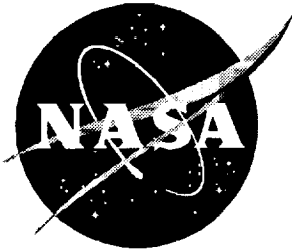


NASA/TM-2000-209852



# NASA Langley Scientific and Technical Information Output—1999

*Susan H. Stewart and Harriet B. Machie, Compilers  
Langley Research Center, Hampton, Virginia*

---

February 2000

## The NASA STI Program Office . . . in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA Scientific and Technical Information (STI) Program Office plays a key part in helping NASA maintain this important role.

The NASA STI Program Office is operated by Langley Research Center, the lead center for NASA's scientific and technical information. The NASA STI Program Office provides access to the NASA STI Database, the largest collection of aeronautical and space science STI in the world. The Program Office is also NASA's institutional mechanism for disseminating the results of its research and development activities. These results are published by NASA in the NASA STI Report Series, which includes the following report types:

- **TECHNICAL PUBLICATION.** Reports of completed research or a major significant phase of research that present the results of NASA programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed to be of continuing reference value. NASA counterpart of peer-reviewed formal professional papers, but having less stringent limitations on manuscript length and extent of graphic presentations.
- **TECHNICAL MEMORANDUM.** Scientific and technical findings that are preliminary or of specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. Does not contain extensive analysis.
- **CONTRACTOR REPORT.** Scientific and technical findings by NASA-sponsored contractors and grantees.

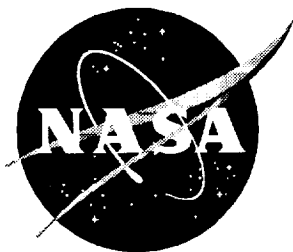
- **CONFERENCE PUBLICATION.** Collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or co-sponsored by NASA.
- **SPECIAL PUBLICATION.** Scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.
- **TECHNICAL TRANSLATION.** English-language translations of foreign scientific and technical material pertinent to NASA's mission.

Specialized services that complement the STI Program Office's diverse offerings include creating custom thesauri, building customized databases, organizing and publishing research results . . . even providing videos.

For more information about the NASA STI Program Office, see the following:

- Access the NASA STI Program Home Page at <http://www.sti.nasa.gov>
- Email your question via the Internet to [help@sti.nasa.gov](mailto:help@sti.nasa.gov)
- Fax your question to the NASA STI Help Desk at (301) 621-0134
- Telephone the NASA STI Help Desk at (301) 621-0390
- Write to:  
NASA STI Help Desk  
NASA Center for Aerospace Information  
7121 Standard Drive  
Hanover, MD 21076-1320

NASA/TM-2000-209852



# NASA Langley Scientific and Technical Information Output—1999

*Susan H. Stewart and Harriet B. Machie, Compilers  
Langley Research Center, Hampton, Virginia*

National Aeronautics and  
Space Administration

Langley Research Center  
Hampton, Virginia 23681-2199

---

February 2000

---

Available from:

NASA Center for Aerospace Information (CASI)  
7121 Standard Drive  
Hanover, MD 21076-1320  
(301) 621-0390

National Technical Information Service (NTIS)  
5285 Port Royal Road  
Springfield, VA 22161-2171  
(703) 605-6000

Available electronically at the following URL address: <http://techreports.larc.nasa.gov/ltrs>



## **Preface**

This report contains a listing of the NASA Langley Research Center's publicly available scientific and technical research output for C.Y. 1999.

The intent of this report is to provide a greater awareness of the broad scope of results and the importance of the research and development work conducted by scientists and engineers at Langley. This current awareness is mandated by the National Aeronautics and Space Act of 1958, which provides for the widest practical dissemination of NASA research.

During C.Y. 1999, Langley's contributions to NASA and non-NASA literature included 3 Special Publications, 15 Technical Publications, 19 Conference Publications, 82 Technical Memorandums, 116 Contractor Reports, 187 Journal Articles and Book Publications, 554 Meeting Presentations, 43 Technical Talks, 11 Tech Briefs, and 28 Patents.



## Introduction

The NASA Langley Research Center is one of the Nation's leading laboratories for research and development in the sciences of aeronautics and space technology. Langley conducts basic and applied research in the areas of aerospace systems, concepts, and analysis, aerodynamics, aerothermodynamics, and acoustics, structures and materials, airborne systems, atmospheric sciences, and systems engineering.

This document contains a bibliography of Langley's publicly available scientific and technical research output for 1999 which is processed through the Center's Office of the Chief Information Officer to become an integral part of NASA's Agency-wide Scientific and Technical Information (STI) system. The results of Langley's research are disseminated in a variety of NASA and non-NASA scientific and technical media and information systems. This document is intended to be a reference summary for researchers and a current awareness publication for the scientific, research, and academic community. Details of the availability of the research references in this document are found in the section, "Availability," on page vi.

Many Langley reports are available electronically on the Langley Technical Report Server (LTRS) at <http://techreports.larc.nasa.gov/ltrs/ltrs.html> or the Institute for Computer Applications in Science and Engineering (ICASE) Technical Report Server (ITRS) at <http://www.icas.edu/docs/library/itrs.html> via the World Wide Web (WWW). The relative Uniform Resource Locators are noted below citations for reports available electronically.

The citations are grouped by the Scientific and Technical Aerospace Reports (STAR) subject categories and listed alphabetically by author or innovator. The Langley organization to which the senior author or innovator is assigned and the Research and Technology Objectives and Plans (RTOP) number are noted below citations when appropriate and included in the indexes.

Patents listed are those which were issued in 1999 and owned by Langley Research Center.

Publication of some journal articles was not known at press time for the 1998 issue of this document. These articles are therefore listed in the 1999 issue.

## Availability

<u>Category</u>	<u>Source</u>
NASA Reports	NASA Center for AeroSpace Information (CASI) 7121 Standard Drive Hanover, MD 21076-1320 (301) 621-0390
	National Technical Information Service (NTIS) 5285 Port Royal Road Springfield, VA 22161-2171 (703) 605-6000
Patents:	
Patent Application Specifications	NASA Center for AeroSpace Information (CASI)
	National Technical Information Service (NTIS)
Printed Copies	Commissioner of Patents and Trademarks U.S. Patent and Trademark Office Washington, DC 20231

# Contents

Preface . . . . .	.iii
Introduction . . . . .	.v
Availability . . . . .	.vi

## Aeronautics

Category 01 Aeronautics (General) . . . . .	.1
Category 02 Aerodynamics . . . . .	.3
Category 03 Air Transportation and Safety . . . . .	.12
Category 04 Aircraft Communications and Navigation . . . . .	.15
Category 05 Aircraft Design, Testing and Performance . . . . .	.15
Category 06 Aircraft Instrumentation . . . . .	.23
Category 07 Aircraft Propulsion and Power . . . . .	.23
Category 08 Aircraft Stability and Control . . . . .	.24
Category 09 Research and Support Facilities (Air). . . . .	.26

## Astronautics

Category 12 Astronautics (General) . . . . .	.27
Category 13 Astrodynamics . . . . .	.27
Category 14 Ground Support Systems and Facilities (Space) . . . . .	.28
Category 15 Launch Vehicles and Space Vehicles . . . . .	.28
Category 16 Space Transportation . . . . .	.29
Category 17 Space Communications, Spacecraft Communications, Command and Tracking . . . . .	.30
Category 18 Spacecraft Design, Testing and Performance . . . . .	.30
Category 19 Spacecraft Instrumentation . . . . .	.32
Category 20 Spacecraft Propulsion and Power . . . . .	.32

## Chemistry and Materials

Category 23 Chemistry and Materials (General) . . . . .	.32
Category 24 Composite Materials . . . . .	.33
Category 26 Metallic Materials . . . . .	.41
Category 27 Nonmetallic Materials . . . . .	.44
Category 28 Propellants and Fuels . . . . .	.51
Category 29 Materials Processing . . . . .	.51

## Engineering

Category 31 Engineering (General) . . . . .	.51
---	-----

Category 32 Communications and Radar . . . . .	.51
Category 33 Electronics and Electrical Engineering . . . . .	.52
Category 34 Fluid Mechanics and Heat Transfer . . . . .	.53
Category 35 Instrumentation and Photography . . . . .	.61
Category 36 Lasers and Masers . . . . .	.65
Category 37 Mechanical Engineering . . . . .	.65
Category 38 Quality Assurance and Reliability . . . . .	.66
Category 39 Structural Mechanics . . . . .	.67

## **Geosciences**

Category 42 Geosciences (General) . . . . .	.75
Category 43 Earth Resources and Remote Sensing . . . . .	.75
Category 45 Environment Pollution . . . . .	.76
Category 46 Geophysics . . . . .	.77
Category 47 Meteorology and Climatology . . . . .	.85

## **Life Sciences**

Category 52 Aerospace Medicine . . . . .	102
Category 53 Behavioral Sciences . . . . .	102
Category 54 Man/System Technology and Life Support . . . . .	102

## **Mathematical and Computer Sciences**

Category 59 Mathematical and Computer Sciences (General) . . . . .	103
Category 60 Computer Operations and Hardware . . . . .	104
Category 61 Computer Programming and Software . . . . .	107
Category 62 Computer Systems . . . . .	109
Category 63 Cybernetics . . . . .	110
Category 64 Numerical Analysis . . . . .	111
Category 66 Systems Analysis . . . . .	115

## **Physics**

Category 70 Physics (General) . . . . .	115
Category 71 Acoustics . . . . .	116
Category 72 Atomic and Molecular Physics . . . . .	124
Category 74 Optics . . . . .	125
Category 76 Solid-State Physics . . . . .	125
Category 77 Thermodynamics and Statistical Physics . . . . .	126

**Social Sciences**

Category 80 Social Sciences (General) . . . . . 126  
Category 81 Administration and Management . . . . . 127  
Category 82 Documentation and Information Science. . . . . 127

**Space Sciences**

Category 91 Lunar and Planetary Exploration . . . . . 128  
Category 92 Solar Physics . . . . . 128  
Category 93 Space Radiation . . . . . 128

**General**

Category 99 General . . . . . 132  
  
Author Index . . . . . 133  
Organization Index. . . . . 151  
RTOP Index . . . . . 154  
Appendix—Formerly Restricted Reports . . . . . 163





## Scientific and Technical Publications

### Aeronautics

#### Category 01 Aeronautics (General)

- 1** Atkins, H. L.; and Lockard, D. P.: A High-Order Method Using Unstructured Grids for the Aeroacoustic Analysis of Realistic Aircraft Configurations. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1945.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1945.pdf>  
Organization RB RTOP 538-03-11
- 2** Ege, R.; Brown, J.; Bradley, K. A.; and Grandi, F.: The Aviation System Analysis Capability Noise Impact Model. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-209356, July 1999, 120 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209356.pdf>  
Organization OE RTOP 536-16-11
- 3** Ege, R.; Villani, J. A.; and Ritter, P.: Aviation System Analysis Capability Quick Response System Report for Fiscal Year 1998. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-208990, January 1999, 87 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208990.pdf>  
Organization OE RTOP 538-16-11
- 4** Gaier, E. M.; Edlich, A.; Santmire, T. E.; and Wingrove, E. R., III: The Aviation System Analysis Capability Air Carrier Cost-Benefit Model. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-208983, January 1999, 55 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208983.pdf>  
Organization OE RTOP 538-16-11
- 5** Hassan, A. A.: Predicted Aerodynamic Characteristics of a NASA-0015 Airfoil Having a 25% Integral-Type Trailing Edge Flap. (NAS1-20096 The Boeing Company.) NASA/CR-1999-209328, May 1999, 167 p.  
Organization RB RTOP 538-07-14
- 6** Hemm, R. V.; Shapiro, G.; Lee, D. A.; Gribko, J.; and Glaser, B.: Benefit Estimates of Terminal Area Productivity Program Technologies. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-208989, January 1999, 144 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208989.pdf>  
Organization OE RTOP 538-16-11
- 7** Hu, H.: Study of the TRAC Airfoil Table Computational System. (NAS1-19935 Hampton University.) NASA/CR-1999-209323, May 1999, 46 p.  
Organization RB RTOP 538-07-14

- 8** Johnson, J. P.; and Santmire, T. E.: Aviation System Analysis Capability Air Carrier Investment Model—Cargo. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-208984, January 1999, 41 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208984.pdf>  
 Organization OE RTOP 538-16-11
- 9** Kostiuk, P. F.; Shapiro, G.; Hanson, D.; Kolitz, S.; Leong, F.; Rosch, G.; Coumeri, M.; Scheidler, P., Jr.; and Bonesteel, C.: A System for Integrated Reliability and Safety Analyses. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-209548, August 1999, 82 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209548.pdf>  
 Organization OE RTOP 536-16-11
- 10** Lachowicz, J. T.; Yao, C-S.; and Joslin, R. D.: Physical Analysis and Scaling of a Jet and Vortex Actuator. Presented at 3rd Joint ASME/JSME Fluids Engineering Conference, July 18-22, 1999, San Francisco, California. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-3fec-jtl.pdf>  
 Organization RB RTOP 522-32-31
- 11** Lockard, D. P.; and Atkins, H. L.: Efficient Implementations of the Quadrature-Free Discontinuous Galerkin Method. Presented at 14th AIAA Computational Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3309.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3309.pdf>  
 Organization RB RTOP 538-03-13
- 12** Long, D.; Lee, D. A.; Gaier, E. M.; Johnson, J. P.; and Kostiuk, P. F.: A Method for Forecasting the Commercial Air Traffic Schedule in the Future. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-208987, January 1999, 84 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208987.pdf>  
 Organization OE RTOP 538-16-11
- 13** Long, D.; Lee, D. A.; Johnson, J. P.; Gaier, E. M.; and Kostiuk, P. F.: Modeling Air Traffic Management Technologies With a Queuing Network Model of the National Airspace System. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-208988, January 1999, 121 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208988.pdf>  
 Organization OE RTOP 538-16-11
- 14** Moster, G. E.; and Martin, J. G.: Oscillatory Trajectories Applied to NASA's DF-7 Configuration. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4931.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4931.pdf>  
 Organization OC RTOP 522-51-71

- 15 Roberts, E.; and Kostiuk, P. F.: Aviation System Analysis Capability Executive Assistant Analyses. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-209118, March 1999, 42 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209118.pdf>

Organization OE

RTOP 538-16-11

- 16 Roberts, E.; Villani, J. A.; Anderson, K.; and Book, P.: Aviation System Analysis Capability Executive Assistant Development. (NAS2-14361 Logistics Management Institute.) NASA/CR-1999-209119, March 1999, 160 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209119.pdf>

Organization OE

RTOP 536-16-11

## Category 02 Aerodynamics

- 17 Anders, J. B., Jr.; Anderson, W. K.; and Murthy, A. V.: Transonic Similarity Theory Applied to a Supercritical Airfoil in Heavy Gas. *Journal of Aircraft*, Volume 36, No. 6, November–December 1999, p. 957-964.

Organization RB

RTOP 505-59-53

- 18 Anders, S. G.; and Fischer, M. C.: F-16XL-2 Supersonic Laminar Flow Control Flight Test Experiment. NASA/TP-1999-209683, December 1999, 262 p.

Organization RB

RTOP 537-07-23

- 19 Asbury, S. C.; and Hunter, C. A.: Effects of Convolved Divergent Flap Contouring on the Performance of a Fixed-Geometry Nonaxisymmetric Exhaust Nozzle. NASA/TP-1999-209093, February 1999, 75 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209093.pdf>

Organization RB

RTOP 538-14-12

- 20 Asbury, S. C.; and Hunter, C. A.: Static Performance of a Fixed-Geometry Exhaust Nozzle Incorporating Porous Cavities for Shock-Boundary Layer Interaction Control. NASA/TM-1999-209513, August 1999, 139 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209513.pdf>

Organization RD

RTOP 538-11-11

- 21 Baggag, A.; Atkins, H. L.; Ozturan, C.; and Keyes, D. E.: Parallelization of an Object-Oriented Unstructured Aeroacoustics Solver. Presented at Ninth SIAM Conference on Parallel Processing for Scientific Computing, March 22-24, 1999, San Antonio, Texas.

Organization RB

RTOP 522-31-61

- 22 Banks, D. W.; Wood, R. M.; and Bauer, S. X.: Control and Augmentation of Passive Porosity Through Transpiration Control. U. S. Patent 5,901,929. Issued May 11, 1999.

