

**NASA
Technical
Memorandum**

NASA TM-86521

FY 1985 SCIENTIFIC AND TECHNICAL REPORTS,
ARTICLES, PAPERS, AND PRESENTATIONS

Compiled by Joyce E. Turner
Management Operations Office

November 1985

(NASA-TM-86521) FY 1985 SCIENTIFIC AND
TECHNICAL REPORTS, ARTICLES, PAPERS AND
PRESENTATIONS (NASA) 82 p CSCL 05B

N88-13083

Unclas
G3/82 0110675

NASA

National Aeronautics and
Space Administration

George C. Marshall Space Flight Center

1. REPORT NO. NASA TM-86521		2. GOVERNMENT ACCESSION NO.		3. RECIPIENT'S CATALOG NO.	
4. TITLE AND SUBTITLE FY 1985 Scientific and Technical Reports, Articles, Papers, and Presentations				5. REPORT DATE November 1985	
				6. PERFORMING ORGANIZATION CODE	
7. AUTHOR(S) Compiled by Joyce E. Turner				8. PERFORMING ORGANIZATION REPORT #	
9. PERFORMING ORGANIZATION NAME AND ADDRESS George C. Marshall Space Flight Center Marshall Space Flight Center, Alabama 35812				10. WORK UNIT NO.	
				11. CONTRACT OR GRANT NO.	
				13. TYPE OF REPORT & PERIOD COVERED Technical Memorandum	
12. SPONSORING AGENCY NAME AND ADDRESS National Aeronautics and Space Administration Washington, D.C. 20546				14. SPONSORING AGENCY CODE	
15. SUPPLEMENTARY NOTES Prepared by Management Operations Office, Administrative Operations Office.					
16. ABSTRACT This document presents formal NASA technical reports, papers published in technical journals, and presentations by MSFC personnel in FY 85. It also includes papers of MSFC contractors. After being announced in STAR, all of the NASA series reports may be obtained from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. The information in this report may be of value to the scientific and engineering community in determining what information has been published and what is available.					
17. KEY WORDS			18. DISTRIBUTION STATEMENT Unclassified – Unlimited		
19. SECURITY CLASSIF. (of this report) Unclassified		20. SECURITY CLASSIF. (of this page) Unclassified		21. NO. OF PAGES 81	22. PRICE NTIS

FOREWORD

In accordance with the NASA Space Act of 1958 the MSFC has provided for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.

Since July 1, 1960, when the George C. Marshall Space Flight Center was organized, the reporting of scientific and engineering information has been considered a prime responsibility of the Center. Our credo has been that "research and development work is valuable, but only if its results can be communicated and made understandable to others."

The N number shown for the reports listed is assigned by the NASA Scientific and Technical Information Facility, Baltimore, Maryland, indicating that the material is unclassified and unlimited and is available for public use. These publications can be purchased from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. The N number should be cited when ordering.

GEORGE C. MARSHALL SPACE FLIGHT CENTER
Marshall Space Flight Center, Alabama

FY 1985 SCIENTIFIC AND TECHNICAL REPORTS,
ARTICLES, PAPERS, AND PRESENTATIONS

TABLE OF CONTENTS

	Page
NASA TECHNICAL MEMORANDA	1
NASA TECHNICAL PAPERS.	13
MSFC CONFERENCE PUBLICATIONS	18
NASA CONTRACTOR REPORTS	19
MSFC PAPERS CLEARED FOR PRESENTATION	50

NASA TECHNICAL MEMORANDUM

TM-86470 November 1984
FY 1984 Scientific and Technical Reports,
Articles, Papers, and Presentations. Com-
piled by Joyce E. Turner. Management
Operations Office. N85-13670

This document presents formal NASA technical reports, papers published in technical journals, and presentations by MSFC personnel in FY 84. It also includes papers of MSFC contractors.

After being announced in STAR, all of the NASA series reports may be obtained from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

The information in this report may be of value to the scientific and engineering community in determining what information has been published and what is available.

TM-86471 October 1984
Estimating Sunspot Number. Robert M.
Wilson, Edwin J. Reichmann, and Dieter L.
Teuber. Space Science Laboratory.
N85-10896

Using a 3-component sinusoidal fit of \bar{R}_{MAX} versus sunspot cycle number (where \bar{R}_{MAX} is the smoothed sunspot number at cycle maximum) for cycles 8 through 20, considered to be the most reliably known cycles, values of \bar{R}_{MAX} are projected for cycles 21 and 22.

TM-86472 October 1984
Signal-to-Noise Ratio for the Wide Field/
Planetary Camera of the Space Telescope.
D. E. Zissa. Information and Electronic
Systems Laboratory. N84-35235

Signal-to-noise ratios for the Wide Field Camera and Planetary Camera of the Space Telescope have been calculated as a function of integration time. Models of the optical systems and CCD detector arrays were used with a 27th visual magnitude point source and a 25th visual magnitude per arc-second² extended source. A 23rd visual magnitude per arc-second² background was assumed. The models predicted signal-to-noise

ratios of 10 within 4 hours for the point source centered on a single pixel. Signal-to-noise ratios approaching 10 are estimated for approximately 0.25 x 0.25 arc-second areas within the extended source after 10 hours integration.

TM-86473 October 1984
Results of the Technical Exchange Agree-
ment Between NASA and DuPont on the
Containerless Drop Tube Solidification of
NiAl₃. Space Science Laboratory.
N85-10087

The final results of the Drop Tube Solidification of NiAl₃ are presented. Problems associated with the utilization of a "dripper" furnace in the drop tube are discussed and the modification of experimental procedures required to achieve results are described. Sample microstructures of drop tube samples are compared with other samples. The dendrite arm spacings of drop tube samples are correlated with the rapid cooling rates.

TM-86474 October 1984
Optical Analysis of the Star-Tracker Tele-
scope for Gravity Probe. D. E. Zissa. Infor-
mation and Electronic Systems Laboratory.
N85-10888

A ray-trace modeling of the star-tracker telescope for Gravity Probe has been used to predict the character of the output signal and its sensitivity to fabrication errors. In particular, the impact of the optical subsystem on the requirement of 1 milliarc-second signal linearity over a ± 50 milliarc-second range has been examined. Photomultiplier and solid state detector options were considered. Recommendations are made.

TM-86475 September 1984
Optical Contacting for Gravity Probe Star
Tracker. J. J. Wright and D. E. Zissa. Infor-
mation and Electronic Systems Laboratory.
N85-10819

A star-tracker telescope, constructed entirely of fused silica elements optically contacted together, has been proposed to provide submilli-arc-second pointing accuracy for Gravity Probe.

NASA TECHNICAL MEMORANDUM

First this report provides a bibliography on optical contacting; the bonding of very flat, highly polished surfaces without the use of adhesives. Then results are presented from preliminary experiments on the strength of optical contacts including a tensile strength test in liquid helium. The report emphasizes the need for further study to verify an optical contacting method for the Gravity Probe star-tracker telescope.

TM-84676 November 1984
Research and Technology 1984 Annual
Report of the Marshall Space Flight Center.
Compiled by the Research and Technology
Office and Edited by Tauna W. Moorehead.
N85-13765

The Marshall Space Flight Center conducts research programs in space sciences, materials processing in space, and atmospheric sciences, as well as technology programs in such areas as propulsion, materials, processes, and space power. This Marshall Space Flight Center 1984 Annual Report on Research and Technology contains summaries of the more significant scientific and technical results obtained during FY-84.

TM-86477 August 1984
Mars Exploration, Venus Swingby and
Conjunction Class Mission Modes, Time
Period 2000 to 2045. Archie C. Young,
John A. Mulqueen, and James E. Skinner.
Program Development Office. N85-11961

Trajectory and mission requirement data is presented for Earth-Mars opposition class and conjunction class round trip stopover mission opportunities available during the time period year 2000 to year 2045. The opposition class mission employs the gravitational field of Venus to accelerate the space vehicle on either the outbound or inbound leg. The gravitational field of Venus was used to reduce the propulsion requirement associated with the opposition class mission. Representative space vehicle systems are sized to compare the initial mass required in low Earth orbit of one mission opportunity with another mission opportunity. The interplanetary space vehicle is made up of the spacecraft and the space vehicle acceleration system. The space

vehicle acceleration system consists of three propulsion stages. The first propulsion stage performs the Earth escape maneuver, the second stage brakes the spacecraft and Earth braking stage into the Mars elliptical orbit and effects the escape maneuver from the Mars elliptical orbit. The third propulsion stage brakes the mission module into an elliptical orbit at Earth return. The interplanetary space vehicle was assumed to be assembled in and depart from the Space Station circular orbit.

TM-86478 October 1984
Global Matrix of Thermospheric Density
Values for Selected Solar/Geomagnetic Con-
ditions and Spacecraft Orbital Altitudes.
Dale L. Johnson. Systems Dynamics Labora-
tory. N85-13409

Presented are selected thermospheric/exospheric global mean and extreme density values computed between 130 and 1100 km altitude. These values were generated from the MSFC/J70 reference orbital atmospheric model using different input conditions of solar flux and geomagnetic index, ranging from low to peak. Typical magnitudes of day-night density changes are presented, as an example, for use in space vehicle orbital analyses.

TM-86479 October 1984
An Electrochemical Study of Hydrogen
Uptake and Elimination by Bare and Gold-
Plated Waspaloy. Merlin D. Danford, Gordon
E. DeRamus, Jr., and James R. Lowery.
Materials and Processes Laboratory.
N85-11222

Two electrochemical methods for the determination of hydrogen concentrations in metals are discussed and evaluated. The take-up of hydrogen at a pressure of 5,000 psi by Waspaloy metal was determined experimentally at 24°C. It was found that the metal becomes saturated with hydrogen after an exposure time of about 1 hr. For samples charged with hydrogen at high pressure, most of the hydrogen is contained in the interstitial solid solution of the metal. For electrolytically charged samples, most of the hydrogen is contained as surface and subsurface hydrides. Hydrogen elimination rates were

determined for these two cases, with the rate for electrolytically charged samples being greater by over a factor of two. Theoretical effects of high temperature and pressure on hydrogen take-up and elimination by bare and gold plated Wasp-alloy metal was considered. The breakthrough point for hydrogen at 5,000 psi, determined experimentally, lies between a gold thickness of 0.0127 mm (0.0005 in.) and 0.0254 mm (0.001 in.) at 24°C.

Electropolishing was found to greatly reduce the uptake of hydrogen at high pressure by Wasp-alloy metal at 24°C. Possible implications of the results obtained in this study, as they apply to the turbine disk of the Space Shuttle Main Engine, are discussed.

TM-86480 October 1984
An Evaluation of Grease Type Ball Bearing Lubricants Operating in Various Environments (Final Status Report No. 8). E. L. McMurtrey. Materials and Processes Laboratory. N85-11239

Because many future spacecraft or space stations will require mechanisms to operate for long periods of time in environments which are adverse to most bearing lubricants, a series of tests has been completed to evaluate 38 grease-type lubricants in R-4 size bearings in five different environments for a 1-year period. Four repetitions of each test were made to provide statistical samples. These tests were also used to select four lubricants for 5-year tests in selected environments with five repetitions of each test for statistical samples. In this completed program, 172 test sets have been completed. The three 5-year tests in (1) continuous operation and (2) start-stop operation, with both in vacuum at ambient temperatures, and (3) continuous vacuum operation at 93.3°C have been completed. In both the 1-year and 5-year tests, the best results in all environments have been obtained with a high viscosity index perfluoroalkylpolyether (PFPE) grease.

TM-86482 November 1984
The Variable Polarity Plasma Arc Welding Process: Its Application to the Space Shuttle External Tank - Second Interim Report.

A. C. Nunes, Jr., E. O. Bayless, Jr., and W. A. Wilson. Materials and Processes Laboratory N85-14115

This report describes progress in the implementation of the Variable Polarity Plasma Arc Welding (VPPAW) process at the External Tank (ET) assembly facility. Design allowable data has been developed for thicknesses up to 1.00 in. More than 24,000 in. of welding on liquid oxygen and liquid hydrogen cylinders has been made without an internal defect.

TM-86483 December 1984
Improving the Spacelab Mass Memory Unit Tape Layout with a Simulation Model. Steven R. Noneman. Systems Analysis and Integration Laboratory. N85-14571

A tape drive called the Mass Memory Unit (MMU) stores software used by Spacelab computers. MMU tape motion must be minimized during typical flight operations to avoid a loss of scientific data. A projection of the tape motion is needed for evaluation of candidate tape layouts. A computer simulation of the scheduled and unscheduled MMU tape accesses is developed for this purpose. This simulation permits evaluations of candidate tape layouts by tracking and summarizing tape movements. The factors that affect tape travel are investigated and a heuristic is developed to find a "good" tape layout. An improved tape layout for Spacelab I is selected after the evaluation of fourteen candidates. The simulation model will provide the ability to determine MMU layouts that substantially decrease the tape travel on future Spacelab flights.

TM-86484 October 1984
Atmospheric Environment for Space Shuttle (STS-41D) Launch. D. L. Johnson, C. K. Hill, G. Jasper, and G. W. Batts. Systems Dynamics Laboratory. N85-14358

This report presents a summary of selected atmospheric conditions observed near Space Shuttle STS-41D launch time on August 30, 1984, at Kennedy Space Center, Florida. Values of ambient pressure, temperature, moisture, ground winds, visual observations (cloud), and

NASA TECHNICAL MEMORANDUM

winds aloft are included. The sequence of pre-launch Jimsphere measured vertical wind profiles is given in this report. Also presented are wind and thermodynamic parameters representative of surface and aloft conditions in the SRB descent/impact ocean area. Final atmospheric tapes, which consist of wind and thermodynamic parameters versus altitude, for STS-41D vehicle ascent and SRB descent/impact have been constructed. The STS-41D ascent meteorological data tape has been constructed by Marshall Space Flight Center's Atmospheric Sciences Division to provide an internally consistent data set for use in post flight performance assessments.

TM-86486 November 1984
Atmospheric Environment for Space Shuttle (STS-41G) Launch. D. L. Johnson, C. K. Hill, G. Jasper, and G. W. Batts. Systems Dynamics Laboratory. N85-16320

This report presents a summary of selected atmospheric conditions observed near Space Shuttle STS-41G launch time on October 5, 1984, at Kennedy Space Center Florida. Values of ambient pressure, temperature, moisture, ground winds, visual observations (cloud), and winds aloft are included. The sequence of pre-launch Jimsphere measured vertical wind profiles is given in this report. The final atmospheric tape, which consists of wind and thermodynamic parameters versus altitude, for STS-41G vehicle ascent has been constructed. The STS-41G ascent atmospheric data tape has been constructed by Marshall Space Flight Center's Atmospheric Sciences Division to provide an internally consistent data set for use in post flight performance assessments.

TM-86487 January 1985
Monodisperse Latex Reactor (MLR) - A Materials Processing Space Shuttle Mid-Deck Payload. Dale M. Kornfell. Space Science Laboratory. N85-21187

The Monodisperse Latex Reactor experiment has flown five times on the space shuttle, with three more flights currently planned. The objective of this project is to manufacture, in the microgravity environment of space, large particle-size monodisperse polystyrene latexes in

particle sizes larger and more uniform than can be manufactured on Earth. Historically it has been extremely difficult, if not impossible, to manufacture in quantity very high quality monodisperse latexes on Earth in particle sizes much above several micrometers in diameter due to buoyancy and sedimentation problems during the polymerization reaction. However the MLR project has succeeded in manufacturing in microgravity monodisperse latex particles as large as 30 micrometers in diameter with a standard deviation of 1.4 percent. It is expected that 100 micrometer particles will have been produced by the completion of the three remaining flights.

These tiny, highly uniform latex microspheres have become the "FIRST SPACE PRODUCT," that is, the first material ever to be commercially marketed that was manufactured in space. The U.S. National Bureau of Standards has certified the first batch of "space latex," which was transferred to NBS by NASA in July 1984, and they will begin marketing this material in mid-1985 as the U.S. national 10-micrometer Standard Reference Material.

TM-86488 December 1984
A Numerical Method for Interface Problems in Elastodynamics. David S. McGhee. Systems Dynamics Laboratory. N85-17391

This study deals with the numerical implementation of a formulation for a class of interface problems in elastodynamics. This formulation combines the use of the finite element and boundary integral methods to represent the interior and the exterior regions, respectively. In particular, the response of a semicylindrical alluvial valley in a homogeneous halfspace to incident antiplane SH waves is considered to determine the accuracy and convergence of the numerical procedure. Numerical results are obtained for several combinations of the incidence angle, frequency of excitation and relative stiffness between the inclusion and the surrounding halfspace. The results tend to confirm the theoretical estimates, that the convergence is of the order h^2 for the piecewise linear elements used. It is also observed that the accuracy decreases as the frequency of excitation increases or as the relative stiffness of the inclusion decreases.

NASA TECHNICAL MEMORANDUM

TM-86489 February 1985
Ground Test Experiment for Large Space Structures. Danny K. Tollison and Henry B. Waites. Systems Dynamics Laboratory.
N85-19013

In recent years, a new body of control theory has been developed for the design of control systems for Large Space Structures (LSS). The problems of testing this theory on LSS hardware are aggravated by the expense and risk of actual "in orbit" tests. Ground tests on large space structures can provide a proving ground for candidate control systems, but such tests require a unique facility for their execution. The current development of such a facility at the NASA Marshall Space Flight Center (MSFC) is the subject of this report.

TM-86490 February 1985
Active Control of Large Space Structures: An Introduction and Overview. G. B. Doane, D. K. Tollison, and H. B. Waites. Systems Dynamics Laboratory.
N85-19014

An overview of the Large Space Structure (LSS) control system design problem is presented. The LSS is defined as a class of system and LSS modeling techniques are discussed. Included are discussions concerning model truncation, control system objectives, current control law design techniques, and particular problem areas.

TM-86491 February 1985
NASA-VCROSS Dynamic Test Facility. Dr. Henry B. Waites, Dr. Sherman M. Seltzer, and Dr. George B. Doane III. Systems Dynamics Laboratory.
N85-18998

This report describes the Large Space Structure Ground Test Facility under development at the NASA Marshall Space Flight Center in Huntsville, Alabama. It presents the status of the tests being performed and the present and proposed utilization of that facility by DOD. The Ground Test Facility was established initially to test experimentally the control system to be used on the Solar Array Flight Experiment. Further, the structural dynamics of the selected test article were to be investigated, including the fidelity of the associated mathematical model. It became

apparent that many of the LSS objectives of NASA were similar to those of DARPA and the US Air Force. In particular, all three agencies are interested in a Government test facility that can accommodate large structures emulating actual space systems. The facility must permit the investigation of structural dynamics phenomena and be able to evaluate candidate attitude control and vibration suppression techniques.

TM-86492 February 1985
Test and Evaluation of the 2.4-m Photorefractor Ocular Screening System. John R. Richardson. Technology Utilization Office.
N85-26115

This report presents a test and evaluation of an improved 2.4-m photorefractor ocular screening system, jointly developed by Medical Sciences Corporation and the Marshall Space Flight Center.

The photorefractor system works on the principal of obtaining a colored photograph of both human eyes; and, by analysis of the retinal reflex images, certain ocular defects can be detected such as refractive error, strabismus, and lens obstructions.

The 2.4-m photorefractor system uses a 35-mm camera with a telephoto lens and an electronic flash attachment. Retinal reflex images obtained from the new 2.4-m system are significantly improved over earlier systems in image quality. Other features were also improved, notably portability and reduction in mass.

A total of 706 school age children were photorefracted, 211 learning disabled and 495 middle school students. The total students having abnormal reflexes were 156 or 22 percent, and 133 or 85 percent of the abnormal had refractive error indicated. Ophthalmological examination was performed on 60 of these students and refractive error was verified in 57 or 95 percent of those examined.

The new 2.4-m system has a NASA patent pending and is authorized by the FDA. It provides a reliable means of rapidly screening the eyes of children and young adults for vision

NASA TECHNICAL MEMORANDUM

facilities available on SPAN. The utilities described within reflect an earnest attempt to provide useful descriptions of working utilities that can be used to transfer graphic images across the network. Whether graphic images are representative of satellite observations or theoretical modeling and whether graphics images are of device dependent or independent type, the SPAN graphics display utilities handbook will be the users guide to graphic image exchange.

TM-86501 May 1985
Preliminary Study of Inphase Gusts and Moment Force Wind Loads Over the First 150 Meters at KSC, Florida. John W. Kaufman. Systems Dynamics Laboratory.
N85-23273

Initial results have been completed on a mathematical/statistical analysis of inphase gusts and wind velocity moment forces over the first 150 m at the Kennedy Space Center, Florida. The wind velocity profile data used in the analysis were acquired at the KSC 150 m Ground Wind Tower. The results show that planetary boundary layer (PBL) winds can sustain near-peak speeds for periods up to 60 sec and longer. This is proven from calculating the auto-correlation functions of moment forces for several 10-min cases of wind profile data. Although this analysis is preliminary, the results prove that lower atmospheric planetary boundary layer winds do have a periodic variation for long periods of time. This flow characteristic is valuable as aerospace vehicle engineering and design criteria where wind loading must be determined. Such information is also important to the aviation and surface transportation engineers.

TM-86502 February 1985
BIG MAC: A Bolometer Array for Mid-Infrared Astronomy, Center Director's Discretionary Fund Final Report. C. M. Tesesco, R. Decher, and C. Baugher. Space Science Laboratory.
N85-23463

This report describes the infrared array developed in the Space Science Laboratory at Marshall Space Flight Center with Center Director's Discretionary Funds. The array, referred to as Big Mac (for Marshall Array Camera), was

designed for ground-based astronomical observations in the wavelength range 5 to 35 μm . It contains 20 discrete gallium-doped germanium bolometer detectors at a temperature of 1.4K. Each bolometer is irradiated by a square field mirror constituting a single pixel of the array. The mirrors are arranged contiguously in four columns and five rows, thus defining the array configuration. Big Mac utilizes cold re-imaging optics and an up-looking dewar. The total Big Mac system also contains a telescope interface tube for mounting the dewar and a computer for data acquisition and processing. Initial astronomical observations at a major infrared observatory indicate that Big Mac performance is excellent, having achieved the design specifications and making this instrument an outstanding tool for astrophysics.

TM-86503 August 1985
A Comparison of the Physics of Gas Tungsten Arc Welding (GTAW), Electron Beam Welding (EBW), and Laser Beam Welding (LBW). A. C. Nunes, Jr. Materials and Processes Laboratory.

The physics governing the applicability and limitations of gas tungsten arc (GTA), electron beam (EB), and laser beam (LB) welding are compared. An appendix on the selection of laser welding systems is included.

TM-86505 March 1985
Preparation of Silicon Carbide-Silicon Nitride Fibers by the Pyrolysis of Polycarbosilazane Precursors (Center Director's Discretionary Fund Final Report. B. G. Penn, J. G. Daniels, F. E. Ledbetter, III and J. M. Clemons. Space Science Laboratory.
N85-28107

The development of silicon carbide-silicon nitride fibers ($\text{SiC-Si}_3\text{N}_4$) by the pyrolysis of polycarbosilazane precursors that was carried out in this laboratory is reviewed. Precursor resin, which was prepared by heating tris(N-methylamino)-methylsilane or tris(N-methylamino)phenylsilane to about 520°C, was drawn into fibers from the melt and then made unmeltable by humidity conditioning at 100°C and 95 percent relative humidity. The humidity treated

NASA TECHNICAL MEMORANDUM

precursor fibers were pyrolyzed to ceramic fibers with good mechanical properties and electrical resistivity. For example, SiC-Si₃N₄ fibers derived from tris(n-methylamino)methylsilane had a tensile rupture modulus of 29×10^6 psi and electrical resistivity of $6.9 \times 10^8 \Omega\text{-cm}$ which is 10^{12} times greater than that obtained for graphite fibers.

This research was sponsored by the MSFC Center Director's Discretionary Fund Project [No. 82-13, "Preparation of New Continuous Silicon Carbide-Silicon Nitride (SiC-Si₃N₄) Fibers by the Controlled Pyrolysis of Organosilane Polymeric Precursors"].

TM-86506 April 1985
Solar Array Flight Experiment. Jerry Slaby.
Systems Dynamics Laboratory. N85-27935

This is a closed form solution for the longitudinal oscillation of the Solar Array Flight Experiment (SAFE) blanket for all phases of deployment. The frequency response shows that the blanket frequency increases shortly before full deployment. That fact causes a coupling between the mast and the blanket frequency but, because of the relatively high speed of deployment, a buildup of resonance is unlikely.

TM-86507 March 1985
The Extended Range X-Ray Telescope,
Center Director's Discretionary Fund Final
Report. R. B. Hoover, N. P. Cumings, E.
Hildner, R. L. Moore, and E. A. Tandberg-
Hanssen. Space Science Laboratory.
N85-30983

An Extended Range X-Ray Telescope (ERXRT) of high sensitivity and spatial resolution capable of functioning over a broad region of the X-ray/XUV portion of the spectrum has been designed and analyzed. This system has been configured around the glancing-incidence Wolter Type I X-ray mirror system which was flown on the Skylab Apollo Telescope Mount as ATM Experiment S-056. Enhanced sensitivity over a vastly broader spectral range can be realized by the utilization of a thinned, back-illuminated, buried-channel Charge Coupled Device (CCD)

as the X-ray/XUV detector rather than photographic film. However, to maintain the high spatial resolution inherent in the X-ray optics when a CCD of 30 micron pixel size is used, it is necessary to increase the telescope plate scale. This can be accomplished by use of a glancing-incidence X-ray microscope to enlarge and re-focus the primary image onto the focal surface of the CCD.

In the ERXRT program, several glancing-incidence hyperboloid/ellipsoid X-ray microscope optical elements were designed and analyzed. An 8X microscope of 2-m focal length was selected as the optimum configuration to couple the S-056 X-ray mirrors to a 30-micron pixel RCA CCD X-ray/XUV detector. Detailed ray trace analysis studies have shown that this system has theoretical performance which should permit sub-arc second images to be achieved over the entire field of view of the detector. This research has shown that the ERXRT concept is theoretically feasible and that this system may be of great value for future high-resolution X-ray telescope/X-ray spectroscopy instruments. It has also provided valuable insights into other hybrid X-ray optical systems, such as are now being developed in the Wolter/LSM X-ray telescope program, which is also a Center Director's Discretionary Fund program.

TM-86508 April 1985
Atmospheric Environment for Space Shuttle
(STS-51C) Launch. G. L. Jasper, D. L.
Johnson, C. K. Hill, and G. W. Batts. Sys-
tems Dynamics Laboratory. N85-30547

This report presents a summary of selected atmospheric conditions observed near Space Shuttle STS-51C launch time on January 24, 1985, at Kennedy Space Center, Florida. Values of ambient pressure, temperature, moisture, ground winds, visual observations (cloud), and winds aloft are included. The sequence of pre-launch Jimsphere measured vertical wind profiles is given in this report. The final atmospheric tape, which consists of wind and thermodynamic parameters versus altitude, for STS-51C vehicle ascent has been constructed. The STS-51C ascent atmospheric data tape has been constructed

NASA TECHNICAL MEMORANDUM

by Marshall Space Flight Center's Atmospheric Sciences Division to provide an internally consistent data set for use in post flight performance assessments.

TM-86509 June 1985
Space Shuttle Molecular Scattering and Wake Vacuum Measurements. R. J. Naumann, G. R. Carignan, and E. R. Miller. Space Science Laboratory. N85-29978

The wake environment of the space shuttle is analyzed to determine whether it is feasible to perform ultra-high vacuum experiments in or near the payload bay with the shuttle oriented such that the payload bay faces the anti-velocity direction. Several mechanisms were considered by which molecules could approach the payload bay from this direction and their relative contributions to the wake environment are estimated. These mechanisms include ambient atmospheric molecules that have velocities in excess of the orbital velocity which can overtake the shuttle, ambient atmospheric molecules that are back-scattered by collisions with the shuttle-induced atmosphere, and self-scattering from the induced atmosphere.

