG GREATER THAN DELTA GREATER THAN -90 DEG
Washington, D.C. 1988 473 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington
(NASA-RP-1190-VOL-6; NAS 1.61:1190-VOL-6) Avail: NTIS HC A20/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, it surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 6, The Point Source Catalog Declination Range -50 deg greater than delta greater than -90 deg. Author

N89-14199*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 7: THE SMALL SCALE STRUCTURE CATALOG
GEORGE HELOU, ed. and D. W. WALKER, ed. Washington, D.C. 1988 348 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA,

Washington
(NASA-RP-1190-VOL-7; NAS 1.61:1190-VOL-7) Avail: NTIS HC A15/MF A02; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, it surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. Volume 1 describes the instrument, the mission, and the data reduction process. Volumes 2 through 6 present the observations of the approximately 245,000 individual point sources detected by IRAS; each volume gives sources within a specified range of declination. Volume 7 gives the observations of the approximately 16,000 sources spatially resolved by IRAS and smaller than 8'. This is Volume 7, The Small Scale Structure Catalog. Author

N89-14201*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
INFRARED ASTRONOMICAL SATELLITE (IRAS) CATALOGS AND ATLASES. VOLUME 3: THE POINT SOURCE CATALOG DECLINATION RANGE 30 DEG GREATER THAN DELTA GREATER THAN 0 DEG
Washington, D.C. 1988 493 p Prepared in cooperation with Netherlands Agency for Aerospace Programs, Delft, and Science Research Council, London, United Kingdom Sponsored by NASA, Washington
(NASA-RP-1190-VOL-3; NAS 1.61:1190-VOL-3) Avail: NTIS HC A21/MF A03; also available SOD CSCL 03B

The Infrared Astronomical Satellite (IRAS) was launched January 26, 1983. During its 300-day mission, IRAS surveyed over 96 pct of the celestial sphere at four infrared wavelengths, centered approximately at 12, 25, 60, and 100 microns. This is Volume 3, The Point Source Catalog Declination Range 30 deg greater than delta greater than 0 deg. Author

N89-27612*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
COMMENTARY ON INTERSTELLAR MATTER ASSOCIATED WITH 18 OPEN CLUSTERS
DAVID LEISAWITZ Washington Sep. 1989 20 p Sponsored by National Research Council
(R033-87; NSF AST-81-6403; NSF AST-83-12332)
(NASA-RP-1229; REPT-89B00238; NAS 1.61:1229) Avail: NTIS HC A03/MF A01 CSCL 03B

Information supplementary to that contained in Section 4 of an article entitled, A CO Survey of Regions Around 34 Open Clusters, (Leisawitz, Bash, and Thaddeus) published in the Astrophysical Journal Supplement Series, Volume 70, Number 4, August 1989 is summarized. The information presented here, which describes the interstellar environments of young clusters and some cluster physical characteristics, comes from observations published in the astronomical literature and the author's carbon monoxide (CO) emission line survey, and may help clarify our understanding of the interaction of massive stars with the interstellar medium. Author

N90-18344*# National Aeronautics and Space Administration, Washington, DC.
FGK STARS AND T TAURI STARS: MONOGRAPH SERIES ON NONTHERMAL PHENOMENA IN STELLAR ATMOSPHERES
LAWRENCE E. CRAM, ed. and LEONARD V. KUHI, ed. (California Univ., Berkeley.) 1989 353 p Prepared in cooperation with Centre National de la Recherche Scientifique, Paris, France
(NASA-SP-502; NAS 1.21:502; LC-89-600317) Avail: NTIS HC A16/MF A02; also available SOD HC $18.00 as 033-000-01073-7 CSCL 03B

The purpose of this book, FGK Stars and T Tauri Stars, like all other volumes of this series, is to exhibit and describe the best space data and ground based data currently available, and also to describe and critically evaluate the status of current theoretical models and physical mechanisms that have been proposed to interpret these data. The method for obtaining this book was to collect manuscripts from competent volunteer authors, and then to collate and edit these contributions to form a well structured book, which will be distributed to an international community of research astronomers by NASA and by the French CNRS. Author