Organization RB

- 23 Bennett, R. M.; and Walker, C. E.: Computational Test Cases for a Rectangular Supercritical Wing Undergoing Pitching Oscillations. NASA/TM-1999-209130, April 1999, 132 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209130.pdf>  
 Organization RC RTOP 522-31-81
- 24 Bennett, R. M.; and Walker, C. E.: Computational Test Cases for a Clipped Delta Wing With Pitching and Trailing-Edge Control Surface Oscillations. NASA/TM-1999-209104, March 1999, 92 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209104.pdf>  
 Organization RC RTOP 522-31-81
- 25 Boeing Commercial Airplane Group: High Reynolds Number Hybrid Laminar Flow Control (HLFC) Flight Experiment: III. Leading Edge Design, Fabrication, and Installation. (NAS1-18574 Boeing Commercial Airplane Group.) NASA/CR-1999-209325, April 1999, 94 p.  
 Organization RB RTOP 522-32-31
- 26 Boeing Commercial Airplane Group: High Reynolds Number Hybrid Laminar Flow Control (HLFC) Flight Experiment: IV. Suction System Design and Manufacture. (NAS1-18574 Boeing Commercial Airplane Group.) NASA/CR-1999-209326, April 1999, 105 p.  
 Organization RB RTOP 522-32-31
- 27 Boeing Commercial Airplane Group: High Reynolds Number Hybrid Laminar Flow Control (HLFC) Flight Experiment: II. Aerodynamic Design. (NAS1-18574 Boeing Commercial Airplane Group.) NASA/CR-1999-209324, April 1999, 172 p.  
 Organization RB RTOP 522-32-31
- 28 Brauckmann, G. J.: X-34 Vehicle Aerodynamic Characteristics. *Journal of Spacecraft and Rockets*, Volume 36, No. 2, March–April 1999, p. 229-239.  
 Organization RB RTOP 242-80-01
- 29 Britt, C. L.; Nguyen, D. C.; and Koch, G. J.: Pulsed Lidar Measurements of Aircraft Wake Vortices at DFW and JFK. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0982.  
 Organization RF RTOP 538-04-11
- 30 Carpenter, M. H.; Nordstrom, J.; and Gottlieb, D. I.: A Stable and Conservative Interface Treatment of Arbitrary Spatial Accuracy. *Journal of Computational Physics*, Volume 148, No. 2, 1999, p. 341-365.  
 Organization RB RTOP 522-31-61
- 31 Chapman, G. T.; Berner, C.; Winchenbach, G. L.; and Mitcheltree, R. A.: The Use of Spherical Bases to Eliminate Limit Cycles of Blunt Entry Vehicles. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-1023.  
 Organization RB RTOP 242-80-01

- 32** Chapman, G. T.; Mitcheltree, R. A.; and Hathaway, W.: Transonic and Low Supersonic Static and Dynamic Aerodynamic Characteristics of the Stardust Sample Return Capsule. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-1021.  
Organization RB RTOP 242-80-01
- 33** Cole, D.; Glauser, M. N.; Yao, C-S.; and Paschal, K. B.: Including Time Dependency in Particle Image Velocimetry Measurements Using Linear Stochastic Estimation. Presented at 30th AIAA Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3595.  
Organization RB RTOP 522-32-31
- 34** Deere, K. A.; and Asbury, S. C.: Experimental and Computational Investigation of a Translating-Throat, Single-Expansion-Ramp Nozzle. NASA/TP-1999-209138, May 1999, 51 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209138.pdf>  
Organization RB RTOP 522-21-51
- 35** Deere, K. A.; and Hunter, C. A.: Experimental Investigation of Convolved Contouring for Aircraft Afterbody Drag Reduction. Presented at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, June 20-24, 1999, Los Angeles, California. AIAA Paper No. 99-2670.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-2670.pdf>  
Organization RB RTOP 522-21-51
- 36** Duquesne, N.; Carlson, J. R.; Rumsey, C. L.; and Gatski, T. B.: Computation of Turbulent Wake Flows in Variable Pressure Gradient. Presented at 30th AIAA Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3781.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3781.pdf>  
Organization RB RTOP 538-14-14
- 37** Engelund, W. C.; Holland, S. D.; Cockrell, C. E., Jr.; and Bittner, R. D.: Propulsion System Airframe Integration Issues and Aerodynamic Database Development for the Hyper-X Flight Research Vehicle. Presented at 14th International Symposium on Airbreathing Engines, September 5-10, 1999, Florence, Italy. In Proceedings, ISOABE Paper No. 99-7215.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-14isoabe-wce.pdf>  
Organization RA RTOP 522-51-71
- 38** Garriz, J. A.; Newman, P. A.; Vatsa, V. N.; and Haigler, K. J.: Observations on Three-Dimensional Nonlinear Transonic Wall-Interference Assessment and Correction Using Semispan Wing Data. *Journal of Computers and Fluids*, Volume 28, No. 4/5, 1999, p. 629-651.  
Organization RB RTOP 522-31-11

- 39** Ghaffari, F.: Unstructured Grid Viscous Flow Simulation Over High-Speed Research Technology Concept Airplane at High-Lift Conditions. NASA/TP-1999-209718, November 1999, 32 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209718.pdf>  
 Organization RB RTOP 537-07-51
- 40** Graves, S. S.: Investigation of a Technique for Measuring Dynamic Ground Effect in a Subsonic Wind Tunnel. (NCC1-24 George Washington University, JIAFS.) NASA/CR-1999-209544, August 1999, 66 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209544.pdf>  
 Organization RB RTOP 537-07-51
- 41** Gumbert, C. R.; Hou, G. J.; and Newman, P. A.: Simultaneous Aerodynamic Analysis and Design Optimization (SAADO) for a 3-D Rigid Wing. Presented at 14th AIAA Computational Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3296.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3296.pdf>  
 Organization RB RTOP 522-31-81
- 42** Hahne, D. E.: 1999 NASA High-Speed Research Program Aerodynamic Performance Workshop: Volume I—Configuration Aerodynamics. NASA/CP-1999-209704/VOL1/PT2, December 1999, 775 p.  
 Organization RD RTOP 537-07-51
- 43** Hahne, D. E.: 1999 NASA High-Speed Research Program Aerodynamic Performance Workshop: Volume II—High Lift. NASA/CP-1999-209704/VOL2/PT1, December 1999, 556 p.  
 Organization RD RTOP 537-07-51
- 44** Hahne, D. E.: 1999 NASA High-Speed Research Program Aerodynamic Performance Workshop: Volume I—Configuration Aerodynamics. NASA/CP-1999-209704/VOL1/PT1, December 1999, 865 p.  
 Organization RD RTOP 537-07-51
- 45** Hahne, D. E.: 1999 NASA High-Speed Research Program Aerodynamic Performance Workshop: Volume II—High Lift. NASA/CP-1999-209704/VOL2/PT2, December 1999, 485 p.  
 Organization RD RTOP 537-07-51
- 46** Hepner, T. E.: Aerodynamic Flow Field Measurements for Automotive Systems. NASA/TM-1999-208965, January 1999, 188 p.  
 Organization RB RTOP 522-31-61

- 47 Hollis, B. R.; Thompson, R. A.; Murphy, K. J.; Nowak, R. J.; Riley, C. J.; Wood, W. A.; Alter, S. J.; and Prabhu, R. K.: X-33 Aerodynamic and Aeroheating Computations for Wind Tunnel and Flight Conditions. Presented at AIAA Atmospheric Flight Mechanics Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4163.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4163.pdf>  
Organization RB RTOP 242-80-01
- 48 Hunter, C. A.; and Deere, K. A.: Computational Investigation of Fluidic Counterflow Thrust Vectoring. Presented at 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, June 20-24, 1999, Los Angeles, California. AIAA Paper No. 99-2669.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-2669.pdf>  
Organization RB RTOP 322-21-51
- 49 Joslin, R. D.: Aircraft Laminar Flow Control. In *McGraw-Hill Yearbook of Science and Technology 2000*, The McGraw-Hill Companies, 1999, p. 5-7.  
Organization RB RTOP 522-32-31
- 50 Joslin, R. D.: Toward Time-Accurate CFD for Active Control Flow. Presented at 1999 World Aviation Congress and Exposition, October 19-21, 1999, San Francisco, California.  
Organization RB RTOP 522-32-31
- 51 Joslin, R. D.; Horta, L. G.; and Chen, F.-J.: Transitioning Active Flow Control to Applications. Presented at 30th AIAA Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3575.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3575.pdf>  
Organization RB RTOP 522-32-31
- 52 Malmuth, N. D.; Crites, R. C.; Everhart, J. L.; Newman, P. A.; and Sickles, W. L.: Transonic Wind Tunnel Wall Interference. In *AGARDograph 336 Wind Tunnel Wall Corrections*, AGARD-AG-336, Chapter 5, B. F. Ewald, ed., AGARD, October 1998, p. 5-1–5-98.  
Organization RB RTOP 519-20-21
- 53 Mavriplis, D. J.; and Pirzadeh, S. Z.: Large-Scale Parallel Unstructured Mesh Computations for 3D High-Lift Analysis. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0537.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0537.pdf>  
Organization RB RTOP 522-22-31
- 54 McGrath, B. E.; and Wood, R. M.: Serrated-Planform Lifting-Surfaces. U. S. Patent 5,901,925. Issued May 11, 1999.  
Organization RB

- 55** Mineck, R. E.: Application of an Unstructured Grid Navier-Stokes Solver to a Generic Helicopter Body—Comparison of Unstructured Grid Results With Structured Grid Results and Experimental Results. NASA/TM-1999-209510, August 1999, 52 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209510.pdf>  
 Organization RB RTOP 581-10-11
- 56** Mitcheltree, R. A.; Fremaux, C. M.; and Yates, L. A.: Subsonic Static and Dynamic Aerodynamics of Blunt Entry Vehicles. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-1020.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1020.pdf>  
 Organization RB RTOP 242-80-01
- 57** Mitcheltree, R. A.; Moss, J. N.; Cheatwood, F. M.; Greene, F. A.; and Braun, R. D.: Aerodynamics of the Mars Microprobe Entry Vehicles. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May–June 1999, p. 392-398.  
 Organization RB RTOP 242-80-01
- 58** Mitcheltree, R. A.; Wilmoth, R. G.; Cheatwood, F. M.; Brauckmann, G. J.; and Greene, F. A.: Aerodynamics of Stardust Sample Return Capsule. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May–June 1999, p. 429-435.  
 Organization RB RTOP 242-80-01
- 59** Murphy, K. J.; Nowak, R. J.; Thompson, R. A.; Hollis, B. R.; and Prabhu, R. K.: X-33 Hypersonic Aerodynamic Characteristics. Presented at AIAA Atmospheric Flight Mechanics Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4162.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4162.pdf>  
 Organization RB RTOP 242-80-01
- 60** Newman, J. C., III; Newman, P. A.; Taylor, A. C., III; and Hou, G. J.: Efficient Nonlinear Static Aeroelastic Wing Analysis. *Journal of Computers and Fluids*, Volume 28, No. 4/5, 1999, p. 615-628.  
 Organization RB RTOP 522-31-11
- 61** Newman, J. C., III; Taylor, A. C., III; Barnwell, R. W.; and Newman, P. A.: Overview of Sensitivity Analysis and Shape Optimization for Complex Aerodynamic Configurations. *Journal of Aircraft*, Volume 36, No. 1, January–February 1999, p. 87-96.  
 Organization RB RTOP 522-31-81
- 62** Newman, P. A.; and Everhart, J. L.: Addressing Uncertainties in Wall Corrections. In *AGARDograph 336: Wind Tunnel Wall Corrections*, AGARD-AG-336, Chapter 11, B. F. Ewald, ed., AGARD, October 1998, p. 11-1–11-19.  
 Organization RB RTOP 519-20-21



- 63** Noonan, K. W.; Yeager, W. T., Jr.; Singleton, J. D.; Wilbur, M. L.; and Mirick, P. H.: Evaluation of a Model Helicopter Main Rotor Blade With Slotted Airfoils at the Tip. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
 Organization RB RTOP 581-10-11
- 64** Pack, L. G.; and Seifert, A.: Periodic Excitation for Jet Vectoring and Enhanced Spreading. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0672.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0672.pdf>  
 Organization RB RTOP 522-32-31
- 65** Pamadi, B. N.; and Brauckmann, G. J.: Aerodynamic Characteristics and Development of the Aerodynamic Database of the X-34 Reusable Launch Vehicle. Presented at International Symposium on Atmospheric Reentry Vehicles and Systems, March 16-18, 1999, Arcachon, France.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-isarvs-bnp.pdf>  
 Organization RA RTOP 242-34-01
- 66** Pirzadeh, S. Z.: An Adaptive Unstructured Grid Method by Grid Subdivision, Local Remeshing, and Grid Movement. Presented at 14th AIAA Computational Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3255.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3255.pdf>  
 Organization RB RTOP 522-22-31
- 67** Pirzadeh, S. Z.: Unstructured Grid Generation for Complex 3D High-Lift Configurations. Presented at 1999 World Aviation Congress and Exposition, October 19-21, 1999, San Francisco, California. SAE Paper No. 1999-01-5557.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-wace-szp.pdf>  
 Organization RB RTOP 522-22-31
- 68** Prabhu, R. K.: An Inviscid Computational Study of an X-33 Configuration at Hypersonic Speeds. (NAS1-96014 Lockheed Martin Engineering & Sciences.) NASA/CR-1999-209366, July 1999, 23 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209366.pdf>  
 Organization RB RTOP 242-80-01
- 69** Rausch, V. L.; McClinton, C. R.; and Sitz, J.: Hyper-X Program Overview. Presented at 14th International Symposium on Airbreathing Engines, September 5-10, 1999, Florence, Italy.  
 Organization OC RTOP 522-51-71
- 70** Ravindran, S. S.: Active Control of Flow Separation Over an Airfoil. NASA/TM-1999-209838, December 1999, 15 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209838.pdf>  
 Organization RB RTOP 706-32-21

- 71** Reubush, D. E.: Hyper-X Stage Separation—Background and Status. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4818.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4818.pdf>  
Organization OC RTOP 706-51-71
- 72** Rogers, J. L.: Tools and Techniques for Decomposing and Managing Complex Design Projects. *Journal of Aircraft*, Volume 36, No. 1, January–February 1999, p. 266-274.  
Organization RB RTOP 509-10-11
- 73** Rumsey, C. L.; Gatski, T. B.; and Morrison, J. H.: Turbulence Model Predictions of Extra-Strain Rate Effects in Strongly-Curved Flows. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0157.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0157.pdf>  
Organization RB RTOP 522-31-61
- 74** Scallion, W. I.: Aerodynamic Characteristics and Control Effectiveness of the HL-20 Lifting Body Configuration at Mach 10 in Air. NASA/TM-1999-209357, September 1999, 59 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209357.pdf>  
Organization RB RTOP 242-80-01
- 75** Schuster, D. M.; and Rausch, R. D.: Transonic Dynamics Tunnel Force and Pressure Data Acquired on the HSR Rigid Semispan Model. (NAS1-96014 Lockheed Martin Engineering & Sciences.) NASA/CR-1999-209555, September 1999, 50 p.  
Organization RC RTOP 537-06-36
- 76** Schuster, D. M.; Spain, C. V.; Turnock, D. L.; Rausch, R. D.; Hamouda, M-N.; Vogler, W. A.; and Stockwell, A. E.: Development, Analysis and Testing of the High Speed Research Flexible Semispan Model. (NAS1-96014 Lockheed Martin Engineering & Sciences.) NASA/CR-1999-209556, September 1999, 123 p.  
Organization RC RTOP 537-06-36
- 77** Seifert, A.; and Pack, L. G.: Oscillatory Excitation of Unsteady Compressible Flows Over Airfoils at Flight Reynolds Numbers. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0925.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0925.pdf>  
Organization RB RTOP 522-32-31
- 78** Stewart, E. C.: Accelerations of One Airplane in Wake Vortices of Another. NASA Tech Brief L-17831, September 1999.  
Organization RD
- 79** Stewart, E. C.: A Parametric Study of Accelerations of an Airplane Due to a Wake Vortex System. NASA/TM-1999-208745, May 1999, 41 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm208745.pdf>  
Organization RD RTOP 538-04-11

- 80** Vatsa, V. N.: Computation of Sensitivity Derivatives of Navier-Stokes Equations Using Complex Variables. Presented at 5th National Symposium on Large-Scale Analysis, Design and Intelligent Synthesis Environments, October 12-15, 1999, Williamsburg, Virginia. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-5slsadise-vnv.pdf>  
Organization RB RTOP 522-31-61
- 81** Wang, Q.; Massey, S. J.; Abdol-Hamid, K. S.; and Frink, N. T.: Solving Navier-Stokes Equations With Advanced Turbulence Models on Three-Dimensional Unstructured Grids. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0156.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0156.pdf>  
Organization RB RTOP 522-31-21
- 82** Whitlow, W., Jr.; and Todd, E. N. (Editors): CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999. NASA/CP-1999-209136/PT1, June 1999, 437 p.  
Organization A RTOP 505-90-52
- 83** Whitlow, W., Jr.; and Todd, E. N. (Editors): CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999. NASA/CP-1999-209136/PT2, June 1999, 419 p.  
Organization A RTOP 505-90-52
- 84** Wilmoth, R. G.; Mitcheltree, R. A.; and Moss, J. N.: Low-Density Aerodynamics of the Stardust Sample Return Capsule. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May-June 1999, p. 436-441.  
Organization RB RTOP 242-80-01
- 85** Wood, R. M.; and Bauer, S. X.: Advanced Aerodynamic Control Effectors. Presented at 1999 World Aviation Congress and Exposition, October 19-21, 1999, San Francisco, California. SAE Paper No. 1999-01-5619.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-wace-rmw.pdf>  
Organization RB RTOP 522-21-51
- 86** Zang, T. A.; and Green, L. L.: Multidisciplinary Design Optimization Techniques: Implications and Opportunities for Fluid Dynamics Research. Presented at 30th AIAA Fluid Dynamics Conference, June 28-July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3798.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3798.pdf>  
Organization RA RTOP 522-31-81

### Category 03 Air Transportation and Safety

- 87** Ballin, M. G.; Wing, D. J.; Hughes, M. F.; and Conway, S. R.: Airborne Separation Assurance and Traffic Management Research of Concepts and Technology. Presented at 1999 AIAA Guidance, Navigation, and Control Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-3989.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3989.pdf>  
Organization RD RTOP 576-01-26
- 88** Barker, L. K.; Hankins, W. W., III; and Hueschen, R. M.: Speed Profiles for Deceleration Guidance During Rollout and Turnoff (ROTO). NASA/TM-1999-209829, December 1999, 22 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209829.pdf>  
Organization RD RTOP 576-02-13
- 89** Cassell, R.; Evers, C.; Hicok, D.; and Lee, D.: NASA Low Visibility Landing and Surface Operations (LVLASO) Atlanta Demonstration: Surveillance Systems Performance Analysis. (NAS1-19214 Research Triangle Institute; Rannoch Corporation, Subcontractor.) NASA/CR-1999-209110, June 1999, 106 p.  
Organization RD RTOP 538-04-13
- 90** Cassell, R.; Smith, A.; and Hicok, D.: Development of Airport Surface Required Navigation Performance (RNP). (NAS1-19214 Research Triangle Institute; Rannoch Corporation, Subcontractor.) NASA/CR-1999-209109, June 1999, 71 p.  
Organization RD RTOP 538-04-13
- 91** Han, J.; Lin, Y-L.; Arya, S. P.; and Proctor, F. H.: Large Eddy Simulation of Aircraft Wake Vortices in a Homogeneous Atmospheric Turbulence: Vortex Decay and Descent. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0756.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0756.pdf>  
Organization RD RTOP 576-02-11
- 92** Hinton, D. A.; Charnock, J. K.; and Bagwell, D. R.: The NASA Aircraft Vortex Spacing System (AVOSS) Development. *ICAO Journal*, Volume 53, No. 7, September 1998, p. 14-17, 28.  
Organization RD RTOP 538-04-11
- 93** Hinton, D. A.; Charnock, J. K.; Bagwell, D. R.; and Grigsby, D. W.: NASA Aircraft Vortex Spacing System Development Status. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0753.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0753.pdf>  
Organization RD RTOP 538-04-11

- 94** Hunt, J. L.; Pegg, R. J.; and Petley, D. H.: Airbreathing Hypersonic Vision-Operational-Vehicles Design Matrix. Presented at 1999 World Aviation Congress and Exposition, October 19-21, 1999, San Francisco, California. Paper No. 1999-01-5515.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-wace-jlh.pdf>  
 Organization RA RTOP 242-82-01
- 95** Johnson, E. J.; and Hyer, P. V.: Roll-Out and Turn-Off Display Software for Integrated Display System. (NAS1-96014 Lockheed Martin Engineering & Sciences.) NASA/CR-1999-209731, November 1999, 56 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209731.pdf>  
 Organization RD RTOP 538-04-13
- 96** Kramer, L. J. (*Compiler*): Synthetic Vision Workshop 2. NASA/CP-1999-209112, March 1999, 391 p.  
 Organization RD RTOP 522-19-11
- 97** Latorella, K. A.: A Safety Index and Method for Flightdeck Evaluation. Presented at Tenth International Symposium on Aviation Psychology, May 2-6, 1999, Columbus, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10isap-kal.pdf>  
 Organization RD RTOP 522-14-11
- 98** McKissick, B. T.: Turbulence Dissipation Rate Estimations. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0758.  
 Organization RD RTOP 538-04-11
- 99** Phillips, C. T.; and Ballin, M. G.: A Cooperative Human-Adaptive Traffic Simulation (CHATS). Presented at 1999 AIAA Guidance, Navigation, and Control Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4231.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4231.pdf>  
 Organization RD RTOP 576-01-26
- 100** Proctor, F. H.; and Han, J.: Numerical Study of Wake Vortex Interaction With the Ground Using the Terminal Area Simulation System. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0754.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0754.pdf>  
 Organization RD RTOP 538-04-11
- 101** Shen, S.; Ding, F.; Han, J.; Lin, Y-L.; Arya, S. P.; and Proctor, F. H.: Numerical Modeling Studies of Wake Vortices: Real Case Simulations. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0755.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0755.pdf>  
 Organization RD RTOP 576-02-11