These estimates are compared with the measurements made with the collimated mass spectrometer which was part of the Induced Environment Contamination Monitor flown on several of the early shuttle flights. Although the collimated mass spectrometer was not designed for this purpose and the instrument background for the species for which the collimator is effective is above the expected levels, upper limits can be established for these species in the wake environment which are consistent with the analysis. There was considerably more helium and argon observed in the wake direction that was predicted, however. Possible origins of these gases are discussed.

TM-86510 April 1985
Docking Simulation Analysis of Range Data Requirements for the Orbital Maneuvering Vehicle. James D. Micheal and Frank L. Vinz. Systems Dynamics Laboratory. N85-31143

This report describes the approach and results of an initial study to assess the controllability of the Orbital Maneuvering Vehicle (OMV) for terminal closure and docking. The vehicle characteristics used in this study are those of the Marshall Space Flight Center (MSFC) baseline OMV which were published with the Request for Proposals for preliminary design of this vehicle. This simulation was conducted at MSFC using the Target Motion Simulator. The study focused on the OMV manual mode capability to accommodate both stabilized and tumbling target engagements with varying complements of range and range rate data displayed to the OMV operator. Four trained test subjects performed over 400 simulated orbital dockings during this study. A firm requirement for radar during the terminal closure and dock phase of the OMV mission was not established by these simulations. Fifteen pound thrusters recommended in the MSFC baseline design were found to be advantageous for initial rate matching maneuvers with unstabilized targets; however, lower thrust levels were desirable for making the final docking maneuvers.

TM-86511 June 1985
Hubble Space Telescope - Pointing Error Effects on Nonlinear Ball Joints. John E. Farmer and Floyd R. Grissett. Systems Dynamics Laboratory. N85-32058

The purpose of this report is to examine the Hubble Space Telescope pointing error produced by optical benches mounted on free ball joints. Spacecraft cable connections are assumed to produce translational and rotational damping and restoring forces which act through the optical bench center of mass. The nonlinear dynamics are modeled and then implemented using an existing computer program for simulating the vehicle dynamics and pointing control system algorithm. Results are presented for the test case which indicate acceptable performance.

TM-86512 June 1985
Development and Test of Advanced Composite Components, Center Director's Discretionary Fund Program. G. Faile, R. Hollis, F. Ledbetter, J. Maldonado, J. Sledd, J. Stuckey, G. Waggoner, and E. Engler.

NASA TECHNICAL MEMORANDUM

Structures and Propulsion Laboratory.

N85-32147

This report describes the design, analysis, fabrication, and test of a complex "bathtub fitting." Graphite fibers (P75) in an epoxy matrix were utilized in manufacturing of 11 components representing four different design and layup concepts. Design allowables were developed for use in the final stress analysis. Strain gage measurements were taken throughout the static load test and correlation of test and analysis data were performed, yielding good understanding of the material behavior and instrumentation requirements for future applications.

TM-86513 August 1985
Analytical Investigation of Solid Rocket Nozzle Failure. Dr. Kenneth E. McCoy and J. Hester. Structures and Propulsion Laboratory.

On April 5, 1983, an Inertial Upper Stage (IUS) spacecraft experienced loss of control during the burn of the second of two solid rocket motors. The anomaly investigation showed the cause to be a malfunction of the solid rocket motor. This paper presents a description of the IUS system, a failure analysis summary, an account of the thermal testing and computer modeling done at Marshall Space Flight Center, a comparison of analysis results with thermal data obtained from motor static tests, and describes some of the design enhancements incorporated to prevent recurrence of the anomaly.

TM-86514 July 1985
Improved Turbopump Dynamics, Center Director's Discretionary Fund Final Report. Larry Kiefling. Systems Dynamics Laboratory. N85-31509

A study was initiated to investigate the practicality of increasing rotor critical speeds by changes in manufacturing method. The technique would be to build a pump with an all-laser-welded shaft and case; such unit to be opened by laser cutting and rebuilt by rewelding the same surface. Use of a split casing, common in industry, would permit assembly of the rotor outside the case.

A team was formed to perform the study; however, the work of the team was severely restricted by conflict with higher priority tasks. No manpower was available to evaluate alternate configurations. Thus, much of the synergetic effects of cohesive design modification was lost. Although very limited results were achieved, nothing was found to indicate that the method is not worth further investigation.

TM-86515 July 30, 1985
Weibull Distribution Based on Maximum Likelihood with Interval Inspection Data. Mario H. Rheinfurth. Systems Dynamics Laboratory. N85-32847

This technical note determines the two Weibull parameters based upon the method of maximum likelihood as presented in memorandum, "Oxidizer Turbine (HPOTP) First Stage Blade Reliability Analysis," dated July 10, 1985, by the author. The test data used were failures observed at inspection intervals. The application was the reliability analysis of the SSME oxidizer turbine blades.

TM-86516 July 1985
Surface Voltage Gradient Role in High Voltage Solar Array/Plasma Interactions -- Center Director's Discretionary Fund Final Report. M. R. Carruth, Jr. Space Science Laboratory.

A large amount of experimental and analytical effort has been directed toward understanding the plasma sheath growth and discharge phenomena which lead to high voltage solar array-space plasma interactions. An important question which has not been addressed is how the surface voltage gradient on such an array may affect these interactions. The results of this study indicate that under certain conditions, the voltage gradient should be taken into account when evaluating the effect on a solar array operating in a plasma environment.

TM-86517 July 1985
Hardware Math for the 6502 Microprocessor. Ralph Kissel and James Currie. Information and Electronic Systems Laboratory.

NASA TECHNICAL MEMORANDUM

A floating-point arithmetic unit is described which is being used in the Ground Facility for Large Space Structures Control Verification (GF/LSSCV). The experiment uses two complete inertial measurement units and a set of three gimbal torquers in a closed loop to control the structural vibrations in a flexible test article (beam). A 6502 (8-bit) microprocessor controls four AMD 9511A floating-point arithmetic units to do all the computation in 20 milliseconds.

TM-86519

October 1985

The Role of Tethers on Space Station.
Georg von Tiesenhausen, Editor. Program
Development.

This report describes the results of research and development that addressed the usefulness of tether applications in space, particularly for space station. A well organized and structured effort of considerable magnitude involving NASA, industry and academia have defined the engineering and technological requirements of space tethers and their broad range of economic and operational benefits. This report consolidates the work directed by seven NASA Field Centers and is structured to cover the general and specific roles of tethers in space as they apply to NASA's planned space station. This is followed by a description of tether systems and operation. The report closes with a summary of NASA's plans for tether applications in space for years to come.

NASA TECHNICAL PAPERS

TP-2396 September 1984

Algorithm for Astronomical, Extended Source, Signal to Noise Ratio Calculations. R. R. Jayroe. Information and Electronic System Laboratory. N85-12833

An algorithm was developed to simulate the expected signal-to-noise ratio as a function of observation time in the charge coupled device detector plane of an optical telescope located outside the Earth's atmosphere for an extended, uniform astronomical source embedded in a uniform cosmic background. By choosing the appropriate input values, the expected extended source signal-to-noise ratios can be computed for the Hubble Space Telescope using the Wide Field/Planetary Camera science instrument.

TP-2397 September 1984

Algorithm for Astronomical, Point Source, Signal to Noise Ratio Calculations. R. R. Jayroe and D. J. Schroeder. Information and Electronics System Laboratory. N85-12834

An algorithm was developed to simulate the expected signal to noise ratios as a function of observation time in the charge coupled device detector plane of an optical telescope located outside the Earth's atmosphere for a signal star, and an optional secondary star, embedded in a uniform cosmic background. By choosing the appropriate input values, the expected point source signal to noise ratio can be computed for the Hubble Space Telescope using the Wide Field/Planetary Camera science instrument.

TP-2425 November 1984

An Evaluation and Comparison of Vertical Profile Data from the VISSR Atmospheric Sounder (VAS). Gary J. Jedlovec. Systems Dynamics Laboratory. N85-16351

A statistical evaluation is used to compare vertical profiles of temperature and moisture derived from VAS with three different algorithms to that of corresponding rawinsonde measurements for a clear-cold environment. To account for time and space discrepancies between the data sets, rawinsonde data were adjusted to be representative of the satellite sounding times.

Both rawinsonde and satellite sounding data were objectively analyzed onto a mesoscale grid. These grid point values were compared at 50 mb pressure increments from the surface up to 100 mb. The data were analyzed for horizontal and vertical structure, representativeness of derived parameters, and significant departure (improvement) from the apriori (first guess) information.

Results indicate some rather strong temperature and moisture biases exist in the satellite soundings. Temperature biases of 1° to 4°C and dewpoint biases of 2° to 6°C generally occur in layers where strong inversions are present and vary with time as these atmospheric features evolve. The biases also change as a function retrieval scheme suggesting limitations and restrictions on the applications of the various techniques. Standard temperature deviations range from 1° to 2°C for each retrieval scheme with maximum values around 800 to 400 mb. Derived parameters (precipitable water and thickness) suffer from similar biases, though to a somewhat lesser extent. Gradients of basic and derived parameters are generally weaker but have good horizontal structure where magnitudes of the parameters are relatively strong. Integrated thermal (temperature) and moisture (precipitable water) parameters show mixed results. Although biases are small in the precipitable water values from the regression scheme, horizontal structure is poor.

An analysis of apriori and first guess information show similar biases when compared to the ground truth measurements. This information, however, seems to provide the majority of the vertical structural information present in the VAS retrievals.

TP-2448 February 1985

A New NASA/MSFC Mission Analysis Global Cloud Cover Data Base. S. C. Brown and W. R. Jeffries, III. Systems Dynamics Laboratory. N85-21878

A global cloud cover data set, derived from the USAF 3D NEPH Analysis, has been developed for use in climate studies and for Earth viewing applications. This data set contains a single parameter — total sky cover — separated in time

by 3 or 6 hr intervals and in space by approximately 50 n.mi. Cloud cover amount is recorded for each grid point (of a square grid) by a single alphanumeric character representing each 5 percent increment of sky cover.

The data are arranged in both quarterly and monthly formats. A quarterly format computer tape usually contains 3 months of data for one hemisphere while each monthly format tape contains up to 5 years of 1 month for one hemisphere.

Although there are gaps in the data, notably all of 1976 for the Northern Hemisphere, the data base currently provides daily, 3-hr observed total sky cover for the Northern Hemisphere (NH) from 1972 through 1977 less 1976. For the Southern Hemisphere (SH), there are data at 6-hr intervals for 1976 through 1978 and at 3-hr intervals for 1979 and 1980. More years of data are being added in both hemispheres.

To validate the data base, the percent frequency of ≤ 0.3 and ≥ 0.8 cloud cover was compared with ground observed cloud amounts at several locations with generally good agreement.

Mean or other desired cloud amounts can be calculated for any time period and any size area from a single grid point to a hemisphere.

The data base is especially useful in evaluating the consequence of cloud cover on Earth viewing space missions. The temporal and spatial frequency of the data allow simulations that closely approximate any projected viewing mission. The greatest attribute is that no adjustments are required to account for cloud continuity.

TP-2450 January 1985
 Three-Dimensional Baroclinic Instability of a Hadley Cell for Small Richardson Number. Basil N. Antar and William W. Fowles. Space Science Laboratory. N85-20605

A three-dimensional, linear stability analysis of a baroclinic flow for Richardson number, Ri , of order unity is presented. The model considered is a thin horizontal, rotating fluid layer which

is subjected to horizontal and vertical temperature gradients. The basic state is a Hadley cell which is a solution of the complete set of governing, nonlinear equations and contains both Ekman and thermal boundary layers adjacent to the rigid boundaries; it is given in a closed form. The stability analysis is also based on the complete set of equations; and perturbations possessing zonal, meridional, and vertical structures were considered. Numerical methods were developed for the stability problem which results in a stiff, eighth-order, ordinary differential eigenvalue problem. The objectives of this work were to extend the previous work on three-dimensional baroclinic instability for small Ri to a more realistic model involving the Prandtl number, σ , and the Ekman number, E , and to finite growth rates and a wider range of the zonal wavenumber. The study covers ranges of $0 < Ri \leq 1.1$, $0.2 \leq \sigma \leq 5.0$, and $E = 10^{-3}$. For the cases computed, it was found for $\sigma \leq 1$ that conventional baroclinic instability dominates for $Ri > 0.8$ and symmetric baroclinic instability dominates for $Ri < 0.8$. However, for $\sigma = 1$ in the range $0.3 \leq Ri \leq 0.8$, conventional baroclinic instability always dominates. Further, it was found for $\sigma \leq 1$ that when symmetric instability dominates, the mode of maximum growth rate is not purely symmetric but has weak zonal structure. This means that the wave fronts are inclined at a small angle to the basic state flow. For these weak zonal modes it was also found that the critical Richardson number is increased by a small amount above its value for pure symmetric instability. Because these modes differ so slightly from the pure symmetric modes, it is unlikely that they represent a new mode of instability.

TP-2456 December 1984
 An Integral Representation of the Generalized Euler-Mascheroni Constants. O. R. Ainsworth and L. W. Howell. Systems Dynamics Laboratory. N85-23305

The limit series for the Euler-Mascheroni constants is represented as an integral. Using this new representation, we compute the first 200 values and assorted others up to 2000. The first 13 roots of γ_n , where n is a positive continuous variable, are also given.

NASA TECHNICAL PAPERS

TP-2459 January 1985

An Electrochemical Study of the Corrosion Behavior of Primer Coated 2219-T87 Aluminum. Merlin D. Danford and Ralph H. Higgins. Materials and Processes Laboratory. N85-22662

The corrosion behavior for 2219-T87 aluminum coated with various primers, including those used for the External Tank and Solid Rocket Boosters of the Space Shuttle Transportation System, has been investigated using electrochemical techniques. Corrosion potential-time, polarization resistance-time, electrical resistance-time, and corrosion rate-time measurements were all investigated. It was found that electrical resistance-time and corrosion rate-time measurement were most useful for studying the corrosion behavior of painted aluminum. Electrical resistance-time determinations give useful information concerning the porosity of paint films, while corrosion rate-time curves give important information concerning overall corrosion rates and corrosion mechanisms. In general, the corrosion rate-time curves all exhibited at least one peak during the 30 day test period, which was attributed, according to the proposed mechanisms, to the onset of the hydrogen evolution reaction and the beginning of destruction of the protective properties of the paint film.

TP-2469 March 1985

Adding Computationally Efficient Realism to Monte Carlo Turbulence Simulation. C. Warren Campbell. Systems Dynamics Laboratory. N85-28708

Frequently in aerospace vehicle flight simulation, random turbulence is generated using the assumption that the craft is small compared to the length scales of turbulence. The turbulence is presumed to vary only along the flight path of the vehicle but not across the vehicle span. The addition of the realism of three-dimensionality is a worthy goal, but any such attempt will not gain acceptance in the simulator community unless it is computationally efficient. A concept for adding three-dimensional realism with a minimum of computational complexity is presented. The concept involves the use of close rational approximations to irrational spectra and cross-spectra so

that systems of stable, explicit difference equations can be used to generate the turbulence.

TP-2474 January 1985

A Critical Evaluation of Various Turbulence Models As Applied to Internal Fluid Flows. M. Nallasamy. Systems Dynamics Laboratory. N85-25757

The report presents a brief account of various turbulent models employed in the computation of turbulent flows, and evaluates the application of these models to internal flows by examining the predictions of various turbulence models in selected important flow configurations. The main conclusions of this analysis are: (a) The $k-\epsilon$ model is used in a majority of all the two-dimensional flow calculations reported in the literature. (b) Modified forms of the $k-\epsilon$ model improve the performance for flows with streamline curvature and heat transfer. (c) For flows with swirl, the $k-\epsilon$ model performs rather poorly; the algebraic stress model performs better in this case. (d) For flows with regions of secondary flow (noncircular duct flows), the algebraic stress model performs fairly well for fully developed flow. For developing flow, the algebraic stress model performance is not good; a Reynolds stress model should be used.

Two important factors in the numerical solution of the model equations, namely false diffusion and inlet boundary conditions, are discussed. The existence of countergradient transport and its implications in turbulence modeling are mentioned. Two examples of recirculating flow predictions obtained using PHOENICS code are discussed. Other approaches to turbulent flow computations, such as the vortex method, large eddy simulation (modeling of subgrid scale Reynolds stresses), and direct simulation, are briefly discussed. Finally, some recommendations for improving the model performance are made. The need for detailed experimental data in flows with strong curvature is emphasized.

TP-2476 March 1985

Formulation/Cure Technology for Ultra-High Molecular Weight Silphenylene-Siloxane Polymers. N. H. Hundley and W. J.

Patterson. Materials and Processes Laboratory.
N85-26990

Molecular weights above one million were achieved for methylvinylsilphenylene-siloxane terpolymers using a two-stage polymerization technique which was successfully scaled up to 200 grams. The resulting polymer was vulcanized by two different formulations and compared to an identically formulated commercial methylvinyl silicone on the basis of ultimate strength, Young's modulus, percent elongation at failure, and tear strength.

Relative thermal/oxidative stabilities of the elastomers were assessed by gradient and isothermal thermogravimetric analyses performed in both air and nitrogen. The experimental elastomer exhibited enhanced thermal/oxidative stability and possessed equivalent or superior mechanical properties.

The effects of variations in prepolymer molecular weight on mechanical properties was also investigated.

TP-2486 April 1985
Fluid Surface Behavior in Low Gravity, Center Discretionary Fund No. 83-21, Final Report. Fred Leslie, Roger F. Gans, and Charles Schafer. Systems Dynamics Laboratory. N85-28260

Measurements of rotating equilibrium bubble shapes in the low-gravity environment of a free-falling aircraft are presented. Emphasis is placed on bubbles which intersect the container boundaries. These data are compared with theoretical profiles derived from Laplace's formula and are in good agreement with the measurements. Two types of instability are explored. The first occurs when the baffle spacing is too large for the bubble to intersect both the top and bottom boundaries. The second occurs when the hydrostatic pressure beneath a displaced free surface does not compensate for pressure change due to capillary forces. The interface shape depends on the contact angle, the radius of intersection with container, and the parameter F , which is a measure of the relative importance of centrifugal force to surface tension. For isolated

bubbles, F has a maximum value of $1/2$. A further increase in F causes the bubble to break contact with the axis of rotation. For large values of F , the bubble becomes more cylindrical and the capillary rise occurs over a thinner layer so that the small radius of curvature can generate enough pressure drop to balance the increased hydrostatic contribution.

TP-2489 April 1985
Convergence of Newton's Method for a Single Real Equation. C. Warren Campbell. Systems Dynamics Laboratory. N85-28656

Newton's method for finding the zeroes of a single real function is investigated in some detail. Convergence is generally checked using the Contraction Mapping Theorem which yields sufficient, but not necessary, conditions for convergence of the general single point iteration method. The resulting convergence intervals are frequently considerably smaller than actual convergence zones. For a specific single point iteration method, such as Newton's method, better estimates of regions of convergence should be possible. A technique is described which, under certain conditions (frequently satisfied by well behaved functions), gives much larger zones where convergence is guaranteed.

TP-2494 March 1985
Recovery of Pyroshock Data from Distorted Acceleration Records. James Lee Smith. Systems Dynamics Laboratory. N85-31141

In the past, distorted pyrotechnic shock time history data has been discarded completely or "cleaned up" by questionable means. Too often the "clean up" procedures introduced as much error into the data as previously existed. The purpose of this paper is to outline techniques for data recovery so that true signals are obtained and so that these recovery procedures will be completely reproducible by any scientist in any lab. Most ordnance shock data is distorted by baseline shifts or accelerometer resonances. The methodology of recovering true signals from these two types of distortion is discussed.

TP-2507 May 1985
Procedure for Estimating Orbital Debris

NASA TECHNICAL PAPERS

Risks. James L. Crafts and James P. Lindberg. Systems Analysis and Integration Laboratory.

This report presents a procedure for estimating the potential orbital debris risk to the world's populace from payloads or spent stages left in orbit on future missions. This approach provides a consistent, but simple, procedure to assess the risk due to random reentry with an adequate accuracy level for making programmatic decisions on planned low Earth orbit missions.

TP-2508 May 1985
Problems Experienced and Envisioned for Dynamical Physical Systems. Robert S. Ryan. Systems Dynamics Laboratory.

The use of high performance systems, which is the trend of future space systems, naturally leads to lower margins and a higher sensitivity to parameter variations and, therefore, more problems of dynamical physical systems. To circumvent dynamic problems of these systems, appropriate design, verification analysis, and tests must be planned and conducted. The basic design goal is to define the problem before it occurs. The primary approach for meeting this goal is a good understanding and reviewing of the problems experienced in the past in terms of the system under design.

This paper reviews many of the dynamic problems experienced in space systems design and operation, categorizes them as to causes, and envisions future program implications, developing recommendations for analysis and test approaches.

TP-2510 May 1985
Potential Spin-Offs of the Carbon Dioxide Observational Platform System (CO-OPS) for Remote Sensing Opportunities. J. Briscoe Stephens. System Dynamics Laboratory.

Alternate remote sensing techniques that could utilize the slight losses of energy from the microwave beam which powers the NASA/MSFC Carbon Dioxide Observational Platform System (CO-OPS) to achieve the objectives of the U.S. Department of Energy (DOE) Carbon Dioxide Research Program's regional observational data requirements, ODRs, are addressed heuristically.

The opportunity for regional remote sensing of the carbon dioxide and water vapor constituents in the atmosphere are discussed as a potential spin-off of the CO-OPS. The CO-OPS is envisioned as a high altitude (~25 km) observational platform system powered by microwave energy for regional observational use by the DOE in their Carbon Dioxide Research Program.

TP-2511 May 1985
Space Station Rotational Equations of Motion. Mario H. Rheinfurth and Stanley N. Carroll. Systems Dynamics Laboratory.

Dynamic equations of motion are developed which describe the rotational motion for a large space structure having rotating appendages. The presence of the appendages produce torque coupling terms which are dependent on the inertia properties of the appendages and the rotational rates for both the space structure and the appendages. These equations were formulated to incorporate into the Space Station Attitude Control and Stabilization Test Bed to accurately describe the influence rotating solar arrays and thermal radiators have on the dynamic behavior of the Space Station.

NASA CONFERENCE PUBLICATIONS

- CP-2364
Applications of Tethers in Space, Volume 1
of 2. Compiled by Alfred C. Cron. Program
Development, Marshall Space Flight Center.
N85-20339
- CP-2365
Applications of Tethers in Space, Volume 2
of 2. Compiled by Alfred C. Cron. Program
Development, Marshall Space Flight Center.
N85-20361
- CP-2366
Applications of Tethers in Space, Executive
Summary. Compiled by Alfred C. Cron.
Program Development, Marshall Space Flight
Center. N85-21659
- CP-2372
February 1985
Proceedings of MSFC Advanced High
Pressure O₂/H₂ Technology Conference
1984. Edited by S. F. Morea and S. T. Wu.
Research and Technology Office, Marshall
Space Flight Center. N85-26862
- CP-2374
December 1984
MSFC Workshop on Measurements of Solar
Vector Magnetic Fields. Edited by Mona J.
Hagyard. Marshall Space Flight Center.
N85-29869
- CP-2388
July 1985
Meteorological and Environmental Inputs to
Aviation Ssystems. Edited by Dennis W.
Camp and Walter Frost. Systems Dynamics
Laboratory.
- CP-2391
July 1985
Second Workshop on Spacecraft Glow. J. H.
Waite, Jr. and T. W. Moorehead, Editors.
Marshall Space Flight Center.
- CP-2402
September 1985
NASA/MSFC FY-85 Atmospheric Processes
Research Review. Compiled by William W.
Vaughan and Fay Porter. Systems Dynamics
Laboratory.