N90-19940*# National Aeronautics and Space Administration, Washington, DC.
RELATIVISTIC GRAVITATIONAL EXPERIMENTS IN SPACE
RONALD W. HELLINGS, ed. Aug. 1989 242 p Workshop held in Annapolis, MD, 28-30 Jun. 1988
(NASA-CP-3046; NAS 1.55:3046) Avail: NTIS HC A11/MF A02 CSCL 03B

BLACK HOLES (ASTRONOMY), GRAVITATIONAL WAVES, RELATIVITY, SPACEBORNE EXPERIMENTS

N90-23294*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE ENERGETIC GAMMA-RAY EXPERIMENT TELESCOPE (EGRET) SCIENCE SYMPOSIUM
CARL E. FICHTEL, ed., STANLEY D. HUNTER, ed., PARAMESWARAN SREEKUMAR, ed., and FLOYD W. STECKER, ed. May 1990 327 p Symposium held in Greenbelt, MD, 15-16 Nov. 1989 Original contains color illustrations
(NASA-CP-3071; NAS 1.55:3071) Avail: NTIS HC A15/MF A02; 1 functional color page CSCL 03B

CONFERENCES, GALACTIC COSMIC RAYS, GALACTIC RADIATION, GALACTIC STRUCTURE, GAMMA RAY ASTRONOMY, GAMMA RAY OBSERVATORY, GAMMA RAY TELESCOPES

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LUNAR AND PLANETARY EXPLORATION

Includes planetology; and manned and unmanned flights.

N87-17598*# National Aeronautics and Space Administration. Goddard Inst. for Space Studies, New York, NY.
THE JOVIAN ATMOSPHERES
MICHAEL ALLISON, ed. and LARRY D. TRAVIS, ed. Oct. 1986 129 p Conference held in New York, N.Y., 6-8 May 1985 Submitted for publication
(NASA-CP-2441; NAS 1.55:2441) Copyright Avail: NTIS HC A07/MF A01 CSCL 84B

ATMOSPHERIC CHEMISTRY, CLOUDS (METEOROLOGY), GAS DYNAMICS, GAS GIANT PLANETS, HYDROGEN, JUPITER ATMOSPHERE, NEPTUNE ATMOSPHERE, SATURN ATMOSPHERE, SPACE EXPLORATION, SYNOPTIC METEOROLOGY, THERMODYNAMICS, URANUS ATMOSPHERE

N87-19322*# National Aeronautics and Space Administration, Washington, DC.
STATUS AND FUTURE OF LUNAR GEOSCIENCE
1986 63 p
(NASA-SP-484; NAS 1.21:484) Avail: SOD HC $4.25 as 033-000-00997-6; NTIS MF A01 CSCL 03B

The Moon is of special interest among the many and diverse bodies of the solar system because it serves as a scientific baseline for understanding the terrestrial planets, its origin is closely tied to the early history of the Earth, and its proximity permits a variety of space applications such as mining and establishment of bases and colonies. Data acquisition and analysis have enabled advances to be made and the remaining questions in many fields of lunar geoscience to be identified. The status and unresolved problems of lunar science are discussed. Immediate needs, new unmanned missions, and a return to the Moon (a lunar base) are examined. B.G.

91 LUNAR AND PLANETARY EXPLORATION

N88-24564*# National Aeronautics and Space Administration, Washington, DC.
REFLECTANCE SPECTROSCOPY IN PLANETARY SCIENCE: REVIEW AND STRATEGY FOR THE FUTURE
THOMAS B. MCCORD, ed. (Hawaii Univ., Honolulu.) Jun. 1987 43 p
(NASA-SP-493; NAS 1.21:493; LC-87-28154) Avail: NTIS HC A03/MF A01 CSCL 03B

Reflectance spectroscopy is a remote sensing technique used to study the surfaces and atmospheres of solar system bodies. It provides first-order information on the presence and amounts of certain ions, molecules, and minerals on a surface or in an atmosphere. Reflectance spectroscopy has become one of the most important investigations conducted on most current and planned NASA Solar System Exploration Program space missions. This book reviews the field of reflectance spectroscopy, including information on the scientific technique, contributions, present conditions, and future directions and needs. Author