- 102** Stough, H. P., III; Rudisill, M.; Schaffner, P. R.; and Martzaklis, K. S.: Aviation Weather Information Systems Research and Development. Presented at 1999 SAE General, Corporate, and Regional Aviation Meeting and Exposition, April 20-22, 1999, Wichita, Kansas.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-sae-hps.pdf>  
 Organization RD RTOP 548-81-11
- 103** Stough, H. P., III; and Scanlon, C. H.: NASA Aviation Weather Information Systems Research and Development. *ICAO Journal*, Volume 54, No. 1, January–February 1999, p. 20-21, 23, 28-29.  
 Organization RD RTOP 548-81-11
- 104** Trujillo, A. C.: Changes in Pilot Behavior With Predictive System Status Information. Presented at Tenth International Symposium on Aviation Psychology, May 2-6, 1999, Columbus, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10isap-act.pdf>  
 Organization RD RTOP 522-14-11
- 105** Turnbull, A.: The Typical General Aviation Aircraft. (NAS1-96013 FDC/NYMA, Inc.) NASA/CR-1999-209550, September 1999, 28 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209550.pdf>  
 Organization SC RTOP 538-11-22
- 106** Vicroy, D. D.; Stuever, R. A.; Stewart, E. C.; and Rivers, R. A.: Flight Data Reduction of Wake Velocity Measurements Using an Instrumented OV-10 Airplane. NASA/TM-1999-209552, September 1999, 66 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209552.pdf>  
 Organization RD RTOP 538-04-11
- 107** Young, S. D.; Jones, D. R.; Bryant, W. H.; and Eckhardt, D. E.: Tests Conducted in Atlanta Suggest Capacity Can be Safely Boosted Using New Technologies. *ICAO Journal (International Civil Aviation Organization)*, Volume 53, No. 1, January–February 1998, p. 7-10.  
 Organization RD RTOP 538-04-13
- 108** Young, S. D.; and Rankin, J.: Airport Surface Operations—Improving Safety. *Air Traffic Technology International*, 1999, p. 27-31.  
 Organization RD RTOP 538-04-13
- 109** Yuchnovicz, D. E.; Burgess, M. A.; and Hammers, W.: An Assessment of Technical and Production Risks of Candidate Low-Cost Attitude/Heading Reference Systems (AHRS). (NCA-1-130 Research Triangle Institute.) NASA/CR-1999-209096, February 1999, 64 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209096.pdf>  
 Organization OE RTOP 538-11-11

## Category 04 Aircraft Communications and Navigation

- 110** Reddy, C. J.; Cockrell, C. R.; Beck, F. B.; Bindiganavale, S.; and Sancer, M.: Fast Computation of Frequency Response Using MBPE/AWE in Conjunction With SWITCH Code. Presented at 1999 Electromagnetic Code Consortium Annual Meeting, April 20-22, 1999, Malibu, California.  
Organization RD RTOP 522-11-41
- 111** Waller, M. C.; and Scanlon, C. H.: A Simulation Study of Instrument Meteorological Condition Approaches to Dual Parallel Runways Spaced 3400 and 2500 Feet Apart Using Flight-Deck-Centered Technology. NASA/TM-1999-208743, March 1999, 104 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm208743.pdf>  
Organization RD RTOP 538-04-11

## Category 05 Aircraft Design, Testing and Performance

- 112** Bartels, R. E.: An Elasticity Based Mesh Scheme Applied to the Computation of Unsteady Three Dimensional Spoiler and Aeroelastic Problems. Presented at 14th AIAA Computational Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3301.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3301.pdf>  
Organization RC RTOP 522-25-41
- 113** Bartels, R. E.; and Schuster, D. M.: Comparison of Two Navier-Stokes Aeroelastic Methods Using BACT Benchmark Experimental Data. Presented at 17th AIAA Applied Aerodynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3157.  
Organization RC RTOP 522-25-41
- 114** Ghiringhelli, G. L.; Masarati, P.; Mantegazza, P.; and Nixon, M. W.: Multi-Body Analysis of an Active Control for a Tiltrotor. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ifasd-glg.pdf>  
Organization RC RTOP 581-20-21
- 115** Ghiringhelli, G. L.; Masarati, P.; Mantegazza, P.; and Nixon, M. W.: Multi-Body Analysis of the 1/5 Scale Wind Tunnel Model of the V-22 Tiltrotor. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-55ahs-glg.pdf>  
Organization RC RTOP 581-20-21
- 116** Giles, G. L.: Design-Oriented Analysis of Aircraft Fuselage Structures Using Equivalent Plate Methodology. *Journal of Aircraft*, Volume 36, No. 1, January–February 1999, p. 21-28.  
Organization RA RTOP 522-41-11

- 117** Giunta, A. A.: Sensitivity Analysis for Coupled Aero-Structural Systems. NASA/TM-1999-209367, August 1999, 23 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209367.pdf>  
 Organization RA RTOP 509-10-11
- 118** Heeg, J.; and Dowell, E. H.: Aerodynamic and Aeroelastic Insights Using Eigenanalysis. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1473.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1473.pdf>  
 Organization RC RTOP 522-25-41
- 119** Heeg, J.; and Dowell, E. H.: Aerodynamic and Aeroelastic Insights Using Eigenanalysis. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
 Organization RC RTOP 522-25-41
- 120** Henderson, D. A.; Moses, R. W.; Zimcik, D.; and Ryall, T.: Overview of an Active Buffeting Alleviation System. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
 Organization RC RTOP 522-21-51
- 121** Henshaw, M. J.; Bennett, R. M.; Guillemot, S.; Geurts, E.; Pagano, A.; Ruiz-Calavera, L. P.; and Woodgate, M.: CFD Calculations for the NLR F-5 DATA—Validation of CFD Technologies for Aeroelastic Applications Using One AVT WG-003 Data Set. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
 Organization RC RTOP 522-31-81
- 122** Horta, L. G.; Daugherty, R. H.; and Martinson, V. J.: Modeling and Validation of a Navy A6-Intruder Actively Controlled Landing Gear System. NASA/TP-1999-209124, May 1999, 33 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209124.pdf>  
 Organization RC RTOP 522-18-11
- 123** Horta, L. G.; Daugherty, R. H.; and Martinson, V. J.: Actively Controlled Landing Gear for Aircraft Vibration Reduction. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia. In NASA/CP-1999-209136/PT 2, p. 665-678.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ceas-lgh.pdf>  
 Organization RC RTOP 522-18-11
- 124** Juang, J-N.; and Maghami, P. G.: Optimal System Realization in Frequency Domain. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ceas-jnj.pdf>  
 Organization RC RTOP 522-18-11



- 125** Kodiyalam, S.; and Sobieszczanski-Sobieski, J.: Bi-Level Integrated Systems Synthesis With Response Surfaces. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1306.  
 Organization RA RTOP 509-10-31
- 126** Kvaternik, R. G.; Juang, J-N.; and Bennett, R. L.: Exploratory Studies in Generalized Predictive Control for Active Control of Aeroelastic Stability and Response of Tilt Rotor Aircraft. Presented at Eighth ARO Workshop on Aeroelasticity of Rotorcraft Systems, October 17-20, 1999, State College, Pennsylvania.  
 Organization RC RTOP 522-31-81
- 127** McGowan, A. R.: An Examination of Applying Shunted Piezoelectrics to Reduce Aeroelastic Response. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia. In NASA/CP-209136/PT2, p. 553-571.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ceas-arm.pdf>  
 Organization RC RTOP 522-32-41
- 128** McGowan, A. R.: A Feasibility Study on Using Shunted Piezoelectrics to Reduce Aeroelastic Response. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California.  
 Organization RC RTOP 522-32-41
- 129** McGowan, A. R.; Horta, L. G.; Harrison, J. S.; and Raney, D. L.: Research Activities Within NASA's Morphing Program. Presented at NATO-RTO Workshop on Structural Aspects of Flexible Aircraft Control, October 18-21, 1999, Ottawa, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-wsafac-arm.pdf>  
 Organization RC RTOP 522-32-41
- 130** McLean, J. D.; Crouch, J. D.; Stoner, R. C.; Sakurai, S.; Seidel, G. E.; Feifel, W. M.; and Rush, H. M.: Study of the Application of Separation Control by Unsteady Excitation to Civil Transport Aircraft. (NAS1-20267 Boeing Commercial Airplane Group.) NASA/CR-1999-209338, June 1999, 64 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209338.pdf>  
 Organization RB RTOP 522-32-31
- 131** Miles, E.; Davis, P.; and Wing, D. J.: Development of a Free-Flight Simulation Infrastructure. Presented at AIAA Modeling and Simulation Technologies Conference and Exhibit, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4193.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4193.pdf>  
 Organization RD RTOP 576-01-26
- 132** Morelli, E. A.: Flight Test of Optimal Inputs and Comparison With Conventional Inputs. *Journal of Aircraft*, Volume 36, No. 2, March-April 1999, p. 389-397.  
 Organization RD RTOP 522-35-11

- 133** Moses, R. W.: Contributions to Active Buffeting Alleviation Programs by the NASA Langley Research Center. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1318.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1318.pdf>  
 Organization RC RTOP 522-25-31
- 134** Moses, R. W.: NASA Langley Research Center Contributions to International Active Buffeting Alleviation Programs. Presented at NATO-RTO Workshop on Structural Aspects of Flexible Aircraft Control, October 18-21, 1999, Ottawa, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-wsafac-rwm.pdf>  
 Organization RC RTOP 522-25-31
- 135** Moses, R. W.; and Shah, G. H.: Correlation of Fin Buffet Pressures on an F/A-18 With Scaled Wind-Tunnel Measurements. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia. In NASA/CP-1999-209136/PT 2, p. 615-625.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ceas-rwm.pdf>  
 Organization RC RTOP 522-21-51
- 136** Nemeth, M. P.; Britt, V. O.; Collins, T. J.; and Starnes, J. H., Jr.: Nonlinear Behavior of the Space Shuttle Superlightweight Liquid Oxygen Tank Under Prelaunch Loads. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, November-December 1999, p. 788-803.  
 Organization RC RTOP 522-11-41
- 137** Nitzsche, F.; Zimcik, D.; Ryall, T.; Moses, R. W.; and Henderson, D. A.: Control Law Synthesis for Vertical Fin Buffeting Alleviation Using Strain Actuation. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1317.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1317.pdf>  
 Organization RC RTOP 522-21-51
- 138** Nixon, M. W.; Piatak, D. J.; Corso, L. M.; and Popelka, D.: Aeroelastic Tailoring for Stability Augmentation and Performance Enhancements of Tiltrotor Aircraft. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-55ahs-mwn.pdf>  
 Organization RC RTOP 581-20-21
- 139** Nixon, M. W.; Piatak, D. J.; Corso, L. M.; and Popelka, D.: Aeroelastic Tailoring for Stability Augmentation and Performance Enhancements of Tiltrotor Aircraft. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ahs-mwn.pdf>  
 Organization RC RTOP 581-20-21

- 140** Pappa, R. S.; Pritchard, J. I.; and Buehrle, R. D.: Vibro-Acoustics Modal Testing at NASA Langley Research Center. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia. In NASA/CP-1999-209136/PT1, p. 101-113.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209319.pdf>  
 Organization RC RTOP 538-03-14
- 141** Piatak, D. J.; and Kunz, D. L.: Experimental Investigation of a Fullspan Tiltrotor Model With Higher-Harmonic Vibration Control. Presented at Eighth ARO Workshop on Aeroelasticity of Rotorcraft Systems, October 17-20, 1999, State College, Pennsylvania.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-8aro-djp.pdf>  
 Organization RC RTOP 522-25-41
- 142** Pritchard, J. I.: An Overview of Landing Gear Dynamics. NASA/TM-1999-209143, ARL-TR-1976, May 1999, 20 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209143.pdf>  
 Organization RC RTOP 522-18-11
- 143** Pritchard, J. I.: An Overview of Landing Gear Dynamics. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209143.pdf>  
 Organization RC RTOP 522-13-11
- 144** Rivers, H. K.: Conformal Cryogenic Tank Trade Study for Reusable Launch Vehicle. Presented at Space Technology and Applications International Forum (STAIF '99), January 31–February 4, 1999, Albuquerque, New Mexico.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-staif-hkr.pdf>  
 Organization RC RTOP 242-33-01
- 145** Ruiz-Calavera, L. P.; Bennett, R. M.; Fox, J. H.; Galbraith, R. W.; Geurts, E.; Henshaw, M. J.; Huang, X-Z.; Kaynes, I.; Loser, T.; Naudin, P.; and Tamayama, M.: A New Compendium of Unsteady Aerodynamic Test Cases for CFD: Summary of AVT WG-003 Activities. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
 Organization RC RTOP 522-21-51
- 146** Ryall, T.; Moses, R. W.; Hopkins, M.; Henderson, D. A.; Zimcik, D.; and Nitzsche, F.: Buffet Load Alleviation. Presented at Second Australasian Congress on Applied Mechanics, February 10-12, 1999, Canberra, Australia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-2acam-tgr.pdf>  
 Organization RC RTOP 522-21-51

- 147** Samareh, J. A.: A Survey of Shape Parameterization Techniques. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ceas-jas.pdf>  
 Organization RB RTOP 509-10-11
- 148** Sawyer, J. W.; Hodge, J. S.; Moore, B.; and Sawyer, K.: Aerothermal Test of Thermal Protection Systems for X-33 Reusable Launch Vehicle. Presented at Space Technology and Applications International Forum (STAIF '99), January 31–February 4, 1999, Albuquerque, New Mexico.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-staif-jws.pdf>  
 Organization RC RTOP 242-33-03
- 149** Scherer, L. B.; Martin, C. A.; West, M.; Florance, J. P.; Wieseman, C. D.; Burner, A. W.; and Fleming, G. A.: DARPA/AFRL/NASA Smart Wing Second Wind Tunnel Test Results. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-6spie-lbs.pdf>  
 Organization RC RTOP 522-32-41
- 150** Schutte, P. C.; Latorella, K. A.; Comstock, J. R., Jr.; Rudisill, M.; and Trujillo, A. C.: Countermeasures for Skill, Rule, and Knowledge-Based Errors. Presented at Tenth International Symposium on Aviation Psychology, May 2-6, 1999, Columbus, Ohio.  
 Organization RD RTOP 522-14-11
- 151** Silva, W. A.: Reduced-Order Models Based on Linear and Nonlinear Aerodynamic Impulse Responses. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia.  
 Organization RC RTOP 522-25-41
- 152** Silva, W. A.: Reduced-Order Models Based on Linear and Nonlinear Aerodynamic Impulse Responses. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1262.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1262.pdf>  
 Organization RC RTOP 522-25-41
- 153** Silva, W. A.; and Perry, B., III: Maximized Gust Loads of a Closed-Loop, Nonlinear Aeroelastic System Using Nonlinear Systems Theory. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1474.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1474.pdf>  
 Organization RC RTOP 522-25-41

- 154** Sinapius, J. M.; and Lake, R. C.: Computer-Controlled Normal Mode Tuning. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia. In NASA/CP-1999-209136/PT1, p. 89-99.  
 Organization RC RTOP 581-20-21
- 155** Singleton, J. D.: Aeroelastic Analysis for Tiltrotor Configurations. Presented at Eighth ARO Workshop on Aeroelasticity of Rotorcraft Systems, October 17-20, 1999, State College, Pennsylvania.  
 Organization RC RTOP 581-20-21
- 156** Sobieszczanski-Sobieski, J.: Multidisciplinary Design Optimisation (MDO) Methods: Their Synergy With Computer Technology in the Design Process. *The Aeronautical Journal of the Royal Aeronautical Society*, August 1999, p. 373-372.  
 Organization RA RTOP 509-10-31
- 157** Sobieszczanski-Sobieski, J.; and Kodiyalam, S.: BLISS/S: A New Method for Two-Level Structural Optimization. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1345.  
 Organization RA RTOP 509-10-31
- 158** Szewczyk, Z. P.; and Tessler, A.: Stress Enhancement and Error Estimation via Neurocomputing Based Smoothing. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1409.  
 Organization RC RTOP 537-06-34
- 159** Taleghani, B. K.; and Campbell, J. F.: Non-Linear Finite Element Modeling of THUNDER Piezoelectric Actuators. NASA/TM-1999-209322, ARL-TR-1977, May 1999, 18 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209322.pdf>  
 Organization RC RTOP 522-32-41
- 160** Taleghani, B. K.; and Campbell, J. F.: Non-Linear Finite Element Modeling of THUNDER Piezoelectric Actuators. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-6spie-bkt.pdf>  
 Organization RC RTOP 522-32-41
- 161** Wang, J. M.; Jones, C. T.; and Nixon, M. W.: A Variable Diameter Short Haul Civil Tiltrotor. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-55ahs-jmw.pdf>  
 Organization RC RTOP 581-20-21

- 162** Wang, J. T.; Lotts, C. G.; and Sleight, D. W.: Analysis of Discrete-Source Damage Progression in a Tensile Stiffened Composite Panel. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1336.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1336.pdf>  
 Organization RC RTOP 538-13-11
- 163** Wilkie, W. K.; Belvin, W. K.; and Park, K. C.: Anisotropic Piezoelectric Twist Actuation of Helicopter Rotor Blades in Hovering Flight. *AIAA Journal*, Volume 37, No. 7, July 1999, p. 818-824.  
 Organization RC RTOP 522-22-21
- 164** Wilkie, W. K.; Wilbur, M. L.; Mirick, P. H.; Cesnik, C. E.; and Shin, S-J.: Aeroelastic Analysis of the NASA/Army/MIT Active Twist Rotor. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-55ahs-wkw.pdf>  
 Organization RC RTOP 581-20-21
- 165** Yager, T. J.: Evaluation of B-737 and B-757 Aircraft Performance During Winter Tests. Presented at 1999 SWIFT (Summer-Winter Integrated Friction Technologies) Conference, September 11-16, 1999, Alberta, Canada.  
 Organization RC RTOP 522-18-11
- 166** Yager, T. J.: The Joint Winter Runway Friction Measurement Program. Presented at 1999 FAA Airport Technology Transfer Conference, April 11-15, 1999, Atlantic City, New Jersey.  
 Organization RC RTOP 522-18-11
- 167** Yager, T. J.: Aircraft and Ground Vehicle Winter Runway Friction Assessment. NASA/TM-1999-209142, May 1999, 16 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209142.pdf>  
 Organization RC RTOP 522-18-11
- 168** Yager, T. J.: Summary of Results From Five Years of NASA Tire/Runway Friction Workshop Activities. Presented at 79th Annual Transportation Research Board Meeting, January 10-14, 1999, Washington, DC.  
 Organization RC RTOP 522-18-11
- 169** Yager, T. J.: Aircraft and Ground Vehicle Winter Runway Friction Assessment. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia. In NASA/CP-1999-209136/PT2, p. 679-689.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209142.pdf>  
 Organization RC RTOP 522-18-11