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-3843 August 1984
Simulation of Solidification in a Bridgman Cell. Youssef M. Dakhoul and Richard C. Farmer. NAS8-35331. Continuum, Inc. N85-11314
- CR-3898 February 1985
Convective Storm Downdrift Outflows Detected by NASA/MSFC's Airborne 10.6 μm Pulsed Doppler Lidar System. G. D. Emmitt. NAS8-35597. Simpson Weather Associates, Inc. N85-28511
- CR-3901 December 1984
Analysis of the NASA/MSFC Airborne Doppler Lidar Results from San Geronio Pass California. W. C. Cliff, J. R. Skarda, D. S. Renne, W. F. Sandusky. NAS8-34733. Battelle, Pacific Northwest Laboratories.
- CR-3905 May 1985
Excitation of Turbulence by Density Waves. C. M. Tchen. NAS8-36153. Universities Space Research Association. N85-30546
- CR-3923 July 1985
System Study of the Utilization of Space for Carbon Dioxide Research. Peter E. Glaser and Robert Vranka. NAS8-35357. Arthur D. Little, Inc.
- CR-3928 July 1985
A Root-Mean-Square Pressure Fluctuations Model for Internal Flow Applications. Y. S. Chen. NAS8-35918. Universities Space Research Association.
- CR-3929 July 1985
Studies on Effects of Boundary Conditions in Confined Turbulent Flow Predictions. M. Nallasamy and C. P. Chen. NAS8-35918. Universities Space Research Association.
- CR-3945 May 1985
The Nature of Symmetric Instability and Its Similarity to Convective and Inertial Instability. Qin Xu and J. H. E. Clark. NAS8-33797. The Pennsylvania State University.
- CR-3946 November 1985
Precision Pointing Using a Dual-Wedge Scanner. Christopher T. Amirault and Charles A. DiMarzio. NAS8-33120. Raytheon Company.
- CR-171152 September 1981
Pinhole/Coronagraph Pointing Control System Integration and Noise Reduction Analysis. NAS8-34529. The University of Alabama. N84-33773
- CR-171153 August 31, 1984
Development of Robotics Facility Docking Test Hardware. NAS8-34656. Essex Corporation. N84-33433
- CR-171154 August 1984
Numerical Analysis of Flow and Heat Transfer in VAFB LO2 Storage Dewar, Progress Report for July 1984. NAS8-35666. Cham of North America, Inc. N84-90603
- CR-171155 September 1984
Numerical Analysis of Flow and Heat Transfer in VAFC LO2 Storage Dewar, Progress Report for August 1984. NAS8-35666. Cham of North America, Inc. N84-90602
- CR-171156 March 1984
Advanced X-Ray Astrophysics Facility (AXAF). NAS8-32667. Smithsonian Astrophysical Observatory. N84-33434
- CR-171157 August 1984
Plasma and Magnetospheric Research. NAS8-33982. The University of Alabama in Huntsville. N84-34275
- CR-171158 September 3, 1984
Ground Test Article for Deployable Space Structure Systems Third Bi-Monthly Progress Report. NAS8-34657. Rockwell International. N84-34457
- CR-171159 September 1984
Orbital Transfer Vehicle Concept Definition and System Analysis Study, First Monthly

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- Progress Report. NAS8-36108. Martin Marietta Aerospace. N84-90605
- CR-171160 August 1984
Improved Structural/Fluid Dynamic Analysis Capability. NAS8-35772. Softcom Systems, Inc. X84-90412
- CR-171161 July 1984
Improved Structural Fluid Dynamic Analysis Capability. NAS-35772. Softcom Systems, Inc. X84-90411
- CR-171162 September 1984
Review of LOX Bearing and Seal Materials Tester (BSMT) Radial Load System. NAS8-34908. Battelle Columbus Laboratories. N84-33810
- CR-171163 July 1984
Surface Analysis of Space Telescope Material Specimens, Monthly Report for July. NAS8-35914. Auburn University.
- CR-171164 August 1984
Surface Analysis of Space Telescope Material Specimens, Monthly Report for August. NAS8-35914. Auburn University. X84-10531
- CR-171165 August 1984
Study of Atmospheric Structures for Mission Analysis, Monthly Progress Report No. 1. NAS8-35974. Computer Sciences Corp. N84-75830
- CR-171166 September 1984
Surface Analysis of Space Telescope Material Specimens, Final Report. NAS8-35914. Auburn University. X85-10045
- CR-171167 June 1984
On Orbit Surfacing of Thermal Control Surfaces. NAS8-35342. General Electric Company. X84-90405
- CR-171168 July 1985
On Orbit Surfacing of Thermal Control Surfaces. NAS8-35342. General Electric Company. X84-90406
- CR-171169 August 1984
On Orbit Surfacing of Thermal Control Surfaces. NAS8-35342. General Electric Company. N84-90601
- CR-171170 September 1984
Rotordynamic Analysis of the SSME Turbopumps Using Reduced Models. NAS8-34505. Texas A&M University. N85-10355
- CR-171171 September 1984
Pinhole Occulter Monthly Progress Report No. 1. NAS8-36101. Honeywell, Inc. N84-90604
- CR-171172 July 1984
Space Shuttle Natural Environment Analysis. NAS8-35975. Computer Sciences Corp. X84-90413
- CR-171173 August 1984
Space Station On-Orbit Maintenance Operations Study Monthly Progress Report for July 1984. NAS8-35982. McDonnell Douglas Corp. X84-90415
- CR-171174 September 1984
Improved Two-Dimensional-Kinetics Computer Program. NAS8-35931. Software and Engineering Associates, Inc. X84-10600
- CR-171175 October 1984
High Area Ratio Nozzle Concepts Investigation. NAS8-35771. Rockwell International Corp. N84-90774
- CR-171176 December 1983
Research Study: Studies in Atmospheric Processes from Space Platforms. NAS8-33730. USRA. N84-10473
- CR-171177 October 1984
Retardation Analytical Model to Extend Service Life Monthly Technical Progress Narrative, Month of September 1984. NAS8-35507. Rockwell International N85-10376

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|---|----------------|---|----------------|
| CR-171178 | October 1984 | Structures Subsystem. NAS8-32350. McDonnell Douglas Corp. | N84-90776 |
| Processing and Display of Atmospheric Phenomena Data. NAS8-33818. Engineering Analysis, Inc. | N85-10475 | | |
| CR-171179 | October 1984 | CR-171188 | September 1984 |
| PDSS/IMC CIS Users Guide. NAS8-33825. Intermetrics, Inc. | N85-10682 | Initial Spacelab VFT Report, Volume IV Command and Data Management Subsystem. NAS8-32350. McDonnell Douglas Corp. | N84-90778 |
| CR-171180 | October 1984 | CR-171189 | September 1984 |
| Dynamic Balance Improvement Program – Final Report Phase II. NAS8-34423. Rockwell International. | N85-70243 | Initial Spacelab VFT Report, Volume V Habitability. NAS8-32350. McDonnell Douglas Corp. | N84-90777 |
| CR-171181 | October 1980 | CR-171190 | September 1984 |
| Report on Phase I: Exploratory Investigation of the Need for and Feasibility of a Lower Atmosphere Research Satellite (LARS) Program. NAS8-33730. USRA. | N85-10091 | Initial Spacelab VFT Report, Volume VI Environment. NAS8-32350. McDonnell Douglas Corp. | N84-90780 |
| CR-171182 | August 1984 | CR-171191 | September 1984 |
| Modular Design Attitude Control System, Exhibit D. NAS8-33979. The Allied Bendix Corp. | N85-10098 | Initial Spacelab VFT Report, Volume VII Electrical Power Distribution Subsystem. NAS8-32350. McDonnell Douglas Corp. | N84-90781 |
| CR-171183 | October 1984 | CR-171192 | September 1984 |
| Study of Proton and Neutron Activation of Metal Samples in Low Earth Orbit. NAS8-35180. Eastern Kentucky University. | N85-10164 | Initial Spacelab VFT Report, Volume VIII Materials. NAS8-32350. McDonnell Douglas Corp. | N84-90782 |
| CR-171184 | October 1984 | CR-171193 | September 1984 |
| Orbital Transfer Vehicle Concept Definition and System Analysis Study Second Monthly Progress Report DR2. NAS8-36108. Martin Marietta Aerospace. | N85-70107 | Initial Spacelab VFT Report, Volume IX Contamination. NAS8-32350. McDonnell Douglas Corp. | N84-90783 |
| CR-171185 | September 1984 | CR-171194 | November 1984 |
| Initial Spacelab VFT Report, Volume I VFT Summary Assessment. NAS8-32350. McDonnell Douglas Corp. | N84-90775 | Participation in the Definition, Conduct, and Analysis of Particle Accelerator Experiments for the First Spacelab Mission. NAS8-32488. Southwest Research Inst. | N84-90789 |
| CR-171186 | September 1984 | CR-171195 | December 1983 |
| Initial Spacelab VFT Report, Volume II Environmental Control Subsystem. NAS8-32350. McDonnell Douglas Corp. | N84-90779 | Applications of Tethers in Space – Executive Summary, Workshop Proceedings. NAS8-35403. General Research Corp. | N85-12075 |
| CR-171187 | September 1984 | CR-171196 | December 1983 |
| Initial Spacelab VFT Report, Volume III | | Applications of Tethers in Space – Volume 1 of 2, Workshop Proceedings. NAS8-35403. General Research Corp. | N85-12076 |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|--|----------------|---|----------------|
| CR-171197 | December 1983 | CR-171207 | July 1984 |
| Applications of Tethers in Space, Volume 2 of 2, Workshop Proceedings. NAS8-35403. General Research Corp. | N85-12077 | Natural Environment Analysis, Interim Report. NAS8-35973. University of Tennessee Space Inst., | N85-90023 |
| CR-171198 | October 1984 | CR-171208 | November 1984 |
| Orbital Transfer Vehicle Concept Definition and System Analysis Study. NAS8-36108. Martin Marietta. | N85-70365 | Definition of Ground Test for Verification of Large Space Structure Control. NAS8-34700. Control Dynamics Company. | N85-13838 |
| CR-171199 | November 1984 | CR-171209 | May 1983 |
| Methane Heat Transfer Investigation Technical Progress Narrative. NAS8-34977. Rockwell International Corp. | N85-12318 | Definition of Technology Development Missions for Early Space Stations - Large Space Structures. NAS8-35043. Boeing Co. | N85-12084 |
| CR-171200 | July 1984 | CR-171210 | October 1984 |
| Monthly Progress Report for Contract NAS8-34206, for June 1984. Essex Corp. | X85-90009 | Atomization and Mixing Study. NAS8-34504. Rockwell International. | N85-70404 |
| CR-171201 | July 1984 | CR-171211 | October 1984 |
| Large-Diameter Astromast Development, Phase II. NAS8-34547. Astro Research Corp. | N85-12200 | Space Station On-Orbit Maintenance Operations Study. NAS8-35982. McDonnell Douglas Astronautics Co. | X85-72379 |
| CR-171202 | November 1984 | CR-171212 | September 1984 |
| Co-Investigator Tasks on SEPAC Experiment for the First Spacelab Mission and EOM-1. NAS8-32580. TRW Defense and Space Systems Group. | X84-90464 | Space Station On-Orbit Maintenance Operations Study. NAS8-35982. McDonnell Douglas Astronautics Co. | X84-90417 |
| CR-171203 | October 1984 | CR-171213 | September 1984 |
| Numerical Analysis of Flow and Heat Transfer in the VAFB LOX Storage Dewar Tank. NAS8-35666. Cham of North America, Inc. | N85-11315 | Power Subsystem Automation Study. Final Report, Phase 2. NAS8-34938. Martin-Marietta. | N85-12299 |
| CR-171204 | October 1984 | CR-171214 | May 1984 |
| Non-Intrusive Speed Sensor, Phase I. NAS8-34658. Rockwell International. | N85-12331 | Solar-Terrestrial Environmental Poster. NAS8-34206. Essex Corp. | X85-90015 |
| CR-171205 | September 1984 | CR-171215 | July 1984 |
| The SEPAC Co-Investigator Support. Monthly Program Report. NAS8-35350. Leland Stanford Jr. University. | X85-90012 | Solar-Terrestrial Environmental Poster. NAS8-34206. Essex Corp. | X85-90016 |
| CR-171206 | November 1985 | CR-171216 | August 1984 |
| Boeing Letter 2-1134-2000-084, Bi-Monthly Progress Report, NAS8-35969. Boeing Aerospace Corp. | N85-90006 | Solar-Terrestrial Environmental Poster. NAS8-34206. Essex Corp. | X84-90418 |
| | | CR-171217 | September 1984 |
| | | Solar-Terrestrial Environmental Poster. NAS8-34206. Essex Corp. | X85-90017 |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|-----------|--|--|--|
| CR-171237 | November 1984 | Governing SSME Internal Fluid Flows. NAS8-35970. Cham Inc. | N85-12859 |
| | Evaluation of Tailored Single Crystal Airfoils. NAS8-35915. Williams International. | | |
| | X85-90103 | | |
| CR-171238 | September 1984 | CR-171248 | September 1984 |
| | Analysis of Space Telescope Data Collection System. NAS8-36044. Mississippi State University. | | Analysis of Physical-Chemical Processes Governing the Internal Fluid Flows. NAS8-35970. Cham of North America, Inc. |
| | N85-90025 | | N85-90002 |
| CR-171239 | December 1984 | CR-171249 | September 1984 |
| | Multishaker Modal Testing. NAS8-35338. University of Texas at Austin. | | Monthly Progress Report for May, June, July and August 1984. NAS8-35972. Texas A&M University. |
| | X85-90025 | | X85-90010 |
| CR-171240 | August 1984 | CR-171250 | December 1984 |
| | Multishaker Modal Testing. NAS8-35338. University of Texas at Austin. | | Design, Fabrication, and Testing of an Experimental Apparatus for Determining Particle Behavior Under Very Low Intergranular Stresses. NAS8-35668. University of Colorado. |
| | X85-90026 | | X85-90013 |
| CR-171241 | July 1984 | CR-171251 | December 1984 |
| | Research Study: Warm/Cold Cloud Processes. NAS8-33882. USRA. | | Reporting Requirements for NAS8-35968 for the Months of May, June, July, August, September, and October 1984. NAS8-35968. OAO Corp. |
| | N85-90058 | | N85-90017 |
| CR-171242 | December 1984 | CR-171252 | September 1984 |
| | Duct Flow Nonuniformities Space Shuttle Main Engines Three (Duct Configuration). NAS8-35592. Lockheed Missiles and Space Corp. | | Monthly Progress Report for September 1984. NAS8-35972. Texas A&M University. |
| | X85-90039 | | X85-90044 |
| CR-171243 | October 1984 | CR-171253 | October 1984 |
| | Duct Flow Nonuniformities (Space Shuttle Main Engine). NAS8-34507. Lockheed Missiles & Space Company, Inc. | | Hardware Test Program for Evaluation of Baseline Range/Range Rate Sensor Concept. NAS8-36144. Bendix Guidance Systems. |
| | N85-90060 | | X85-90054 |
| CR-171244 | December 1984 | CR-171254 | August 1984 |
| | Quarterly Progress Report for July and October 1984. NAS8-35920. University of Colorado. | | Quantitative Analysis of Metallurgical Specimen. NAS8-35985. Georgia Inst. of Tech. |
| | N85-90015 | | X85-90051 |
| CR-171245 | December 1984 | CR-171255 | November 1984 |
| | B-52B Test Vehicle Research Study/Pylon Hook Failure for the Months of March and April 1984. NAS8-35819. Boeing Military Airplane Development. | | Turbine Blade Damping Study. NAS8-34682. University of Dayton Research Inst. |
| | N85-90027 | | N85-12890 |
| CR-171246 | October 1984 | CR-171256 | October 1984 |
| | B-52B/Test Vehicle Research Study/Pylon Hook Failure. NAS8-35819. Boeing Military Airplane Company. | | Autonomous Momentum Management for Space Station, Exhibit A. NAS8-35349. The Allied Bendix Corp. |
| | X85-90067 | | N85-12933 |
| CR-171247 | December 1984 | | |
| | Analyses of Physical-Chemical Processes | | |

NASA CONTRACTOR REPORTS

(Abstracts for these reports may be obtained from STAR)

- | | | |
|---|------------------------------------|--|
| <p>CR-171257
SSME Main Combustion and Nozzle Flow-field Analysis. NAS8-35510. Continuum, Inc.</p> | <p>October 1984
X85-90036</p> | <p>Thermal Protection System Bonding Applications. NAS8-35818. Springborn Laboratories, Inc.
N85-13043</p> |
| <p>CR-171258
Boundary Layer Simulator Improvements. NAS8-35976. Remtech, Inc.</p> | <p>August 1984
X85-90045</p> | <p>CR-171267
Production of Large-Particle Size Monodisperse Latexes. NAS8-32951. Lehigh University, Emulsion Polymers Institute.
X85-10018</p> |
| <p>CR-171259
Calculation of Flow About Posts and Powerheads. NAS8-35506. Continuum, Inc.</p> | <p>October 1984
X85-90029</p> | <p>CR-171268
Analysis of Physical-Chemical Processes Governing SSME Internal Fluid Flows: Progress Report for October 1984. NAS8-35970. Cham of North America, Inc.
N85-70402</p> |
| <p>CR-171260
Analysis of Physical-Chemical Processes Governing SSME Internal Fluid Flows Progress Report for September 1984. NAS8-35970. Cham, Inc.</p> | <p>October 1984
N85-70403</p> | <p>CR-171269
Atomization and Mixing Study. NAS8-34504. Rockwell International.
N85-70826</p> |
| <p>CR-171261
Additional Drop Test Vehicle Loads and Aeroelastic Analysis. NAS8-35016. Boeing Military Airplane Co.</p> | <p>October 1984
X85-90065</p> | <p>CR-171270
Monthly Progress Report on NAS8-35972. Texas A&M University.</p> |
| <p>CR-171262
Monthly Progress Report for Contract NAS8-34206 During October Reporting Period. Essex Corp.</p> | <p>October 1984
X85-90064</p> | <p>CR-171271
SPAR X Technical Report for Experiment 76-22 Directional Solidification of Magnetic Composites. NAS8-32219. Grumman Aerospace Corp.
N85-15880</p> |
| <p>CR-171263
Modularized Flight Dynamics Simulation (Boost Phase). NAS8-24920. Northrop, Corp.</p> | <p>June 1970
N85-70358</p> | <p>CR-171272
Commerce Lab: Mission Analysis and Payload Integration Study -- Interim Progress Report. NAS8-36109. Wyle Laboratories.
N85-16981</p> |
| <p>CR-171264
Modularized Flight Dynamics Simulation (Boost Phase), Interim Report. NAS8-24920. Northrop Corporation.</p> | <p>December 1969
N85-70359</p> | <p>CR-171273
Shuttle/Spacelab Contamination Environment and Effects Handbook for the Period September 1 through September 30, 1984. NAS8-35770. Martin Marietta Aerospace.
X85-90040</p> |
| <p>CR-171265
Derivation of Equations for a 6-D Trajectory with 3-D elastic Body Vehicle Dynamics. NAS8-24920. Northrop Corp.</p> | <p>April 1970
N85-70360</p> | <p>CR-171274
Multi-KW Solar Arrays for Earth Orbit Applications -- Progress Report for October 1984. NAS8-36162. Lockheed Missiles and Space Company.
N85-70857</p> |
| <p>CR-171266
Development of Acceptance Criteria for Batches of Silane Primer for External Tank</p> | <p>December 1984</p> | |

NASA CONTRACTOR REPORTS
 (Abstracts for these reports may be obtained from STAR)

- | | | | |
|---|----------------|---|----------------|
| CR-171275 | June 1984 | CR-171285 | December 1984 |
| Mathematical Model for a Simplified Bridgman-Stockbarger Crystal Growing System. NAS8-35983. Roberts Associates, Inc. | | Commerce Lab. Mission Analysis Payload Integration Study. NAS8-36109. Wyle Laboratories. | |
| | X85-90050 | | N85-16982 |
| CR-171276 | October 1984 | CR-171286 | November 1984 |
| Mathematical Model for the Bridgman-Stockbarger Crystal Growing System. NAS8-36190. Roberts Associates, Inc. | | Space Processing Workshop. NAS8-33542. The University of Alabama in Huntsville. | |
| | X85-90059 | | N85-70779 |
| CR-171277 | October 1984 | CR-171287 | December 1984 |
| Simulation of Solidification in a Bridgman Cell. NAS8-35331. Continuum, Inc. | | Assessment of the Operating Characteristics of the SSME LOX Turbopump Pump-End Bearing. H-78194B. SRS Technologies. | |
| | X85-90018 | | N85-17362 |
| CR-171278 | November 1984 | CR-171288 | January 1985 |
| The Investigation of Tethered Satellite System Dynamics. NAS8-36160. Smithsonian Institute. | | PDSS/IMC CIS Users Guide. NAS8-33825. Intermetrics, Inc. | |
| | N85-15772 | | |
| CR-171279 | December 1984 | CR-171289 | December 1984 |
| High Area Ratio Nozzle Concepts Investigation. NAS8-35771. Rocketdyne Division. | | The Growth of Metastable Peritectic Compounds. NAS8-32998. Grumman Aerospace Corporation. | |
| | X85-72026 | | N85-15824 |
| CR-171280 | December 1984 | CR-171290 | December 1984 |
| Evaluation of Carbon-Carbon Composites for Space Engine Nozzles. NAS8-35971. Aerojet Strategic Propulsion Co. | | The Growth of Metastable Peritectic Compounds. NAS8-32998. Grumman Aerospace Corp. | |
| | X85-72032 | | N85-15825 |
| CR-171281 | December 1984 | CR-171291 | August 1984 |
| Investigation of the HPFTP First Stage Impeller Crack. NAS8-34978. Lockheed Research & Development Division. | | Monthly Progress Report July 20, 1984 to August 19, 1984, on Contract NAS8-35977. Auburn University. | |
| | N85-16208 | | N85-90024 |
| CR-171282 | December 1984 | CR-171292 | September 1984 |
| Bearing Tester Fit Analysis. NAS8-34978. Lockheed Research & Development Division. | | Monthly Progress Report August 20, 1984 to September 19, 1984 on Contract NAS8-35977. Auburn University. | |
| | N85-16181 | | N85-90009 |
| CR-171283 | October 1984 | CR-171293 | January 1985 |
| Atmospheric Modeling and Sensor Simulation (AMASS) Study. NAS8-35189. New Technology, Inc. | | Plasma and Magnetospheric Research. NAS8-33982. The University of Alabama in Huntsville. | |
| | N85-16325 | | N85-17451 |
| CR-171284 | September 1984 | CR-171294. | July 1984 |
| Float Zone Experiments in Space. H34328B. Iowa State University. | | Monthly Progress Report for June 20, 1984 to July 19, 1984, on Contract NAS8-35977. Auburn University. | |
| | N85-15766 | | N85-90038 |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|---|----------------------|--|-----------------------|
| <p>CR-171295
Shuttle/Spacelab Contamination Environment and Effects Handbook Progress Report for Nov. 1 through Nov. 30, 1984. NAS8-35770. Martin Marietta Corp. X85-90081</p> | <p>December 1984</p> | <p>CR-171304
Monthly Progress Report for Sept., Oct., and Nov. on Contract NAS8-35977. Auburn University. X85-73262</p> | <p>December 1984</p> |
| <p>CR-171296
Additional Drop Test Vehicle Loads and Aeroelastic Analysis. NAS8-35016. Boeing Military Airplane Company. X85-90080</p> | <p>November 1984</p> | <p>CR-171305
Procurement Management Information System (PROMIS) for Shuttle. NAS8-35928. OAO Corp. N85-90232</p> | <p>August 1984</p> |
| <p>CR-171297
Multi-KW Solar Arrays for Earth Orbit Applications Progress Report for November 1984. NAS8-36162. Lockheed Missiles and Space Company, Inc. N85-70858</p> | <p>December 1984</p> | <p>CR-171306
Orbital Transfer Vehicle Concept Definition and System Analysis Study. NAS8-36108. Martin Marietta Corp. N85-71303</p> | <p>January 1985</p> |
| <p>CR-171298
Commerce Lab: Mission Analysis Payload Integration Study. NAS8-36109. Wyle Laboratories. N85-15764</p> | <p>November 1984</p> | <p>CR-171307
Influence of Coherent Mesoscale Structures on Satellite-Based Doppler Lidar Wind Measurements. NAS8-35597. Simpson Weather Associates, Inc. X85-90217</p> | <p>August 1984</p> |
| <p>CR-171299
Hydrogen Embrittlement in Alloys. Stacking Fault Energy Measurement in CuNi. NAS8-33811. The University of Alabama in Huntsville. N85-71320</p> | <p>December 1984</p> | <p>CR-171308
Influence of Coherent Mesoscale Structures on Satellite-Based Doppler Lidar Wind Measurements. NAS8-35597. Simpson Weather Associates, Inc. X85-90218</p> | <p>September 1984</p> |
| <p>CR-171300
A Preliminary Study of a Cryogenic Equivalence Principle Experiment on Shuttle. NAS8-33796. W. W. Hansen Laboratories of Physics. N85-18994</p> | <p>January 1985</p> | <p>CR-171309
Influence of Coherent Mesoscale Structures on Satellite-Based Doppler Lidar Wind Measurements. NAS8-35597. Simpson Weather Associates, Inc. X85-90226</p> | <p>October 1984</p> |
| <p>CR-171301
Ground Test Article for Deployable Space Structure Systems. NAS8-34657. Rockwell International. N85-19011</p> | <p>January 1985</p> | <p>CR-171310
Orbital Transfer Vehicle Concept Definition and System Analysis Study. NAS8-36108. Martin Marietta Aerospace Corp. N85-71302</p> | <p>December 1984</p> |
| <p>CR-171302
A Shock Wave Capability for the Improved Two-Dimensional Kinetics (TDK) Computer Program. NAS8-34974. Software and Engineering Associates, Inc. N85-19360</p> | <p>March 1984</p> | <p>CR-171311
Improved Internal Ballistic Analysis and Design Procedures for Solid Rocket Motors. NAS8-36147. Auburn University. X85-10170</p> | <p>October 1984</p> |
| <p>CR-171303
Ion Implantation and Plating to Improve Surface Hardness and Wear Characteristics of Stainless Steel for Bearing Applications. NAS8-35048. Georgia Tech Research Inst. X85-72670</p> | <p>July 1984</p> | <p>CR-171312
Shuttle HPM Combustion Vorticity Instability Annual Report, Research Activity on Phase 2. NAS8-35052. University of Alabama. X85-10216</p> | <p>1984</p> |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-171313 December 1984
Analysis and Calculation of Macrosegregation in a Casting Ingot. NAS8-36039. General Electric. N85-71319
- CR-171314 December 1984
Hardware Test Program for Evaluation of Baseline Range/Range Rate Sensor Concept Monthly Progress Report Nov 12 through Dec. 11, 1984. NAS8-36144. Bendix Guidance Systems. X85-90234
- CR-171315 September 1984
Space Station Thermal Storage System Trades and Evaluation for the Period June 4 through September 30, 1984. NAS8-35626. LTV Aerospace and Defense Co. X85-73135
- CR-171316 December 1984
Improved Internal Ballistic Analysis and Design Procedures for Solid Rocket Motors. NAS8-36147. Auburn University. X85-90236
- CR-171317 January 1985
Research Reports - 1984 NASA/ASEE Summer Faculty Fellowship Program, Final Report, NASA Grant NGT-01-002-099. N85-22210
- CR-171318 November 1984
Influence of Coherent Mesoscale Structures on Satellite-Based Doppler Lidar Wind Measurements. NAS8-35597. Simpson Weather Associates, Inc. X85-90230
- CR-171319 December 1984
Simulation of Solidification in a Bridgman Cell. NAS8-35331. Continuum, Inc. X85-90240
- CR-171320 September 1984
Progress Report on Contract NAS8-36038, for the Period May 1984 to September 30, 1984. Intergraph Corp. N85-90237
- CR-171321 April 1984
Ion Implantation and Plating to Improve Surface Hardness and Wear Characteristics of Stainless Steel for Bearings Applications. NAS8-35048. Georgia Tech Research Inst.
- CR-171322 January 1985
Improved Internal Ballistic Analysis and Design Procedures for Solid Rocket Motors. NAS8-36147. Auburn University. X85-90333
- CR-171323 January 1985
Analysis and Calculation of Macrosegregation in a Casting Ingot. NAS8-36039. General Electric Corp. N85-71322
- CR-171324 December 1984
Influence of Coherent Mesoscale Structures on Satellite-Based Doppler Lidar Wind Measurements. NAS8-35597. Sunosib Weather Associates, Inc. X85-90331
- CR-171325 July 1984
Development of Liquid and Gaseous Oxygen Compatible Elastomers for Advanced High Pressure O₂/H₂ Propulsion Systems. NAS8-34909. TRW Electronics & Defense. X85-10232
- CR-171326 January 1985
Characterization of Drop Spectra from High Volume Flow Water Jet. NAS8-36178. Atmospheric Sciences Research Center, State University of New York at Albany. N84-71412
- CR-171327 January 1985
Study of Space Shuttle Response to Ascent Wind Profile Perturbations for Period Nov. 30 to Dec. 29, 1984. NAS8-36163. Computer Sciences Corp. X85-90231
- CR-171328 November 1984
Measurement of Damping of Graphic Epoxy Material. NAS8-36146. Auburn Univ. X85-90229
- CR-171329 January 1985
Study of Proton and Neutron Activation of Metal Samples in Low Earth Orbit. NAS8-35180. Eastern Kentucky University. X85-90249

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-171330 February 1985
Sample Selection and Testing of Separation
Processes September 20 to December 19,
1985. NAS8-35593. Huntsville Hospital.
X85-90159
- CR-171331 January 1985
Payload Missions Integration Progress
Report Data Requirement (DR) MA-03.
NAS8-32712. Teledyne Brown Engineering.
N85-19009
- CR-171332 March 1984
Science and Technical Support for Develop-
ment of a Solar Variability Experiment.
NAS8-34944. Atmospheric and Environ-
mental Research, Inc.
- CR-171333 January 1985
Natural Environment Analysis. NAS8-
35973. The University of Tennessee Space
Institute. N85-19010
- CR-171334 October 1984
Upated Fine Guidance Sensor Study.
NAS8-35504. Eastman Kodak Company.
N85-90238
- CR-171335 September 1984
Space Plasma Computer Analysis Scan
Conference. NASA Order H-78103B. Uni-
versity of Alabama. N85-90427
- CR-171336 October 1984
Research Study: Warm/Cold Cloud Pro-
cesses. NAS8-33882. USRA, Boulder, CO.
N85-90371
- CR-171337 October 1984
Research Study: Cyclone Diagnostics.
NAS8-34010. USRA, Boulder, CO.
N85-19567
- CR-171338 No Date
Computer Studies of Baroclinic Flow.
NAS8-33815. University of Arizona.
N85-19566
- CR-171339 December 1984
Mathematical Model for the Bridgman-
Stockbarger Crystal Growing System Third
and Fourth Monthly Progress Reports.
NAS8-36190. Roberts Associates, Inc.
X85-90237
- CR-171340 February 1985
Atomization and Mixing Study. NAS8-
34504. Rockwell International.
X85-10237
- CR-171341 February 1985
Co-Investigator Tasks on SEPAC Experi-
ment for the First Spacelab Mission and
EOM-1. NAS8-32580. TRW Defense and
Space Systems Group. X85-90250
- CR-171342 February 1985
Spacelab Integration Report MA-04. NAS8-
32350. McDonnell Douglas Corporation.
N85-90248
- CR-171343 January 1985
Preliminary Analysis of Selected Gas Dy-
namic Problems. NAS8-35328. Continuum,
Inc. N85-19361
- CR-171344 January 1985
Calculation of Flow About Posts and Power-
head Model. NAS8-35506. Continuum, Inc.
N85-19362
- CR-171345 January 1985
Evaluation of Miniature Vacuum Ultra-
violet Lamps for Stability and Operating
Characteristics. NAS8-35812. Radiometrics,
Inc. N85-19323
- CR-171346 December 1984
Thrust Chamber Performance Using Navier-
Stokes Solution. NAS8-35987. Lockheed
Research and Development Division.
N85-19019
- CR-171347 February 1985
Computational Fluid Mechanics Utilizing the
Variational Principle of Modeling Damping
Seals. NAS8-35508. Continuum, Inc.
- CR-171348 January 1985
Design Performance Investigation and Deliv-
ery of a Miniaturized Cassegrainian Concen-
trator Solar Array. NAS8-36159. TRW
Defense and Space Sys. Group. X85-90334