N88-26279*# National Aeronautics and Space Administration, Washington, DC.
PLANETARY GEOLOGY: GOALS, FUTURE DIRECTIONS, AND RECOMMENDATIONS Final Report
Aug. 1988 23 p Workshop held in Tempe, Ariz., Jan. 1987
(NASA-CP-3005; NAS 1.55:3005) Avail: NTIS HC A03/MF A01 CSCL 03B

PLANETARY GEOLOGY, PLANETOLOGY, SPACE EXPLORATION

N89-16709*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THE CASSINI MISSION: INFRARED AND MICROWAVE SPECTROSCOPIC MEASUREMENTS
V. G. KUNDE Jan. 1989 127 p
(NASA-RP-1213; NAS 1.61:1213; REPT-89B0006) Avail: NTIS HC A07/MF A01 CSCL 03B

The Cassini Orbiter and Titan Probe model payloads include a number of infrared and microwave instruments. This document describes: (1) the fundamental scientific objectives for Saturn and Titan which can be addressed by infrared and microwave instrumentation, (2) the instrument requirements and the accompanying instruments, and (3) the synergism resulting from the comprehensive coverage of the total infrared and microwave spectrum by the complement of individual instruments. The baseline consists of four instruments on the orbiter and two on the Titan probe. The orbiter infrared instruments are: (1) a microwave spectrometer and radiometer; (2) a far to mid-infrared spectrometer; (3) a pressure modulation gas correlation spectrometer, and (4) a near-infrared grating spectrometer. The two Titan probe infrared instruments are: (1) a near-infrared instrument, and (2) a tunable diode laser infrared absorption spectrometer and nephelometer. Author

N89-18373*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA.
PROCEEDINGS OF THE POLAR PROCESSES ON MARS WORKSHOP
ROBERT M. HABERLE Dec. 1988 59 p Workshop held in Sunnyvale, CA, 12-13 May 1988
(NASA-CP-10021; A-89001; NAS 1.55:10021) Avail: NTIS HC A04/MF A01 CSCL 03B

CONFERENCES, MARS (PLANET), MARS ATMOSPHERE, POLAR REGIONS

N89-28474*# National Aeronautics and Space Administration, Washington, DC.
TIME-VARIABLE PHENOMENA IN THE JOVIAN SYSTEM
MICHAEL J. S. BELTON, ed., ROBERT A. WEST, ed. (Jet Propulsion Lab., California Inst. of Tech., Pasadena.), JURGEN RAHE, ed., and MARGARITA PEREYDA 1989 406 p Workshop held in Flagstaff, AZ, 25-27 Aug. 1987 Original contains color illustrations
(NASA-SP-494; NAS 1.21:494; LC-88-25450) Avail: NTIS HC A18/MF A03 CSCL 03B

The current state of knowledge of dynamic processes in the Jovian system is assessed and summaries are provided of both theoretical and observational foundations upon which future research might be based. There are three sections: satellite phenomena and rings; magnetospheric phenomena, Io's torus, and aurorae; and atmospheric phenomena. Each chapter discusses time dependent theoretical framework for understanding and interpreting what is observed; others describe the evidence and nature of observed changes or their absence. A few chapters provide historical perspective and attempt to present a comprehensive synthesis of the current state of knowledge. Author

N90-10814*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
CONCEPTUAL DESIGN OF A SYNCHRONOUS MARS TELECOMMUNICATIONS SATELLITE
DEBORAH M. BADI, JEFFREY T. FARMER, PAUL A. GARN, and GARY L. MARTIN (George Washington Univ., Hampton, VA.) Washington Nov. 1989 18 p
(NASA-TP-2942; L-16580; NAS 1.60:2942) Avail: NTIS HC A03/MF A01 CSCL 03B

COMMAND AND CONTROL, COMMUNICATION SATELLITES, STRUCTURAL DESIGN

N90-25030*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, TX.
GEOSCIENCE AND A LUNAR BASE: A COMPREHENSIVE PLAN FOR LUNAR EXPLORATION
G. JEFFREY TAYLOR, ed. and PAUL D. SPUDIS, ed. (Geological Survey, Flagstaff, AZ.) Washington Apr. 1990 76 p Workshop held in Houston, TX, 25-26 Aug. 1988
(NASA-CP-3070; S-603; NAS 1.55:3070) Avail: NTIS HC A05/MF A01 CSCL 03B