## Category 06 Aircraft Instrumentation

- 170** Nguyen, T. X.: RF Loading Effects of Aircraft Seats in an Electromagnetic Reverberating Environment. Presented at 18th Digital Avionics Systems Conference, October 24-29, 1999, St. Louis, Missouri.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-18dasc-txn.pdf>  
Organization RD RTOP 522-14-21
- 171** Shafer, D. B.; and Harris, H.: A Weather Channel in Your Cockpit. Presented at Experimental Aviation Association AirVenture '99, July 28--August 4, 1999, Oshkosh, Wisconsin.  
Organization RD RTOP 548-81-11

## Category 07 Aircraft Propulsion and Power

- 172** Auslender, A. H.: Scramjet-Combustor Performance Assessment. Presented at Data Exchange Agreement (DEA) Supersonic-Combustor Workshop, September 14-16, 1999, Paris, France.  
Organization RB RTOP 522-51-31
- 173** Bakos, R. J.; Tsai, C-Y.; Rogers, R. C.; and Shih, A. T.: The Mach 10 Component of NASA's Hyper-X Ground Test Program. Presented at 14th International Symposium on Airbreathing Engines, September 5-10, 1999, Florence, Italy.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-14isae-rjb.pdf>  
Organization RB RTOP 522-51-31
- 174** Carty, A. A.; and Cutler, A. D.: Development and Validation of a Supersonic Helium-Air Coannular Jet Facility. (NCC1-217 The George Washington University, JIAFS.) NASA/CR-1999-209717, November 1999, 114 p.  
Organization RB RTOP 522-51-31
- 175** Cutler, A. D.; Carty, A. A.; Doerner, S. E.; Diskin, G. S.; and Drummond, J. P.: Supersonic Coaxial Jet Experiment for CFD Code Validation. Presented at 30th AIAA Fluid Dynamics Conference, June 28--July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3588.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3588.pdf>  
Organization RB RTOP 522-51-31
- 176** Diskin, G. S.: Use of Nonintrusive Optical Techniques in the Determination of Scramjet Combustor Performance. Presented at Supersonic Combustion Workshop, September 14-16, 1999, Paris, France.  
Organization RB RTOP 522-51

- 177 McClinton, C. R.; Hunt, J. L.; Ricketts, R. H.; Reukauf, P.; and Peddie, C. L.: Airbreathing Hypersonic Technology Vision Vehicles and Development Dreams. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4978.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4978.pdf>  
Organization OC RTOP 706-51-71
- 178 Moses, P. L.; Bouchard, K. A.; Vause, R. F.; Pinckney, S. Z.; Taylor, L. W., III; Ferlemann, S. M.; Leonard, C. P.; Robinson, J. S.; Martin, J. G.; Petley, D. H.; and Hunt, J. L.: An Airbreathing Launch Vehicle Design With Turbine-Based Low-Speed Propulsion and Dual Mode Scramjet High Speed Propulsion. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4948.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4948.pdf>  
Organization OC RTOP 706-51-71
- 179 Rubinstein, R.; and Auslender, A. H.: Relaxation of Steady States Far From Equilibrium and the Decay of Anomalous Shock Behavior in Weakly Ionized Gases. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4939.  
Organization RB RTOP 522-51-31
- 180 Voland, R. T.; Auslender, A. H.; Smart, M. K.; Roudakov, A.; Semenov, V.; and Kopchenov, V.: CIAM/NASA Mach 6.5 Scramjet Flight and Ground Test Program. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4848.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4848.pdf>  
Organization RB RTOP 522-51-31
- 181 White, J. A.; and Morrison, J. H.: A Psuedo-Temporal Multi-Grid Relaxation Scheme for Solving the Parabolized Navier-Stokes Equations. Presented at 14th AIAA Computational Fluid Dynamics Conference, June 28-July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3360.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3360.pdf>  
Organization RB RTOP 522-51-31

#### **Category 08 Aircraft Stability and Control**

- 182 Davidson, J. B., Jr.; and Andrisani, D., II: Gain Weighted Eigenspace Assignment. *Journal of Guidance, Control, and Dynamics*, Volume 21, No. 6, 1998, p. 1009-1012.  
Organization RD RTOP 522-22-21



- 183** Davidson, J. B., Jr.; Lallman, F. J.; McMinn, J. D.; Martin, J. A.; Pahle, J. W.; Stephenson, M.; Selmon, J.; and Bose, D.: Flight Control Laws for NASA's Hyper-X Research Vehicle. Presented at 1999 AIAA Guidance, Navigation, and Control Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4124.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4124.pdf>  
 Organization RD RTOP 522-51-71
- 184** Gregory, I. M.: Modified Dynamic Inversion to Control Large Flexible Aircraft—What's Going On? Presented at 1999 AIAA Guidance, Navigation, and Control Conference, August 9-11, 1999, Portland, Oregon. AIAA paper No. 99-3998.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3998.pdf>  
 Organization RD RTOP 522-33-41
- 185** Jackson, E. B.; Martinez, D.; and Derry, S. D.: Piloted Simulation Investigation of a Supersonic Transport Configuration (LaRC.4). NASA/TM-1999-209557, September 1999, 92 p.  
 Organization RD RTOP 537-07-52
- 186** Klein, V.: Modeling of Longitudinal Unsteady Aerodynamics of a Wing-Tail Combination. (NCC1-29 George Washington University, JIAFS.) NASA/CR-1999-209547, September 1999, 29 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209547.pdf>  
 Organization RD RTOP 522-33-11
- 187** Montgomery, R. C.; Raney, D. L.; Park, M. A.; and Green, L. L.: Distributed Deployment of Shape Change Devices for Aircraft Flight Control—A Preliminary Design Concept Evaluation. Presented at 1999 ASME Mechanics and Materials Conference, June 27-30, 1999, Blacksburg, Virginia. In Proceedings, p. 206.  
 Organization RD RTOP 522-32-41
- 188** Morelli, E. A.: Real-Time Parameter Estimation in the Frequency Domain. Presented at 1999 AIAA Guidance, Navigation, and Control Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4043.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4043.pdf>  
 Organization RD RTOP 522-21-61
- 189** Ostroff, A. J.; and Bacon, B. J.: Force and Moment Approach for Achievable Dynamics Using Nonlinear Dynamic Inversion. Presented at 1999 AIAA Guidance, Navigation, and Control Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4001.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4001.pdf>  
 Organization RD RTOP 522-21-61

- 190** Park, M. A.; Green, L. L.; Montgomery, R. C.; and Raney, D. L.: Determination of Stability and Control Derivatives Using Computational Fluid Dynamics and Automatic Differentiation. Presented at 17th AIAA Applied Aerodynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3136.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3136.pdf>  
 Organization RB RTOP 522-31-81
- 191** Smith, M. S.: Analysis of Wind Tunnel Oscillatory Data of the X-31A Aircraft. (NCC1-24 George Washington University, JIAFS.) NASA/CR-1999-208725, February 1999, 126 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208725.pdf>  
 Organization RD RTOP 522-25-21
- 192** Wang, Z.; Lan, C. E.; and Brandon, J. M.: Fuzzy Logic Modeling of Lateral-Directional Unsteady Aerodynamics. Presented at AIAA Atmospheric Flight Mechanics Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4012.  
 Organization RD RTOP 522-25-31
- 193** Waszak, M. R.; and Andrisani, D., II: Uncertainty Modeling via Frequency Domain Model Validation. Presented at 1999 AIAA Guidance, Navigation, and Control Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-3959.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3959.pdf>  
 Organization RD RTOP 522-33-11

**Category 09 Research and Support Facilities (Air)**

- 194** Dress, D. A.: Upgrade of the 14- by 22-Foot Subsonic Tunnel. Presented at 35th Subsonic Aerodynamic Testing Association, June 7-10, 1999, Nashville, Tennessee.  
 Organization RB RTOP 576-03-14
- 195** Egoavil, M. A.; and Puster, R. L.: Turbulent Flame Analysis of the Ignitor in the 8 Ft. High Temperature Tunnel of NASA Langley Research Center. Presented at 17th Colloquium on the Dynamics of Explosions and Reactive Systems, July 25-30, 1999, Heidelberg, Germany.  
 Organization RF RTOP 522-51-31
- 196** Gregory, P. B.; and Monroe, C. A.: Wind Tunnel Model Support Cart With Telescoping Mast and Cable Yaw Drive. Presented at 33rd Aerospace Mechanisms Symposium, May 11-14, 1999, Pasadena, California.  
 Organization RF RTOP 538-14-14
- 197** Hodge, J. S.; and Harvin, S. F.: Test Capabilities and Recent Experiences in the NASA Langley 8-Foot High Temperature Tunnel. Presented at 1999 JANNAF 36th CS/APS/PSHS Joint Meeting, October 18-22, 1999, Cocoa Beach, Florida.  
 Organization RB RTOP 706-51-31

- 198** Kegelman, J. T.: Recent Cycle Time Reduction at Langley Research Center. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0178.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0178.pdf>  
 Organization RB RTOP 522-31-51
- 199** Mason, A. J.: An Experimental Investigation of Damaged Arresting Gear Tapes for the Langley Aircraft Landing Dynamics Facility. NASA/TM-1999-209839, December 1999, 25 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209839.pdf>  
 Organization RC RTOP 706-12-11
- 200** Shirinzadeh, B.; Herring, G. C.; and Barros, T.: Demonstration of Imaging Flow Diagnostics at the 0.3-m Transonic Cryogenic Tunnel Using Rayleigh Scattering. NASA/TM-1999-208970, February 1999, 16 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm208970.pdf>  
 Organization RB RTOP 522-31-61

## Astronautics

### Category 12 Astronautics (General)

- 201** Roithmayr, C. M.: International Space Station Attitude Control and Energy Storage Experiment: Effects of Flywheel Torque. NASA/TM-1999-209100, February 1999, 20 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209100.pdf>  
 Organization RA RTOP 906-43-00
- 202** Saunders, M. P.; Richie, R. W.; Rogers, J. F.; and Moore, A. A.: Predicting Mission Success in Small Satellite Missions. Presented at 50th International Astronautical Congress, October 4-8, 1999, Amsterdam, The Netherlands.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-50iac-mps.pdf>  
 Organization OB RTOP 896-10-00

### Category 13 Astrodynamics

- 203** Desai, P. N.; and Cheatwood, F. M.: Entry Dispersion Analysis for the Genesis Sample Return Capsule. Presented at AAS/AIAA Astrodynamics Specialist Conference, August 16-18, 1999, Girdwood, Alaska. AAS Paper No. 99-469.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-aasasc-pnd.pdf>  
 Organization RA RTOP 859-00-00
- 204** Desai, P. N.; Mitcheltree, R. A.; and Cheatwood, F. M.: Entry Dispersion Analysis for the Stardust Comet Sample Return Capsule. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May-June 1999, p. 463-469.  
 Organization RA RTOP 859-00-00

**205** Desai, P. N.; Mitcheltree, R. A.; and Cheatwood, F. M.: Entry Trajectory Issues for the Stardust Sample Return Capsule. Presented at International Symposium on Atmospheric Reentry Vehicles and Systems, March 16-18, 1999, Arcachon, France.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-isarvs-pnd.pdf>  
Organization RA RTOP 859-00-00

**206** Munk, M. M.: Departure Energies, Trip Times and Entry Speeds for Human Mars Missions. Presented at Ninth AAS/AIAA Spaceflight Mechanics Conference, February 7-10, 1999, Breckenridge, Colorado. AAS Paper No. 99-103.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-aas103-mmm.pdf>  
Organization RA RTOP 896-10-00

#### **Category 14 Ground Support Systems and Facilities (Space)**

**207** Glass, D. E.; Stevens, J. C.; Vause, R. F.; Winn, P. M.; Maguire, J. F.; Driscoll, G. C.; Blackburn, C. L.; and Mason, B. H.: Analysis and Design of the NASA Langley Cryogenic Pressure Box. (NAS1-19864 Analytical Services & Materials, Inc.) NASA/CR-1999-209822, December 1999, 148 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209822.pdf>  
Organization RC RTOP 713-10

#### **Category 15 Launch Vehicles and Space Vehicles**

**208** Dorsey, J. T.; Wu, K. C.; Rivers, H. K.; Martin, C. J., Jr.; and Smith, R. W.: Airframe Integration Trade Studies for a Reusable Launch Vehicle. Presented at Space Technology and Applications International Forum (STAIF '99), January 31–February 4, 1999, Albuquerque, New Mexico.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-staif-jtd.pdf>  
Organization RC RTOP 242-33-03

**209** Kleb, W. L.; Wood, W. A.; and Gnoffo, P. A.: Computational Aeroheating Predictions for X-34. *Journal of Spacecraft and Rockets*, Volume 36, No. 2, March–April 1999, p. 179-188.  
Organization RB RTOP 242-80-01

**210** Madaras, E. I.; and Smith, W. L.: *Liberty Bell 7* Recovery Evaluation and Nondestructive Testing. NASA/TM-1999-209824, December 1999, 13 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209824.pdf>  
Organization OC RTOP 953-20-00

**211** Moore, J. P.: An Overview of the Fiber Optic Sensing System for Hydrogen Leak Detection in the Space Shuttle Discovery on STS-96. Presented at Bragg Gratings, Photosensitivity, and Poling in Glass Waveguides Conference, September 22-25, 1999, Stuart, Florida.  
Organization RD RTOP 260-10-01

- 212** Myers, D. E.; Martin, C. J., Jr.; and Blosser, M. L.: Parametric Weight Comparison of Current and Proposed Thermal Protection System (TPS) Concepts. Presented at 33rd AIAA Thermophysics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3459.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3459.pdf>  
 Organization RA RTOP 242-33-01
- 213** Queen, E. M.; Cheatwood, F. M.; Powell, R. W.; and Braun, R. D.: Mars Polar Lander Aerothermodynamic and Entry Dispersion Analysis. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May–June 1999, p. 421-428.  
 Organization RA RTOP 898-00-00
- 214** Rivers, H. K.: Cyclic Cryogenic Thermal-Mechanical Testing of an X-33/RLV Liquid Oxygen Tank Concept. NASA/TM-1999-209560, September 1999, 18 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209560.pdf>  
 Organization RC RTOP 242-23-02

### Category 16 Space Transportation

- 215** Antol, J.; and Headley, D. E.: The International Space Station as a Free Flyer Servicing Node. Presented at Space Technology and Applications International Forum (STAIF '99), January 31–February 4, 1999, Albuquerque, New Mexico.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-staif-ja.pdf>  
 Organization RA RTOP 906-43-00
- 216** Monell, D. W.; and Piland, W. M.: Aerospace Systems Design in NASA's Collaborative Engineering Environment. Presented at 50th International Astronautical Congress, October 4-8, 1999, Amsterdam, The Netherlands.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-50iac-dwm.pdf>  
 Organization OI RTOP 297-90-00
- 217** Rowell, L. F.; Braun, R. D.; Olds, J. R.; and Unal, R.: Multidisciplinary Conceptual Design Optimization of Space Transportation System. *Journal of Aircraft*, Volume 36, No. 1, January–February 1999, p. 218-226.  
 Organization RA RTOP 242-33-01
- 218** Wood, W. A.: Aerothermodynamic Calculations on X-34 at Mach 6 Wind Tunnel Conditions. NASA/TM-1999-208998, February 1999, 24 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm208998.pdf>  
 Organization RB RTOP 242-80-01

## Category 17 Space Communications, Spacecraft Communications, Command and Tracking

- 219 Stillwagen, F. H.: Communications and Tracking of Visiting Vehicles Near International Space Station (ISS)—The Design Approach of the Reusable Launch Vehicle (RLV) Communications. Presented at AIAA International Space Station Service Vehicles Conference, April 25-28, 1999, Houston, Texas.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-issvc-fhs.pdf>  
Organization RA RTOP 242-33-03

## Category 18 Spacecraft Design, Testing and Performance

- 220 Antol, J.; and Headley, D. E.: International Space Station Evolution Strategy. Presented at Space Technology and Applications International Forum (STAIF '99), January 31–February 4, 1999, Albuquerque, New Mexico.  
Organization RA RTOP 906-43-00
- 221 Bement, L. J.; and Multhaup, H. A.: Determining Functional Reliability of Pyrotechnic Mechanical Devices. *Journal of Spacecraft and Rockets*, Volume 37, No. 3, March 1999, p. 357-363.  
Organization RF RTOP 323-57-40
- 222 Brown, P. L.; Miller, J. B.; Jones, W. R.; Rasmussen, K.; Wheeler, D. R.; Rana, M.; and Peri, F., Jr.: The Clouds and the Earth's Radiant Energy System Elevation Bearing Assembly Life Test. Presented at 33rd Aerospace Mechanisms Symposium, May 11-14, 1999, Pasadena, California. In NASA/CP-1999-209259.  
Organization RE RTOP 225-12-02
- 223 Cox, D. E.; Gibbs, G. P.; Clark, R. L.; and Vipperman, J. S.: Experimental Robust Control of Structural Acoustic Radiation. *Journal of Vibration and Acoustics*, Volume 121, No. 4, 1999, p. 433-439.  
Organization RD RTOP 522-35-11
- 224 Harvey, G. A.; Humes, D. H.; and Kinard, W. H.: Mir Environmental Effects Payload and Returned Mir Solar Panel Cleanliness. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44sampe-gah.pdf>  
Organization RF RTOP 547-60-00
- 225 Harvey, G. A.; Humes, D. H.; and Kinard, W. H.: Optical Characterization of Returned Mir Solar Cells. Presented at AIAA 1999 Space Technology Conference and Exposition, September 28-30, 1999, Albuquerque, New Mexico. AIAA Paper No. 99-4488.  
Organization RF RTOP 547-60-00

- 226** Jorgensen, C. A. (*Editor*): International Space Station Evolution Data Book—Volume 1. Baseline. NASA/SP-1999-6109/VOL1, November 1999, 180 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/spec/NASA-99-sp6109vol1.pdf>  
 Organization RA RTOP 953-20-00
- 227** Jorgensen, C. A. (*Editor*): International Space Station Evolution Data Book—Volume 2. Evolution. NASA/SP-1999-6109/VOL2, November 1999, 84 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/spec/NASA-99-sp6109vol2.pdf>  
 Organization RA RTOP 953-20-00
- 228** Jorgensen, C. A.: An Initial Strategy for Commercial Industry Awareness of the International Space Station. (NAS1-96013 FDC/NYMA.) NASA/CR-1999-209686, October 1999, 13 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209686.pdf>  
 Organization RA RTOP 953-20-00
- 229** Kumar, R. R.; and Mazanek, D. D.: An Optimal Rendezvous Simulator. Presented at AIAA International Space Station Service Vehicles Conference, April 25-28, 1999, Houston, Texas.  
 Organization RA RTOP 906-43-00
- 230** Maghami, P. G.; and Lim, K. B.: Substructure Synthesis: A Controls Approach. Presented at 1999 AIAA Guidance, Navigation, and Control Conference, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-3957.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3957.pdf>  
 Organization RD RTOP 532-10-14
- 231** Mitcheltree, R. A.; DiFulvio, M.; Horvath, T. J.; and Braun, R. D.: Aerothermal Heating Predictions for Mars Microprobe. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May–June 1999, p. 405-411.  
 Organization RB RTOP 242-80-01
- 232** Mitcheltree, R. A.; and Kellas, S.: A Passive Earth-Entry Capsule for Mars Sample Return. Presented at International Symposium on Atmospheric Reentry Vehicles and Systems, March 16-18, 1999, Arcachon, France.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-isarvs-ram.pdf>  
 Organization RB RTOP 242-80-01
- 233** Vipperman, J. S.; Cox, D. E.; and Clark, R. L.: Robust Multivariable Active Control With Sensoriactuator Feedthrough. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1531.  
 Organization RD RTOP 522-35-11
- 234** Wilmoth, R. G.; Rault, D. F.; Cheatwood, F. M.; and Engelund, W. C.: Rarefied Aerothermodynamic Predictions for Mars Global Surveyor. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May–June 1999, p. 314-322.  
 Organization RB RTOP 242-80-01

- 235 Woodard, S. E.; and Garg, D. P.: A Numerical Optimization Approach for Tuning Fuzzy Logic Controllers. *IEEE Transactions on Systems, Man, and Cybernetics*, Volume 29, No. 4, 1999, p. 565-572.