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-171367 February 1985
Glass Fiber Pulling in Low Gravity. NAS8-35978. The University of Alabama in Huntsville. X85-90352
- CR-171368 January 1985
Advanced SSME Turbine Disk Processing for Hydrogen Resistance. NAS8-35669. Wyman-Gordon Company. X85-90338
- CR-171369 May 1985
Definition of Ground Test for Verification of Large Space Structure Control. NAS8-35835. Control Dynamics Company. N85-90616
- CR-171370 February 1985
Research on Expert System for Data Base Operation of "Simulation/Emulation" Math Models. NAS8-36285. Vanderbilt University. N85-90284
- CR-171371 January 1985
Ostwald Ripening Theory. NAS8-35986. The University of Alabama in Huntsville. N85-90356
- CR-171372 February 1985
Progress Report for the Month of January 1985 on Contract NAS8-35836. MTS Systems Corp. X85-90347
- CR-171373 December 1984
Monthly Progress Report on Contract NAS8-35921 Covering the Period from December 1 Through 28, 1984. Teledyne Brown Engineering. X85-90348
- CR-171374 February 1985
Pulsed Doppler Lidar Airborne Scanner. NAS8-33120. Raytheon Company. N85-71762
- CR-171375 February 1985
Pulsed Doppler Lidar Airborne Scanner. NAS8-33120. Raytheon Company. N85-71424
- CR-171376 December 1984
Development of a Computational Aero/Fluids Analysis System. NAS8-35774. Lockheed Missiles and Space Company, Inc. X85-90339
- CR-171377 February 1985
Advanced SSME Turbine Disk Processing for Hydrogen Resistance. NAS8-35669. Wyman-Gordon Company. X85-90346
- CR-171378 February 1985
Bearing Tested Data Compilation Analysis and Reporting and Bearing Math Modeling. R&D Progress Report No. 1. NAS8-36183. SRS Technologies. X85-10239
- CR-171379 February 1985
Orbital Transfer Vehicle Concept Definition and System Analysis Study. NAS8-36108. Martin Marietta Aerospace Corp.
- CR-171380 January 1985
Research Study: Cyclone Diagnostics. NAS8-34010. USRA. N85-90390
- CR-171381 January 1984
Development of a Computational Aero/Fluid Analysis System. NAS8-35774. Lockheed Missiles and Space Corp. X85-90366
- CR-171382 February 1985
Development of the Sonic Pump Levitator. NAS8-33513. Bjorksten Research Laboratories. N85-21186
- CR-171383 February 1985
Analysis of Electrophoresis Performance. NAS8-36042. Roberts Associates, Inc.
- CR-171384 January 1985
Expert Systems Applies to Fault Isolation and Energy Storage Management, October, December and January. NAS8-35922. Martin Marietta Aerospace Corp.
- CR-171385 February 1985
The Vehicle Charging and Potential Experiment on Spacelab-2. NAS8-36011. Stanford University. X85-90353
- CR-171386 March 1985
Ground Test Article for Deployable Space Structure Systems. NAS8-34657. Rockwell International. X85-90272

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|--|---------------|---|---------------|
| CR-171387 | January 1985 | CR-171397 | March 1985 |
| Theoretical Analyses of Baroclinic Flows. NAS8-33386. University of Tennessee Space Institute. | N85-90285 | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 2. NAS8-36108. Martin Marietta Corp. | X85-10205 |
| CR-171388 | January 1985 | CR-171398 | March 1985 |
| Discrete Element Weld Model. Phase I: General Model of a Weld Puddle Without a Cavity. NAS8-35773. Martin Marietta Lab. | X85-10174 | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 3. NAS8-36108. Martin Marietta Corp. | X85-10206 |
| CR-171389 | February 1985 | CR-171399 | March 1985 |
| Development of New Materials for Turbopump Bearings. NAS8-35341. SKF Technologies Services, Inc. | X85-90369 | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 4. NAS8-36108. Martin Marietta Corp. | X85-10207 |
| CR-171390 | March 1985 | CR-171400 | March 1985 |
| SSME Main Combustion Chamber and Nozzle Flowfield Analysis. NAS8-35510. Continuum Inc. | N85-90361 | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 5. NAS8-36108. Martin Marietta Corp. | X85-10208 |
| CR-171391 | March 1985 | CR-171401 | March 1985 |
| Natural Environment Analysis, Monthly Progress Report February 1 Through February 28, 1985. NAS8-35973. University of Tennessee Space Institute. | N85-90362 | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 6. NAS8-36108. Martin Marietta Corp. | X85-10209 |
| CR-171392 | February 1985 | CR-171402 | March 1985 |
| Infrared Telescope. NAS8-32818. The University of Alabama in Huntsville. | N85-26465 | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 7. NAS8-36108. Martin Marietta Corp. | X85-10210 |
| CR-171393 | November 1984 | CR-171403 | March 1985 |
| On Orbit Servicing of Thermal Control Surfaces. NAS8-35342. General Electric Company. | X85-10215 | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 8. NAS8-36108. Martin Marietta Corp. | X85-10211 |
| CR-171394 | April 1985 | CR-171404 | March 1985 |
| SSME Main Combustion and Nozzle Flowfield Analysis. NAS8-35510. Continuum Inc. | N85-90367 | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 9. NAS8-36108. Martin Marietta Corp. | X85-10212 |
| CR-171395 | December 1984 | CR-171405 | March 1985 |
| Boundary Layer Simulator Improvement. NAS8-35976. Remtech, Inc. | | Orbital Transfer Vehicle Concept Definition and System Analysis Study, Vol. 10. NAS8-36108. Martin Marietta Corp. | X85-10213 |
| CR-171396 | March 1985 | CR-171406 | February 1985 |
| Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Vol. 1. NAS8-36108. Martin Marietta Corp. | X85-10201 | Superconducting Gyroscope Research. NAS8-29316. The University of Alabama in Huntsville. | N85-25795 |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|--|---------------|--|---------------|
| CR-171425 | March 1985 | CR-171435 | April 1985 |
| Nonlinear Rotordynamics Analysis. NAS8-35992. Auburn University. N85-22364 | | Simulation of Solidification in a Bridgman Cell. NAS8-35331. Continuum Inc. X85-90378 | |
| CR-171426 | March 1985 | CR-171436 | April 1985 |
| New Atmospheric Sensor Analysis Study. NAS8-36179. New Technology Inc. N85-23069 | | Development of Acceptance Criteria for Batches of Silane Primer for External Tank Thermal Protection System Bonding Applications. NAS8-35818. N85-25523 | |
| CR-171427 | March 1985 | CR-171437 | March 1985 |
| Space Station On-Orbit Maintenance Operations Study. NAS8-35982. McDonnell Douglas Astronautics Company. X85-10199 | | Duct Flow Nonuniformities Space Shuttle Main Engine Three Duct Configuration. NAS8-35592. Lockheed Missiles and Space Company. X85-90379 | |
| CR-171428 | April 1985 | CR-171438 | April 1985 |
| Development of Acceptance Criteria for Batches of Silane Primer for External Tank Thermal Protection System Bonding Applications. NAS8-35818. N85-23998 | | Definition of Ground Test for Verification of Large Space Structure Control. NAS8-35835. Control Dynamics Company. N85-25377 | |
| CR-171429 | February 1985 | CR-171439 | December 1984 |
| Digital Processing of Mesoscale Analysis and Space Sensor Data. NAS8-35917. Atsuko Computing International. N85-23319 | | Augmented Flexible Body Dynamics Analysis Program. NAS8-34588. Honeywell, Inc. X85-90391 | |
| CR-171430 | March 1985 | CR-171440 | January 1985 |
| X-Ray Analysis Algorithm. NAS8-35343. Wade and Associates, Inc. X85-10276 | | Augmented Flexible Body Dynamics Analysis Program. NAS8-34588. Honeywell, Inc. X85-90330 | |
| CR-171431 | March 1985 | CR-171441 | February 1985 |
| Advanced SSME Turbine Disk Processing for Hydrogen Resistance. NAS8-35669. Wyman-Gordon. N85-90365 | | Augmented Flexible Body Dynamics Analysis Program. NAS8-34588. Honeywell, Inc. X85-90343 | |
| CR-171432 | April 1985 | CR-171442 | March 1985 |
| R&D Progress Report No. 1, Interchangeable End Effector Tools Utilized on the PFMA. NAS8-36307. SRS Technologies. | | Stress Analysis of the Space Telescope Focal Plane Structure Joint Bi-Monthly Progress Report, January 1, 1985 Through February 18, 1985. NAS8-36288. Auburn University. N85-90364 | |
| CR-171433 | March 1985 | CR-171443 | April 1985 |
| The Investigation of Tethered Satellite System Dynamics for the Period December 1 1984 Through February 14, 1985. NAS8-36160. Smithsonian Inst. Astrophysical Observatory. N85-25375 | | Solid Rocket Motor Nozzle Material Testing and Analysis. NAS8-36148. Southern Research Institute. X85-74635 | |
| CR-171434 | April 1985 | | |
| Atomization and Mixing Study. NAS8-34504. Rockwell International. X85-10270 | | | |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|---|---------------|---|------------|
| CR-171444 | April 1985 | CR-171454 | April 1985 |
| High Area Ratio Nozzle Concepts Investigation. NAS8-35771. Rockwell International. | X85-10262 | SRB Ascent Aerodynamic Heating Design Criteria Reduction Study. NAS8-35322. Remtech, Inc. | X85-90384 |
| CR-171445 | April 1985 | CR-171455 | March 1985 |
| Evaluation of Carbon-Carbon Composites for Space Engine Nozzles. NAS8-35971. Aerojet Strategic Propulsion Company. | X85-74952 | Utilization of Satellite Cloud Information To Diagnose the Energy State and Transformations in Extratropical Cyclones. NAS8-34009. Purdue Research Institute. | N85-90380 |
| CR-171446 | November 1984 | CR-171456 | April 1985 |
| Definition of Technology Development Missions for Early Space Stations Large Space Structures Phase II. NAS8-35043. Boeing Aerospace Company. | N85-25281 | SSME Nozzle Heating and TPS Response During Orbital Entry. NAS8-36151. Remtech, Inc. | X85-90386 |
| CR-171447 | April 1985 | CR-171457 | April 1985 |
| Plasma and Magnetospheric Research. NAS8-33982. The University of Alabama in Huntsville. | N85-25976 | Feasibility Study and Verified Design Concept for New Improved Hot Gas Facility, Monthly Progress Report for March 1985. NAS8-36304, Lockheed. | X85-90389 |
| CR-171448 | April 1985 | CR-171458 | March 1985 |
| Financial Management Report Ending March 31, 1985 on Contract NAS8-36160. Smithsonian Institute. | X85-90387 | Bearing Tester Data Compilation Analysis and Reporting and Bearing Math Modeling. NAS8-36183. SRS Technologies. | |
| CR-171449 | April 1985 | CR-171459 | April 1985 |
| Progress Report for the Month of March 1985 on Contract NAS8-35826. MTS Systems Corp. | X85-90485 | Dynamics and Energetics of the South Pacific Convergence Zone During FGGE SOP-1. NAS8-35187. Purdue University. | |
| CR-171450 | April 1985 | CR-171460 | April 1985 |
| Advanced SSME Turbine Disk Processing for Hydrogen Resistance. NAS8-35669. Wyman-Gordon Company. | X85-90484 | Development of a Shuttle Plume Radiation Heating Indicator. NAS8-35671. Remtech, Inc. | |
| CR-171451 | April 1985 | CR-171461 | March 1985 |
| Progress Report for the Month of March 1985 on Contract NAS8-36456. Remic Corp. | X85-90390 | Design Analysis and Fabrication of Composite Springs for the ST-SSE Isolation System from February 16, 1985 to March 15, 1985. NAS8-35444. CTL Aerospace, Inc. | X85-76001 |
| CR-171452 | April 1985 | CR-171462 | March 1985 |
| Research on Expert System for Data Base Operation of Simulation Emulation Math Models. NAS8-36285. Vanderbilt University. | X85-90388 | Application of Powder Metallurgy Techniques to Produce Improved Bearing Elements for Liquid Rocket Engines Phase 1 Report. NAS8-34763. TRW Aircraft Components Group. | X85-10347 |
| CR-171453 | April 1985 | | |
| Augmented Flexible Body Dynamics Analysis Program, Monthly Progress Report No. 40. NAS8-34588. Honeywell, Inc. | X85-90385 | | |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-171463 April 1985
System Enhancements of Mesoscale Analysis and Space Sensor (MASS) Computer System. Purchase Order H-78185B. Atsuko Computing International. N85-30708
- CR-171464 May 1985
Progress Report for Month of April 1985 on Contract NAS8-36456. Remic Corp. X85-90491
- CR-171465 May 1985
Participation in the Definition Conduct and Analysis of Particle Accelerator Experiments for the First Spacelab Mission. NAS8-32488. Southwest Research Inst.
- CR-171466 April 1985
SSME LOX Post Flow Analyses Fluid Structure Interaction. NAS8-35505. Lockheed Missiles and Space Company, Inc. X85-90483
- CR-171467 December 1981
Locomotive Dynamic Characterization Test Analysis, Industry Review. NAS8-29882. Martin Marietta Corp. N85-30981
- CR-171468 April 1985
Meteorological and Environmental Inputs to Aviation Systems (Committee Summary Report). NAS8-36177. University of Tennessee Space Institute.
- CR-171469 April 1985
SRB Filament Wound Case Material Property Study, Final Report. NAS8-35672. Tennessee Technological University. N85-27940
- CR-171470 October 1984
Analysis of Heat-Transfer Measurements From Two AEDC Wind Tunnels on the Shuttle External Tank. H-61304B. Arnold Engineering Development Center. N85-28263
- CR-171471 April 1985
Space Shuttle Propulsion Estimation Development Verification. NAS8-36152. Rogers Engineering and Associates. X85-75612
- CR-171472 April 1985
Monthly Progress Report on Contract NAS8-36602. Charles Stark Draper Lab. N85-72941
- CR-171473 June 1980
Shuttle/Tethered Satellite System Definition Study Extension, Final Report. NAS8-32853. Ball Aerospace Division. N85-27923
- CR-171474 February 1979
Shuttle/Tethered Satellite System Definition Study - Volume 1, Executive Summary, Final Report. NAS8-32853. Ball Aerospace Systems Division. N85-27924
- CR-171475 March 1985
Preparation of Polystyrene Latex Particles in a Rotating Reactor. NAS8-36286. Lehigh University. N85-28108
- CR-171476 May 1985
Interchangeable End Effector Tools Utilized on the PFMA. NAS8-36307. SRS Technologies.
- CR-171477 March 1985
Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 1 of 10, Executive Summary. NAS8-36107. Boeing Aerospace Company. X85-10287
- CR-171478 March 1985
Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 2 of 10, Mission Analysis. NAS8-36107. Boeing Aerospace Company. X85-10288
- CR-171479 March 1985
Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 3 of 10, System Design Trades. NAS8-36107. Boeing Aerospace Company. X85-10289
- CR-171480 March 1985
Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 4 of 10, Structures Trades, NAS8-36107. Boeing Aerospace Company. X85-10290

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|-----------|------------|---|-----------|
| CR-171481 | March 1985 | MSFC Bearing Tester for LN2. NAS8-34978. Lockheed Missiles and Space Company. | X85-10376 |
| CR-171482 | March 1985 | Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 5 of 10, Propulsion Trades. NAS8-36107. Boeing Aerospace Company. | X85-10291 |
| CR-171483 | March 1985 | Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 6 of 10, GN&C Trades. NAS8-36170. Boeing Aerospace Company. | X85-10292 |
| CR-171484 | March 1985 | Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 7 of 10, Aerothermal Trades. NAS8-36107. Boeing Aerospace Company. | X85-10293 |
| CR-171485 | March 1985 | Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 8 of 10, Operations Trades. NAS8-36107. Boeing Aerospace Company. | X85-10294 |
| CR-171486 | March 1985 | Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 9 of 10, Space Station Accommodations. NAS8-36107. Boeing Aerospace Company. | X85-10295 |
| CR-171487 | March 1985 | Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, Second Interim Briefing, Book 10 of 10, Programmatic Analysis. NAS8-36107. Boeing Aerospace Company. | X85-10296 |
| CR-171488 | April 1985 | Orbital Transfer Vehicle Concept Definition and Systems Analysis Study, March Progress Report. NAS8-36108. Martin Marietta Aerospace Corp. | X85-75607 |
| CR-171489 | May 1985 | Stress Analysis of the Space Telescope Focal Plane Structure Joint Bi-Monthly Progress Report March 1 Through April 30, 1985. NAS8-36288. Auburn University. | N85-90535 |
| CR-171490 | May 1985 | Evaluation of Tailored Single Crystal Airfoils, Third Quarterly Progress Report, February 10 to May 10, 1985. NAS8-35815. Williams International. | X85-10280 |
| CR-171491 | May 1985 | Ground Test Article for Deployable Space Structure Systems, Seventh Bi-Monthly Report. NAS8-34657. Rockwell International. | X85-90535 |
| CR-171492 | May 1985 | Payload Missions Integration Progress Report, Data Requirement MA-03. NAS8-32712. Teledyne Brown Engineering. | N85-90617 |
| CR-171493 | May 1985 | Progress Report on Contract NAS8-34137, February 1 to April 30, 1985. The University of Alabama in Huntsville. | N85-90536 |
| CR-171494 | May 1985 | Space Shuttle Main Engine Powerhead Structural Modeling, Stress and Fatigue Life Analysis, Monthly Progress Report for April 1985. NAS8-34978. Lockheed Missiles and Space Company. | X85-90591 |
| CR-171495 | May 1985 | Pinhole Occulter Monthly Progress Report No. 9. NAS8-36101. Honeywell. | |
| CR-171496 | April 1985 | Latest Flight Profile and Software Changes and Assess Their Effect on ET Heat Loads. NAS8-36196. Dynetics, Inc. | X85-90490 |
| CR-171488 | April 1985 | Thermal and Structural Analysis of the | |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- Assembly, Final Report. NAS8-35042. Mar-
tin Marietta. N85-30001
- CR-171516 April 1985
Space Shuttle Simulation Model Monthly
Progress Report No. 10 for the Period March
1 Through March 31, 1985. NAS8-35979.
Engineering Analysis, Inc. N85-90472
- CR-171517 April 1985
Research Study: Cyclone Diagnostics.
NAS8-34010. USRA. N85-90643
- CR-171518 June 1985
High Area Ratio Nozzle Concepts Investiga-
tion, Article I, Attachment "A". NAS8-
35771. Rockwell International. X85-10364
- CR-171519 May 1985
Monthly Progress Report on Contract
NAS8-36602. Charles Stark Draper Lab.
N85-90489
- CR-171520 February 1985
Materials Processing in Low Gravity Pro-
gram. NAS8-34530. The University of
Alabama in Huntsville.
- CR-171521 May 1985
Materials Processing in Low Gravity Pro-
gram. NAS8-34530. The University of
Alabama in Huntsville.
- CR-171522 May 1985
Shuttle HPM Combustion Vorticity Insta-
bility. NAS8-35052. The University of
Alabama in Huntsville. X85-90608
- CR-171523 June 1985
Space Shuttle Propulsion Estimation Devel-
opment Verification. NAS8-36152. Rogers
Engineering and Associates. X85-75984
- CR-171524 May 1985
Roller Bearing Research and Technology
Program Phase I - Feasibility Study, Sum-
mary Report. NAS8-35560. Rockwell Inter-
national.
- CR-171525 June 1985
Evaluation of Carbon-Carbon Composites
- for Space Engine Nozzles. NAS8-35971.
Aerojet Strategic Propulsion Company.
X85-10298
- CR-171526 June 1985
Containerless Glass Fiber Pulling Apparatus
and Furnace. NAS8-35874. Intersonics
Incorporated. X85-10373
- CR-171527 December 1984
MCT Crystal Growth. NAS8-34957. The
University of Alabama in Huntsville.
N85-90642
- CR-171528 March 1985
MCT Crystal Growth. NAS8-34957. The
University of Alabama in Huntsville.
N85-90640
- CR-171529 June 1985
MCT Crystal Growth. NAS8-34957. The
University of Alabama in Huntsville.
N85-90639
- CR-171530 May 1985
B-52B/DTV (Drop Test Vehicle) Flight
Test Results - Drop Test Missions. NAS8-
35016. The Boeing Company. N85-29934
- CR-171531 May 1985
Microgravity Silicon Zoning Investigation.
NAS8-34920. Westech Systems, Inc.
N85-31073
- CR-171532 December 1983
MCT Crystal Growth. NAS8-34956. The
University of Alabama in Huntsville.
N85-90641
- CR-171533 June 1985
Advanced Recovery Systems for STS Appli-
cations. NAS8-36120. United Technologies
United Space Boosters. X85-10341
- CR-171534 June 1985
Turbine Blade-Tip Clearance Excitation
Forces. NAS8-35018. Massachusetts Insti-
tute of Technology. N85-29963

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|---|--------------|---|--------------|
| CR-171535 | June 1985 | CR-171545 | June 1985 |
| Comparison of Wind and Turbulence Measurements from Doppler Lidar and Instrumented Aircraft, Final Report. NAS8-36188. FWG Associates, Inc. N85-31729 | | Steel Case SRB Reentry Flight Evaluation and Design Environment (STS-7, 8, 9, 11, and 14 SRB Reentry Heating Flight Evaluation) Final Report. NAS8-33111. Remtech, Inc. X85-10345 | |
| CR-171536 | March 1985 | CR-171546 | October 1983 |
| NASA/MSFC Coaxial Welding Vision System, Theory and Operation. NAS8-35595. The Ohio State University. | | STS-6 SRB Reentry Heating Flight Evaluation Volume I. NAS8-33111. Remtech, Inc. X85-10344 | |
| CR-171537 | June 1985 | CR-171547 | July 1985 |
| Wave/Particle Interactions in the Plasma Sheet, Final Report. NAS8-35920. University of Colorado. N85-32072 | | Final Report on Contract NAS8-34650. Cedarwood Systems Corporation. N85-73886 | |
| CR-171538 | June 1985 | CR-171548 | April 1985 |
| Multi-kW Solar Arrays for Earth Orbit Applications, Final Report. NAS8-36162. Lockheed Missiles and Space Company. N85-31139 | | NASA/MSFC Large Stretch Press Study. NAS8-35969. Boeing. X85-10375 | |
| CR-171539 | July 1985 | CR-171549 | July 1985 |
| Ground Test Article for Deployable Space Structure Systems. NAS8-34657. Rockwell International. | | SPAR Improved Structural/Fluid Dynamic Analysis Capability. NAS8-35772. Softcom Systems, Inc. N85-31449 | |
| CR-171540 | May 1985 | CR-171550 | May 1985 |
| Software Development to Support Sensor Control of Robot Arc Welding. NAS8-36460. Clemson University. | | Modification to Beckman DK-2A Spectroreflectometer, Final Report. NAS8-35812. Radiometrics, Inc. | |
| CR-171541 | January 1985 | CR-171551 | July 1985 |
| Concept Development Evaluation for John Deere/UA STS Middeck Experiment Location. NAS8-35615. Wyle Laboratories. N85-31071 | | Research on Expert System for Data Base Operation of Simulation/Emulation with Models. NAS8-36285. Vanderbilt University. X85-90503 | |
| CR-171542 | June 1985 | CR-171552 | June 1985 |
| Progress Report Contract NAS8-33726. The University of Alabama In Huntsville. | | The Role of Gravity During the Solidification of Miscibility Gap Alloys. NAS8-36193. The University of Alabama. | |
| CR-171543 | July 1985 | CR-171553 | July 1985 |
| Interchangeable End Effector Tools Utilized on the PFMA, Task I, Final Report. NAS8-36307. SRS Technologies. | | Plasma and Magnetospheric Research. NAS8-33982. The University of Alabama in Huntsville. | |
| CR-171544 | June 1984 | CR-171554 | July 1985 |
| The Steel Case SRB Reentry Thermal Environment Data Book. NAS8-33111. Remtech, Inc. | | Utilization of Satellite Cloud Information to Diagnose the Energy State and Transformations in Extratropical Cyclones. NAS8-34009. Purdue University. | |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|---|-------------|--|-------------|
| CR-171555 | June 1985 | CR-171564 | July 1985 |
| Space Shuttle Simulation Model Monthly Progress Report No. 12 for the Period May 1 Through May 31, 1985. NAS8-35979. Engineering Analysis, Inc. | | Berthing Mechanisms, Monthly Progress Report for May and June 1985. NAS8-36417. McDonnell Douglas Corporation. | |
| CR-171556 | June 1985 | CR-171565 | June 1985 |
| Software Development to Support Sensor Control of Robot Arc Welding. NAS8-36460. Clemson University. | | Space Station Thermal Storage Refrigeration System Research and Development. NAS8-36401. Lockheed Missiles and Space Corp. X85-10361 | |
| CR-171557 | June 1985 | CR-171566 | June 1985 |
| Monthly Progress Report for May 1985 on Contract NAS8-36602. Charles Stark Draper Lab. | | Space Station Body Mounted Radiator System. NAS8-36402. LTV Aerospace and Defense. X85-10362 | |
| CR-171558 | July 1985 | CR-171567 | June 1985 |
| Monthly Progress Report for June 1985 on Contract NAS8-36602. Charles Stark Draper Lab. | | Space Station Trace Contaminant Control, Monthly Progress Report for June 1985. NAS8-36406. Biotechnology LMSC, Inc. | |
| CR-171559 | July 1985 | CR-171568 | April 1985 |
| Space and Sea Systems Department Hamilton Standard First Monthly Progress Report. NAS8-36626. United Technologies Hamilton Standard. | | Research Study: Space Related Aerosol Research, Quarterly Progress Report February 1 Through April 30, 1985. NAS8-35919. Universities Space Research Association. N85-90496 | |
| CR-171560 | July 1985 | CR-171569 | August 1985 |
| Dynamics and Energetics of the South Pacific Convergence Zone During FGGE SOP-1. NAS8-35187. Purdue University. | | Diagnosis of Vertical Motions from VAS Retrievals During a Convective Outbreak. NAS8-35330. Saint Louis University. N85-30554 | |
| CR-171561 | August 1985 | CR-171570 | May 1985 |
| Effect of Microstructure on Weld Haz Cracking of Inconel 718. NAS8-34962. University of Alabama in Birmingham. X85-10369 | | Bearing Tester Data Compilation Analysis and Reporting and Bearing Math Modeling Monthly Progress Report for May 1985. NAS8-36183. SRS Technologies. | |
| CR-171562 | May 1985 | CR-171571 | June 1985 |
| Space Station ECLSS Integration Analysis. NAS8-36407. MDTSCO Huntsville Operations. | | Group-Kinetic Theory and Modeling of Atmospheric Turbulence, Quarterly Progress Report, November 30, 1984 Through April 30, 1985. NAS8-36153. University Space Research Association. N85-90498 | |
| CR-171563 | June 1985 | CR-171572 | June 1985 |
| Environmental Control Life Support (ECLS) Integration Analysis, Monthly Progress Report for May 1985. NAS8-36407. McDonnell Douglas Technical Service Company, Inc. | | Monthly Progress Report Covering the Period May 4 Through 31, 1985. NAS8-35921. | |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- | | | | |
|---|----------------|---|------------|
| CR-171573 | June 1985 | CR-171582 | April 1985 |
| Study of High Performance Alloy Electroforming, Seventeenth Monthly Technical Progress Narrative, April 29 to May 24, 1985. NAS8-35817. Bell Aerospace Textron. | | U.S. and Foreign Alloy Cross-Reference Data Base. NAS8-36166. Fisk University. | X85-90502 |
| CR-171574 | April 1985 | CR-171583 | July 1985 |
| Space Station Thermal Integration Study Thermal Storage and Cryogenic Propellant Depot Final Report. NAS8-35624. General Dynamics Convair Division. | | The Imaging Spectrometric Observatory for Spacelab 1/EOM 1-2. NAS8-33992. Utah State University. | X85-90565 |
| CR-171575 | June 1985 | CR-171584 | July 1985 |
| Space Station ACS Test Bed Modification and Refurbishment of Skylab CMG's and Related Experiment. NAS8-36408. Bendix Guidance Systems Division. | | System Analysis for the Huntsville Operation Support Center Distributed Computer System, Progress Report for July 1985. NAS8-34906. Mississippi State University. | |
| CR-171576 | June 1985 | CR-171585 | July 1985 |
| Space Station ACS Test Bed Modification and Refurbishment of Skylab CMG's and Related Equipment. NAS8-36408. Bendix Guidance System Division. | | Space Shuttle Propulsion Estimation Development Verification. NAS8-36152. Rogers Engineering and Associates. | X85-10363 |
| CR-171577 | March 1985 | CR-171586 | June 1985 |
| The Utilization of Satellite Data and Dynamics in Understanding and Predicting Global Weather Phenomena. NAS8-33794. The Pennsylvania State University. | | Latest Flight Profile and Software Changes and Assess Their Effect on ET Heat Loads. NAS8-36196. Dynetics Inc. | X85-10360 |
| CR-171578 | May 1985 | CR-171587 | June 1984 |
| Orbital Transfer Vehicle Concept Definition and System Analysis Study. NAS8-36108. Martin Marietta Corp. | N85-90486 | Analysis of Spacecraft Data Final Technical Report. NAS8-34005. Intergraph Corporation. | N85-32789 |
| CR-171579 | June 1985 | CR-171588 | July 1985 |
| Orbital Transfer Vehicle Concept Definition and Systems Analysis Study. NAS8-36108. Martin Marietta Corp. | X85-90501 | A Retarding Ion Mass Spectrometer for the Dynamics Explorer-1. NAS8-32831 The University of Texas at Dallas. | N85-32303 |
| CR-171580 | July 1985 | CR-171589 | May 1985 |
| Orbital Transfer Vehicle Concept Definition and Systems Analysis Study. NAS8-36108. Martin Marietta Corp. | X85-90494 | Analysis and Calculation of Macrosegregation in a Casting Ingot. NAS8-36039. General Electric. | N85-32178 |
| CR-171581 | September 1984 | CR-171590 | June 1985 |
| Diagnostics of Severe Convection and Sub-synoptic Scale Ageostrophic Circulations. NAS8-33222. University of Wisconsin-Madison. | N85-32571 | Progress Report for the Month of May 1985 on Contract NAS8-35836. MTS Systems Corp. | X85-90498 |
| | | CR-171591 | July 1985 |
| | | Progress Report for the Month of June 1985 on Contract NAS8-35836. MTS Systems Corp. | X85-90499 |