CONFERENCES, GEOLOGY, GEOPHYSICS, LUNAR BASES, LUNAR EXPLORATION, RESOURCES MANAGEMENT

N90-26744*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
FIRST INTERNATIONAL CONFERENCE ON LABORATORY RESEARCH FOR PLANETARY ATMOSPHERES
KENNETH FOX, ed., JOHN E. ALLEN, JR., ed., LOUIS J. STIEF, ed., and DIANA T. QUILLEN, ed. (Bowie State Univ., MD.) May 1990 481 p Conference held in Bowie, MD, 25-27 Oct. 1989
(NASA-CP-3077; REPT-90B00106; NAS 1.55:3077) Avail: NTIS HC A21/MF A03 CSCL 03B

CHARGED PARTICLES, CONFERENCES, PARTICLE INTERACTIONS, PHOTONS, PLANETARY ATMOSPHERES, REACTION KINETICS, SPECTROSCOPY, THERMODYNAMICS

N90-27607*# Arizona State Univ., Tempe. Dept. of Geology.
MARS LANDING SITE CATALOG
RONALD GREELEY, ed. Washington NASA Aug. 1990 202 p
(NAGW-1306)
(NASA-RP-1238; NAS 1.61:1238) Avail: NTIS HC A10/MF A02 CSCL 03B

The catalog was compiled from material provided by the planetary community for areas on Mars that are of potential interest for future exploration. The catalog has been edited for consistency insofar as practical; however, the proposed scientific objectives and characteristics have not been reviewed. This is a working catalog that is being revised, updated, and expanded continually. Author

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SOLAR PHYSICS

Includes solar activity, solar flares, solar radiation and sunspots.

N87-19328*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
ENERGETIC PHENOMENA ON THE SUN: THE SOLAR MAXIMUM MISSION FLARE WORKSHOP. PROCEEDINGS
MUKUL KUNDU, ed. (Maryland Univ., College Park) and BRUCE WOODGATE, ed. Dec. 1986 423 p Workshop held in Greenbelt, Md., 24-28 Jan. 1983, 9-14 Jun. 1983, and 13-17 Feb. 1984
(NASA-CP-2439; NAS 1.55:2439) Avail: NTIS HC A18/MF A03 CSCL 03B
CONFERENCES, MAGNETOHYDRODYNAMIC STABILITY, SOLAR CORONA, SOLAR FLARES, SOLAR MAGNETIC FIELD, SOLAR MAXIMUM MISSION, SOLAR PHYSICS, SOLAR PROMINENCES, SUN, SUNSPOTS

N87-20871*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
CORONAL AND PROMINENCE PLASMAS
ARTHUR I. POLAND, ed. Dec. 1986 435 p Workshop held in Greenbelt, Md., 9-11 Apr. 1985 and 8-10 Apr. 1986
(NASA-CP-2442; REPT-86BO536; NAS 1.55:2442; AD-A188629) Avail: NTIS HC A19/MF A03 CSCL 03/2
CONFERENCES, MAGNETIC FIELD CONFIGURATIONS, MAGNETOHYDRODYNAMIC STABILITY, MAGNETOSTATICS, PLASMAS (PHYSICS), RADIO ASTRONOMY, SOLAR ATMOSPHERE, SOLAR CORONA, SOLAR MAGNETIC FIELD, SOLAR PHYSICS, SOLAR PROMINENCES, SUN

N87-20947*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
STATISTICAL ASPECTS OF SOLAR FLARES
ROBERT M. WILSON Apr. 1987 41 p
(NASA-TP-2714; NAS 1.60:2714) Avail: NTIS HC A03/MF A01 CSCL 03B
SOLAR FLARES, SOLAR PROMINENCES, STATISTICAL ANALYSIS

N87-21785*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
RAPID FLUCTUATIONS IN SOLAR FLARES
BRIAN R. DENNIS, ed., LARRY E. ORWIG, ed., and ALAN L. KIPLINGER, ed. (Systems Applied Sciences Corp.-Technologies, Landover, Md.) 1986 491 p Workshop held in Lanham, Md., 30 Sep. - 4 Oct. 1985
(NASA-CP-2449; NAS 1.55:2449) Avail: NTIS HC A21/MF A03 CSCL 03B
CONFERENCES, MICROWAVES, OSCILLATIONS, PLASMA PHYSICS, RADIO WAVES, SOLAR FLARES, X RAYS