Organization RC

RTOP 632-20-21

- 236 Wu, K. C.; and Lepsch, R. A., Jr.: Nontangent, Developed Contour Bulkheads for a Wing-Body Single Stage Launch Vehicle. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0835.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0835.pdf>

Organization RC

RTOP 242-33-01

### Category 19 Spacecraft Instrumentation

- 237 Jalink, A., Jr.; Hellbaum, R. F.; and Rohrbach, W. W.: Ferroelectric Fluid Flow Control Valve. U. S. Patent 5,961,096. Issued September 5, 1999.

Organization RF

- 238 Jalink, A., Jr.; Hellbaum, R. F.; and Rohrbach, W. W.: Ferroelectric Stirling-Cycle Refrigerator. U. S. Patent 5,867,991. Issued February 9, 1999.

Organization RF

### Category 20 Spacecraft Propulsion and Power

- 239 Balepin, V.; Rosholt, D.; and Petley, D. H.: Progress in Air Separation With the Vortex Tube. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4844.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4844.pdf>

Organization RA

RTOP 282-10-01

## Chemistry and Materials

### Category 23 Chemistry and Materials (General)

- 240 Arrington, G. L.; Gardner, J. E.; Jacobs, J. A.; Swyler, K. J.; and Fine, L. W. (*Compilers*): National Educators' Workshop: Update 98—Standard Experiments in Engineering, Materials Science, and Technology. NASA/CP-1999-209549, October 1999, 486 p.

Organization OA

RTOP 251-10-01

- 241 Sprinkle, D. R.; and Davis, P. P.: Langley 8-Ft. HTT Test 139 Gas Analyses. NASA/TM-1999-209712, October 1999, 193 p.

Organization RB

RTOP 522-51-31



## Category 24 Composite Materials

- 242** Baker, D. J.; and Rousseau, C. Q.: Evaluation of Carbon-Rod Reinforced Crippling Strength Specimens. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1282.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1282.pdf>  
Organization RC RTOP 538-13-11
- 243** Chen, C-S.; Wawrzynek, P.; and Ingraffea, A.: Crack Growth Simulation and Residual Strength Prediction in Airplane Fuselages. (NAG1-1184 Cornell University.) NASA/CR-1999-209115, March 1999, 189 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209115.pdf>  
Organization RC RTOP 538-02-10
- 244** Coats, T. W.; and Harris, C. E.: A Progressive Damage Methodology for Residual Strength Predictions of Notched Composite Panels. *Journal of Composite Materials*, Volume 33, No. 23, December 1999, p. 2193.  
Organization RC RTOP 538-13-11
- 245** Davila, C. G.; Ambur, D. R.; and McGowan, D. M.: Analytical Prediction of Damage Growth in Notched Composite Panels Loaded in Axial Compression. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1435.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1435.pdf>  
Organization RC RTOP 538-13-11
- 246** Dawicke, D. S.; Newman, J. C., Jr.; Starnes, J. H., Jr.; Rose, C. A.; Young, R. D.; and Seshadri, B. R.: Residual Strength Analysis Methodology: Laboratory Coupons to Structural Components. Presented at Third Joint FAA/DoD/NASA Conference on Aging Aircraft, September 20-23, 1999, Albuquerque, New Mexico. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-3jcaa-dsd.pdf>  
Organization RC RTOP 522-18-11
- 247** Gates, T. S.: On the Use of Accelerated Test Methods for Screening High Temperature Polymeric Composite Materials. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1296.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1296.pdf>  
Organization RC RTOP 522-32-11
- 248** Gates, T. S.: Durability Assessment of Polymeric Composites for High Speed Civil Transport. Presented at International Conference on Recent Developments in Durability Analysis of Composite Systems, July 11-14, 1999, Brussels, Belgium.  
Organization RC RTOP 522-32-11

- 249** Gates, T. S.; Whitley, K. S.; and Nicholson, L. M.: Characterizing the Influence of Molecular Weight and Temperature on the Mechanical Performance of an Advanced Polymer. Presented at 36th Annual Technical Meeting of the Society of Engineering Science, October 25-27, 1999, Austin, Texas.  
 Organization RC RTOP 522-32-11
- 250** Generazio, E. R.; and Harris, C. E.: The Role of Modeling and Simulation in the Development of Advanced Nondestructive Inspection Systems. Presented at CEAS Forum on Life Extension —Aerospace Technology Opportunities, March 23-25, 1999, Cambridge, United Kingdom.  
 Organization RC RTOP 538-02-11
- 251** Glaessgen, E. H.; and Raju, I. S.: Three-Dimensional Effects in the Plate Element Analysis of Stitched Textile Composites. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1416.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1416.pdf>  
 Organization RC RTOP 538-13-11
- 252** Glaessgen, E. H.; Raju, I. S.; and Poe, C. C., Jr.: Delamination and Stitch Failure in Stitched Composite Joints. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1247.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1247.pdf>  
 Organization RC RTOP 538-13-11
- 253** Glaessgen, E. H.; Raju, I. S.; and Poe, C. C., Jr.: Modeling the Influence of Stitching on Delamination Growth in Stitched Warp-Knit Composite Lap Joints. Presented at 12th International Conference on Composite Materials, July 5-9, 1999, Paris, France.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-12iccm-ehg.pdf>  
 Organization RC RTOP 538-10-12
- 254** Glaessgen, E. H.; Raju, I. S.; and Poe, C. C., Jr.: Debonding of Stitched Composite Joints: Testing and Analysis. Presented at 1999 Society for Experimental Mechanics Spring Conference and Exposition, June 7-9, 1999, Cincinnati, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-semsce-ehg.pdf>  
 Organization RC RTOP 538-10-12
- 255** Harris, C. E.; and Coats, T. W.: Methodology to Predict the Residual Strength of Polymer Matrix Composites in Applications Such as Aircraft Primary Structure. Presented at 1999 ASME Mechanics and Materials Conference, June 27-30, 1999, Blacksburg, Virginia.  
 Organization RC RTOP 522-18-11

- 256** Harris, C. E.; Coats, T. W.; and Glaessgen, E. H.: Experimental Verification of Computational Models for Laminated Composites. Presented at 1999 Society for Experimental Mechanics Spring Conference and Exposition, June 7-9, 1999, Cincinnati, Ohio. In Proceedings, p. 221-225.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-semsce-ceh.pdf>  
Organization RC RTOP 538-13-11
- 257** Harris, C. E.; and Newman, J. C., Jr.: Fracture Mechanics Methodology to Predict the Onset of Widespread Fatigue Damage in Aircraft Structure. Presented at Symposium on Experiments in Fracture Mechanics, June 27-30, 1999, Blacksburg, Virginia.  
Organization RC RTOP 522-18-11
- 258** Harris, C. E.; Piascik, R. S.; and Newman, J. C., Jr.: A Practical Engineering Approach to Predicting Fatigue Crack Growth in Riveted Lap Joints. Presented at ICAF '99 International Committee on Aeronautical Fatigue 20th Symposium, July 12-16, 1999, Bellevue, Washington.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-icaf-ceh.pdf>  
Organization RC RTOP 538-02-10
- 259** Jackson, K. E.; and Fasanella, E. L.: Crashworthy Evaluation of a 1/5 Scale Model Composite Fuselage Concept. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209132.pdf>  
Organization RC RTOP 247-00-98
- 260** Jackson, K. E.; and Fasanella, E. L.: Crashworthy Evaluation of a 1/5-Scale Model Composite Fuselage Concept. NASA/TM-1999-209132, April 1999, 18 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tmNASA-99-tm209132.pdf>  
Organization RC RTOP 247-00-98
- 261** Jackson, K. E.; and Fasanella, E. L.: Composite-Fuselage Concept for Greater Crashworthiness. NASA Tech Brief L-17835, November 1999.  
Organization RC
- 262** Johnston, N. J.; Cano, R. J.; Marchello, J. M.; Hulcher, A. B.; and Belvin, H. L.: A Prototype Research Laboratory for Automated Fabrication of High Performance Composites. Presented at 12th International Conference on Composite Materials, July 5-9, 1999, Paris, France.  
Organization RC RTOP 242-33-02
- 263** Krueger, R.: A Shell/3D Modeling Technique for Delaminations in Composite Laminates. Presented at 14th Annual Technical Conference of the American Society for Composites, September 27-29, 1999, Dayton, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-14asc-rk.pdf>  
Organization RC RTOP 538-02-10

- 264** Krueger, R.; Cvitkovich, M. K.; O'Brien, T. K.; and Minguet, P. J.: Testing and Analysis of Composite Skin/Stringer Debonding Under Multi-Axial Loading. NASA/TM-1999-209097, February 1999, 59 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209097.pdf>  
 Organization RC RTOP 538-02-10
- 265** Krueger, R.; Minguet, P. J.; and O'Brien, T. K.: A Method for Calculating Strain Energy Release Rates in Preliminary Design of Composite Skin/Stringer Debonding Under Multi-Axial Loading. Presented at ASTM Symposium on Composite Structures: Theory and Practice, May 17-18, 1999, Seattle, Washington.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209365.pdf>  
 Organization RC RTOP 581-10-21
- 266** Krueger, R.; Minguet, P. J.; and O'Brien, T. K.: A Method for Calculating Strain Energy Release Rates in Preliminary Design of Composite Skin/Stringer Debonding Under Multi-Axial Loading. NASA/TM-1999-209365, ARL-TR-2012, July 1999, 38 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209365.pdf>  
 Organization RC RTOP 581-10-21
- 267** Madaras, E. I.: Ultrasonic Attenuation Results of Thermoplastic Resin Composites Undergoing Thermal and Fatigue Loading. In *Review of Progress in Quantitative Nondestructive Evaluation*, Volume 18B, D. O. Thompson and D. E. Chimenti, eds., Kluwer Academic/Plenum Publishers, 1999, p. 1329-1336.  
 Organization RC RTOP 537-06-33
- 268** Murri, G. B.: Influence of Ply Waviness on Fatigue Life of Tapered Composite Flexbeam Laminates. NASA/TM-1999-209830, ARL-TR-2110, December 1999, 39 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209830.pdf>  
 Organization RC RTOP 581-10-21
- 269** Murri, G. B.: Influence of Ply Waviness on Fatigue Life of Tapered Composite Flexbeam Laminates. Presented at ASTM Symposium on Composite Structures: Theory and Practice, May 17-18, 1999, Seattle, Washington.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209830.pdf>  
 Organization RC RTOP 581-10-21
- 270** Nettles, A. T.; Douglas, M. J.; and Estes, E. E.: Scaling Effects in Carbon/Epoxy Laminates Under Transverse Quasi-Static Loading. NASA/TM-1999-209103, March 1999, 44 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209103.pdf>  
 Organization RC RTOP 538-13-11
- 271** Newman, J. C., Jr.: Advances in Fatigue and Fracture Mechanics Analyses for Aircraft Structures. Presented at ICAF '99 International Committee on Aeronautical Fatigue 20th Symposium, July 12-16, 1999, Bellevue, Washington.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-icaf-jcn.pdf>  
 Organization RC RTOP 538-18-11

- 272** Newman, J. C., Jr.: Prediction of Crack Growth Under Variable-Amplitude Loading in Thin-Sheet 2024-T3 Aluminum Alloys. In *Engineering Against Fatigue*, J. Beynon, M. Brown, R. Smith, T. Lindley, and B. Tompkins, eds., Balkema Publishers, 1999, p. 261-268.  
 Organization RC RTOP 538-02-10
- 273** Newman, J. C., Jr.: Analyses of Fatigue Crack Growth and Closure Near Threshold Conditions for Large-Crack Behavior. NASA/TM-1999-209133, April 1999, 32 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209133.pdf>  
 Organization RC RTOP 522-18-11
- 274** Newman, J. C., Jr.: Fatigue and Fracture Simulations Using the Finite-Element Method. Presented at Symposium on Experiments in Fracture Mechanics, June 27-30, 1999, Blacksburg, Virginia.  
 Organization RC RTOP 522-18-11
- 275** Newman, J. C., Jr.: An Evaluation of Plasticity-Induced Crack-Closure Concept and Measurement Methods. In *Advances in Fatigue Crack Closure Measurement and Analysis*, Volume 2, R. C. McClung and J. C. Newman, Jr., eds., ASTM 1343, 1999, p. 128-144.  
 Organization RC RTOP 538-02-10
- 276** Newman, J. C., Jr.: Analyses of Fatigue and Fatigue-Crack-Growth Under Variable-Amplitude Loading. Presented at XVI Meeting of the Spanish Group of Fracture, April 14-16, 1999, Malaga, Spain.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-xvisgf-jcn.pdf>  
 Organization RC RTOP 538-02-10
- 277** Newman, J. C., Jr.; Harris, C. E.; Piascik, R. S.; and Dawicke, D. S.: Methodology for Predicting the Onset of Widespread Fatigue Damage in Lap-Splice Joints and Structure. Presented at Fatigue '99: Seventh International Fatigue Conference, June 8-12, 1999, Beijing, China. In *Proceedings*, Volume 1, p. 81-92.  
 Organization RC RTOP 528-18-11
- 278** Newman, J. C., Jr.; and Seshadri, B. R.: Fracture Simulation of Riveted Lap-Splice Joints With a Stringer. Presented at 1999 USAF Aircraft Structural Integrity Program Conference, November 30–December 2, 1999, San Antonio, Texas.  
 Organization RC RTOP 522-18-11
- 279** Nicholson, L. M.; Hinkley, J. A.; Whitley, K. S.; and Gates, T. S.: Effects of Molecular Structure on Macroscopic Mechanical Properties of an Advanced Polymer (LaRC<sup>TM</sup>-SI). Presented at 57th Annual Technical Conference of the Society of Plastics Engineers, May 2-6, 1999, New York, New York.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-57tcspe-lmn.pdf>  
 Organization RC RTOP 522-32-11

- 280** Nicholson, L. M.; Whitley, K. S.; Gates, T. S.; and Hinkley, J. A.: How Molecular Structure Affects Mechanical Properties of an Advanced Polymer. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44sampe-lmn.pdf>  
Organization RC RTOP 522-32-11
- 281** Northam, G. B.: Integral Ring Carbon-Carbon Piston. U. S. Patent 5,884,550. Issued March 23, 1999.  
Organization RC
- 282** Northam, G. B.; Ransone, P. O.; and Rivers, H. K.: Carbon Fiber Reinforced Carbon Composite Rotary Valves for Internal Combustion Engine. U. S. Patent 5,908,016. Issued June 1, 1999.  
Organization RC
- 283** Northam, G. B.; Ransone, P. O.; and Rivers, H. K.: Process for Making Carbon-Carbon Turbocharger Housing Unit for Intermittent Combustion Engines. U. S. Patent 5,900,089. Issued May 4, 1999.  
Organization RC
- 284** Northam, G. B.; Ransone, P. O.; and Rivers, H. K.: Carbon Fiber Reinforced Carbon Composite Valve for an Internal Combustion Engine. U. S. Patent 5,934,648. Issued August 10, 1999.  
Organization RC
- 285** Northam, G. B.; Ransone, P. O.; and Rivers, H. K.: Method of Fabricating Chopped-Fiber Composite Piston. U. S. Patent 5,948,330. Issued September 7, 1999.  
Organization RC
- 286** Northam, G. B.; Ransone, P. O.; and Rivers, H. K.: Lightweight Exhaust Manifold and Exhaust Pipe Ducting for Internal Combustion Engines. U. S. Patent 5,927,070. Issued July 27, 1999.  
Organization RC
- 287** O'Brien, T. K.; Chawan, A. D.; and DeMarco, K.: Influence of Specimen Preparation and Specimen Size on the Transverse Tensile Strength and Scatter of Glass Epoxy Laminates. Presented at 12th International Conference on Composite Materials, July 5-9, 1999, Paris, France.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-12iccm-tko.pdf>  
Organization RC RTOP 581-10-21
- 288** O'Brien, T. K.; and Sen, J. K.: Tension-Torsion Behavior of Glass Epoxy Flexbeam Laminates. *Journal of Composites Technology and Research*, Volume 20, No. 4, October 1998, p. 221-226.  
Organization RC RTOP 581-10-21

- 289** Palmer, S. O.; Nettles, A. T.; and Poe, C. C., Jr.: An Experimental Study of a Stitched Composite With a Notch Subjected to Combined Bending and Tension Loading. NASA/TM-1999-209511, August 1999, 31 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209511.pdf>  
 Organization RB RTOP 538-10-11
- 290** Plotnikov, Y.; and Winfree, W. P.: Temporal Treatment of a Thermal Response for Defect Depth Estimation. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
 Organization RC RTOP 538-13-12
- 291** Poe, C. C., Jr.: Fracture Behavior of a Stitched Warp-Knit Carbon Fabric. Presented at ASTM Symposium on Composite Structures: Theory and Practice, May 17-18, 1999, Seattle, Washington.  
 Organization RC RTOP 538-13-12
- 292** Poe, C. C., Jr.; Dexter, H. B.; and Raju, I. S.: Review of the NASA Textile Composites Research. *Journal of Aircraft*, Volume 36, No. 5, September–October 1999, p. 876-884.  
 Organization RC RTOP 538-13-11
- 293** Prosser, W. H.; Gorman, M. R.; Reightler, R. E.; and Humes, D. H.: Acoustic Emission Signals in Thin Plates Produced by Impact Damage. *Journal of Acoustic Emission*, Volume 17, No. 1-2, June 1999, p. 29-36.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-99-joaep29-whp.pdf>  
 Organization RC RTOP 242-33-03
- 294** Prosser, W. H.; Seale, M. D.; and Smith, B. T.: Time-Frequency Analysis of the Dispersion of Lamb Modes. *Journal of the Acoustical Society of America*, Volume 105, No. 5, May 1999, p. 2669-2676.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-99-joasa-whp.pdf>  
 Organization RC RTOP 242-33-01
- 295** Raju, I. S.; and Shivakumar, K.: The Problem of Crack Intersecting a Free Surface. Presented at Symposium on Experiments in Fracture Mechanics, June 27-30, 1999, Blacksburg, Virginia.  
 Organization RC RTOP 522-18-11
- 296** Rivers, H. K.; Ransone, P. O.; Northam, G. B.; and Schwind, F. A.: A Method of Making Carbon-Carbon Piston Architectures. U. S. Patent 5,900,193. Issued May 4, 1999.  
 Organization RC
- 297** Sathish, S.; Madhukar, M. S.; Cantrell, J. H., Jr.; and Yost, W. T.: Assessment of Single Fiber Fragmentation Using Scanning Acoustic Microscopy. *Journal of Materials Research*, Volume 14, No. 7, 1999, p. 2881-2887.  
 Organization RC RTOP 522-18-11