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-171592 May 1985
Advanced SSME Turbine Disk Processing for Hydrogen Resistance. NAS8-35669. R&D Department Wyman-Gordon.
- CR-171593 June 1985
Mechanical Properties of Various Alloys in Hydrogen. NAS8-36040. United Technologies Pratt and Whitney.
- CR-171594 June 1985
Process Chemistry Definition for Carbon-Phenolic and Carbon-Carbon Precursor Materials. NAS8-36296. Aerojet Strategic Propulsion Company.
- CR-171595 July 1985
SSME Seal Test Program: Test Results for Hole-Pattern Damper Seals. NAS8-33716. Texas A&M University. N85-31059
- CR-171596 July 1985
Study of Proton and Neutron Activation of Metal Samples in Low Earth Orbit. NAS8-35180. Eastern Kentucky University. N85-32130
- CR-171597 March 1985
Analysis of Spacecraft Data Final Technical Report. NAS8-36038. Intergraph Corporation. N85-32790
- CR-171598 June 1985
Space Shuttle Natural Environment Analysis, Monthly Progress Report for the Period May 1 Through 31, 1985. NAS8-35975. Computer Science Corp. N85-90497
- CR-171599 July 1985
Space Shuttle Natural Environment Analysis, Monthly Progress Report for June 1 Through 30, 1985. NAS8-35975. Computer Sciences Corp. X85-90500
- CR-171600 July 1985
High-Altitude Plume Computer Code Development Final Report. NAS8-34970. Lockheed Missiles and Space Company, Inc.
- CR-171601 July 1985
Turbine Rotor/Stator Flowfield Analysis, Monthly Progress Report for June 1985.
- NAS8-36284. Lockheed Missiles and Space Company.
- CR-171602 June 1985
Turbine Rotor/Stator Flowfield Analysis Monthly Progress Report for May 1985. NAS8-36284. Lockheed Missiles and Space Company.
- CR-171603 June 1985
Debond Detection System Development Monthly Report May 21 Through May 31, 1985. NAS8-36384. Vibration and Acoustics, Inc.
- CR-171604 June 1985
SRM Nozzle Instrumentation and Model Validation Study, Monthly Progress Report No. 1, May 15 Through 30, 1985. NAS8-36290. Morton Thiokol, Inc.
- CR-171605 August 1985
Atomization and Mixing Study. NAS8-34504. Rockwell International.
- CR-171606 August 1985
Participation in the Definition, Conduct, and Analysis of Particle Accelerator Experiments for the First Spacelab Mission. NAS8-32488. Southwest Research Institute.
- CR-171607 July 1985
U.S. and Foreign Alloy Cross Reference Data Bases Monthly Progress Report for the Period May 15 to June 14, 1985. NAS8-36166. Fisk University.
- CR-171608 July 1985
U.S. and Foreign Alloy Cross Reference Data Bases Monthly Progress Report, June 15 to July 14, 1985. NAS8-36166, Fisk University.
- CR-171609 June 1985
Development of a Coaxial Viewer and Vision System for Gas Tungsten Arc Welding. NAS8-35595. Ohio State University.
- CR-171610 July 1985
HPOTP Low-Speed Flexible Rotor Balancing Phase I Final Report. NAS8-35598. Mechanical Technology Incorporated.

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-171611 July 1985
Analytical Investigation of the Dynamics of Tethered Constellations in Earth Orbit (Phase II). NAS8-36606. Smithsonian Institution.
- CR-171612 June 1985
Augmented Flexible Body Dynamics Analysis Program. NAS8-34588. Honeywell, Inc.
- CR-171613 July 1985
Space Station Thermal Storage Refrigeration System Research and Development Monthly Progress Report for June 1985. NAS8-36401. Lockheed Missiles and Space Corp.
- CR-171614 July 1985
Space Station Body Mounted Radiator Systems. NAS8-36402. LTV Aerospace and Defense Company.
- CR-171615 July 1985
Integrated Wall Design and Penetration Damage Control, Monthly Progress Report No. 1, June 3 to June 30, 1985. NAS8-36426. Boeing Aerospace Company.
- CR-171616 July 1985
Advanced SSME Turbine Disk Processing for Hydrogen Resistance, Sixth Monthly Report for June 8, 1985 to July 7, 1985. NAS8-35669. Wyman-Gordon Company.
- CR-171617 July 1985
Mechanical Properties of Various Alloys in Hydrogen. NAS8-36040. Pratt and Whitney Aircraft Group.
- CR-171618 July 1985
Design Analysis and Fabrication of Composite Springs for the ST-SEE Isolation System from June 16, 1985 to July 15, 1985. NAS8-35444. CTL-Aerospace, Inc.
- CR-171619 July 1985
Retardation Analytical Model to Extend Service Life, Monthly Technical Progress Narrative Month of June 1985. NAS8-35507. Rockwell International.
- CR-171620 July 1985
Latest Flight Profile and Software Changes and Assess Their Effect on ET Heat Loads. NAS8-36196. Dynetics, Inc.
- CR-178425 July 1985
Monthly Progress Report No. 1 Period Ending June 30, 1985, Space Station Electro-Optical Sensor Assembly. NAS8-36627. Ball Aerospace Systems.
- CR-178426 July 1985
Process Chemistry Definition for Carbon-Phenolic and Carbon-Carbon Precursor Materials for Period June 1 to June 30, 1985. NAS8-36296. Aerojet Strategic Propulsion Company.
- CR-178427 June 1985
Bearing Tester Data Compilation Analysis and Reporting and Bearing Math Modeling, Monthly Progress Report for June 1985. NAS8-36183. SRS Technologies.
- CR-178428 July 1985
Bearing Tester Data Compilation Analysis and Reporting and Bearing Math Modeling, Quarterly Progress Report for April Through June 1985. NAS8-36183. SRS Technologies, Inc.
- CR-178429 July 1985
Analysis of Electrophoresis Performance, Sixth Monthly Progress Report June 22, 1985 Through July 22, 1985. NAS8-36042. Roberts Associates, Inc.
- CR-178430 July 1985
Adaptive Rigid Body Control for an Evolving Space Station. NAS8-36422. Ford Aerospace and Communications Corp.
- CR-178431 July 1985
Lightning Data Study in Conjunction with Geostationary Satellite Data April 1 Through June 30, 1985. NAS8-35981. University of Wisconsin-Madison.
- CR-178432 July 1985
Space Station Prototype CMG Monthly Progress Report Through June 30, 1985. NAS8-36628. Bendix Guidance Systems Division.

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-178451 June 1985
SSME Nozzle Heating and TPS Response
During Orbital Entry, Progress Report for
May 1985. NAS8-36151. Remtech, Inc.
- CR-178452 June 1985
Development of a Shuttle Plume Radiation
Heating Indicator, Progress Report for
May 1985. NAS8-35671. Remtech, Inc.
- CR-178453 June 1985
SRB Ascent Aerodynamic Heating Design
Criteria Reduction Study Progress Report
for May 1985. NAS8-35322. Remtech, Inc.
- CR-178454 July 1985
SRB Ascent Aerodynamic Heating Design
Criteria Reduction Study Progress Report
for June 1985. NAS8-35322. Remtech, Inc.
- CR-178455 July 1985
Retarding Ion Mass Spectrometer (RIMS)
Quarterly Progress Report No. 67. NAS8-
32831. The University of Texas at Dallas.
- CR-178456 August 1985
Research on an Expert System for Database
Operation of Simulation/Emulation Math
Models Phase I Results Volume I. NAS8-
36285. Vanderbilt University.
- CR-178457 August 1985
Research on an Expert System for Database
Operation of Simulation/Emulation Math
Models Phase I Results, Volume II. NAS8-
36285. Vanderbilt University.
- CR-178458 August 1985
Development of a Continuous Spinning
Process for Producing Silicon Carbide-
Silicon Nitride Precursor Fibers. NAS8-
34648. Bjorksten Research Laboratories,
Inc.
- CR-178459 July 1985
Space Station Data Management Network
Components. NAS8-36411. Cybex Corp.
- CR-178460 July 1985
Space Station Data Management Network
Components Monthly Progress Report for
June 1985. NAS8-36411. Cybex Corp.
- CR-178461 May 1985
Advanced X-Ray Astrophysics Facility for
the Period of April 1 Through April 30,
1985. NAS8-36123. Smithsonian Inst.
- CR-178462 June 1985
Advanced X-Ray Astrophysics Facility
Monthly Progress Report for May 1 Through
May 31, 1985. NAS8-36123. Smithsonian
Inst.
- CR-178463 June 1985
Advanced X-Ray Astrophysics Facility
Monthly Progress Report for June 1
Through June 30, 1985. NAS8-36123.
Smithsonian Inst.
- CR-178464 July 1985
Accommodation of Astrophysical Instru-
ments in the Space Station System, Monthly
Progress Report for June 11, 1985 Through
July 10, 1985. NAS8-36124. Allied Bendix
Aerospace Corp.
- CR-178465 July 1985
Design Fabrication Testing and Delivery of
a Manipulator Foot Restraint, Monthly
Progress Report for June. NAS8-36366.
Essex Corp.
- CR-178466 June 1985
Design Fabrication Testing and Delivery of
a Manipulator Foot Restraint, Monthly
Progress Report for May. NAS8-36366.
Essex Corp.
- CR-178467 July 1985
Space Station Rotary Joint Mechanism Test
Bed Operation, Progress Report No. 1,
June-July 1985. NAS8-36585. Campbell
Engineering.
- CR-178468 March 1985
Analysis and Calculation of Macrosegrega-
tion in a Casting Ingot, Monthly Progress
Report February 1985. NAS8-36039.
General Electric Company.
- CR-178469 August 1985
Space Shuttle Propulsion Estimation Dev-
elopment Verification, Progress Report.
NAS8-36152. Rogers Engineering and Asso-
ciates, Inc.

NASA CONTRACTOR REPORTS

(Abstracts for these reports may be obtained from STAR)

- CR-178470 September 1985
Quarterly Progress Report for July 1985 on Contract NASA Order H-78173B. University of Texas at Dallas.
- CR-178471 June 1985
Monthly Progress Report for NASA Order No. H-78175B, Reporting Period May 1985. Essex Corp.
- CR-178472 July 1985
Monthly Progress Report for NASA Order H-78175B, Reporting Period for June 1985. Essex Corp.
- CR-178473 July 1985
Computation of Flow Regimes in Parameter Space for the AGCE. Purchase Order H-78181B. Robert Associates, Inc.
- CR-178474 June 1985
Evaluation of Data Obtained from Atmospheric Laser Doppler Velocimeter, Final Report. NAS8-34731. University of Nevada System.
- CR-178475 August 1985
Bearing Tester Data Compilation Analysis, and Reporting and Bearing Math Modeling Monthly Progress Report for July 1985. NAS8-36183. SRS Technologies.
- CR-178476 August 1985
May and June 1985 Technical Report on Contract NAS8-35968. OAO Corporation.
- CR-178477 August 1985
Evaluation of Carbon-Carbon Composites for Space Engine Nozzles. NAS8-35971. Aerojet Strategic Propulsion Company.
- CR-178478 August 1985
Progress Report Contract NAS8-34137, May 1, 1985 Through July 31, 1985. The University of Alabama in Huntsville.
- CR-178479 June 1985
Computation of Flow Regimes in Parameter Space for the AGCE, March 13, 1985 Through June 13, 1985. NASA Order H-78181B. Robert Associates, Inc.
- CR-178480 July 1985
Computation of Flow Regimes in Parameter Space for the AGCE, Final Report, September 13, 1984 Through July 13, 1985.
- NASA Order H-78181B. Roberts Associates, Inc.
- CR-178481 July 1985
Debond Detection System Development Monthly Progress Report June 1 Through June 30, 1985. NAS8-36384. Vibration and Acoustic, Inc.
- CR-178482 September 1985
Investigation of Coronal Parameters in Solar Type Stars, Final Report. NAS8-35873. Lockheed Palo Alto Research Lab.
- CR-178483 June 1985
Research Pressure Instrumentation for NASA Space Shuttle Main Engine Modification No. 7. NAS8-34769. Honeywell, Inc.
- CR-178484 August 1985
Confined Swirling Jet Predictions Using a Multiple-Scale Turbulence Model. NASW-3458. National Research Council in Association with Systems Dynamics Laboratory.
- CR-178485 July 1985
Periodic Progress Review Meeting Documentation Quarterly Report, Period ATP to July 15, 1985, User Operations Management. NAS8-36404. O. C. Jean and Associates.
- CR-178486 June 1985
Duct Flow Nonuniformities (Space Shuttle Main Engine), Bimonthly Progress Report April Through May 1985. NAS8-34507. Lockheed Missiles and Space Company, Inc.
- CR-178487 August 1985
Space Station Data Management Network Components, Monthly Progress Report July 1985. NAS8-36411. Cybex Corp.
- CR-178488 July 1985
Design Performance Investigation and Delivery of a Miniaturized Cassegrainian Concentrator Solar Array, Monthly Report, June 1 to June 28, 1985. NAS8-36159. TRW Defense and Space Systems Group.
- CR-178489 August 1985
Design Performance Investigation and Delivery of a Miniaturized Cassegrainian Concentrator Solar Array, June 3 to June 28, 1985. NAS8-36159. TRW Space Systems Group.

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

- CR-178490 August 1985
SSME Nozzle Heating and TPS Response
During Orbital Entry, Progress Report for
July 1985. NAS8-36151. Remtech, Inc.
- CR-178491 August 1985
Advanced X-Ray Astrophysics Facility, July
1 Through July 31, 1985. NAS8-36123.
Smithsonian Institute.
- CR-178492 August 1985
High Performance Solid Rocket Motor SRM
Submerged Nozzle Combustion Cavity Flow-
field Assessment, Monthly Progress Report.
NAS8-35980. Lockheed Missiles and Space
Company.
- CR-178493 August 1985
Development of a Shuttle Plume Radiation
Heating Indicator, Progress Report for
July 1985. NAS8-35671. Remtech, Inc.
- CR-178494 August 1985
SRB Ascent Aerodynamic Heating Design
Criteria Reduction Study Progress Report
for June 1985. NAS8-35322. Remtech,
Inc.
- CR-178495 January 1985
Evaluation and Prediction of Long-Term
Environmental Effects on Nonmetallic
Materials, Addendum to Final Report.
NAS8-33578. Martin Marietta.
- CR-178496 August 1985
Monthly Progress Report for NASA Order
H-78175B for the Month of July 1985.
Essex Corp.
- CR-178497 August 1985
Materials Processing in Low Gravity Pro-
gram, Quarterly Status Report. NAS8-
34530. The University of Alabama in
Huntsville.
- CR-178498 August 1985
Fiber Pulling in Low Gravity. NAS8-35978.
The University of Alabama in Huntsville.
- CR-178499 July 1985
Plasma Source for Spacecraft Potential Con-
trol. The University of Alabama in Hunts-
ville.
- CR-178500 December 1984
Solid Rocket Booster Water Impact Flight
Evaluation Monthly Progress Report, Sep-
tember 1 Through December 31, 1984.
NAS8-35017. Chrysler Corporation.
- CR-178501 September 1985
Ground Test Article for Deployable Space
Structure Systems. NAS8-34657. Rockwell
International.
- CR-178502 August 1985
Shuttle HPM Combustion Vorticity Insta-
bility, Quarterly Report. NAS8-35052. The
University of Alabama in Huntsville.
- CR-178503 July 1985
Augmented Flexible Body Dynamics Analy-
sis Program, Monthly Progress Report No.
43. NAS8-34588. Honeywell, Inc.
- CR-178504 August 1985
Space Shuttle Main Engine Powerhead Struc-
tural Modeling, Stress and Fatigue Life
Analysis Volume I Thermal and Structural
Analysis of the MSFC Bearing Tested for
LN₂. NAS8-34978. Lockheed Missiles and
Space Company, Inc.
- CR-178505 August 1985
Space Shuttle Main Engine Powerhead Struc-
tural Modeling, Stress and Fatigue Life
Analysis Volume II Documentation of SSME
Analytical Models and Investigations of
Unscheduled Events and Special Tasks.
NAS8-34978. Lockheed Missiles and Space
Company, Inc.
- CR-178506 August 1985
Advanced Turbine Study Technical Progress
Report No. 11, April 1, 1984 Through
August 31, 1984. NAS8-33821. Pratt and
Whitney United Technologies.

NASA CONTRACTOR REPORTS
(Abstracts for these reports may be obtained from STAR)

CR-178507 May 1985
Multishaker Modal Testing, Final Report.
NAS8-35338. The University of Texas at
Austin.

CR-178508 May 1985
Substructure Coupling in the Frequency
Domain. NAS8-35338. The University of
Texas at Austin.

CR-178509 May 1985
A Modal Parameter Extraction Procedure
Applicable to Linear Time-Invariant
Dynamic Systems. NAS8-35338. The Uni-
versity of Texas at Austin.

CR-178510 May 1984
A Substructure Coupling Procedure Applic-
able to General Linear Time-Invariant
Dynamic Systems. NAS8-35338. The Uni-
versity of Texas at Austin.

CR-178511 August 1985
Space Station Rotary Joint Mechanism Test
Bed Operation, Progress Report for July-
August 1985. NAS8-36585. Campbell Engin-
eering Corp.

CR-178512 August 1985
Mechanical Properties of Various Alloys in
Hydrogen. NAS8-36040. Pratt and Whitney
Aircraft Corp.

CR-178513 August 1985
Progress Report on Contract NAS8-35836
for the Month of July 1985. NAS8-35836.
MTS Systems Corp.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- | | |
|--|---|
| <p>ALTER, W. S. EH22
ANDREWS, J. B.
JOHNSTON, M. H.
CURRERI, P. A.
HAMILTON, W. D.</p> | <p>ANDERSON, B. JEFFREY ED44
KELLER, VERNON W.
Space Shuttle Exhaust Cloud: Impact Analysis. For presentation at the JANNAF Safety and Environmental Protection Subcommittee, Los Angeles, CA, June 11-13, 1985.</p> |
| <p>AN, C.-H. (NRC) ES52
Condensation Modes in Sheared Magnetic Fields. For publication in the Astrophysical Journal, Chicago, Illinois.</p> | <p>ANDREWS, J. B. ES72
ROBINSON, M.B.
Containerless Low Gravity Processing of Hypermonotectic Gold-Rhodium Alloys. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.</p> |
| <p>AN, C.-H. (NRC) ES52
The Formation of Prominences by Condensation Modes in Magnetized Cylindrical Plasmas. For presentation at the 165th American Astro. Union Meeting, Tucson, AZ, January 14-17, 1985.</p> | <p>ANDREWS, R. N. ES72
SZOFRAN, F. R.
DORRIES, A. M.
HARRIS, R. P.
LEHOCZKY, S. L.
The Effect of Growth Rate on the Compositional Variations in Directionally Hg_{1-x}Cd_xSe Alloys. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.</p> |
| <p>AN, C.-H. (NRC) ES52
The Formation of Prominences by Condensation Modes in Magnetized Cylindrical Plasmas. For publication in the Astrophysical Journal, Chicago, Illinois.</p> | <p>ANSPAUGH, B. JPL
EDGE, T. EB13
CRABB, R. European Space Agency
Radiation Effects in Space Telescope Silicon Solar Cells Using Isotropic Proton Irradiation. For presentation at the IEEE Photovoltaic Conference, Monterey, CA, July 1985.</p> |
| <p>AN, C.-H. (NRC, MSFC) ES52
SUESS, S. T.
TANDBERG-HANSSSEN, E.
STEINOLFSON, R. S. (U. of California)
On the Formation of Coronal Cavities. For publication in Solar Physics, Dordrecht, The Netherlands.</p> | <p>ANTAR, BASIL N. ES73
Penetrative Double Diffusive Convection. For publication in The Physics of Fluids Journal, Washington, D.C.</p> |
| <p>AN, C.-H. (NRC) ES52
SUESS, S. T.
TANDBERG-HANSSSEN, E.
On the Formation of Coronal Cavity. For presentation at the Annual Meeting of the Solar Physics Division of the American Astronomical Society, Tucson, AZ, May 13-15, 1985, and for publication in the Bulletin AAS, Washington, D.C.</p> | <p>ANTAR, BASIL N. ES73
Penetrative Double Diffusive Convection. For presentation at the Symposium on Double Diffusive Motions, Albuquerque, New Mexico, June 24-26, 1985.</p> |
| | <p>APPARAO, KRISHNA M. V. ES62
ANTIA, H. M.
CHITRE, S. M.</p> |

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- Origin of the Be Star Phenomenon. For publication in *Astronomy and Astrophysics*, Meudon, France.
- ARNOLD, JAMES E. ED43
A Comparison Between Doppler Wind Profiles and High Resolution Jimsphere/FPS-16-Balloon/MSS Data. For presentation at the Conference on Aerospace and Range Meteorology American Meteorological Society, Huntsville, AL, August 27-29, 1985.
- ARNOLD, R., L. ES53
MOORE, T. E.
CAHILL, L. J., Jr.
Low Altitude Field Aligned Electrons. For publication in the *Journal of Geophysical Research*, Washington, D.C.
- ATKINS, HARRY L. PS05
Commercial Materials in Processing in Space (CMPS): How U. S. Industry Gets Involved. For presentation at the Canadian Space Business Opportunities Conference, Toronto, Canada, April 23-26, 1985.
- AUSTIN, ROBERT E. PS03
SCHULTZ, DAVID N. PD11
Aeroassist Flight Experiment. For presentation at the Twenty-Second Space Congress, Canaveral Council of Technical Societies, Cocoa Beach, FL, April 23-26, 1985.
- BARCILON, A. ED42
FITZJARRALD, D.
A Nonlinear Steady Model for Moist Hydrostatic Mountain Waves. For publication in the *Journal of the Atmospheric Sciences*.
- BARLOW, G. H. ES73
SNYDER, R. S., et al.
Continuous Flow Electrophoretic Separation of Proteins and Cells from Mammalian Tissues. For publication in *Science*, Washington, D.C.
- BAYUZICK, R. J. ES72
HOFMEISTER, W. H.
EVANS, N. D.
ROBINSON, M.B.
Microstructures of Highly Undercooled Niobium Alloys. For presentation to the Metallurgical Society of AIME, Toronto, Canada, October 13-17, 1985.
- BAYUZICK, ROBERT J. ES72
ROBINSON, MICHAEL B.
Review of Undercooling Experiments in Long Drop Tubes. For presentation at the 1986 Hume-Rothery Memorial Symposium, New Orleans, LA, March 2-6, 1986.
- BAYUZICK, ROBERT ES72
ROBINSON, MICHAEL B.
Containerless Processing Experiments in Long Drop Tubes. For presentation to the American Society for Engineering Educators, Atlanta, GA, June 18, 1985.
- BECHTEL, ROBERT T. EB11
Autonomously Managed High Power System. For presentation at the Intersociety Energy Conversion Engineering Conference, Miami Beach, FL, August 17, 1985.
- BHAT, B. N. EH23
Ion Plating Processes and the Future. For presentation at the 5th Annual Golden West Regional American Electroplaters' Society, Industry Hills, CA, April 19-20, 1985.
- BHAT, B. N. EH23
GILMORE, H. L.
Thermal Barrier Coatings for the Space Shuttle Main Engine Turbine Blades. For presentation at the Thermal Barrier Coating Workshop, Cleveland, Ohio, May 20-21, 1985.
- BIDDLE, A. P. ES53
REYNOLDS, J. M.
An Integrated Development Facility for the Calibration of Low-Energy Charged Particle Flight Instrumentation. For publication in *Reviews of Scientific Instruments*, New York, NY.
- BIDDLE, A. P. ES53
MOORE, T. E.
CHAPPELL, C. R.
Occurrences of Ion Heat Fluxes in the Light Ion Polar Wind. For presentation at the

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

Spring Meeting of American Geophysical Union, Baltimore, MD, May 27-31, 1985.