N88-11609*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
THEORETICAL PROBLEMS IN HIGH RESOLUTION SOLAR PHYSICS, 2
G. ATHAY, ed. (National Center for Atmospheric Research, Boulder, Colo.) and D. S. SPICER, ed. Sep. 1987 141 p Workshop held in Boulder, Colo., 15-17 Sep. 1986
(NASA-CP-2483; REPT-87B0401; NAS 1.55:2483) Avail: NTIS HC A07/MF A01 CSCL 03B
HIGH RESOLUTION, MAGNETIC FLUX, SOLAR MAGNETIC FIELD, SOLAR OBSERVATORIES, SOLAR PHYSICS

N89-30151*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
NIMBUS-7 ERB SOLAR ANALYSIS TAPE (ESAT) USER'S GUIDE
EUGENE MAJOR, JOHN R. HICKEY, H. LEE KYLE, BRADLEY M. ALTON, and BRENDA J. VALLETTE (Research and Data Systems, Inc., Lanham, MD.) Nov. 1988 92 p
(NASA-RP-1211; REPT-88-204; NAS 1.61:1211) Avail: NTIS HC A05/MF A01 CSCL 03B
Seven years and five months of Nimbus-7 Earth Radiation Budget (ERB) solar data are available on a single ERB Solar Analysis Tape (ESAT). The period covered is November 16, 1978 through March 31, 1986. The Nimbus-7 satellite performs approximately 14 orbits per day and the ERB solar telescope observes the sun once per orbit as the satellite crosses the southern terminator. The solar data were carefully calibrated and screened. Orbital and daily mean values are given for the total solar irradiance plus other spectral intervals (10 solar channels in all). In addition, selected solar activity indicators are included on the ESAT. The ESAT User's Guide is an update of the previous ESAT User's Guide (NASA TM 86143) and includes more detailed information on the solar data calibration, screening procedures, updated solar data plots, and applications to solar variability. Details of the tape format, including source code to access ESAT, are included. Author

N90-12456*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, AL.
ON THE STATISTICS OF EL NINO OCCURRENCES AND THE RELATIONSHIP OF EL NINO TO VOLCANIC AND SOLAR/GEOMAGNETIC ACTIVITY
ROBERT M. WILSON Washington Sep. 1989 62 p
(NASA-TP-2948; NAS 1.60:2948) Avail: NTIS HC A04/MF A01 CSCL 03B
AIR WATER INTERACTIONS, EL NINO, GEOMAGNETISM, SOLAR TERRESTRIAL INTERACTIONS, VOLCANOES

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SPACE RADIATION

Includes cosmic radiation; and inner and outer earth's radiation belts.

N87-25984*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, MD.
COSMIC RAY HEAVY ION LET MAPPING FOR ALUMINUM, SILICON, AND TISSUE TARGETS
E. G. STASSINOPOULOS, J. M. BARTH, and T. M. JORDAN (EMP Consultants, Northridge, Calif.) Apr. 1987 264 p
(NASA-RP-1180; REPT-87B0034; NAS 1.61:1180) Avail: NTIS HC A12/MF A02 CSCL 03B
Linear energy transfer (LET) values in aluminum, silicon, and tissue targets have been calculated for 31 galactic cosmic ray ion species in eight different units. The values are described for single event upset (SEU) effect assessments or radiobiological evaluations. The data are presented in graphical and tabular form. Author

N89-14210*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
SOLAR-FLARE SHIELDING WITH REGOLITH AT A LUNAR-BASE SITE
JOHN E. NEALY, JOHN W. WILSON, and LAWRENCE W. TOWNSEND Dec. 1988 21 p
(NASA-TP-2869; L-16488; NAS 1.60:2869) Avail: NTIS HC A03/MF A01 CSCL 03B
LUNAR BASES, LUNAR SURFACE, RADIATION DOSAGE, RADIATION SHIELDING, SOLAR FLARES

N89-16714*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
BENCHMARK SOLUTIONS FOR THE GALACTIC ION TRANSPORT EQUATIONS: ENERGY AND SPATIALLY DEPENDENT PROBLEMS
BARRY D. GANAPOL (Arizona Univ., Tucson.), LAWRENCE W.