- 298** Seale, M. D.; and Madaras, E. I.: Lamb Wave Assessment of Stiffness Degradation in Fatigued Composites. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
 Organization RC RTOP 538-13-12
- 299** Seale, M. D.; and Madaras, E. I.: Lamb Wave Characterization of the Effects of Long-Term Thermal-Mechanical Aging on Composite Stiffness. *Journal of the Acoustical Society of America*, Volume 106, No. 3, September 1999, p. 1346-1352.  
 Organization RC RTOP 537-06-33
- 300** Seale, M. D.; and Madaras, E. I.: Ultrasonic Measurements of Stiffness in Thermal-Mechanically Fatigued IM7/5260 Composites. *Journal of Materials Engineering and Performance*, Volume 8, No. 4, 1999, p. 429-436.  
 Organization RC RTOP 537-06-33
- 301** Seshadri, B. R.; and Newman, J. C., Jr.: Residual Strength Analyses of Riveted Lap-Splice Joints. Presented at 31st National Symposium on Fatigue and Fracture Mechanics, June 21-24, 1999, Cleveland, Ohio.  
 Organization RC RTOP 538-02-10
- 302** Seshadri, B. R.; and Newman, J. C., Jr.: Analysis of Buckling and Stable Tearing in Thin-Sheet Materials. In *STP on Fatigue and Fracture Mechanics*, Volume 26, T. L. Panontin and S. D. Sheppard, eds., ASTM, 1999, p. 114-134.  
 Organization RC RTOP 538-02-10
- 303** Shuart, M. J.; Johnston, N. J.; Dexter, H. B.; Marchello, J. M.; and Grenoble, R. W.: Automated Fabrication Technologies for High Performance Polymer Composites. *Composites Fabrication*, August 1998, p. 24-30.  
 Organization RC RTOP 522-32-11
- 304** Smith, S. A.; Shivakumar, K.; and Raju, I. S.: An Evaluation of Fracture Test Specimen for Sandwich Composites. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1325.  
 Organization RC RTOP 538-10-12
- 305** Tai, H.: On the Thermal Model of Transverse Flow of Unidirectional Composite Materials. Presented at 6th International Conference on Composites Engineering, June 27-July 3, 1999, Orlando, Florida.  
 Organization RC RTOP 522-18-11
- 306** Whitley, K. S.; and Gates, T. S.: Durability of Polymeric Composite Materials Under Long-Term Flight Profile Testing. Presented at 1999 ASME Mechanics and Materials Conference, June 27-30, 1999, Blacksburg, Virginia.  
 Organization RC RTOP 522-32-11



- 307** Wu, X. R.; Newman, J. C., Jr.; Zhao, W.; Swain, M. H.; Ding, C. F.; and Phillips, E. P.: Small Crack Growth and Fatigue Life Predictions for High-Strength Aluminum Alloys: Part 1— Experimental and Fracture Mechanics Analysis. *Fatigue and Fracture of Engineering Materials and Structures*, Volume 21, 1998, p. 1289-1306.  
 Organization RC RTOP 522-18-11
- 308** Zalameda, J. N.: Measured Through-the-Thickness Thermal Diffusivity of Carbon Fiber Reinforced Composite Materials. *Journal of Composites Technology and Research*, Volume 21, No. 2, 1999, p. 98-102.  
 Organization RC RTOP 522-18-11

### Category 26 Metallic Materials

- 309** Bird, R. K.; and Dicus, D. L.: Evaluation of Pressurization Fatigue Life of 1441 Al-Li Fuselage Panel. NASA/TM-1999-209684, October 1999, 27 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209684.pdf>  
 Organization RC RTOP 522-11-48
- 310** Cantrell, J. H., Jr.; and Yost, W. T.: Nonlinear Acoustical Assessment of Precipitate Nucleation and Growth in Aluminum Alloy 2024. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-26qnde-jhc.pdf>  
 Organization RC RTOP 522-18-11
- 311** Choi, S. H.; Singh, U. N.; and Cutler, A. D.: Development of Hot Diodes With New Thermal Dissipating Submount. Presented at Conference on Lasers and Electro-Optics/Pacific Rim 1999, August 30–September 3, 1999, Seoul, Korea.  
 Organization RC RTOP 632-10-14
- 312** Chu, S. H.; Choi, S. H.; Kwak, M.; Cutler, A. D.; and Song, K. D.: Smart Material Actuator Driven by Networked Rectenna Array. Presented at 34th Intersociety Energy Conversion Engineering Conference, August 1-5, 1999, Vancouver, British Columbia, Canada.  
 Organization RC RTOP 522-32-11
- 313** Cotton, J. D.; Will, J. D.; and Hales, S. J.: Superplastic Forming/Adhesive Bonding of Aluminum Structures. Presented at 10th Annual AeroMat Conference and Exposition, June 21-24, 1999, Dayton, Ohio.  
 Organization RC RTOP 522-12-51
- 314** Domack, M. S.; Funk, J. G.; Bogert, P. B.; Munroe, J.; and Pettit, R. G.: Integral Airframe Structures (IAS) Program Summary. Presented at 10th Annual AeroMat Conference and Exposition, June 21-24, 1999, Dayton, Ohio. In Proceedings, p.39.  
 Organization RC RTOP 522-12-51

- 315** El-Soudani, S. M.; Bird, R. K.; Boyer, R.; and Stephens, R.: Improvement of Ti-62222 Titanium Alloy Sheet and Extrusions With RX2™ Heat Treat Processing. Presented at 10th Annual AeroMat Conference and Exposition, June 21-24, 1999, Dayton, Ohio.  
Organization RC RTOP 522-11-48
- 316** Everett, R. A., Jr.; and Elber, W.: Damage Tolerance Issues as Related to Metallic Rotorcraft Dynamic Components. Presented at NATO/RTO Spring Symposium on Aging Systems: Application of Damage Tolerance Principles for Improved Airworthiness of Rotorcraft, April 21-22, 1999, Corfu, Greece.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-adtp-rae.pdf>  
Organization RC RTOP 581-10-21
- 317** Everett, R. A., Jr.; Newman, J. C., Jr.; and Phillips, E. P.: The Effects of a Machining-Like Scratch on the Fatigue Life of 4340 Steel. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
Organization RC RTOP 522-18-11
- 318** Fridlyander, J. N.; Bird, R. K.; Sadcov, V. V.; and Sandler, V. S.: Advanced Al-Li Alloy (1441) for Extended Fuselage Service Life. Presented at 5th International Symposium on Air Technologies for the 21st Century, August 8, 1999, Moscow, Russia.  
Organization RC RTOP 522-11-48
- 319** Hinton, Y. L.; Na, J. K.; Yost, W. T.; and Kessel, G.: Field Measurement of the Nonlinearity Parameter in Turbine Blades. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada. In Proceedings.  
Organization RC RTOP 522-18-11
- 320** Na, J. K.; Yost, W. T.; and Cantrell, J. H., Jr.: Effects of Surface Roughness and Nonparallelism on the Measurement of the Acoustic Nonlinearity Parameter in Steam Turbine Blades. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
Organization RC RTOP 522-18-11
- 321** Namkung, M.; Wincheski, R. A.; Nath, S.; and Fulton, J. P.: Characteristics of Electromagnetic Pulse Propagation in Metal. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-26qn-de-mn.pdf>  
Organization RC RTOP 522-18-11
- 322** Newman, J. C., Jr.; Phillips, E. P.; and Everett, R. A., Jr.: Fatigue Analyses Under Constant- and Variable-Amplitude Loading Using Small-Crack Theory. NASA/TM-1999-209329, ARL-TR-2001, May 1999, 27 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209329.pdf>  
Organization RC RTOP 522-18-11

- 323** Newman, J. C., Jr.; Phillips, E. P.; and Swain, M. H.: Fatigue-Life Prediction Methodology Using Small-Crack Theory. *International Journal of Fatigue*, Volume 21, No. 2, 1999, p. 109.  
Organization RC RTOP 538-02-10
- 324** Piascik, R. S.: Small Fatigue Crack Methodology for Corroded Airframe Materials. Presented at 1999 USAF Aircraft Structural Integrity Program Conference, November 30–December 2, 1999, San Antonio, Texas.  
Organization RC RTOP 522-19-11
- 325** Piascik, R. S.: The Growth of Small Corrosion Fatigue Cracks in Alloy 7075. Presented at Fatigue '99: Seventh International Fatigue Conference, June 8-12, 1999, Beijing, China.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-7ifc-rsp.pdf>  
Organization RC RTOP 538-02-10
- 326** Qian, M.; Wu, X-M.; Yin, Q.-R.; Zhang, B-Y.; and Cantrell, J. H., Jr.: Scanning Electron Acoustic Microscopy of Electric Domains in Ferroelectric Materials. *Journal of Materials Research*, Volume 14, No. 7, July 1999, p. 3096-3101.  
Organization RC RTOP 522-18-11
- 327** Starnes, J. H., Jr.; Ambur, D. R.; Young, R. D.; and Harris, C. E.: Experimental Verification of the Analytical Methodology to Predict the Residual Strength of Metallic Shell Structure. Presented at 1999 Society for Experimental Mechanics Spring Conference and Exposition, June 7-9, 1999, Cincinnati, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-semsce-jhs.pdf>  
Organization RC RTOP 538-02-10
- 328** Troeger, L. P.; and Wagner, J. A.: Structure-Processing-Property Correlation of Al-Li Alloy 2195 Shear Formed Cylinders. Presented at 10th Annual AeroMat Conference and Exposition, June 21-24, 1999, Dayton, Ohio. In Proceedings, p. 59.  
Organization RC RTOP 242-82-10
- 329** Wallace, T. A.; and Bird, R. K.: Influence of Heat Treatment on the Mechanical Properties of Ti-6Al-2Sn-2Zr-2Mo-2Cr-0.15Si Sheet. Presented at 10th Annual AeroMat Conference and Exposition, June 21-24, 1999, Dayton, Ohio.  
Organization RC RTOP 242-23-20
- 330** Weinstein, L. M.: Low-Current Cathodic Protection of Metal. NASA Tech Brief LAR-15069, July 1999.  
Organization RB
- 331** Wincheski, R. A.; and Namkung, M.: Electromagnetic Detection of Fatigue Cracks Under Protruding Head Ferromagnetic Fasteners. Presented at Third Joint FAA/DoD/NASA Conference on Aging Aircraft, September 20-23, 1999, Albuquerque, New Mexico.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-3caa-raw.pdf>  
Organization RC RTOP 522-18-11

- 332 Wincheski, R. A.; and Namkung, M.: Tunneling Magnetoresistance and Variable Range Hopping in Iron-Polyimide Nanocomposites. Presented at Materials Research Society 1999 Spring Meeting, April 5-9, 1999, San Francisco, California.  
Organization RC RTOP 522-18-11
- 333 Wincheski, R. A.; and Namkung, M.: Deep Flaw Detection With Giant Magnetoresistive (GMR) Based Self-Nulling Probe. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-26qnde-bw.pdf>  
Organization RC RTOP 522-18-11
- 334 Wincheski, R. A.; Simpson, J. W.; Fulton, J. P.; Nath, S. C.; Todhunter, R. G.; and Namkung, M.: Radially Focused Eddy Current Sensor for Detection of Longitudinal Flaws in Metallic Tubes. U. S. Patent 5,942,894. Issued August 24, 1999.  
Organization RC
- 335 Yost, W. T.; and Cantrell, J. H., Jr.: Calibration Techniques for Electronic-Based Systems Used in Measurement of Nonlinearity Parameters. In *Reviews of Progress in Quantitative Nondestructive Evaluation*, Volume 18, 1999.  
Organization RC RTOP 522-18-11
- 336 Yost, W. T.; and Cantrell, J. H., Jr.: Fatigue Cycle Induced Variation of the Acoustic Nonlinearity Parameter in Aluminum Alloy 2024. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
Organization RC RTOP 522-18-11

### Category 27 Nonmetallic Materials

- 337 Aust, J. F.; Cooper, J. B.; Wise, K. L.; and Jensen, B. J.: *In-Situ* Analysis of a High-Temperature Cure Reaction in Real Time Using Modulated Fiber-Optic FT-Raman Spectroscopy. *Applied Spectroscopy*, Volume 53, No. 6, 1999, p. 682-686.  
Organization RC RTOP 242-23-02
- 338 Bar-Cohen, Y.; Leary, S.; Yavrouian, A.; Oguro, K.; Tadokoro, S.; Harrison, J. S.; Smith, J. G., Jr.; and Su, J.: Challenges to the Transition of IPMC Artificial Muscle Actuators to Practical Application. Presented at Materials Research Society Fall Meeting, November 29-December 3, 1999, Boston, Massachusetts.  
Organization RC RTOP 706-32-11
- 339 Belvin, H. L.; Cano, R. J.; Treasure, M.; and Shahood, T. W.: Fabrication of Carbon-Boron Reinforced Dry Polymer Matrix Composite Tape. Presented at 31st SAMPE Technical Conference, October 27-31, 1999, Chicago, Illinois. In *Proceedings*, Volume 31, p. 329-340.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-31sampe-hlb.pdf>  
Organization RC RTOP 522-32-11

- 340** Bryant, R. G.; Fox, R. L.; Lachowicz, J. T.; and Chen, F.-J.: Piezoelectric Synthetic Jets for Aircraft Control Surfaces. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California. In Proceedings.  
 Organization RC RTOP 522-32-11
- 341** Cano, R. J.; Belvin, H. L.; Jensen, B. J.; and Bennett, J. E.: IM7/LaRC™ MPEI-5 Polyimide Composites. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California. In Proceedings, Volume 44, p. 1780-1791.  
 Organization RC RTOP 537-06-32
- 342** Cano, R. J.; Bennett, J. E.; Belvin, H. L.; and Jensen, B. J.: Effect of Molecular Weight on the Properties of IM7/LaRC™ MPEI-5 Polyimide Composites. Presented at 31st SAMPE Technical Conference, October 27-31, 1999, Chicago, Illinois. In Proceedings, Volume 31, p. 535-548.  
 Organization RC RTOP 537-06-32
- 343** Cano, R. J.; Hinkley, J. A.; and Estes, E. D.: Fiber Study Involving the Polyimide LARCTM PETI-5. Presented at 6th International Conference on Composites Engineering, June 27–July 3, 1999, Orlando, Florida. In Proceedings, p. 103-104.  
 Organization RC RTOP 522-32-11
- 344** Chang, A. C.: Modified Phenylethynyl Containing Imides for Secondary Bonding: Non-Autoclave, Low Temperature Processable Adhesives. (NAS1-96014 Lockheed Martin Engineering & Sciences.) NASA/CR-1999-208993, February 1999, 14 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208993.pdf>  
 Organization RC RTOP 537-06-32
- 345** Choi, S. H.; Chu, S. H.; Kwak, M.; and Cutler, A. D.: A Study on a Microwave-Driven Smart Material Actuator. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-6spie-shc.pdf>  
 Organization RC RTOP 274-00-98
- 346** Connell, J. W.: The Effect of Low Earth Orbit Atomic Oxygen Exposure on Phenylphosphine Oxide-Containing Polymers. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44sampe-jwc.pdf>  
 Organization RC RTOP 632-10-14
- 347** Copeland, B. M.; Buckley, J. D.; Bryant, R. G.; Fox, R. L.; and Hellbaum, R. F.: THUNDER—An Ultra-High Displacement Piezoelectric Actuator. Presented at 1999 American Ceramic Society Meeting, January 25-27, 1999, Cocoa Beach, Florida.  
 Organization RF RTOP 632-10-14

- 348** Costen, R. C.; and Marchello, J. M.: Tape-Drop Transient Model for *In Situ* Automated Tape Placement of Thermoplastic Composites. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California. In Proceedings, Volume 44, p. 1820-1830.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44sampe-rcc.pdf>  
 Organization RC RTOP 505-63-50
- 349** Dorsey, K. D.; Desai, P. N.; Abhiraman, A. S.; Hinkley, J. A.; and St. Clair, T. L.: Structure and Properties of Melt-Extruded LaRC-IA (3,4'-ODA 4,4'-ODPA) Polyimide Fibers. *Journal of Applied Polymer Science*, Volume 73, 1999, p. 1215-1222.  
 Organization RC RTOP 274-00-93
- 350** Fay, C. C.; and St. Clair, A. K.: Dimensionally Stable Ether-Containing Polyimide Copolymers. U. S. Patent 5,889,139. Issued March 30, 1999.  
 Organization RC
- 351** Fay, C. C.; Stoakley, D. M.; and St. Clair, A. K.: Molecularly Oriented Films for Space Applications. *High Performance Polymers*, Volume 11, No. 1, March 1999, p. 145-156.  
 Organization RC RTOP 274-00-98
- 352** Gierow, P. A.; Clayton, W. R.; and St. Clair, A. K.: Substrate Materials for Holographic Emulsions Utilizing Fluorinated Polyimide Film. U. S. Patent 5,986,036. Issued November 16, 1999.  
 Organization RC
- 353** Goodman, D. L.; Byrne, C. A.; Moulton, R.; Dixon, D.; Yen, A.; and Costen, R. C.: Automated Tape Placement With *In Situ* Electron Beam Cure. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California.  
 Organization RC RTOP 505-63-50
- 354** Hergenrother, P. M.: Composites for the High Speed Civil Transports. *SAMPE Journal*, Volume 35, No. 1, January-February 1999, p. 30-32.  
 Organization RC RTOP 537-06-32
- 355** Hergenrother, P. M.; Smith, J. G., Jr.; and Connell, J. W.: Effect of PETI-5 Molecular Weight on Composite Properties. Presented at Gordon Research Conference on Composites, January 10-15, 1999, Ventura, California.  
 Organization RC RTOP 537-06-32
- 356** Hinkley, J. A.; Dezern, J. F.; Feuz, L.; and Klinedinst, D.: Uniaxial Stretching of Poly(keto-ether-imide) Films. NASA/TM-1999-209820, November 1999, 20 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209820.pdf>  
 Organization RC RTOP 274-00-99