Ray Conference, San Diego, CA, August 12-23, 1985.

BIDDLE, A.P. ES53
MOORE, T. E.
CHAPPELL, C. R.
Evidence for Ion Heat Flux in the Light Ion Polar Wind. For publication in the Journal of Geophysical Research, Washington, D.C.

BILBRO, JAMES W. EB23
Airborne Doppler Lidar Measurements. For presentation at the Topical Meeting on Optical Remote Sensing of the Atmosphere, Incline Village, NV, January 15-18, 1985.

BOMBARA, E. L. EG21
DeMATOS, H. V. Union Carbide Corp.
Estimation of Minimum Stored Energy in Metallized Film Capacitors to Insure Clearing of Dielectric Faults. For presentation at the Capacitor and Resistor Technology Symposium, San Diego, CA, March 12-13, 1985.

BRANDON, LARRY B. PD12
Reentry Guidance and Control for an Aeroassist Flight Experiment. For presentation at the Space Tech Conference, Society of Manufacturing Engineers, Anaheim, CA, September 23-25, 1985.

BRYAN, THOMAS C. EB24
SCOTT, DONALD R.
Remote Servicing Via Telepresence. For presentation at Space Tech '85, Anaheim, CA, September 23, 1985.

BUGG, FRANK M. ED22
Structural Dynamics of Filament Wound Space Shuttle Booster Rockets. For presentation at the 26th Structures, Structural Dynamics, and Materials Conference, Orlando, FL, April 15-17, 1985.

BURNETT, T. H. ES62
DAKE, S.
PARNELL, T. A. et al.
Energy Spectra of Cosmic Ray Nuclei C to Fe Above 20 GeV/n from a Hybrid Counter-Emulsion Chamber Experiment. For presentation at the 19th International Cosmic

BURNETT, T. H. ES62
DAKE, S.
WATTS, J. W., et al.
The Response of a Scintillation Counter Below an Emulsion Chamber to Central Interactions in the Chamber. For presentation at the 19th International Cosmic Ray Conference, San Diego, CA, August 12-23, 1985.

BURNETT, T. H. ES62
GREGORY, J. C. UAH
PARNELL, T. A.
TAKAHASHI, Y., et al. NAS
Observation of Direct Hadronic Pairs in Nucleus-Nucleus Collisions in JACEE Emulsion Chamber. For publication in the Proceedings of the 19th International Cosmic Ray Conference, San Diego, CA, August 11-23, 1985.

BURNETT, T. H. ES62
DAKE, S.
PARNELL, T. A., et al.
Excessive Production of Electron Pairs in Low Multiplicity Interactions. For publication in Nuclear Physics A, North Holland Publishing, New York, NY.

BUTLER, JOHN M. PD24
Mars Missions and Bases – A Recent Look. For presentation at the 18th Annual Electronics and Aerospace Systems Conference, Washington, D.C., October 28-30, 1985.

CALVERT, JOHN A. EP36
The Design of a Keel Latch for Use on the Hubble Space Telescope. For presentation at the 20th Aerospace Mechanisms Symposium, Lewis Research Center, Cleveland, OH, May 7-9, 1986.

CAMP, DENNIS W. ED44
HUANG, KAO-HUAH
Comparative Analysis of Aircraft and Tower Data. For publication in the Journal of Climate and Applied Meteorology.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- CAMPBELL, C. WARREN ED42
WU, S. T.
BAI, DON
A Computational Study of Multiple Jet and Wall Interaction. For presentation at the Nineteenth Midwestern Mechanics Conference, Ohio State University, Columbus, OH, September 9-11, 1985.
- CAMPBELL, C. WARREN ED42
FICHTL, GEORGE H.
Recent Advances in Monte Carlo Turbulence Simulation. For presentation at the Conference on Aerospace and Range Meteorology, American Meteorological Society, Huntsville, AL, August 27-29, 1985.
- CAMPBELL, C. WARREN ED42
Adding Computationally Efficient Realism to Monte Carlo Turbulence Simulation. For presentation at the Alabama Academy of Science 62nd Annual Meeting, Huntsville, AL, March 27-31, 1985.
- CARRUTH, M. R. ES53
YOUNG, L. E.
Extraterrestrial Photovoltaics. For presentation at the Technical and Business Exhibition/Symposium 1985, Huntsville, AL, April 26, 1985.
- CHANG, KIJOON ES73
FRAZIER, DONALD O.
Temperature Dependence of Solution-Container Interfacial Free Energies of Conjugate Phases in a Miscibility-Gap Type System. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.
- CHAPPELL, C. R. ES51
WAITE, J. H., et al.
The Theta Aurora. For publication in the Journal of Geophysical Research, Washington, D.C.
- CHAPPELL, CHARLES R. ES51
Spacelab Mission One: A Window to the Future. For presentation at the Annual Meeting of the American Association for the Advancement of Science, Los Angeles, CA, May 29, 1985.
- CHAPPELL, CHARLES R. ES51
Spacelab Mission. For publication in The Encyclopedia of Physical Science and Technology, San Diego, CA.
- CHAPPELL, C. R. ES51
KNOTT, K. (ESA/ESTEC)
Spacelab - A New Capability for Space Science Research. For presentation at the 5th European Symposium "Material Sciences Under Microgravity - Results of Spacelab 1," Munich, Germany, November 5-7, 1984.
- CHASSAY, ROGER P. JA62
PRICE, JOHN M. JA61
Processing Materials in Space: The History and the Future. For presentation at the Space Tech '85 Conference and Exposition, Anaheim, CA, September 23-25, 1985.
- CHEN, C. P. NRC/ED42
The Calculation of Confined Flows Using Multiple-Scale Turbulence Model. For presentation at the 19th Midwestern Mechanics Conference, Columbus, OH, September 9-11, 1985.
- CHEN, C. P. NRC/ED42
Calculation of Confined Swirling Jets. For publication in Communication of Applied Numerical Methods.
- CIKANEK, HARRY A., III ED14
Space Shuttle Main Engine Failure Detection. For publication in the IEEE Control Systems Magazine, Palo Alto, CA.
- CIKANEK, HARRY A., III ED14
Space Shuttle Main Engine Failure Detection. For presentation at the American Control Conference ASME, AIAA, IEEE, AIChE, ISA, Boston, MA, June 19-20, 1985.
- CLARKE, John T. TA02
Observations of Planetary Aurora with the Hubble Space Telescope. For presentation and publication at the 5th Assembly of IAGA, Prague, Czechoslovakia, August 9-12, 1985.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- | | | | |
|--|-------------|---|-------------|
| <p>CLARKE, J. T.
DURRANCE, S.
BARNES, A.
MIHALOV, J. D.
BELCHER, J.</p> <p>Observations of the Auroral H LY α Emission from Uranus Near the Time of Passage of a Large Solar Wind Disturbance. For publication in Geophysical Research Letters, Washington, D.C.</p> | <p>ES01</p> | <p>CRAFT, HARRY G., JR.</p> <p>Spacelab Payloads. For presentation at the AIAA Shuttle Environment and Operations II Conference, Houston, TX, November 13-15, 1985.</p> | <p>JA01</p> |
| <p>CLOUGH, DANIEL R.</p> <p>Motivational Contracting for Space Programs. For presentation at the Twenty-Second Space Congress, Cocoa Beach, FL, April 23-26, 1985, and for publication in Motivational Contracting for Space Programs.</p> | <p>AP40</p> | <p>CRAVEN, P. D.
CHAPPELL, C. R.</p> <p>The Detection of Heavy, Low Energy Ions in the Magnetosphere. For presentation at the Spring American Geophysical Union Meeting, Baltimore, MD, May 27-31, 1985.</p> | <p>ES53</p> |
| <p>COMFORT, R. H.
CHAPPELL, C. R.</p> <p>Variations in Thermal Ion Temperatures Near the Plasmopause Associated with Geomagnetic Activity. For presentation at the Spring Meeting, American Geophysical Union, Baltimore, MD, May 26-31, 1985.</p> | <p>ES53</p> | <p>CRAVEN, P. D.
OLSEN, R. C.
CHAPPELL, C. R.
KAKANI, L.</p> <p>First Observations of Molecular Ions in the Earth's Magnetosphere. For publication in the Journal of Geophysical Research, Washington, D.C.</p> | <p>ES53</p> |
| <p>COMFORT, R. H.
WAITE, J. H., JR.
CHAPPELL, C. R.</p> <p>Thermal Ion Temperatures from the Retarding Ion Mass Spectrometer on DE-1. For publication in the Journal of Geophysical Research, Washington, D.C.</p> | <p>ES53</p> | <p>CURRERI, P. A.
FISK, M.
STEFANESCU, D. M.</p> <p>The Effects of Low-Gravity During Directional Solidification on the Microstructure of Iron-Carbon Alloys. For presentation at the AIME Annual Meeting, New York, NY, February 1985.</p> | <p>ES74</p> |
| <p>CONNERNEY, J. E. P.
WAITE, J. H., Jr.</p> <p>Wet Model of Saturn's Ionosphere: Water From the Rings. For presentation at the American Geophysical Union Fall Meeting, San Francisco, CA., December 2-7, 1984.</p> | <p>ES53</p> | <p>CURRERI, P. A.
KAUKLER, W. F.
JOHNSTON, M. H.</p> <p>The Effects of Gravity Level During Directional Solidification of the Microstructure of Al-In-Sn Alloys. For presentation at the TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.</p> | <p>ES72</p> |
| <p>COTHRAN, ERNESTINE K.
SZOFRAN, F. R.
LEHOCZKY, S. L.</p> <p>Phase Equilibrium Parameters for the Hg_{1-x} Cd_x Te Alloy System. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.</p> | <p>ES72</p> | <p>DAILEY, CARROLL C.
CUMINGS, NESBITT P.
WINKLER, CARL E.</p> <p>AXAF Science Instrumentation. For presentation at the 18th Annual Electronics and Aerospace Conference, Washington, D.C., October 28-30, 1985.</p> | <p>PF19</p> |

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- DERRICKSON, JAMES H. ES62
PARNELL, T. A.
WATTS, J. W.
GREGORY, J. C.
A Simultaneous Measurement of the Cosmic Ray Elements B to Fe in the Two Energy Intervals 0.5 to 2.0 GeV/N and 20 to 60 GeV/N. For presentation at the 19th International Cosmic Ray Conference, San Diego, CA, August 12, 1985.
- DESSLER, A. J. ES01
Do Gaseous Planets Exhibit Solar-Like Differential Rotation of Their Internal Magnetic Fields? For presentation at the International Conference on Comparative Study of Magnetospheric Systems, La Londe Des Maures, France, September 9-14, 1985, and for publication in the Proceedings.
- DESSLER, A. J. ES01
Planetary Auroras. For presentation at the 62nd Meeting of the Alabama Academy of Science, Huntsville, AL, March 27-31, 1985.
- DESSLER, A. J. ES01
Solar-Type Differential Rotation in the Magnetic Field of Jupiter. For presentation at the 1985 Spring American Geophysical Union Meeting, Baltimore, MD, May 26-31, 1985, and for publication in EOS.
- DESSLER, A. J. ES01
HILL, T. W.
RUSSELL, C. T.
Solar-Terrestrial Relations as a Component of Space Plasma Physics. For publication in EOS, Washington, D.C.
- DESSLER, A. J. ES01
Technology Transfer and the Vernov Radiation Belt. For publication in the editorial section of Science Magazine, New York, NY.
- DESSLER, A. J. ES01
Differential Rotation of the Magnetic Fields of Gaseous Planets. For publication in the Geophysical Research Letters, Washington, D.C.
- DING, Y. J. ES52
HAGYARD, M. J.
DeLOACH, A. C.
HONG, Q. F.
LI, S. C.
LIU, X. P.
To Study the Currents Flowing Along the Reconnected Magnetic Fields. For presentation at the SMA Workshop, Irkutsk, USSR, June 17-21, 1985.
- DOZIER, JAN D. EP24
HACKETT, Robert M.
A Viscoelastic/Damage Static Fatigue Model for Filament-Wound Spherical Pressure Vessels. For presentation at the 19th Midwestern Mechanics Conference, Ohio State University, Columbus, OH, September 9-11, 1985.
- DUNNING, J. D. ES73
HERREN, B. J.
OMENYI, S.
SEAMAN, G. V. F.
SNYDER, R. S.
Electrophoretic Separation and Characterization of Geologic Materials. For publication in Separation Science and Technology, USA.
- ELSNER, R. F. ES62
DARBRO, W.
RAMSEY, B. D.
WEISSKOPF, M. C.
WILLIAMS, A. C., et al.
On Fast X-Ray Rotators with Long Term Periodicities. For presentation at the 165th Meeting of the American Astronomical Society, Tucson, AZ, January 14, 1985.
- ELSNER, R. F. ES62
SEWARD, F. D.
HARNDEN, F. R., Jr.
X-Ray Pulse Emission Mechanism of PSR-0540-69 and PSE 1509-58. For presentation at the Crab Nebula Symposium, George Mason University, Fairfax, VA, October 11-12, 1984.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- ENGBRETSON, M. J. ES53
CAHILL, L. J., JR.
WAITE, J. H., JR.
GALLAGHER, D. L.
CHANDLER, M. O.
SUGIURA, M.
WEIMER, D.
Wave and Plasma Observations During a Compressional Pc5 Wave Event, August 10, 1982. For publication in the Journal of Geophysical Research, Washington, D.C.
- EVANS, N. D. ES72
HOFMEISTER, W. H.
BAYUZICK, R. J.
ROBINSON, M. B.
Solidification of Nb-Ge Alloys in Long Drop Tubes. For publication in Metallurgical Transactions A, Pittsburgh, PA.
- FELIX, A. RICHARD ED35
SSME Air Flow Facility. For presentation at the 63rd Meeting of the Supersonic Tunnel Association, Dallas, Texas, April 15-16, 1985.
- FERNANDEZ, KENNETH R. EB44
Robosim, A Robot Simulation System. For presentation at Tabes-85, Huntsville, AL, April 23, 1985.
- FEUERBACHER, B. ES71
HAMACHER, H.
NAUMANN, R.
III.3 Containerless Processing Technology. For publication in Materials Science in Space, Germany.
- FEUERBACHER, B. ES71
HAMACHER, H.
NAUMANN, R.
Historical Development. For publication in Materials Science in Space.
- FICHTL, GEORGE H. ED42
HILL, KELLY
VAUGHAN, OTHA H.
Spacelab Mission 3 - Broadening Horizons in Space Research. For presentation at the 22nd Space Congress, Space and Society - Progress and Promise, Cocoa Beach, FL, April 23-26, 1985.
- FISHMAN, G. J. ES62
MEEGAN, C. A.
PARNELL, T. A.
WILSON, R. B., et al.
The Design and Expected Performance of the Burst and Transient Source Experiment (BATSE) for the Gamma Ray Observatory (GRO). For presentation at the 19th International Cosmic Ray Conference, San Diego, CA, August 11-22, 1985.
- FISHMAN, G. J. ES62
The Status of Low Energy GAMMA-Ray Astronomy and the Gamma Ray Observatory. For presentation at the LSU Workshop on High Energy Cosmic Ray and Gamma Ray Astronomy Experiments, Baton Rouge, LA, October 17-20, 1984.
- FITZJARRALD, D. ED43
BILBRO, J.
BERANEK, R.
Doppler Lidar Wind Measurement on EOS. For presentation at the AIAA/NASA Earth Observation Systems Conference, Virginia Beach, VA., October 8-10, 1985.
- FITZJARRALD, D. E. ED41
Preliminary Results from 1984 Airborne Lidar Wind Measurements. For presentation at the Optical Remote Sensing of the Atmosphere, Incline Village, NV, January 15-18, 1985.
- FOUNTAIN, JAMES A. PS05
McKEOWN, DAN
COX, V.
Analysis of TQCM Surface Contamination Adsorbed During Spacelab I Mission. For presentation at the Shuttle Environment and Operations II, Houston, TX, November 13-15, 1985.
- FOUNTAIN, JAMES A. PS05
Opportunities for Commercial Materials Processing in Space. For presentation at the Space Station: Gateway to Space Mfg. and Services Conference, Orlando, FL, November 7-8, 1985.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- FOUNTAIN, JAMES A. PA01
Commercial Materials Processing in Space at Marshall Space Flight Center: Overview and Progress Report. For presentation at the Twenty-Second Space Congress, Canaveral Council of Technical Societies, Cocoa Beach, FL, April 23-26, 1985.
- FOWLIS, W. W. ES73
Confinement of Floating Zone Thermocapillary Flow By Rotation. For presentation at the Gravitation Effects in Materials, Separation Processes, and Living Systems Gordon Research Conference, New London, NH, August 19-23, 1985.
- FOWLIS, WILLIAM W. ES73
ROBERTS, GLYN O.
Analytical and Numerical Studies of the Thermocapillary Flow in a Uniformly Rotating Floating Zone. For publication in the Journal of Crystal Growth, Amsterdam, The Netherlands.
- FOWLIS, W. W. ES73
ROBERTS, G. O.
Fluid Dynamic Analysis of Protein Crystal Growth. For presentation at the conference on Protein Crystal Growth in Space, Huntsville, AL, May 6-9, 1985.
- FRAZIER, D. O. ES73
LOO, B. H.
The Infrared Spectrum of Solid Chlorotrifluoromethane. For publication in Spectrochimica ACTA, Elmsford, NY.
- FRAZIER, DONALD O. ES73
FACEMIRE, BARBARA R.
FANNING, URSULA S.
Surface Effect on Phase Distributions of a Fast-Quenched Miscibility Gap Type System: Succinonitrile Water. For publication in Acta Metallurgica, Cambridge, England.
- FRAZIER, D. O. ES73
FACEMIRE, B. R.
FANNING, U. S.
Surface Effects on Phase Distribution of a Fast-Quenched Miscibility Gap Type System: Succinonitrile-Water. For presentation at the Huntsville Association of Technical Societies, Huntsville, AL, April 24, 1985.
- GALLAGHER, D. L. ES01
REINLEITNER, L. A.
Rest Frame Spectrum of Ion Acoustic Waves in the Magnetosheath. For presentation at the Fall AGU Meeting, San Francisco, CA, December 9-13, 1985.
- GALLAGHER, D. L. ES53
The Lion Roars: Natural Wave Emission in Space Plasma. For presentation at the 62nd Annual Meeting of the Alabama Academy of Science, Huntsville, AL, March 27-31, 1985.
- GALLAGHER, D. L. ES53
Wave Diagnostics in a Cold Multi-Ion Plasma. For presentation at the International School of Space Simulations, Kauai, Hawaii, February 4-15, 1985.
- GALLAGHER, D. ES53
MENIETTI, J.
BURCH, J.
PERSON, A.
WAITE, J.
CHAPPELL, C.
Evidence of High Densities and Ion Outflows in the Polar Cap During the Recovery Phase. For publication in the Geophysical Research Letters, Ann Arbor, MI.
- GARY, GILMER A. ES52
A Variational Approach to Non-Linear Force-Free Magnetic Fields. For presentation at the Annual Meeting of the Solar Physics Division of the American Astronomical Society, Tucson, AZ, May 13-15, 1985.
- GENTZ, STEVEN J. EH22
BURKA, JAMES A.
MUNAFO, PAUL M.
Hydrotest Failure of Refurbished Space Shuttle Solid Rocket Motor Case Segment. For presentation at the ASM/Westec 85 Technical Conference SME, Los Angeles, CA, March 18-22, 1985.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- GIUDICI, ROBERT J. PD14
Space Station Power System Issues. For presentation and publication at the 20th Intersociety Energy Conversion Engineering Conference, Miami Beach, FL, August 18-23, 1985.
- GOMBOSI, T. I. ES53
CRAVENS, T. E.
NAGY, A. F.
WAITE, J. H., JR.
Time-Dependent Numerical Simulation of Hot Ion Outflow From the Polar Ionosphere. For presentation at the Chapman Conference on Ion Acceleration in the Magnetosphere and Ionosphere, Wellesley, MA, June 3-7, 1985.
- GOMBOSI, T. I. ES53
CRAVENS, T. E.
NAGY, A. F.
WAITE, J. H., JR.
Time-Dependent Theoretical Studies of Supersonic O^+ Outflow from the Polar Ionosphere. For presentation at the Spring American Geophysical Union Meeting, Baltimore, MD, May 27-31, 1985.
- GOODMAN, STEVEN J. ED43
USRA Visiting Scientist
Real-Time Applications for Remotely Sensed Lightning Observations. For presentation at the Conference on Aerospace and Range Meteorology, Huntsville, AL, August 27-29, 1985.
- GREEN, JAMES L. ES53
THOMAS, DOUG
GALLAGHER, DENNIS
Access, Analysis, and Color Display of Multidimensional Spacecraft Data Stored on Optical Disks. For presentation at the 38th Annual Conference of the Society of Photographic Scientists and Engineers, Atlantic City, NJ, May 12-16, 1985.
- GREEN, J. L. ES53
BAKER, D. N. Los Alamos National Lab.
ZWICKL, R. D. Los Alamos National Lab.
DSUWG Meeting Report (Data System Users Working Group). For publication in EOS, Washington, D.C.
- GREEN, J. L. ES53
MENIETTI, J. D.
Three-Dimensional Raytracing of Io-Dependent Jovian Decametric Radiation. For presentation at the International School for Space Simulations, Kauai, Hawaii, February 3-16, 1985.
- GREEN, JAMES L. ES53
WAITE, J. HUNTER, JR.
Reply to Composition of the Polar Wind – Not Just H^+ and HE^+ . For publication in the Geophysical Research Letters, Washington, D.C.
- GREGG, CECIL C. KA01
Space Station Program Overview. For presentation at the Technical and Business Exhibition/Symposium '85, Huntsville, AL, April 24, 1985.
- GUEST, STANLEY H. ED24
Correlation of Model and Flight Aero-Acoustic Data for Shuttle Launches. For presentation at the AIAA 9th Aero-Acoustic Conference, Williamsburg, VA, October 15, 1984.
- GUEST, S. H. ED24
RAO, M. D.
RAJU, P. K.
CROCKER, M. J.
ZHU, G.
Experimental Evaluation of Damping of Graphite Fiber Composites. For presentation at the National Noise Control Conference NOISE-CON 85, Ohio State University, June 3-5, 1985.
- HAGYARD, M. J. ES52
Preflare Magnetic and Velocity Fields. For publication in Solar Maximum Mission Workshop Monograph.
- HAGYARD, M. J. ES52
A Comparison of Photospheric Electric Current and Ultraviolet and X-Ray Emission in an Active Region. For publication in the Astrophysical Journal, Chicago, IL.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- HAGYARD, M. J. ES52
WEST, E. A.
O'FARRELL, M. Boeing
Are There Constant-Alpha Force-Free Magnetic Fields in Solar Active Regions? For presentation at the Annual Meeting of the Solar Physics Division of the American Astronomical Society, Tucson, AZ, May 13-15, 1985.
- HAGYARD, M. J. ES52
The Relation of Sheared Magnetic Fields to the Occurrence of Flares. For publication in Artificial Satellites.
- HAGYARD, M. J. ES52
TEUBER, D.
WEST, E. A.
TANDBERG-HANSSSEN, E.
HENZE, W., JR.
The Vertical Gradient of Sunspot Magnetic Fields. For presentation at the Ron Giovanelli Commemorative Colloquium, Tucson, AZ, January 17-18, 1985.
- HATHAWAY, D. H. ES52
Jupiter and Saturn's Magnetic Differential Rotation and Expected Periods of Magnetic Field Reversals. For presentation at the 17th Annual Meeting of the Division of Planetary Sciences of the AAS, Baltimore, MD, October 29-November 1, 1985.
- HATHAWAY, DAVID H. ES52
SOMERVILLE, R. C. J.
Nonlinear Interactions Between Convection, Rotation and Flows with Vertical Shear. For publication in the Journal of Fluid Mechanics, Cambridge, England.
- HATHAWAY, D. H. ES52
FOWLIS, W. W.
Flow Regimes in a Shallow Rotating Cylindrical Annulus with Temperature Gradients Imposed on the Horizontal Boundaries. For publication in the Journal of Fluid Mechanics, Cambridge, England.
- HATHAWAY, D. H. ES01
DESSLER, A. J.
Magnetic Reversals of Jupiter and Saturn. For publication in the Geophysical Research Letters, Washington, D.C.
- HATHAWAY, DAVID H. ES52
Computer Animation of Three-Dimensional, Time-Dependent Thermal Convection. For presentation at the International Symposium on Computational Fluid Dynamics and for publication in the Proceedings, Tokyo, Japan, September 9-12, 1985.
- HATHAWAY, DAVID H. ES52
Convective Forcing of Global Circulations on the Jovian Planets. For presentation at the Conference on the Jovian Atmospheres, New York, May 6-8, 1985.
- HAUSSLER, JONATHAN B. KA11
AI Applications for the Space Station. For presentation to the Applied Artificial Intelligence Education Foundation Data Processing Management Association, San Jose, CA, May 20-21 and Los Angeles, CA, May 23-24, 1985.
- HENDERSON, ARTHUR J. EH22
Project Explorer Unique Experiments. For presentation at the Get-Away-Special Experimenters Symposium, Greenbelt, MD, October 9-10, 1985.
- HENDERSON, ARTHUR J. EH22
Project Explorer: Get Away Special No. 007. For presentation at the 57th Annual Conference of NTA, Houston, TX, July 23, 1985.
- HENDERSON, ARTHUR J. EH22
Project Explorer: Get Away Special No. 007. For presentation and publication at the NTA 57th Annual Conference "Techno-Trends and You: A Universal Perspective," Houston, TX, July 24-26, 1985.
- HILCHEY, JOHN D. PS02
ARNO, ROGER D. ARC
Animal and Plant Research Facilities Accommodations Aboard Space Station. For presentation at the American Physiological Society Joint Conference, Niagara Falls, New York, October 14-18, 1985.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- | | | | |
|---|--------------------|---|------|
| HILCHEY, JOHN D.
ARNO, ROBERT | PS02
ARC/LB | HOCKMAN, R.
ERDEMIR, A.
DOLAN, F.
THOM, R. | EH14 |
| Space Station Life Sciences Accommodations Optimizing the Return. For presentation at the 15th Intersociety Conference on Environmental Systems, San Francisco, CA, July 15, 1985. | | The Relation of the Properties of Cu, Ti and TiN Coatings to Rolling Contact Fatigue. For presentation at the 12th International Conference on Metallurgical Coatings, Los Angeles, CA, April 15-19, 1985. | |
| HILDNER, ERNEST | ES52 | HOFMEISTER, W. H. | ES72 |
| A Decade of Research in Coronal Mass Ejections. For presentation at the U.S. Japan Seminar on Heliomagnetosphere, Kyoto, Japan, November 5-9, 1984. | | EVANS, N. D.
BAYUZICK, R. J.
ROBINSON, M. B. | |
| HILDNER, ERNEST | ES52 | Microstructures of Niobium-Germanium Alloys Processed in Inert Gas in the 100 Meter Drop Tube. For publication in Metallurgical Transactions, Pittsburgh, PA. | |
| SMM Workshop Proceedings - 6 Coronal Mass Ejections and Coronal Structures. For publication in Chapter 6 of the SMM Workshop Proceedings. | | | |
| HILL, CHARLES K.
SMITH, O. E. | ED44 | HOOVER, RICHARD B.
CHAO, S. H.
SHEALY, D. L. | ES52 |
| Aerospace Meteorology, Design Criteria, and Mission Analysis for National Space Transportation System. For presentation at the AIAA 24th Aerospace Sciences Meeting, Reno, NV, January 6-9, 1986. | | Design and Analysis of Spectral Slicing X-Ray Telescope Systems. For presentation at the SPIE's 29th Annual International Technical Symposium on Optical and Electro-Optical Engineering, San Diego, CA, August 18-23, 1985. | |
| HILL, CHARLES K. | ED44 | HOOVER, RICHARD B. | ES52 |
| Atmospheric Constraint Statistics for the Space Shuttle Mission Planning. For presentation at the Conference on Aerospace and Range Meteorology, American Meteorological Society, Huntsville, AL, August 27-29, 1985. | | Hybrid X-Ray Telescope System. For presentation at the Grazing Incidence Optics, SPIE 1986 Tech. Sym. Southeast on Optics and Optoelectronics, Orlando, FL, March 31-April 4, 1986, and for publication in the SPIE Conference Proceedings. | |
| HILL, T. W.
DESSLER, A. J. | ES01 | HOOVER, R. B.
HOYLE, FRED
WICKRAMASINGHE, N.C.
HOOVER, MIRIAM J.
AL-MUFTI, S. | ES01 |
| Remote Sensing of the Magnetic Moment of Uranus: Predictions for Voyager. For publication in Science, Washington, D.C. | | Diatoms on Earth, Comets, Europa, and in Interstellar Space. For publication in Earth, Moon, and Planets, Manchester, England. | |
| HINMAN, ELAINE M.
YORCHAK, JOHN
HARTLEY, CRAIG | EB24
MMC
MMC | HORANYI, M.
CRAVENS, T. E.
WAITE, J. H., JR. | ES53 |
| Characterization of Good Teleoperators: What Aptitudes, Interests, and Experience Correlate with Measures of Teleoperator Performance. For presentation at the 29th Annual Meeting of the Human Factors Society, Baltimore, MD, September 1985. | | Energetic Heavy Ion Precipitation Into the | |

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

Upper Atmosphere of Jupiter. For presentation at the Fall Meeting of the American Geophysical Union, San Francisco, CA, December 3-7, 1984.