TOWNSEND, and JOHN W. WILSON Washington, DC Mar. 1989 31 p
(NASA-TP-2878; L-16519; NAS 1.60:2878) Avail: NTIS HC A03/MF A01 CSCL 03B
EQUATIONS OF MOTION, GALACTIC RADIATION, HEAVY IONS, ION BEAMS, IONIC MOBILITY, RADIATION HAZARDS, TRANSPORT THEORY

N89-17562*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
BRYNTRN: A BARYON TRANSPORT MODEL
JOHN W. WILSON, LAWRENCE W. TOWNSEND, JOHN E. NEALY, SANG Y. CHUN, B. S. HONG, WARREN W. BUCK, S. L. LAMKIN, BARRY D. GANAPOL, FERDOUS KHAN, and FRANCIS A. CUCINOTTA (*Old Dominion Univ., Norfolk, VA.*) *Washington, DC* Mar. 1989 84 p
(NASA-TP-2887; L-16512; NAS 1.60:2887) Avail: NTIS HC A05/MF A01 CSCL 03B
BARYONS, COMPUTER PROGRAMS, DATA BASES, ENERGY TRANSFER, TRANSPORT PROPERTIES

N89-25103*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
KAON-NUCLEUS SCATTERING
BYUNGSIK HONG, KHIN MAUNG MAUNG, JOHN W. WILSON, and WARREN W. BUCK (Hampton Inst., VA.) 1989 30 p
(NASA-TP-2920; L-16583; NAS 1.60:2920) Avail: NTIS HC A03/MF A01 CSCL 03A
ABSORPTION CROSS SECTIONS, EIKONAL EQUATION, KAONS, MESON-NUCLEON INTERACTIONS, NUCLEAR SCATTERING, NUCLEONS, PARTICLE COLLISIONS, PARTICLE INTERACTIONS, PROTON SCATTERING, SCATTERING CROSS SECTIONS, SCHROEDINGER EQUATION

N90-18357*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
RADIATION EXPOSURE FOR MANNED MARS SURFACE MISSIONS
LISA C. SIMONSEN, JOHN E. NEALY, LAWRENCE W. TOWNSEND, and JOHN W. WILSON Washington Mar. 1990 25 p
(NASA-TP-2979; L-16708; NAS 1.60:2979) Avail: NTIS HC A03/MF A01 CSCL 03B
GALACTIC COSMIC RAYS, MANNED MARS MISSIONS, MARS ATMOSPHERE, MARS SURFACE, RADIATION DOSAGE, SOLAR FLARES

N90-25031*# National Aeronautics and Space Administration. *Langley Research Center, Hampton, VA.*
IMPROVED MODEL FOR SOLAR COSMIC RAY EXPOSURE IN MANNED EARTH ORBITAL FLIGHTS
JOHN W. WILSON, JOHN E. NEALY, WILLIAM ATWELL, FRANCIS A. CUCINOTTA (Rockwell International Corp., Houston, TX.), JUDY L. SHINN, and LAWRENCE W. TOWNSEND Washington Jun. 1990 14 p
(NASA-TP-2987; L-16759; NAS 1.60:2987) Avail: NTIS HC A03/MF A01 CSCL 03B
ASTRONAUTS, EXPOSURE, FLUENCE, MATHEMATICAL MODELS, ORGANS, RADIATION DOSAGE, RADIATION SHIELDING, SOLAR COSMIC RAYS

N90-29290*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
COMPARISON OF DOSE ESTIMATES USING THE BUILDUP-FACTOR METHOD AND A BARYON TRANSPORT CODE (BRYNTRN) WITH MONTE CARLO RESULTS
JUDY L. SHINN, JOHN W. WILSON, JOHN E. NEALY, and FRANCIS A. CUCINOTTA (Rockwell International Corp., Houston, TX.) Washington Oct. 1990 29 p
(NASA-TP-3021; L-16806; NAS 1.60:3021) Avail: NTIS HC A03/MF A01 CSCL 03B
COMPUTER PROGRAMS, EXTRATERRESTRIAL RADIATION, MONTE CARLO METHOD, RADIATION DOSAGE, RADIATION SHIELDING, RADIATION TRANSPORT