- 357** Holloway, N. M.; Draughon, G. K.; and Long, E. R., Jr.: Adhesiveless Lightweight Flex Circuits. Presented at IMAPS (JPL) Southern California Symposium and Exhibition, May 12-13, 1999, Pasadena, California.  
 Organization RF RTOP 632-10-14
- 358** Hou, T-H.; Cano, R. J.; St. Clair, T. L.; Echigo, Y.; and Kaneshiro, H.: Processing and Properties of Polyimide Composite Made From "Salt-Like" Solution Precursors. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California. In Proceedings, p. 1807-1819.  
 Organization RC RTOP 522-32-11
- 359** Hou, T-H.; Weiser, E. S.; Siochi, E. J.; St. Clair, T. L.; and Grimsley, B. W.: Processing and Properties of Polyimide Foam. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California. In Proceedings, p. 1792-1806.  
 Organization RC RTOP 242-82-20
- 360** Hulcher, A. B.; Marchello, J. M.; Hinkley, J. A.; Johnston, N. J.; and Lamontia, M. A.: Dry Ribbon for Heated Head Automated Fiber Placement. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California. In Proceedings, Volume 44, p. 146.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44sampe-abh.pdf>  
 Organization RC RTOP 537-06-32
- 361** Jensen, B. J.: Copolyimides Prepared From 3,4' Oxidianiline and 1,2-Bis(3-Aminophenoxy)Benzene With 3,3' 4,4'-Biphenylcarboxylic Dianhydride. U. S. Patent 5,866,676. Issued February 2, 1999.  
 Organization RC
- 362** Jensen, B. J.: Method of Preparing Polymers With Low Melt Viscosity. U. S. Patent 5,965,687. Issued September 12, 1999.  
 Organization RC
- 363** Jensen, B. J.; and Chang, A. C.: Adhesive Properties and Cured, Modified Phenylethynyl Containing Imides. Presented at 22nd Annual Meeting of the Adhesion Society, February 21-24, 1999, Panama City Beach, Florida.  
 Organization RC RTOP 242-23-10
- 364** Johnson, T. F.: Research Activities on Cryogenic Tanks at the NASA Langley Research Center. Presented at Workshop on Cryogenic Composite Tanks, December 15-17, 1999, Tsukuba-Shi, Japan.  
 Organization RC RTOP 713-23-02
- 365** Johnston, N. J.: Aerospace Materials and Processes for the Next Decade. Presented at Composites 2000: An International Symposium on Composite Materials, October 5-8, 1999, Newark, Delaware.  
 Organization RC RTOP 706-13-41

- 366** Kim, M.; Heilbronn, L. H.; Thibeault, S. A.; Simonsen, L. C.; Wilson, J. W.; Chang, K.; Kiefer, R. L.; and Maahs, H. G.: Considerations Concerning the Development and Testing of *In Situ* Materials for Martian Exploration. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44sampe-mhyk.pdf>  
 Organization RC RTOP 632-10-14
- 367** Lazur, A.; Sawyer, J. W.; Hudson, L.; and Sullivan, B. J.: Hypersonic Vehicle Control Surface Development. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4864.  
 Organization RC RTOP 242-82-75
- 368** Lowther, S. E.; Park, C.; and St. Clair, T. L.: Acid-Base Surface Treatment for Metal Substrates to Promote Bonding. Presented at 23rd Annual Meeting of the Adhesion Society, February 20-23, 1999, Myrtle Beach, South Carolina.  
 Organization RC RTOP 537-06-46
- 369** Lowther, S. E.; Park, C.; and St. Clair, T. L.: A Novel Surface Treatment for Titanium Alloys. Presented at 22nd Annual Meeting of the Adhesion Society, February 21-24, 1999, Panama City Beach, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-22amas-sel.pdf>  
 Organization RC RTOP 537-06-32
- 370** Nicholson, L. M.; Whitley, K. S.; Gates, T. S.; and Hinkley, J. A.: Influence of Molecular Weight on the Mechanical Performance of a Thermoplastic Glassy Polyimide. NASA/TM-1999-209720, November 1999, 33 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209720.pdf>  
 Organization RC RTOP 522-32-11
- 371** Ounaies, Z.; Young, J. A.; and Harrison, J. S.: Design Requirements for Amorphous Piezoelectric Polymers. NASA/TM-1999-209359, August 1999, 22 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209359.pdf>  
 Organization RC RTOP 522-32-00
- 372** Ounaies, Z.; Young, J. A.; and Simpson, J. O.: An Overview of the Piezoelectric Phenomenon in Amorphous Polymers. In *Field Responsive Polymers: Electroresponsive, Photoresponsive, and Responsive Chemistry and Biology*, I. M. Khan and J. S. Harrison, eds., ACS Symposium Series, 1999, p. 88-103.  
 Organization RC RTOP 522-32-11
- 373** Park, C.; Lowther, S. E.; and Smith, J. G., Jr.: Organic-Inorganic Hybrids Using Novel Phenylethynyl Imide Silanes. Presented at 1999 American Chemical Society Symposium, August 22-26, 1999, New Orleans, Louisiana.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-acss-cp.pdf>  
 Organization RC RTOP 537-06-32



- 374** Park, C.; Lowther, S. E.; Smith, J. G., Jr.; Connell, J. W.; Hergenrother, P. M.; and St. Clair, T. L.: Novel Phenylethynyl Imide Silanes as Coupling Agents for Titanium Alloy. Presented at 22nd Annual Meeting of the Adhesion Society, February 21-24, 1999, Panama City Beach, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-22amas-cp.pdf>  
 Organization RC RTOP 537-06-32
- 375** Park, C.; Lowther, S. E.; Smith, J. G., Jr.; Connell, J. W.; and St. Clair, T. L.: Application of Organic-Inorganic Hybrids With Pendent Phenylethynyl Imide Silanes. Presented at 23rd Annual Meeting of the Adhesion Society, February 20-23, 1999, Myrtle Beach, South Carolina.  
 Organization RC RTOP 537-06-46
- 376** Park, C.; Ounaies, Z.; Su, J.; Smith, J. G., Jr.; and Harrison, J. S.: Polarization Stability of Amorphous Piezoelectric Polyimides. Presented at Materials Research Society Fall Meeting, November 29–December 3, 1999, Boston, Massachusetts.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-mrs-cp.pdf>  
 Organization RC RTOP 706-13-41
- 377** Pater, R. H.: LARC<sup>TM</sup>RP 46: A Low Cost High Temperature Resin. Presented at National Educators' Workshop, October 30–November 3, 1999, Auburn Hills, Michigan.  
 Organization RC RTOP 251-30-07
- 378** Shahinpoor, M.; Bar-Cohen, Y.; Simpson, J. O.; and Smith, J. G., Jr.: Ionic Polymer-Metal Composites (IPMCs) as Biomimetic Sensors, Actuators and Artificial Muscles—A Review. *Smart Materials and Structures*, Volume 7, No. 6, 1998, p. R-15–R-30.  
 Organization RC RTOP 632-40-41
- 379** Shuart, M. J.: Composites Research and Technology for Aerospace Vehicles. Presented at The Global Outlook for Carbon Fibers '99, November 8-10, 1999, San Diego, California. Intertech Conferences.  
 Organization RC RTOP 538-13-12
- 380** Shuart, M. J.: Composite Materials and Structures Technologies at NASA Langley Research Center. Presented at Composites 2000: An International Symposium on Composite Materials, October 5-8, 1999, Newark, Delaware.  
 Organization RC RTOP 538-13-12
- 381** Shuart, M. J.: Composites Research and Technology for Aerospace Vehicles. Presented at Aerospace Materials 1999 Conference and Exhibition, Toulouse, France, September 9-10, 1999.  
 Organization RC RTOP 538-13-12

- 382** Shuart, M. J.; Johnston, N. J.; Dexter, H. B.; Marchello, J. M.; and Grenoble, R. W.: Automated Fabrication Technologies for High Performance Polymer Composites. Presented at Aerospace Materials Conference, September 8-10, 1999, Toulouse, France.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1998/mtg/NASA-98-AGARD-mjs.pdf>  
 Organization RC RTOP 538-13-12
- 383** Simpson, J. O.; and St. Clair, T. L.: Method of Making Thermally Stable, Piezoelectric and Pyroelectric Polymeric Substrates. U. S. Patent 5,909,905. Issued June 8, 1999.  
 Organization RC
- 384** Song, K. D.; and Choi, S. H.: Applications of Free Electron Laser (FEL). Presented at Conference on Lasers and Electro-Optics/Pacific Rim 1999, August 30–September 3, 1999, Seoul, Korea.  
 Organization RC RTOP 632-10-14
- 385** Southward, R. E.; St. Clair, A. K.; Boggs, C. M.; and Thompson, D. W.: Fabrication of Reflective and Conductive Silvered Polyimide Films Via In Situ Silver (I) Reduction: LIGAND/ANION Effects. Presented at 217th American Chemical Society National Meeting, March 21-25, 1999, Anaheim, California. In Proceedings, Volume 80.  
 Organization RC RTOP 522-24-11
- 386** Southward, R. E.; Warren, A. S.; Thompson, D. W.; and St. Clair, A. K.: Silvered Polyimide Films for Space Applications Via a Single Stage Synthesis. Presented at 217th American Chemical Society National Meeting, March 21-25, 1999, Anaheim, California.  
 Organization RC RTOP 522-24-11
- 387** Su, J.; Ounaies, Z.; and Harrison, J. S.: Ferroelectric and Piezoelectric Properties of Blends of Poly(Vinylidene-Trifluoroethylene) and Graft Elastomer. Presented at Materials Research Society Fall Meeting, November 29–December 3, 1999, Boston, Massachusetts.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-mrs-js.pdf>  
 Organization RC RTOP 706-13-41
- 388** Weiser, E. S.; Johnson, T. F.; St. Clair, T. L.; Echigo, Y.; Kaneshiro, H.; and Grimsley, B. W.: High Temperature Polyimide Foams for Aerospace Vehicles. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California. In Proceedings, Volume 44, p. 511-525.  
 Organization RC RTOP 242-33-02
- 389** Weiser, E. S.; St. Clair, T. L.; Echigo, Y.; and Kaneshiro, H.: Hollow Polyimide Microspheres. U. S. Patent 5,994,418. Issued November 30, 1999.  
 Organization RC
- 390** Young, J. A.; Farmer, B. L.; and Hinkley, J. A.: Molecular Modeling of the Poling of Piezoelectric Polyimides. *Polymer Journal*, Volume 40, 1999, p. 2787-2795.  
 Organization RC RTOP 522-32-11

## **Category 28 Propellants and Fuels**

- 391** Jenkins, R. V.: Separating Ethanol From Water Via Differential Miscibility. NASA Tech Brief LAR-14895, July 1999.  
Organization RB
- 392** Jenkins, R. V.: Separating Ethanol From Water Via Differential Solubility. NASA Tech Brief LAR-14894, July 1999.  
Organization RB

## **Category 29 Materials Processing**

- 393** Hinkley, J. A.; Johnston, N. J.; Hulcher, A. B.; Marchello, J. M.; and Messier, B. C.: Utilization of Induction Bonding for Automated Fabrication of TIGR. NASA/TM-1999-209123, April 1999, 45 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209123.pdf>  
Organization RC RTOP 537-06-32

## **Engineering**

### **Category 31 Engineering (General)**

- 394** Malone, J. B.; Housner, J. M.; and Lytle, J. K.: The Design of Future Airbreathing Engine Systems Within an Intelligent Synthesis Environment. Presented at 14th International Symposium on Airbreathing Engines, September 5-10, 1999, Florence, Italy.  
Organization OI RTOP 522-31-21
- 395** Paden, B.; Antaki, J.; and Groom, N. J.: Animal Trials of a Magnetically Levitated Left-Ventricular Assist Device. Presented at Fifth International Symposium on Magnetic Suspension Technology, December 1-3, 1999, Santa Barbara, California.  
Organization RD RTOP 242-90-63

### **Category 32 Communications and Radar**

- 396** Froggatt, M. E.; and Erdogan, T.: Measurement of Grating Chirp Using the Second Harmonic Grating. Presented at BPGG '99: Brass Gratings, Photosensitivity, and Poling in Glass Waveguides, September 23-25, 1999, Stuart, Florida.  
Organization RC RTOP 242-33-01
- 397** Froggatt, M. E.; Moore, J. P.; Erdogan, T.; and Shenk, S.: Optical Frequency Domain Characterization of Dispersion in Optical Fiber Bragg Gratings. Presented at BPGG '99: Brass Gratings, Photosensitivity, and Poling in Glass Waveguides, September 23-25, 1999, Stuart, Florida.  
Organization RC RTOP 242-33-01

- 398** Hom, K. W.: Visualizing the Effects of Theoretical Approximations on the Scattering From a Metal Kite Target. Presented at 1999 Electromagnetic Code Consortium Annual Meeting, April 20-22, 1999, Malibu, California.  
 Organization RA RTOP 522-22-71
- 399** Shaeffer, J. F.; Cooper, B. A.; and Hom, K. W.: Analytic Bistatic k Space Images Compared to Experimental Swept Frequency ISAR Images. Presented at 15th Annual Review of Progress in Applied Computational Electromagnetics, March 15-20, 1999, Monterey, California. In Proceedings, Volume 1, p. 184-190.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-15pace.js.pdf>  
 Organization RA RTOP 522-22-71

### **Category 33 Electronics and Electrical Engineering**

- 400** Daniels, T. S.: Comparison of Velocity Estimators for Wake Vortex Detection. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0516.  
 Organization RD RTOP 538-04-11
- 401** Kudlinski, K. E.; and Ragsdale, W. A.: Design and Development of Lateral Flight Director. NASA/TM-1999-208957, May 1999, 78 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm208957.pdf>  
 Organization RD RTOP 992-30-11
- 402** Refaat, T. F.; Luck, W. S.; and De Young, R. J.: Design of an Advanced Atmospheric Water Vapor DIAL Detection System. NASA/TP-1999-209348, July 1999, 42 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209348.pdf>  
 Organization RE RTOP 622-63-13
- 403** Refaat, T. F.; Luck, W. S.; and De Young, R. J.: An Advanced Water Vapor Lidar Detection System for Aircraft and Space Deployment. Presented at SPIE's 44th Annual Meeting, July 18-23, 1999, Denver, Colorado.  
 Organization RE RTOP 622-63-13
- 404** Refaat, T. F.; Luck, W. S.; and De Young, R. J.: Temperature Control of Avalanche Photodiode Using Thermoelectric Cooler. NASA/TM-1999-209689, October 1999, 21 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209689.pdf>  
 Organization RE RTOP 622-63-13
- 405** Refaat, T. F.; Luck, W. S.; and De Young, R. J.: Advanced Water Vapor DIAL Detection System. Presented at CLEO '99: 1999 Conference on Lasers and Electro-Optics, May 23-28, 1999, Baltimore, Maryland.  
 Organization RE RTOP 622-29-26

- 406** Wilson, W. C.: Design of the Wind Tunnel Model Communication Controller Board. NASA/TM-1999-209108, March 1999, 119 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209108.pdf>  
Organization RF RTOP 519-20-21

### Category 34 Fluid Mechanics and Heat Transfer

- 407** Akgun, M. A.; Haftka, R. T.; Wu, K. C.; and Walsh, J. L.: Sensitivity of Lumped Constraints Using the Adjoint Method. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1314.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1314.pdf>  
Organization RC RTOP 537-06-48
- 408** Amundsen, R. M.: Method Improvements in Thermal Analysis of Mach 10 Leading Edges. Presented at 10th Thermal and Fluids Analysis Workshop, September 13-17, 1999, Huntsville, Alabama.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-tfaw-rma.pdf>  
Organization RF RTOP 522-51-21
- 409** Berry, S. A.; Horvath, T. J.; DiFulvio, M.; Glass, C. E.; and Merski, N. R.: X-34 Experimental Aeroheating at Mach 6 and 10. *Journal of Spacecraft and Rockets*, Volume 36, No. 2, March-April 1999, p. 171-178.  
Organization RB RTOP 242-80-01
- 410** Berry, S. A.; Horvath, T. J.; Hollis, B. R.; Thompson, R. A.; and Hamilton, H. H., II: X-33 Hypersonic Boundary Layer Transition. Presented at 33rd AIAA Thermophysics Conference, June 28-July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3560.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3560.pdf>  
Organization RB RTOP 242-80-01
- 411** Berry, S. A.; Horvath, T. J.; Kowalkowski, M. K.; and Liechty, D. S.: X-33 (Rev-F) Aeroheating Results of Test 6770 in NASA Langley 20-Inch Mach 6 Air Tunnel. NASA/TM-1999-209122, March 1999, 99 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209122.pdf>  
Organization RB RTOP 242-80-01
- 412** Buckley, J. D.; Fox, R. L.; Johnson, S. D.; Copeland, C. E.; and Coultrip, R. H.: Inductive Systems for Bonding and Joining. U. S. Patent 5,919,387. Issued July 6, 1999.  
Organization RF
- 413** Carpenter, M. H.; and Casper, J. H., Jr.: Accuracy of Shock Capturing in Two Spatial Dimensions. *AIAA Journal*, Volume 37, No. 9, September 1999, p. 1072-1079.  
Organization RB RTOP 522-31-61

- 414** Chen, P-S.: Implementation of Interaction Algorithm to Non-Matching Discrete Interfaces Between Structure and Fluid Mesh. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209340, ICASE Interim Rept. 36, June 1999, 13 p.  
<ftp://ftp.icase.edu/pub/interim/Interim36.pdf>  
 Organization A RTOP 505-90-52
- 415** Dagenhart, J. R.; and Saric, W. S.: Crossflow Stability and Transition Experiments in Swept-Wing Flow. NASA/TP-1999-209344, July 1999, 150 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209344.pdf>  
 Organization RB RTOP 522-31-11
- 416** Daryabeigi, K.: Effective Thermal Conductivity of High Temperature Insulations for Reusable Launch Vehicles. NASA/TM-1999-208972, February 1999, 35 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm208972.pdf>  
 Organization RC RTOP 242-33-03
- 417** Demuren, A. O.; and Wilson, R. V.: Streamwise Vorticity Generation in Laminar and Turbulent Jets. (NAS1-19480 and NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209517, ICASE Report No. 99-33, August 1999, 14 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-33.pdf>  
 Organization A RTOP 505-90-52
- 418** Doerner, S. E.; and Cutler, A. D.: Effects of Jet Swirl on Mixing of a Light Gas Jet in a Supersonic Airstream. (NCC1-217 The George Washington University, JIAFS.) NASA/CR-1999-209842, December 1999, 128 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209842.pdf>  
 Organization RB RTOP 522-51-31
- 419** Girimaji, S. S.: Reduction of Large Dynamical Systems by Minimization of Evolution Rate. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209121, ICASE Report No. 99-15, May 1999, 13 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-15.pdf>  
 Organization A RTOP 505-90-52
- 420** Glass, C. E.: Numerical Simulation of Low-Density Shock-Wave Interactions. NASA/TM-1999-209358, July 1999, 22 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209358.pdf>  
 Organization RB RTOP 242-80-01
- 421** Glass, C. E.: Numerical Simulation of Low Density Shock-Wave Interactions. Presented at 22nd International Symposium on Shock Waves, July 18-23, 1999, London, England.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209358.pdf>  
 Organization RB RTOP 242-80-01