HORWITZ, J. L. ES53

MOORE, T. E.
Comment on "A Possible Mechanism for the Observed Streaming of O⁺ and H⁺ ions at Early Equal Speeds in the Distant Magnetotail" By N. Singh and R. W. Schunk. For publication in the Journal of Geophysical Research, Washington, D.C.

HORWITZ, J. L. ES53

Velocity-Filter Mechanism for Ion Bowl Distributions (Bimodal Conics). For publication in the Journal of Geophysical Research, Washington, D.C.

HORWITZ, J. L. ES53

WAITE, J. H., JR.
MOORE, T. E.
Supersonic Ion Outflows in the Polar Magnetosphere Via the Geomagnetic Spectrometer. For publication in The Journal of Geophysical Research, Washington, D.C.

HORWITZ, J. L. ES53

LOCKWOOD, M.
WAITE, J. H., JR.
MOORE, T. E.
CHAPPELL, C. R.
CHANDLER, M. O.
Transport of Accelerated Low-Energy Ions in the Polar Magnetosphere. For publication in the Journal of Geophysical Research, Washington, D.C.

HORWITZ, J. L. ES53

LOCKWOOD, M.
The Cleft Ion Fountain: A Two-Dimensional Kinetic Model. For publication in the Journal of Geophysical Research, Washington, D.C.

HORWITZ, J. ES53

LOCKWOOD, M.
MOORE, T.
WAITE, J.
CHANDLER, M.

Transport of O⁺ in the Polar Magnetosphere: Modelling and DE-1 Observations. For presentation at the International School of Space Simulations, Kauai, Hawaii, February 4-15, 1985.

HORWITZ, J. L. ES53

MENTEER, S.
TURNLEY, J.
BURCH, J. L.
WINNINGHAM, J. D.
CHAPPELL, C. R.
CRAVEN, J. D.
FRANK, L. A.
SLATER, D. W.

Plasma Boundaries in the Inner Magnetosphere. For publication in the Journal of Geophysical Research, Washington, D.C.

HORWITZ, J. L. ES53

The Substorm as an Internal Magnetospheric Instability. For publication in the Journal of Geophysical Research, Washington, D.C.

HUBER, WILLIAM G. PF14

FINNELL, WOOLSEY, III
Orbital Maneuvering Vehicle (OMV) Guidance, Navigation and Control. For presentation at the 1985 American Aeronautical Society Guidance and Control Conference, Keystone, CO, February 2-6, 1985.

HUMPHRIES, W. R. EP45

HAMNER, R.
STALLCUP, R.
COTTON, J.
Performance of the Spacelab Astro-1 Mission Heat Pipe Radiator. For presentation at the Intersociety Conference on Environmental Systems, San Francisco, CA, July 14-17, 1985.

HUNG, R. J. ED41

TSAO, D. Y.
SMITH, R. E.
Local Convergence of Moisture, Tropopause Height Variation, Potential Energy Storage, and Severe Storm Formation. For publication in Tellus, Stockholm, Sweden.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- | | |
|--|--|
| <p>ISHIMOTO, M. ES55
 TORR, MARSHA R.
 RICHARDS, P. G.
 TORR, D. G.
 The Roll of Energetic O⁺ Precipitation in a Mid-Latitude Aurora. For publication in the Journal of Geophysical Research, Washington, D.C.</p> | <p>KAUFMANN, R. L. ES53
 ARNOLDY, R. L.
 MOORE, T. E.
 KINTNER, P. M.
 CAHILL, L. J., JR.
 WALKER, D. N.
 Heavy Ion Beam Interactions: Electron Acceleration. For publication in the Journal of Geophysical Research, Washington, D.C.</p> |
| <p>JOHNSON, G. PD34
 STEINCAMP, J.
 SCOTT, M.
 A Mathematical Formulation of the Problem of Optimal Use of Ground Resources for Future Space Missions. For publication in The European Journal of Operations Research, Amsterdam, The Netherlands.</p> | <p>KAUKLER, WILLIAM ES73
 FRAZIER, DONALD
 Solidification Interface Morphology of Monotectic Systems. For presentation at the 1985 TMS-AIME Fall Meeting, Toronto, Canada, October 13-17, 1985.</p> |
| <p>JOHNSTON, M. H. EH22
 HAMILTON, W. D.
 CURRERI, P. A.
 PARR, R. A.
 The Influence of Varying Gravity Forces on the Solidification of Alloys. For presentation at the Space Tech. Conference and Exposition, Anaheim, CA, September 23-25, 1985.</p> | <p>KAUKLER, WILLIAM F. ES73
 FRAZIER, DONALD O.
 A New Solid-Liquid Interface Morphology in Transparent Miscibility Gap-Type Systems. For publication in Science, Washington, D.C.</p> |
| <p>JONES, CLYDE S., III EH42
 Application of Robotic Welding for Fabrication of the Space Shuttle Main Engine. For presentation at the Conference on R&D Productivity, University of Houston-Johnson Space Flight Center, Houston, TX, September 9-11, 1985.</p> | <p>KELLER, VERNON W. ED44
 Space Shuttle Exhaust Cloud: Microphysical Properties Summary. For presentation at the JANNAF Workshop on Atmospheric Transport and Diffusion Modeling, Los Angeles, CA, June 11-13, 1985.</p> |
| <p>JONES, CLYDE S., III EH42
 Application of Intelligent Robotic Welding Systems for Fabrication of Aerospace Hardware. For presentation at the Space Tech. Conference and Exposition, Anaheim, CA, September 23-25, 1985.</p> | <p>KELLER, VERNON W. ED44
 Large Volume Water Sprays for Dispersing Warm Fogs. For presentation at the International Conference of Liquid Atomisation and Spray Systems, London, England, July 8-10, 1985.</p> |
| <p>KAHLER, S. W. ES52
 MOORE, R. L.
 KANE, S. R.
 ZIRIN, H.
 Filament Eruptions During Flare Impulsive Phase. For presentation at the Fall Meeting of the American Geophysical Union, San Francisco, CA, December 3-7, 1984, and for publication in EOS.</p> | <p>KELLER, VERNON W. ED44
 Demonstration of a New Method for Dispersing Warm Fogs. For presentation at the Conference on Aerospace and Range Meteorology, American Meteorological Society, Huntsville, AL, August 27-29, 1985.</p> |
| | <p>KENT, G. S., et al. ED43
 Global Tropospheric Aerosol Backscatter Modeling at 10.6 m Wavelength. For presentation at the 3rd Topical Meeting on Coherent Laser Radar, Gt. Malvern, England, July 7-11, 1985.</p> |

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- | | | |
|--|------|--|
| KLUMPAR, D. M.
BURCH, J. L.
GURNETT, D. A.
SUGIURA, M.
WAITE, J. H. | ES53 | Planned Directional Solidification Crystal Growth of $Hg_{1-x}Cd_xTe$ In Space. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986. |
| The Latitudinal Structure of Ion Inverted-V's. For presentation at the Fall Meeting of the American Geophysical Union, San Francisco, CA, December 3-7, 1984. | | LESLIE, FRED
ED42
Measurements of Rotating Bubble Shapes in a Low Gravity. For publication in the Journal of Fluid Mechanics. |
| KROES, R. L.
REISS, D. A.
LAL, R. B. | ES72 | LOCKWOOD, M.
CHANDLER, M. O.
HORWITZ, J. L.
WAITE, J. H., JR.
MOORE, T. E.
CHAPPELL, C. R. |
| Growth of TGS Crystals on Spacelab 3. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986. | | The Cleft Ion Fountain. For publication in the Journal of Geophysical Research, Washington, D.C. |
| LAL, R. B.
AGGARWAL, M. D.
BATRA, A. K.
KROES, R. L. | ES72 | LOCKWOOD, M.
MOORE, T. E.
WAITE, J. H.
CHAPPELL, C. R.
HORWITZ, J. L.
HEELIS, R. A. |
| Growth of Triglycine Sulfate Crystals Aboard Spacelab-3 Mission. For presentation at the Alabama Academy of Science Meeting at University of Alabama In Huntsville, March 27-31, 1985. | | The Geomagnetic Mass Spectrometer. For publication in Nature (letters), London, England. |
| LEE, Y. G.
FRAZIER, D. O.
LOO, B. H. | ES73 | LOO, B. H.
LEE, Y. G.
FRAZIER, D. O. |
| Molecular Interaction of Dinitriles with Copper Surfaces. For presentation at the 62nd Annual Meeting of the Alabama Academy of Science, Huntsville, AL, March 27-30, 1985. | | Enhanced Raman Spectroscopic Study of the Adsorption of Dinitriles at the Copper-Aqueous Electrolyte Interface: Observation of Gauche and Trans Rotational Isomers of Succinonitrile on Copper Surfaces. For publication in Physical Chemistry, Washington, D.C. |
| LEHOCZKY, S. L. | ES72 | LOO, B. H.
LEE, Y. G.
FRAZIER, D. O. |
| Metals and Semiconductors. For presentation at the Western Design Engineering Show and ASME Conference, Anaheim, CA, December 11-13, 1985. | | Enhanced Raman Spectroscopic Study of Rotational Isomers on Metal Surfaces. For presentation at the O-E Laser '86 Optoelectronics, Los Angeles, CA, January 19-24, 1986. |
| LEHOCZKY, S. L.
SZOFRAN, F. R. | ES72 | |
| Effect of Variable Thermal Conductivity on Bridgman Growth. For presentation at the 1985 Gordon Research Conference, Plymouth, NH, July 15-19, 1985. | | |

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- LOO, B. H. ES73
LEE, Y. G.
FRAZIER, D. O. Space Vehicle Glow Measurements on STS 41-D. For publication in the Journal of Spacecraft and Rockets, Gainesville, VA.
Laser Raman Spectroscopic Characterization of Metal Surfaces. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.
- LOO, B. H. ES73
LEE, Y. G.
FRAZIER, D. O. Enhanced Raman Spectroscopic Study of the Coordination Chemistry of Malononitrile on Copper Surfaces: Removal of V(C≡N) Degeneracy Through π -Coordination. For publication in Chemical Physics Letters, Stanford, CA.
- McCAY, T. DWAYNE EP26
DEXTER, CAROL E. Effects of Chemical Nonequilibrium on Laser Thermal Rocket Performance. For presentation at the AIAA 20th Thermophysics Conference, Williamsburg, VA, June 19-21, 1985.
- McCOY, KENNETH E. EP44
HESTER, J. Analytical Investigation of Solid Rocket Nozzle Failure. For presentation at the Alabama Academy of Science Annual Meeting, UAH, Huntsville, AL, March 27-29, 1985.
- McCOY, KENNETH E. EP44
VANIMAN, J. L. IUS/SRM-2 Nozzle Thermal Assessment. For presentation at the JANNAF Rocket Nozzle Technology Subcommittee, MSFC, Huntsville, AL, December 4-6, 1984.
- MEEGAN, C. A. ES62
FISHMAN, G. J.
WILSON, R. B. The Frequency of Weak Gamma-Ray Bursts. For publication in the Astrophysical Journal.
- MENDE, S. B. ES63
SWENSON, G. R. Lockheed
CLIFTON, K. S.
GAUSE, R.
LEGER, L.
GARRIOTT, O. K. JSC
- MEYER, PAUL J. ED43
Application of the Man Computer Interactive Data Access System (McIDAS) To Aerospace Meteorology. For presentation at the Conference on Aerospace and Range Meteorology, Huntsville, AL, August 27-29, 1985.
- MILLER, JOHN Q. EP25
Advances in Large Solid Rocket Boosters. For presentation at the International Astronautical Congress Symposium on Space Energy, Power, and Propulsion, Stockholm, Sweden, October 5-14, 1985.
- MILLER, TIMOTHY L. ED42
ANTAR, BASIL N. Three-Dimensional Baroclinic Instability at Small Richardson Number. For presentation at the Fifth Conference on Atmospheric and Oceanic Waves and Stability, New Orleans, LA, March 4-7, 1985.
- MILLER, TIMOTHY L. ED42
FOWLIS, WILLIAM W. Laboratory Experiments in a Baroclinic Annulus with Heating and Cooling on the Horizontal Boundaries. For publication in the Geophysical and Astrophysical Fluid Dynamics.
- MILLER, T. L. ED42
ANTAR, B. N. On Viscous Non-Geostrophic Baroclinic Instability. For publication in the Journal of the Atmospheric Sciences, Boston, MA.
- MILLER, TERESA Y. ES73
WILLIAMS, GEORGE O.
SNYDER, ROBERT S. Effect of Conductivity and Concentration on the Sample Stream in the Transverse Axis of a Continuous Flow Electrophoresis. For publication in Electrophoresis (Journal).

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- MITCHELL, ROYCE E. TA81
Hubble Space Telescope Satellite. For presentation at the Electronics and Aerospace Systems Conference sponsored by IEE, Washington, D.C., October 28-30, 1985.
- MOORE, RONALD L. ES52
Flux Submergence, Magnetic Shear, and the Solar Cycle. For presentation at the Ron Giovanelli Commemorative Colloquium, Tucson, AZ, January 17-18, 1985.
- MOORE, RONALD L. ES52
RABIN, DOUGLAS UAH/MSFC
Sunspot Oscillations and the Short-Period Cutoff for Global P-Mode Oscillations. For presentation at the 165th Meeting of the American Astronomical Society, Tucson, AZ, January 14-16, 1985, and for publication in the Bulletin AAS.
- MOORE, RONALD ES52
Magnetic Structures in the Solar Atmosphere. For publication in the Proceedings of the High Energy Solar Physics Symposium, Tokyo, Japan.
- MOORE, RONALD L. ES52
RABIN, DOUGLAS M.
Sunspots. For publication in the Annual Review of Astronomy and Astrophysics.
- MOORE, R. L. ES52
HORWITZ, J. L.
GREEN, J. L.
Implications of Solar Flare Dynamics for Reconnection in Magnetospheric Substorms. For publication in Planetary and Space Science, Ireland.
- MOORE, T. E. ES53
WAITE, J. H., JR.
LOCKWOOD, M.
HELLIS, R. A.
BURCH, J. L.
DE-1-2 Observations of Dayside Ionospheric Outflow. For presentation at the 1985 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 9-13, 1985.
- MOORE, T. E. ES53
LOCKWOOD, M.
CHANDLER, M. O.
WAITE, J. H., JR.
PETERSON, W. K.
PERSON, A.
SUGIURA, M.
Upwelling O⁺ Ion Source Characteristics. For publication in the Journal of Geophysical Research, Washington, D.C.
- MOORE, T. E. ES53
WAITE, J. H., JR.
LOCKWOOD, M.
CHAPPELL, C. R.
Observations of Coherent Transverse Ion Acceleration. For presentation at the Chapman Conference on Ion Acceleration in the Magnetosphere and Ionosphere, Wellesley, MA, June 3-7, 1985.
- MOORE, T. E. ES53
BIDDLE, A. P.
WAITE, J. H., JR.
KILLEEN, T. L.
Auroral Zone Effects on Hydrogen Geocorona Structure and Variability. For publication in Planetary and Space Science, Oxford, U.K. (NY).
- MOORE, T. E. ES53
CHANDLER, M.
CHAPPELL, C. R.
HORWITZ, J.
WAITE, J. H., JR.
LOCKWOOD, M.
Solar Wind Control of the Geomagnetic Mass Spectrometer. For presentation at the AGU Chapman Conference on Solar Wind/Magnetosphere Coupling, Pasadena, CA, January 12-15, 1985.
- MORGAN, S. H. ES72
SILBERMAN, E.
KROES, R. L.
REISS, D.
Raman Determination of the Composition of Concentrated Aqueous Solutions of Triglycine Sulfate. For publication in Applied Spectroscopy, Sweden.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- MORRIS, DANIEL J. ES62
Low-Energy Gamma-Ray Scattering in the Atmosphere and in Spacecraft. For publication in Nuclear Instruments and Methods in Physics Research, Section A, Amsterdam, Holland.
- MORRIS, DANIEL J. ES62
Space Shuttle Molecular Scattering and Wake Vacuum Measurements. For presentation at the 21st Annual Symposium of the New Mexico Chapter of the American Vacuum Society, Albuquerque, NM, April 23-25, 1985.
- NALLASAMY, M. ED42
Turbulence Model Predictions of Confined Plane Two-Dimensional and Axisymmetric Flows. For presentation at the AIAA Applied Aerodynamics Conference, Colorado Springs, CO, October 14-16, 1985.
- NAUMANN, ROBERT J. ES71
Space Station – The Base for Tomorrow's Electronic Industry. For presentation at Space Station: Gateway to Space Manufacturing and Services, Orlando, FL, November 7-8, 1985.
- NAUMANN, ROBERT J. ES71
SNEYDER, R. S.
BUGG, C. E.
DeLUCAS, L. J.
SUDDATH, F. L.
Letter Answering Article (July 26, p. 370) Entitled "The Great Crystal Caper." For publication in Science (Letter), New York, NY.
- NAUMANN, ROBERT J. ES71
CARIGNAN, G. R.
MILLER, E. R.
Space Shuttle Molecular Scattering and Wake Vacuum Measurements. For publication in the Journal of Vacuum Science and Technology, Research Triangle Park, NC.
- NAUMANN, ROBERT J. ES71
CARIGNAN, G. R.
MILLER, E. R.
Space Shuttle Molecular Scattering and Wake Vacuum Measurements. For presentation at the 1984 American Vacuum Society National Symposium, Reno, Nevada, December 4, 1984.
- NAUMANN, ROBERT J. ES71
CARIGNAN, G. R.
MILLER, E. R.
- NAUMANN, ROBERT J. ES71
SNEYDER, R. S.
BUGG, C. E.
DeLUCAS, L. J.
SUDDATH, F. L.
Letter Answering Article (July 26, p. 370) Entitled "The Great Crystal Caper." For publication in Science (Letter), New York, NY.
- NERNEY, STEVEN ES71
SUESS, S. T. ES52
Modelling the Effects of Latitudinal Gradients in the Solar Wind in the Outer Solar System. For publication in the Astrophysical Journal, Chicago, IL.
- NERNEY, STEVEN
(U.S. Naval Postgraduate School)
SUESS, S. T. ES52
Modelling the Effects of Latitudinal Gradients in the Solar Wind in the Outer Solar System. For publication in the Astrophysical Journal.
- NESMAN, TOMAS E. ED24
REED, DARREN K.
SAFE/DAE: Modal Test in Space. For presentation at the 56th Shock and Vibration Symposium, Monterey, CA, October 22-24, 1985.
- NEVINS, C. D. EP11
Improving Productivity and Quality Through Computer Aided Design. For presentation at the NASA Second Annual Contractor Conference (Hardware), Huntsville, AL, June 12-13, 1985.
- OLSEN, R. C. ES53
CHAPPELL, C. R.
GURNETT, D. A.
The Hidden Ion Population – Revisited. For publication in the Journal of Geophysical Research, Washington, D.C.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- | | | | |
|---|------|---|---|
| OLSEN, R. C.
CHAPPELL, C. R.
MENIETTI, J. D.
BURCH, J. L.
Aperture Plane Potential Control for Thermal Plasma Measurements. For publication in the Journal of Geophysical Research, Washington, D.C. | ES53 | PARKER, KAREN
HICKEY, JOHN
KARITANI, SHOGO
DICKERSON, MIKE
KELLER, DAVE
MACLEAN, LAURA
WILSON, GREGORY
Interactive Information Processing for NASA's Mesoscale Analysis and Space Sensor Program. For presentation at the Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology Conference, Los Angeles, CA, January 7-11, 1985. | (NTI) ED44
(ACI)
(ACI)
(ACI)
(USRA)
(NASA)
(NASA) |
| OMENYI, S. N.
SNYDER, R. S.
TIPPS, R.
ABSOLOM, D. R.
van OSS, C. J.
Effect of DMSO on the Properties of Red Blood Cells II. Electrokinetic and Sedimentation. For publication in the Journal of Dispersion Science and Technology, New York, NY. | ES73 | PARNELL, T. A.
WATTS, JOHN W.
Radiation Background for the Space Station. For presentation at the Workshop on Cosmic Ray and X-Ray Experiments for the Space Station Evaluation, Baton Rouge, LA, October 17, 1984. | ES62 |
| OMENYI, S. N.
SNYDER, R. S.
van OSS, C. J.
Effects of DMSO on the Properties of Red Blood Cells. For publication in the Journal of Dispersion Science and Technology. | ES73 | PARNELL, THOMAS A.
A Large Area Emulsion Chamber Experiment for the Space Shuttle. For presentation at the Workshop on Cosmic Ray and High Energy Gamma Ray Experiments for the Space Station Era, Baton Rouge, LA, October 17-20, 1984. | ES62 |
| OWEN, JAMES W.
Space Station Common Module Thermal Management Options. For presentation at the AIAA 20th Thermophysics Conference, Williamsburg, VA, June 19-20, 1985. | EP44 | PARR, RICHARD A.
DAVIS, JACK H.
JOHNSTON, MARY H.
OH, TAE K.
MCCLURE, JOHN C.
Hydrogen Embrittlement in Alloys: Stacking Fault Energy Measurement in CuNi. For presentation at the Alabama Academy of Science Meeting, University of Alabama, Huntsville, AL, March 27-31, 1985. | EH22 |
| OWEN, ROBERT B.
KROES, R. L.
Holography on the Spacelab 3 Mission. For publication in Optics News, USA. | ES73 | PATTY, S. R.
HAGYARD, M. J.
Delta-Configurations: Flare Activity and Magnetic Field Structure. For publication in Solar Physics, Dordrecht, The Netherlands. | UAH
ES52 |
| OWEN, R. B.
KROES, R. L.
The Performance of the Spacelab 3 Holographic System. For presentation at the Optical Society of American 1985 Annual Meeting, Washington, D.C., October 14-18, 1985. | ES73 | | |
| OWEN, R. B.
BAUMGARDNER, D.
BERGER, R.
Holographic Calibration of Cloud Particle Measurement Systems. For presentation at the 1985 Annual Meeting of the Optical Society of America, Washington, D.C., October 14-18, 1985. | ES73 | | |

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- PENN, B. G. ES73
DANIELS, J. G.
LEDBETTER, F. E., III
CLEMONS, J. M.
Preparation of Silicon Carbide-Silicon Nitride Fibers by the Pyrolysis of Polycarbosilazane Precursors - A Review. For publication in Polymer Engineering and Science.
- PENN, B. G. ES73
DANIELS, J. G.
LEDBETTER, F. E., III
SEMMELE, M. L.
GOLDBERG, B. G.
WHITE, W. T.
CLEMONS, J. M.
Effects of Seawater and Deionized Water at 0 to 80°C on the Flexural Properties of a Glass/Epoxy Composite. For publication in the Composite Technology Review.
- PETERS, PALMER N. ES63
Effects on Optical Systems Due to Exposure in Low Earth Orbits. For presentation at the Aerospace Optics Workshop, Huntsville, AL, October 28-30, 1985.
- PETERS, PALMER N. ES63
GREGORY, JOHN UAH
Measurement of Reaction Rates and Activation Energies for 5 eV Oxygen Atoms with Graphite and Other Solid Surfaces. For presentation at the AIAA 23rd Aerospace Sciences Meeting, Reno, NV, January 14-17, 1984.
- PIZZANO, FRANK EG23
Reliability and Maintenance Simulation for Space Telescope. For presentation at the 1986 Annual Reliability and Maintainability Symposium, Las Vegas, Nevada, January 28-30, 1986.
- PORTER, J. G. (NAS/NRC) ES52
TOOMRE, J.
GEBBIE, K. B. (U. Colorado)
Frequent Ultraviolet Brightenings in Solar Active Regions. For presentation at the Annual Meeting of the Solar Physics Division of the American Astronomical Society, and for publication in the Bulletin AAS, Tucson, AZ, May 13-15, 1985.
- PORTER, J. G. (NAS) ES52
GEBBIE, K. G.
NOVEMBER, L. J.
Helium Resonance Lines in the Solar Flare of 15 June 1973. For presentation at the 165th Meeting of the American Astronomical Society, Tucson, AZ, January 13-16, 1985, and for publication in the Bulletin of the AAS.
- PORTER, ROBERT L. EP46
Reverification of Techroll Seal Used in the IUS Nozzle. For presentation at the JANNAF Rocket Nozzle Technology Subcommittee (RNTS), Huntsville, AL, December 4-6, 1984.
- POWELL, LUTHER E. KA01
BEAM, EVERETTE E.
Commonality Analysis for the NASA Space Station Common Modules. For presentation at the Thirty-Sixth IAF Congress, Stockholm, Sweden, October 7-12, 1985.
- POWELL, LUTHER E. KA01
The NASA MSFC Space Station Work Package. For presentation at the Southeastern Section of the American Physical Society, University of Georgia, Athens, Georgia, December 2-4, 1985.
- POWELL, LUTHER E. KA01
McCOWN, JAMES W. Martin
HAGER, ROBERT W. Boeing
The NASA MSFC Space Station Work Package. For presentation at the DGLR Symposium, Bonn, Germany, October 2-4, 1985.
- RABIN, DOUGLAS M. ES52
A Case for Submergence of Magnetic Flux in a Solar Active Region. For presentation at the Ron Giovanelli Commemorative Colloquium, Tucson, AZ, January 17-18, 1985.
- REASONER, D. L. ES53
SHAWHAN, S. D.
Plasma Diagnostics Package Measurements of Ionospheric Ions and Shuttle-Induced Perturbations. For publication in the Journal of Geophysical Research, Washington, D.C.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- REINLEITNER, L. A. ES53
GALLAGHER, D. L.
GREEN, J. L.
Test Particle Simulations of Wave-Particle Interactions in the Earth's Magnetosphere. For presentation at the International School of Space Simulations, Kauai, Hawaii, February 4-15, 1985.
- REISS, D. A. ES72
KROES, R. L.
ANDERSON, E. E.
University of Alabama in Huntsville
Study of the Growth of Triglycine Sulfate from Aqueous Solution. For presentation at the March Meeting of the American Physical Society, Baltimore, MD, March 25-29, 1985, and for publication in Bulletin APS.
- ReVELLE, DOUGLAS O. ED44
USRA Visiting Scientist
A Theoretical Definition of Fireball End Heights. For presentation at the First Globmet Symposium, Dushanbe, USSR, August 19-24, 1985.
- ReVELLE, DOUGLAS O. ED44
USRA Visiting Scientist
Density and Pressure Variability in the Mesosphere and Lower Thermosphere. For presentation at the First Globmet Symposium, Dushanbe, USSR, August 19-24, 1985.
- RICHMOND, R. J. EP01
JONES, L. W.
Space Station Advanced Propulsion and Fluid Management Program. For presentation at the 1985 JANNAF Propulsion Meeting, San Diego, CA, April 9-12, 1985.
- RIEHL, W. A. EH31
Close-in Characteristics of LH₂/LOX Reactions. For presentation at the JANNAF Meeting, San Diego, CA, April 11, 1985.
- ROBERTS, F. E. ES62
Computer Simulation of Cosmic Ray Interactions. For presentation at the 19th International Cosmic Ray Conference, San Diego, CA, August 12-23, 1985.
- ROBERTSON, FRANKLIN R. ED43
Use of IR Satellite Rainfall Estimates in Diagnosing Thermally Forced Circulations During FGGE SOP-1. For presentation at the National Conference on Scientific Results of First GARP Global Exp., Miami, FL, January 13-17, 1986.
- ROBERTSON, FRANKLIN R. ED43
IR Precipitation Estimates in the South Pacific During FGGE SOP-1. For presentation at the 16th Conference on Hurricanes and Tropical Meteorology, Houston, TX, May 14-17, 1985.
- ROBINSON, M. B. ES72
ANDREWS, J. B.
Containerless Processing of Bulk Ni₆₀Nb₄₀ Alloys. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.
- RODRIGUEZ, PEDRO I. EP15
Hubble Space Telescope Space Support Equipment Load Isolation System. For presentation at the 20th Aerospace Mechanisms Symposium, NASA, LeRD, Cleveland, OH, May 7-9, 1986.
- ROTHERMEL, JEFFRY ED42
USRA Visiting Scientist
- JONES, WILLIAM D.
Ground-Based Measurements of Atmospheric Backscatter and Absorption Using Coherent CO₂ Lidar. For publication in Applied Optics, Newton Highlands, MA.
- SAMIR, U. ES53
COMFORT, R. H.
CHAPPELL, C. R.
STONE, N. H.
The Distribution of Low Energy Ions in the Wake of a Magnetospheric Satellite. For publication in the Journal of Geophysical Research, Washington, D.C.
- SAMIR, U. ES53
WRIGHT, K. H., JR.
STONE, N. H.
Ion Acceleration: a Phenomenon Characteristic of the "Expansion of Plasma Into a