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GENERAL

N87-24390*# National Aeronautics and Space Administration. Langley Research Center, Hampton, VA.
ENGINEER IN CHARGE: A HISTORY OF THE LANGLEY AERONAUTICAL LABORATORY, 1917-1958
JAMES R. HANSEN (Maine Univ., Orono.) Washington, D.C. 1986 643 p NASA History Series
(NASW-3502)
(NASA-SP-4305; NAS 1.21:4305) Avail: SOD HC $30.00 as 033-000-00999-2; NTIS MF A01 CSCL 05B
A history is presented by using the most technologically significant research programs associated with the Langley Aeronautical Laboratory from 1917 to 1958 and those programs that, after preliminary research, seemed best to illustrate how the laboratory was organized, how it works, and how it cooperated with industry and the military. B.G.

N88-14062*# National Aeronautics and Space Administration, Washington, DC.
ASTRONAUTICS AND AERONAUTICS, 1978: A CHRONOLOGY
BETTE R. JANSON (Creative Resources and Planning, Fairfax, Va.) 1986 394 p *Its* NASA History Series
(NASA ORDER W-73289)
(NASA-SP-4023; NAS 1.21:4023) Avail: SOD HC $13.00 as 033-000-01010-9; NTIS MF A01 CSCL 05D
This is the 18th in a series of annual chronologies of significant events in the fields of astronautics and aeronautics. Events covered are international as well as national and political as well as scientific and technical. This series is a reference work for historians, NASA personnel, government agencies, congressional staffs, and the media. Author

N88-25428*# National Aeronautics and Space Administration, Washington, DC.
NASA HISTORICAL DATA BOOK. VOLUME 1: NASA RESOURCE 1958-1968
JANE VANNIMMEN, LEONARD C. BRUNO, and ROBERT L. ROSHOLT 1988 639 p
(NASW-3597)
(NASA-SP-4012-VOL-1; NAS 1.21:4012-VOL-1; LC-74-600126)
Avail: NTIS MF A04; SOD HC $57.00 in set of 3 as 033-000-01017-6 CSCL 05D
This is Volume 1, NASA Resources 1958-1968, of a three-volume series providing a 20-year compilation of summary statistical and other data descriptive of NASA's programs in aeronautics and manned and unmanned spaceflight. This series is an important component of NASA published historical reference works, used by NASA personnel, managers, external researchers, and other government agencies. Author

N88-25429*# National Aeronautics and Space Administration, Washington, DC.
NASA HISTORICAL DATA BOOK. VOLUME 2: PROGRAMS AND PROJECTS 1958-1968
LINDA NEUMAN EZELL 1988 652 p
(NASW-3597)
(NASA-SP-4012-VOL-2; NAS 1.21:4012-VOL-2; LC-74-600126)
Avail: NTIS MF A04; SOD HC $57.00 in set of 3 as 033-000-01017-6 CSCL 05D
This is Volume 2, Programs and Projects 1958-1968, of a three-volume series providing a 20-year compilation of summary statistical and other data descriptive of NASA's programs in

aeronautics and manned and unmanned spaceflight. This series is an important component of NASA published historical reference works, used by NASA personnel, managers, external researchers, and other government agencies. Author

N88-25430*# National Aeronautics and Space Administration, Washington, DC.
NASA HISTORICAL DATA BOOK. VOLUME 3: PROGRAMS AND PROJECTS 1969-1978
LINDA NEUMAN EZELL 1988 492 p
(NASW-3597)
(NASA-SP-4012-VOL-3; NAS 1.21:4012-VOL-3; LC-74-600126)
Avail: NTIS MF A03; SOD HC $57.00 in set of 3 as
033-000-01017-6 CSCL 05D

This is Volume 3, Programs and Projects 1969-1978, of a three-volume series providing a 20-year compilation of summary statistical and other data descriptive of NASA's programs in aeronautics and manned and unmanned spaceflight. This series is an important component of NASA published historical reference works, used by NASA personnel, managers, external researchers, and other government agencies. Author

N89-25946*# National Aeronautics and Space Administration, Washington, DC.
WHERE NO MAN HAS GONE BEFORE: A HISTORY OF APOLLO LUNAR EXPLORATION MISSIONS
WILLIAM DAVID COMPTON 1988 420 p Original contains color illustrations
(NASA-SP-4214; NAS 1.21:4214) Avail: NTIS HC A18/MF A03
CSCL 05D

This book is a narrative account of the development of the science program for the Apollo lunar landing missions. It focuses on the interaction between scientific interests and operational considerations in such matters as landing site selection and training of crews, quarantine and back contamination control, and presentation of results from scientific investigations. Scientific exploration of the moon on later flights, Apollo 12 through Apollo 17 is emphasized. Author

N89-26803*# National Aeronautics and Space Administration, Washington, DC.
ASTRONAUTICS AND AERONAUTICS, 1985: A CHRONOLOGY
BETTE R. JANSON Mar. 1988 545 p
(NASA-SP-4025; NAS 1.21:4025; LC-65-60308) Avail: NTIS HC A23/MF A03; also available SOD HC $22.00 as 033-000-01022-2
CSCL 05B

This book is part of a series of annual chronologies of significant events in the fields of astronautics and aeronautics. Events covered are international as well as national, in political as well as scientific and technical areas. This series is an important reference work used by historians, NASA personnel, government agencies, and congressional staffs, as well as the media. Author

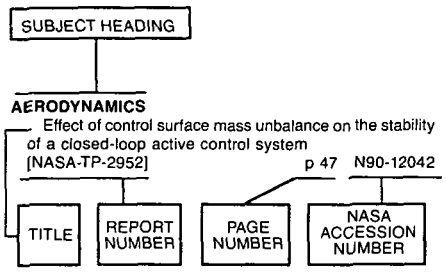
N89-26805*# National Aeronautics and Space Administration, Washington, DC.
ORDERS OF MAGNITUDE: A HISTORY OF THE NACA AND NASA, 1915-1990
ROGER E. BILSTEIN Jul. 1989 171 p ERRATUM: Coauthored by Frank W. Anderson, Jr.
(NASA-SP-4406; NAS 1.21:4406) Avail: NTIS HC A08/MF A01
CSCL 05D

This edition brings up to date the history of U.S. agencies for space exploration, the NACA and NASA, from 1915 through 1990. Early aviation and aeronautics research are described, with particular emphasis on the impact of the two world wars on aeronautics development and the postwar exploitation of those technologies. The reorganization and expansion of the NACA into NASA is described in detail as well as NASA's relationship with industry, the university system, and international space agencies such as the ESA. The dramatic space race of the 1950 and 1960s is recounted through a detailed histroy of the Gemini and Apollo programs and followed by a discussion of the many valuable social/scientific application of aeronautics technologies, many of which were realized through the launching of successful satellite projects. The further solar system explorations of the Voyager missions are described, as it the Challenger tragedy and the 1988 return to space of the Shuttle program. Future plans are outlined for a cooperatively funded international space station to foster the ongoing study of space science. Author

N90-25928*# National Aeronautics and Space Administration, Washington, DC.
ASTRONAUTICS AND AERONAUTICS, 1979-1984: A CHRONOLOGY
BETTE R. JANSON and ELEANOR H. RITCHIE Nov. 1989 736 p
(NASA-SP-4024; NAS 1.21:4024) Avail: NTIS HC A99/MF A04; also available SOD HC $24.00 as 033-000-01080-0 CSCL 05D

This volume of the Astronautics and Aeronautics series covers 1979 through 1984. The series provides a chronological presentation of all significant events and developments in space exploration and the administration of the space program during the period covered. Author

Typical Subject Index Listing



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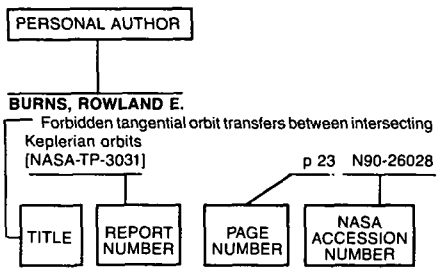

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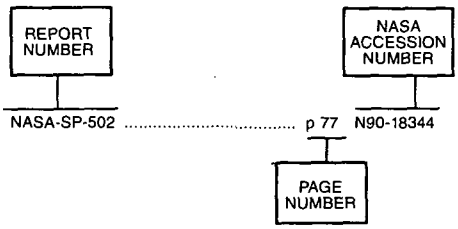

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