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- Vacuum." For publication in the American Geophysical Union Monograph, Washington, D.C.
- SAMIR, U. ES53
STONE, N. H.
WRIGHT, K. H., JR.
On Plasma Disturbances Caused by the Motion of the Space Shuttle and Small Satellites - A Comparison of In Situ Observations. For publication in the Journal of Geophysical Research, Washington, D.C.
- SAMIR, U. ES53
COMFORT, R. H.
STONE, N. H.
CHAPPELL, C. R.
Thermal Ions in the Wake of the DE-1 Satellite. For presentation at the Fall American Geophysical Union Meeting, San Francisco, CA, December 3-7, 1984.
- SCHOCK, RICHARD W. ED24
MSFC Analysis of the Safe Dynamic Augmentation Experiment. For presentation at the Langley Antenna Conference, Hampton, Virginia, December 5, 1984.
- SCHOCK, R. W. ED24
REED, D. K.
NESMAN, T. E.
MSFC Data Analysis of the SAFE/DAE Experiment. For presentation at the Large Space Antenna Systems Technology Conference, LaRC/Hampton, VA, December 4-6, 1984.
- SCHRAMM, HARRY F. SA55
How Bar Codes are Used in Manufacturing the Space Shuttle Propulsion System. For Presentation at the APICS 28th Annual International Conference, Toronto, Canada, October 22-25, 1985.
- SCHRAMM, Harry F. SA55
Automated Data Entry for Improved Multi-Level Productivity. For presentation at the Research and Development Conference, Johnson Space Center, TX, September 10-11, 1985.
- SCHUERER, PAUL H. EH41
A Systematic Approach to Weld Process Implementation on Space Shuttle. For presentation at the Fitness for Purpose in Welded Construction-Sponsored by American Welding Society, Philadelphia, PA, May 14, 1985.
- SCHWINGHAMER, R. J. EH01
Fitness for Purpose in Materials and Processes for Shuttle Engine, External Tank, and Solid Rocket Booster. For presentation at the Fitness For Purpose Conference, Philadelphia, PA, May 14-16, 1985.
- SCHWINGHAMER, R. J. EH01
Variable Polarity Plasma Arc Welding Process Brings Radical Improvement to Aerospace Aluminum Welding. For publication in the AIAA Publication Aerospace America.
- SHELTON, BILLY W. PD24
MARSHALL, WILLIAM R. PA01
Advanced Launch Vehicles. For presentation at the 1984 Society of Automotive Engineers Aerospace Congress and Exposition, Long Beach, CA, October 15-18, 1984.
- SHELTON, BILLY W. PD24
SPEARS, LUTHER T. PS01
Shuttle Derived Launch Vehicles. For presentation at the Twenty-Second Space Congress, Canaveral Council of Technical Societies, Cocoa Beach, FL, April 23-26, 1985.
- SMALLEY, LARRY L. ES65
Self-Consistent Godel Cosmology with Spindensity in Einstein-Cartan Spacetime. For publication in Physics Letters, Amsterdam, Holland.
- SMALLEY, LARRY L. ES65
Godel Cosmology in the Self-Consistent Einstein-Cartan Spacetime with Spindensity. For publication in Physical Review D, Ridge, NY, May 1985.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- SMALLEY, LARRY L. ES65
Self-Consistent Godel Cosmology with Spin-Density in Einstein-Cartan Spacetime. For publication in Physical Review Letters, Ridge, NY, May 1985.
- SMELSER, JERRY W. SA51
Managing the Implementation of a Cost Reduction Program Within an R&D Environment. For presentation at the Space Technology Conference, Anaheim, CA, September 23-25, 1985.
- SMITH, R. E. ED41
HUNG, R. J.
LIU, J. M.
Infrared Remote Sensing of Convective Clouds and Amount of Rainfall Over the Tibet Plateau Area. For publication in Annales Geophysicae, Zurich, Switzerland.
- SNODDY, WILLIAM C. PA01
Facilitating the Commercial Use of Low Gravity. For presentation at the 36th International Astronautical Congress, Stockholm, Sweden, October 7-12, 1985.
- SNYDER, R. S. ES73
RHODES, P. H.
MILLER, T. Y.
MICALE, F. J.
MANN, R. V.
SEAMAN, G. V. F.
Polystyrene Latex Separations by Continuous Flow Electrophoresis on the Space Shuttle. For publication in Separation Science and Technology, USA.
- SNYDER, ROBERT S. ES73
Two Polymer Aqueous Phase Partition in Microgravity. For presentation at the Gordon Research Conference, New London, NH, August 18-23, 1985.
- SNYDER, ROBERT S. ES73
RHODES, PERCY H.
HERREN, BLAIR, J.
MILLER, TERESA Y., et al.
Analysis of Free Zone Electrophoresis of Fixed Erythrocytes Performed in Microgravity. For publication in Electrophoresis, Verlag, West Germany.
- SPANYER, KAREN L. ED14
Application of General Lockheed Expert System. For presentation at the Artificial Intelligence Conference, The University of Alabama in Huntsville, October 15-16, 1985.
- SPANYER, KAREN L. ED14
Characteristics Pertaining to a Stiffness Cross Coupled Jeffcott Model. For presentation at the Technical Conference and Exhibit on Mechanical Vibration and Noise, Cincinnati, Ohio, September 10-13, 1985.
- SPENCER, ROY W. USRA Visiting Scientist
Passive Microwave Precipitation Measurements for EOS. For presentation at the AIAA/NASA Earth Observing Systems Conference, Virginia Beach, VA, October 8-10, 1985.
- SPRINGER, J. M. ES72
SILBERMAN, E.
KROES, R. L.
Reliability of Electrical Measurements in Ferroelectric Crystals. For presentation at the Southeastern Section of the American Physical Society, Memphis, TN, October 25-26, 1984, and for publication in the Bulletin of the American Physical Society.
- STEFANESCU, D. M. ES72
CURRERI, P. A.
FISKE, M.
Low-Gravity Processing of Directionally Solidified Iron-Carbon Type Alloys. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.
- STINSON, MELANIE B. EP42
The Finite Element Model of the Keel Latch for Use on the Hubble Space Telescope. For presentation at the Intergraph Graphic Users Group Fall Conference, San Francisco, CA, October 28-31, 1985.
- STINSON, MELANIE B. EP42
The Stress Analysis of the Keel Latch for Use on the Hubble Space Telescope. For presentation at the 20th Aerospace Mechanisms Symposium, Lewis Research Center, Cleveland, OH, May 7-9, 1986.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- STONE, N. H. ES53
 WRIGHT, K. H.
 HWANG, K. S.
 SAMIR, U.
 MURPHY, G. B.
 SHAWHAN, S. D.
 Further Observations of Space Shuttle Plasma-Electrodynamics Effects from OSS-1/STS-3. For publication in the Geophysical Research Letters, Washington, D.C.
- STONE, N. ES53
 LEWTER, B.
 CHISHOLM, W.
 WRIGHT, K.
 An Instrument for Differential Ion Flux Vector Measurements on Spacelab 2. For publication in Review of Scientific Instruments, New York, NY.
- STONE, R. L. EL23
 Selection of Orbits for the CRRES Dual-Mission Satellite. For presentation at the AAS/AIAA Conference, Vail, Colorado, August 12-15, 1985.
- SU, CHING-HUA ES72
 SZOFRAN, F. R.
 LEHOCZKY, S. L.
 Solidification of HgCdTe. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.
- SUESS, S. T. ES52
 DESSLER, A. J. ES01
 Probing the Local Interstellar Medium. For publication in Nature (Letters).
- SUESS, S. T. ES52
 HILDNER, E.
 Deformation of the Heliospheric Current Sheet. For publication in the Journal of Geophysical Research, Washington, D.C.
- SUESS, S. T. ES52
 MOORE, R. L.
 Wave Speeds in the Corona and the Dynamics of Mass Ejections. For presentation at the Annual Meeting of the Solar Physics Division of the American Astronomical Society, Tucson, AZ, May 13-15, 1985.
- SUESS, S. T. ES52
 The Steady Global Corona – A Hexapole. For presentation at the Fall 1985 American Geophysical Union National Meeting, San Francisco, CA, December 9-13, 1985.
- SUESS, S. T. ES52
 HILDNER, E.
 The Large Scale Structure of the Interplanetary Medium. For presentation at the U.S.-Japan Seminar on Heliomagnetosphere, Kyoto, Japan, November 5-9, 1984.
- SUESS, S. T. ES52
 THOMAS, B. R.
 NERNEY San Juan College
 Theoretical Interpretation of the Observed Interplanetary Magnetic Field Radial Variation in the Outer Solar System. For publication in Geophysical Research Letters.
- SUESS, S. T. ES52
 Solar Wind Speed Azimuthal Variation Along the Heliospheric Current Sheet. For presentation at the 19th ESLAB Symposium on the Sun and the Heliosphere in Three Dimensions, Les Diablerets, Switzerland, June 4-6, 1985.
- SWENSON, G. R. ES63
 MENDE, S. B. Lockheed
 CLIFTON, K. S.
 Ram Vehicle Glow Spectrum; Implication of NO₂ Recombination Continuum. For publication in the Journal Geophysical Research, Hanover, NH.
- SZOFRAN, F. R. ES72
 PARKER, H. W.
 Apparatus for High Temperature Electrical Conductivity Measurements of High Vapor Pressure Materials. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.
- SZOFRAN, F. R. ES72
 ESPY, P. N.
 Automated ac Galvanomagnetic Measurement System. For publication in Review of Scientific Instruments, Argonne, IL.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- TAKAHASHI, Y. (NAS) ES62
 EBY, P. B.
 The ϕ Meson and "Chiral-Mass-Meson" Production in Heavy-Ion Collisions as potential Probes of Quark-Gluon-Plasma and Chiral Symmetry Transitions. For publication in the Proceedings of the 19th International Cosmic Ray Conference, San Diego, CA, August 11-23, 1985.
- TAKAHASHI, Y. (NAS) ES62
 Anomalous Cosmic Ray Interaction Events for Investigations in the SSC and Space Station. For publication in the Proceedings of the Workshop on Cosmic Rays and High-Energy Gamma-Ray Experiments for the Space Station Era, USA.
- TAKAHASHI, Y. ES62
 EBY, P. B.
 PARNELL, T. A.
 GREGORY, J. C.
 HAYASHI, T.
 Use of Direct Electron Pair Method. For publication in the Proceedings, Workshop on Cosmic Ray and High Energy Gamma-Ray Experiments for the Space Station Era, Baton Rouge, LA.
- TELESCO, C. M. ES61
 DECHER, R.
 GATLEY, IAN
 Very Extended Infrared Emission at the Center of M51: The Role of Star Formation. For publication in The Astrophysical Journal, Tucson, AZ.
- TELESCO, C. M., et al. ES63
 Condensation of Dust Around the WC7 Star HD192641 (WR137). For publication in the Monthly Notices of Royal Astronomical Society, London, England.
- TELESCO, CHARLES M. ES63
 Infrared Mapping of Galaxian Centers. For presentation at the Extragalactic Infrared Astronomy Meeting, London, England, May 20-22, 1985.
- TELESCO, C. M. ES63
 DECHER, R.
 GATLEY, IAN
 United Kingdom Infrared Telescope Unit Near-Infrared Mapping of ARP 299 (IC 694-NGC 3690): Colliding Galaxies Unveiled. For publication in The Astrophysical Journal (Part 1), Tucson, AZ.
- THOM, ROBERT L. EH14
 The Rolling Contact Fatigue Behavior of Chromium Ion Plated Substrates. For presentation at the Applications of Ion Plating and Implantation of Materials Conference in Atlanta, GA, June 3-5, 1985.
- THOMAS, DOUGLAS T. EB32
 A High Speed Data Management System with On-Line Optical Disk Storage. For presentation at the IEEE Computer Society, Tucson, AZ, November 4, 1985.
- TORR, D. G. Utah State University
 TORR, M. R. ES55
 RICHARDS, P. G. Utah State University
 Heating Efficiencies in the Terrestrial Thermosphere. For presentation at the International Association for Geomagnetism and Aeronomy (IAGA), Prague, Czechoslovakia, August 5-17, 1985.
- TORR, D. G. Utah State University
 TORR, M. R. ES55
 KHOYLOO, A. Utah State University
 RICHARDS, P. G. Utah State University
 N₂ + Vibrational Emission in the Dayglow. For presentation at the International Association for Geomagnetism and Aeronomy (IAGA), Prague, Czechoslovakia, August 5-17, 1985.
- TORR, MARSHA R. ES55
 WELSH, BARRY Y.
 TORR, DOUGLAS G.
 The O₂ Atmospheric Dayglow in the Thermosphere. For publication in Journal of Geophysical Research.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- TORR, MARSHA R. ES55
TORR, D. G. Utah State University)
The VUV-VIS Thermospheric Dayglow from Spacelab I. For presentation at the International Association for Geomagnetism and Aeronomy (IAGA), Prague, Czechoslovakia, August 5-17, 1985.
- URBAN, EUGENE W. ES63
Flight Performance of the Infrared Telescope on Spacelab 2. For presentation at the Workshop on Helium Transfer in Space, National Bureau of Standards, Boulder, CO, August 20-21, 1985.
- VAN ALSTINE, J. M. (USRA) ES73
CHIU, B.
BROOKS, D. E.
Amphiphathic Surface Properties of Human Platelet Discocytes and Echinocytes Analyzed by Cell Partition in Aqueous Polymer Two-Phase Systems. For publication in Thrombosis and Haemostasis, Stuttgart, West Germany.
- VAN ALSTINE, J. M. (USRA) ES73
SORENSEN, P.
WEBBER, T. J., et al.
Heterogeneity in the Surface Properties of B16 Melanoma Cells for Sublines with Differing Metastatic Potential Detected via Two Polymer Aqueous Phase Partition. For publication in Biophys. Acta, Amsterdam, The Netherlands.
- VAN ALSTINE, J. M. ES73
McELHANEY, R.
BROOKS, D. E.
Effect of Membrane Lipid Alteration on the Partitioning of Acholeplasma Laidlawii B Cells in Two-Polymer, Aqueous-Phase Systems. For publication in Biochimica Biophysica Acta, Amsterdam, Holland.
- VAN ALSTINE, J. M. ES73
TRUST, T. J.
BROOKS, D. E.
Differential Partition of Virulent Aeromonas Salmonicida and Attenuated Derivatives Possessing Specific Cell Surface Alteration in Polymer, Aqueous Phase Systems. For publication in Biochem. Biophys. Acta, Seattle, WA.
- VAN ALSTINE, J. M. (USRA) ES73
SHARP, K. A.
BROOKS, D. E.
Critical Micelle Concentration Dependence on Head Group Size in Polyoxyethylene Nonionic Surfactants. For publication in Colloid and Surfaces, Potsdam, NY.
- VAN ALSTINE, J. M. ES73
HARRIS, J. M. Univ. of Alabama
SNYDER, R. S. ES73
CURRERI, P. A. ES73
BAMBERGER, S. Oregon Health Science Univ.
Brooks, D. E. Univ. of British Columbia
Separation of Aqueous Two Phase Polymer Systems in Microgravity. For publication in the Conference Proceedings - 5th European Symposium Material Sciences Under Microgravity, Munich, West Germany.
- VAN ALSTINE, J. A. ES73
HARRIS, M.
KARR, L.
SNYDER, R. S.
Cell Separation Using Thin-Layer Counter-current Distribution and Helical-Coil Chromatography. For publication in the Journal of Liquid Chromatography, Fairfield, CT, Spring 1985.
- VAUGHAN, OTHA H., JR. ED43
Atmospheric Research From a Long Endurance Aircraft. For presentation at Progress in Very Long Endurance Aircraft Conference, Menlo Park, CA, October 30-November 1, 1985.
- VERDERAIME, V. S. ED01
Modeling In Situ Elastic Properties of Filament Wound Vessels. For presentation at the 5th International Conference on Mathematical Modelling, Berkeley, CA, July 29-31, 1985.
- VERDERAIME, V. S. ED01
Scaling Phenomena of Graphite-Epoxy Wound Cases. For presentation at the Seventh DOD/NASA Conference on Fibrous Composites in Structural Design, Denver, CO, June 17-20, 1984.
- VINZ, FRANK EB44
KAWAMURA, K. Vanderbilt University

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- A Simulation Expert System for Spacecraft Attitude Control Problems. For presentation at the IEEE Second Conference on Artificial Intelligence Applications, Miami Beach, FL, December 11-13, 1985.
- VINZ, FRANK L. EB44
System Integration Methodologies. For presentation at the Rendezvous and Proximity Operations Workshop, February 19-22, 1985.
- VON PRAGENAU, GEORGE L. ED14
Spline Friction Whirl Stabilization With Damping Seals. For presentation at the Fourth Workshop Rotordynamics Instability Problems in High Performance Turbomachinery, Texas A&M University, College Station, TX, June 2-4, 1986.
- VON PRAGENAU, GEORGE L. ED14
Damping Seals in Rotordynamics -- A Fluid Mechanical Problem. For presentation at the UAH Mechanical Engineering Seminar, Huntsville, AL, May 3, 1985.
- VON TIESENHAUSEN, GEORG PS01
The Role of Tethers on Space Station. For presentation at the Second Biennial Workshop Applications of Tethers in Space, Venice, Italy, October 15-17, 1985.
- VON TIESENHAUSEN, GEORG PS01
Future Applications of Tethers in Space. For presentation at the AIAA 24th Aerospace Science Meeting, Reno, Nevada, January 6-9, 1986.
- WAITE, J. H. ES53
LOCKWOOD, M.
MOORE, T. E.
CHANDLER, M. O.
CHAPPELL, C. R.
A New Source of Magnetospheric Plasma from the Dayside Polar Cleft. For presentation at the Chapman Conference on Ion Acceleration in the Magnetosphere and Ionosphere, Wellesley, MA, June 3-7, 1985.
- WAITE, J. H. ES53
DECREAU, P. M. E.
CARPENTER, D.
CHAPPELL, C. R.
COMFORT, R. H.
GREEN, J.
GURNETT, D. A.
OLSEN, R. C.
Latitudinal Plasma Distribution in the Dusk Plasmaspheric Bulge: Refilling Phase and Quasi-Equilibrium State. For publication in the Journal of Geophysical Research, Washington, D.C.
- WALES, WILLIAM E. KA11
Space Station Advanced Technical Program. For presentation at the Technical and Business Exhibition/Symposium '85, Huntsville, AL, April 24, 1985.
- WEEKS, DAVID J. EB12
Application of Expert Systems in the Common Module Electrical Power System. For presentation at the SPIE Cambridge Symposium, Cambridge, MA, September 15-20, 1985, and for publication in the Proceedings.
- WEISSKOPF, MARTIN C. ES65
The Advanced X-Ray Astrophysics Facility (AXAF). For presentation at the 2nd International Technical Symposium on Optical and Electro-Optical Applied Science and Engineering, Cannes, France, December 2-6, 1985, and for publication in SPIE, USA.
- WEISSKOPF, M. C. ES62
ELSNER, R. F.
APPARAO, M. V.
DARBRO, W. A., et al.
X-Ray Observations of GX1+4 With the Monitor Proportional Counter Aboard the Einstein Observatory. For publication in the Astrophysical Journal (Letters), Chicago, IL.
- WEISSKOPF, M. C. ES62
SUTHERLAND, P. G.
ELSNER, R. F.
RAMSEY, B. D.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- On the Viability of Exploiting L-Shell Fluorescence for X-Ray Polarimetry. For presentation at the 165th Meeting of the American Astronomical Society, Tucson, AZ, January 13, 1985, and for publication in the Bulletin of the AAS.
- WEISSKOPF, M. C. ES62
SUTHERLAND, P. G.
ELSNER, R. F.
RAMSEY, B. D.
On the Viability of Exploiting L-Shell Fluorescence for X-Ray Polarimetry. For publication in Nuclear Instruments and Methods in Physics Research (NIM-A), Uppsala, Sweden.
- WHITAKER, A. F. EH11
LITTLE, S. A.
FROMHOLD, A. T., JR.
DANESHVAR, K.
Interaction of Metals with Lower Earth Orbit Environment During Space Shuttle Flights. For presentation at the Baltimore Meeting of the American Physical Society, Baltimore, MD, March 25-29, 1985.
- WHITAKER, ANN F. EH11
Protective Coatings for Atomic Oxygen Susceptible Spacecraft Materials - STS-41G Results. For presentation at the AIAA Meeting on Shuttle Environment and Operations II, Houston, TX, November 13-15, 1985.
- WHITAKER, ANN F. EH11
Orbital Atomic Oxygen Effects on Thermal Control and Optical Materials - STS-8 Results. For presentation at the AIAA Atmospheric Environment 23rd Aerospace Sciences Meeting, Reno, Nevada, January 14-17, 1985.
- WILLIAMS, A. C. ES65
WEISSKOPF, M. C.
ELSNER, R. F.
DARBRO, W.
SUTHERLAND, P. G.
Accretion Onto Neutron Stars with the Presence of a Double Layer. For publication in the Astrophysical Journal, Chicago, IL, March 1985.
- WILLIAMS, ALTON C. ES62
Accretion on Magnetized Neutron Stars in the Presence of a Double Layer. For presentation at the Spring Meeting of the American Physical Society, Crystal City, VA, April 24-27, 1984.
- WILLIAMS, J. R. JA64
MOOKHERJI, T. K.
Teledyne-Brown Engineering Facilities Evolution for Materials Processing in Space. For presentation at the Space Station: Gateway, Space Manufacturing and Services, Orlando, FL, November 7-8, 1985.
- WILSON, ROBERT M. ES52
RABIN, DOUGLAS NRC
MOORE, RONALD L.
Bimodality of the Solar Cycle. For presentation at the American Astronomical Society 165th Meeting, Tucson, AZ, January 13-16, 1985.
- WILSON, R. B. ES62
FISHMAN, G. J.
MEEGAN, C. A.
Hard X-Ray Time Variability of the Mean Pulse Profile of the Crab Pulsar. For presentation at the 165th Meeting of the American Astronomical Society, Tucson, AZ, January 13, 1984.
- WILSON, WILLIAM A. EH42
BABCOCK, STEVE Rocketdyne
Robotic Welding on SSME. For presentation at the Robot 9 Conference, Dearborn, MI, June 3-8, 1985.
- WRIGHT, K. H., JR. ES53
PARKS, D. E.
KATZ, I.
STONE, N. H.
SAMIR, U.
More on the Expansion of a Collisionless Plasma Into the Wake of a Body. For publication in the Journal of Plasma Physics, Cambridge University Press, Cambridge, England.

MSFC PAPERS CLEARED FOR PRESENTATION
(Available only from authors. Dates are presentation dates.)

- WRIGHT, K. H., JR. ES53
STONE, N. H.
SAMIR, U.
A Study of Plasma Expansion Phenomena in Laboratory Generated Plasma Wakes: Preliminary Results. For publication in the Journal of Plasma Physics, Cambridge, England.
- WU, M. K. ES72
ASHBURN, J. R.
CURRERI, P. A.
KAUKLER, W. F.
Electronic Properties of the Directionally Solidified Al-In-Sn. For presentation at the 115th TMS-AIME Annual Meeting, New Orleans, LA, March 2-6, 1986.
- WU, S. T. ES62
CHANG, H. M. UAH
HAGYARD, M. J. ES62
On the Numerical Computation of Nonlinear Force-Free Magnetic Fields. For presentation at the 165th Meeting of the American Astronomical Society, Tucson, AZ, January 14-16, 1985, and for publication in the Bulletin AAS.
- WYMAN, CHARLES L., et al. EE01
X-Ray Test Performance of the AXAF Technology Mirror Assembly. For presentation at the Second International Conference on Optical and Electro-Optical Applied Science and Engineering, Cannes, France, November 25-December 5, 1985.
- XENOFOS, DANNY KA31
Space Station Manufacturing Technology Laboratory. For presentation at the Technical and Business Exhibition/Symposium, Huntsville, AL, April 23-25, 1985.
- YARBROUGH, LEONARD S. PS05
Microgravity Materials Research and Manufacturing. For presentation at the Space Technology '85 Conference, Anaheim, CA, September 23-25, 1985.

APPROVAL

FY 1985 SCIENTIFIC AND TECHNICAL REPORTS,
ARTICLES, PAPERS, AND PRESENTATIONS

Compiled by Joyce E. Turner

The information in this report has been reviewed for technical content. Review of any information concerning Department of Defense or Atomic Energy Commission programs has been made by the MSFC Security Classification Officer. This report, in its entirety, has been determined to be unclassified.



C. D. BEAN

Director, Administrative Operations Office