- 422 Glass, D. E.; Camarda, C. J.; Merrigan, M. A.; Sena, J. T.; and Reid, R. S.: Fabrication and Testing of a Leading-Edge-Shaped Heat Pipe. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4866.  
 Organization RC RTOP 242-33-03
- 423 Glass, D. E.; Dilley, A. D.; and Kelly, H. N.: Numerical Analysis of Convection/Transpiration Cooling. NASA/TM-1999-209828, December 1999, 13 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209828.pdf>  
 Organization RC RTOP 242-33-03
- 424 Glass, D. E.; Dilley, A. D.; and Kelly, H. N.: Numerical Analysis of Convection/Transpiration Cooling. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4911.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209828.pdf>  
 Organization RC RTOP 242-33-03
- 425 Gnoffo, P. A.: Planetary Entry Gas Dynamics. *Annual Review of Fluid Mechanics*, Volume 31, 1999, p. 459-494.  
 Organization RB RTOP 242-80-01
- 426 Gnoffo, P. A.; Braun, R. D.; Weilmuenster, K. J.; Mitcheltree, R. A.; Engelund, W. C.; and Powell, R. W.: Prediction and Validation of Mars Pathfinder Hypersonic Aerodynamic Data Base. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May-June 1999, p. 367-373.  
 Organization RB RTOP 242-80-01
- 427 Gnoffo, P. A.; and Inger, G. R.: Numerical and Analytical Solutions of Hypersonic Interactions Involving Surface Property Discontinuities. Presented at AIAA 9th International Space Planes and Hypersonic Systems and Technologies Conference, November 1-5, 1999, Norfolk, Virginia. AIAA Paper No. 99-4836.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4836.pdf>  
 Organization RB RTOP 242-89-01
- 428 Gnoffo, P. A.; Weilmuenster, K. J.; Hamilton, H. H., II; Olynick, D. R.; and Venkatapathy, E.: Computational Aerothermodynamic Design Issues for Hypersonic Vehicles. *Journal of Spacecraft and Rockets*, Volume 36, No. 1, January-February 1999, p. 21-43.  
 Organization RB RTOP 242-80-01
- 429 Hanuska, A.; Scott, E. P.; and Daryabeigi, K.: Thermal Characterization of Aerospace Structures. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-1053.  
 Organization RC RTOP 537-06-34

- 430** Hollis, B. R.; Horvath, T. J.; Berry, S. A.; Hamilton, H. H., II; and Alter, S. J.: X-33 Computational Aeroheating Predictions and Comparisons With Experimental Data. Presented at 33rd AIAA Thermophysics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3559.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3559.pdf>  
 Organization RB RTOP 242-80-01
- 431** Horvath, T. J.; Berry, S. A.; Hollis, B. R.; Liechty, D. S.; Hamilton, H. H., II; and Merski, N. R.: X-33 Experimental Aeroheating at Mach 6 Using Phosphur Thermography. Presented at 33rd AIAA Thermophysics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3558.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3558.pdf>  
 Organization RB RTOP 242-80-01
- 432** Inger, G. R.; and Gnoffo, P. A.: Analytical and Computational Study of Wall Temperature Jumps in Hypersonic Flow. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0226.  
 Organization RB RTOP 242-80-01
- 433** Janke, E.; and Balakumar, P.: On the Stability of Three-Dimensional Boundary Layers, Part 2: Secondary Instability. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209341, ICASE Report No. 99-19, June 1999, 28 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-19.pdf>  
 Organization A RTOP 505-90-52
- 434** Janke, E.; and Balakumar, P.: On the Stability of Three-Dimensional Boundary Layers, Part 1: Linear and Nonlinear Stability. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209330, ICASE Report No. 99-16, May 1999, 25 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-16.pdf>  
 Organization A RTOP 505-90-52
- 435** Jongen, T.; and Gatski, T. B.: A New Approach to Characterizing the Equilibrium States of the Reynolds Stress Anisotropy in Homogeneous Turbulence. *Theoretical and Computational Fluid Dynamics*, Volume 11, No. 1, 1998, p. 31-47.  
 Organization RB RTOP 522-31-61
- 436** King, R. A.; and Breuer, K. S.: Non-Localized Acoustic Receptivity and Subsequent Disturbance Growth in a Blasius Boundary Layer. Presented at IUTAM Symposium on Laminar-Turbulent Transition, September 13-17, 1999, Sedona, Arizona. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-iutam-rak.pdf>  
 Organization RB RTOP 522-31-61



- 437** Kleb, W. L.; Wood, W. A.; and Van Leer, B.: Efficient Multi-Stage Time Marching for Viscous Flows via Local Preconditioning. Presented at 14th AIAA Computational Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3267.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3267.pdf>  
 Organization RB RTOP 242-80-01
- 438** Kogan, M. N.; Shumilkin, V. G.; Ustinov, M. V.; and Zhigulev, S. V.: Receptivity of Flat-Plate Boundary Layer in a Non-Uniform Free Stream (Vorticity Normal to the Plate)—Final Report. (NCC1-241 Central Aerohydrodynamics Institute (TsAGI).) NASA/CR-1999-209334, June 1999, 82 p.  
 Organization A RTOP 282-10-01
- 439** Lachowicz, J. T.; Yao, C-S.; and Wlezien, R. W.: Flow Field Characterization of a Jet and Vortex Actuator. *Experiments in Fluids*, Volume 27, No. 1, 1999, p. 12-20.  
 Organization RB RTOP 522-32-31
- 440** Lasseigne, D. G.; Criminale, W. O.; Joslin, R. D.; and Jackson, T. L.: Towards Understanding the Mechanism of Receptivity and Bypass Dynamics in Laminar Boundary Layers. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209553, ICASE Report No. 99-37, September 1999, 31 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-37.pdf>  
 Organization A RTOP 505-90-52
- 441** Lasseigne, D. G.; Criminale, W. O.; Joslin, R. D.; and Jackson, T. L.: Receptivity and Bypass Dynamics. Presented at IUTAM Symposium on Laminar-Turbulent Transition, September 13-17, 1999, Sedona, Arizona.  
 Organization RB RTOP 522-31-11
- 442** Lasseigne, D. G.; Joslin, R. D.; Jackson, T. L.; and Criminale, W. O.: The Transient Period for Boundary Layer Disturbances. *Journal of Fluid Mechanics*, Volume 381, 1999, p. 89.  
 Organization RB RTOP 522-31-11
- 443** Lin, J. C.: Control of Turbulent Boundary-Layer Separation Using Micro-Vortex Generators. Presented at 30th AIAA Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3404.  
 Organization RB RTOP 522-32-31
- 444** Miller, C. G.: Development of X-33/X-34 Aerothermodynamic Data Bases: Lessons Learned and Future Enhancements. Presented at NATO-AVT Symposium on Aerodynamic Design and Optimization of Flight Vehicles in a Concurrent Multi-Disciplinary Environment, October 18-21, 1999, Ottawa, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-sadofv-cgm.pdf>  
 Organization RB RTOP 242-80-01

- 445** Moss, J. N.; Blanchard, R. C.; Wilmoth, R. G.; and Braun, R. D.: Mars Pathfinder Rarefied Aerodynamics: Computations and Measurements. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May–June 1999, p. 330-339.  
 Organization RB RTOP 242-80-01
- 446** Moss, J. N.; Pot, T.; Chanetz, B.; and Lefebvre, M.: DSMC Simulation of Shock/Shock Interactions: Emphasis on Type IV Interactions. Presented at 22nd International Symposium on Shock Waves, July 18-23, 1999, London, England.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-22issw-jnm.pdf>  
 Organization RB RTOP 242-80-01
- 447** Moss, J. N.; Wilmoth, R. G.; and Price, J. M.: Direct Simulation Monte Carlo Simulations of Blunt Body Flows for Mars Microprobe Capsules. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, May–June 1999, p. 399-404.  
 Organization RB RTOP 242-80-01
- 448** Ounaies, Z.; Park, C.; Harrison, J. S.; Smith, J. G., Jr.; and Hinkley, J. A.: Structure-Property Study of Piezoelectricity in Polyimides. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209516, ICASE Report No. 99-32, August 1999, 14 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-32.pdf>  
 Organization A RTOP 505-90-52
- 449** Park, C.; Ounaies, Z.; Su, J.; Smith, J. G., Jr.; and Harrison, J. S.: Polarization Stability of Amorphous Piezoelectric Polyimides. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209833, ICASE Report No. 99-53, December 1999, 11 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-53.pdf>  
 Organization A RTOP 505-90-52
- 450** Povitsky, A.: On Aeroacoustics of a Stagnation Flow Near a Rigid Wall. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209825, ICASE Report No. 99-48, December 1999, 23 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-48.pdf>  
 Organization A RTOP 505-90-52
- 451** Povitsky, A.; and Morris, P. J.: A Parallel Compact Multi-Dimensional Numerical Algorithm With Aeroacoustics Applications. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209518, ICASE Report No. 99-34, August 1999, 24 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-34.pdf>  
 Organization A RTOP 505-90-52

- 452 Qian, Y-H.; and Zhou, Y.: On Higher Order Dynamics in Lattice-Based Models Using Chapman-Enskog Method. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209346, ICASE Report No. 99-21, June 1999, 12 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-21.pdf>  
 Organization A RTOP 505-90-52
- 453 Ravindran, S. S.: Proper Orthogonal Decomposition in Optimal Control of Fluids. NASA/TM-1999-209113, March 1999, 30 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209113.pdf>  
 Organization RB RTOP 522-32-31
- 454 Ravindran, S. S.: Proper Orthogonal Decomposition in Optimal Control of Fluids. NASA Tech Brief L-17846, October 1999.  
 Organization RB
- 455 Riley, C. J.; Kleb, W. L.; and Alter, S. J.: Aeroheating Predictions for X-34 Using an Inviscid-Boundary Layer Method. *Journal of Spacecraft and Rockets*, Volume 36, No. 2, March-April 1999, p. 206-215.  
 Organization RB RTOP 242-80-01
- 456 Roberts, T. W.; Swanson, R. C., Jr.; and Sidilkover, D.: An Algorithm for Ideal Multigrid Convergence for the Steady Euler Equations. *Computers and Fluids*, Volume 28, No. 4-5, 1999, p. 427-442.  
 Organization RB RTOP 522-31-61
- 457 Rokni, M.; and Gatski, T. B.: Predicting Turbulent Convective Heat Transfer in Three-Dimensional Duct Flows. NASA/TM-1999-209843, December 1999, 24 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209843.pdf>  
 Organization RB RTOP 706-31-11
- 458 Rubinstein, R.: Double Resonances and Spectral Scaling in the Weak Turbulence Theory of Rotating and Stratified Turbulence. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208996, ICASE Report 99-7, February 1999, 19 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-7.pdf>  
 Organization A RTOP 505-90-52
- 459 Rubinstein, R.; and Auslender, A. H.: Relaxation From Steady States Far From Equilibrium and the Persistence of Anomalous Shock Behavior in Weakly Ionized Gases. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209105, ICASE Report No. 99-13, March 1999, 13 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-13.pdf>  
 Organization A RTOP 505-90-52

- 460** Rubinstein, R.; and Zhou, Y.: Characterization of Sound Radiation by Unresolved Scales of Motion in Computational Aeroacoustics. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209688, ICASE Report No. 99-39, October 1999, 13 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-39.pdf>  
 Organization A RTOP 505-90-52
- 461** Rubinstein, R.; and Zhou, Y.: The Dissipation Range in Rotating Turbulence. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208997, ICASE Report No. 99-8, February 1999, 11 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-8.pdf>  
 Organization A RTOP 505-90-52
- 462** Seifert, A.; and Pack, L. G.: Active Control of Separated Flows on Generic Configurations at High Reynolds Numbers. Presented at 30th AIAA Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3403.  
 Organization RB RTOP 522-32-31
- 463** Seifert, A.; and Pack, L. G.: Oscillatory Control of Separation at High Reynolds Numbers. *AIAA Journal*, Volume 37, No. 9, September 1999, p. 1062-1071.  
 Organization RB RTOP 522-32-31
- 464** Woodruff, S. L.; Shebalin, J. V.; and Hussaini, M. Y.: Direct-Numerical and Large-Eddy Simulations of a Non-Equilibrium Turbulent Kolmogorov Flow. (NAS1-19480 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209727, ICASE Report No. 99-45, December 1999, 21 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-45.pdf>  
 Organization A RTOP 505-90-52
- 465** Wurster, K. E.; Riley, C. J.; and Zoby, E. V.: Engineering Aerothermal Analysis for X-34 Thermal Protection System Design. *Journal of Spacecraft and Rockets*, Volume 36, No. 2, March–April 1999, p. 216-228.  
 Organization RA RTOP 242-33-01
- 466** Xu, K.; and Luo, L-S.: Connection Between the Lattice Boltzmann Equation and the Beam Scheme. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209001, ICASE Report No. 99-10, February 1999, 14 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-10.pdf>  
 Organization A RTOP 505-90-52
- 467** Younis, B. A.; Gatski, T. B.; and Speziale, C. G.: Towards a Rational Model for the Triple Velocity Correlations of Turbulence. NASA/TM-1999-209134, April 1999, 18 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209134.pdf>  
 Organization RB RTOP 522-31-61

## Category 35 Instrumentation and Photography

- 468** Amer, T. R.; Obara, C. J.; Goodman, W. L.; Sealey, B. S.; Burkett, C. G., Jr.; and Carmine, T.: Pressure Sensitive Paint Measurements in NASA-Langley Wind Tunnels. Presented at 45th International Instrumentation Symposium, May 2-6, 1999, Albuquerque, New Mexico.  
Organization RB RTOP 992-35-12
- 469** Amer, T. R.; Tripp, J. S.; Tchong, P.; Burkett, C. G., Jr.; and Sealey, B. S.: Characterization and Uncertainty Analysis of a Reference Pressure Measurement System for Wind Tunnels. Presented at 45th International Instrumentation Symposium, May 2-6, 1999, Albuquerque, New Mexico.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-45iis-ta.pdf>  
Organization RB RTOP 992-20-03
- 470** Barnes, N. P.; Walsh, B. M.; Hutcheson, R. L.; and Equall, R. W.: Pulsed  ${}^4F_{3/2}$  to  ${}^4I_{9/2}$  Operation of Nd Lasers. *Journal of the Optical Society of America B*, Volume 16, No. 12, 1999, p. 2169-2177.  
Organization RF RTOP 258-70-21
- 471** Barnes, N. P.; Walsh, B. M.; and Reichle, D. J., Jr.: Solid State Laser Ultraviolet Source. Presented at Advanced Solid State Laser Conference, January 31–February 3, 1999, Boston, Massachusetts.  
Organization RF RTOP 258-70-21
- 472** Burner, A. W.; Liu, T.; Garg, S.; Bell, J. H.; and Morgan, D. G.: Unified Model Deformation and Flow Transition Measurements. *Journal of Aircraft*, Volume 36, No. 5, September–October 1999, p. 898-901.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-joa-awb.pdf>  
Organization RB RTOP 519-20-21
- 473** Childers, B. A.: Prismatic Phase Shifter. NASA Tech Brief LAR-14637, September 1999.  
Organization RC
- 474** Daryabeigi, K.: Analysis and Testing of High Temperature Fibrous Insulation for Reusable Launch Vehicles. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-1044.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1044.pdf>  
Organization RC RTOP 242-33-01
- 475** Evans, K. F.; Evans, A. H.; Nolt, I. G.; and Marshall, B. T.: The Prospect for Remote Sensing of Cirrus Clouds With a Submillimeter-Wave Spectrometer. *Journal of Applied Meteorology*, Volume 38, May 1999, p. 514-525.  
Organization RF RTOP 622-43-53

- 476 Fleming, G. A.; and Burner, A. W.: Deformation Measurements of Smart Aerodynamic Surfaces. Presented at Optical Diagnostics for Fluids/Heat/Combustion and Photomechanics for Solids, July 18-23, 1999, Denver, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44spie-gaf.pdf>  
 Organization RB RTOP 519-20-21
- 477 Fleming, G. A.; Soto, H. L.; South, B. W.; and Bartram, S. M.: Advances in Projection Moire Interferometry Development for Large Wind Tunnel Applications. Presented at 1999 World Aviation Congress and Exposition, October 19-21, 1999, San Francisco, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-wace-gaf.pdf>  
 Organization RB RTOP 519-20-21
- 478 Hereford, J. M.; Parker, P. A.; and Rhew, R. D.: Impact of Thermal Gradients on Wind Tunnel Force Measurements. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0309.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0309.pdf>  
 Organization RB RTOP 522-31-51
- 479 Hereford, J. M.; Parker, P. A.; and Rhew, R. D.: TIGER: Development of Thermal Gradient Compensation Algorithms and Techniques. Presented at Second International Symposium on Strain Gauge Balances, May 4-7, 1999, Bedford, United Kingdom.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-2issgb-jh.pdf>  
 Organization RB RTOP 992-35-12
- 480 Huck, F. O.; Fales, C. L., Jr.; Alter-Gartenberg, R.; Park, S. K.; and Rahman, Z-U.: Information-Theoretic Assessment of Sampled Imaging Systems. *Optical Engineering*, Volume 38, No. 5, 1999, p. 742-762.  
 Organization RD RTOP 258-70-21
- 481 Jordan, T. L.; Ounaies, Z.; Tripp, J. S.; and Tcheng, P.: Electrical Properties and Power Considerations of a Piezoelectric Actuator. Presented at Materials Research Society Fall Meeting, November 29-December 3, 1999, Boston, Massachusetts.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-mrs-tlj.pdf>  
 Organization RB RTOP 522-32-11
- 482 Merski, N. R.: Global Aeroheating Wind-Tunnel Measurements Using Improved Two-Color Phosphor Thermography Method. *Journal of Spacecraft and Rockets*, Volume 36, No. 2, March-April 1999, p. 160-170.  
 Organization RB RTOP 242-80-01
- 483 Parker, P. A.; and Rhew, R. D.: A Study of Automatic Balance Calibration System Capabilities. Presented at Second International Symposium on Strain Gauge Balances, May 4-7, 1999, Bedford, United Kingdom. In Proceedings.  
 Organization RB RTOP 992-35-12

- 484** Rogowski, R. S.; Brown, T.; Childers, B. A.; Froggatt, M. E.; and Moore, J. S.: Evaluation of Fiber Optic Bragg Grating Sensors for Health Monitoring of X-33 Cryotanks. Presented at SPIE International Symposium on Environmental and Industrial Sensing, September 19-22, 1999, Boston, Massachusetts.  
 Organization RC RTOP 242-33-01
- 485** Rogowski, R. S.; Udd, E.; and Adamovsky, G.: Fiber Optic Sensors for Aerospace Applications. Presented at SPIE International Symposium on Environmental and Industrial Sensing, September 19-22, 1999, Boston, Massachusetts.  
 Organization RC RTOP 522-32-11
- 486** Ross, R. W.; and Hibler, D. L.: Target Recognition Using Neural Networks for Model Deformation Measurements. Presented at 1999 International Joint Conference on Neural Networks, July 10-16, 1999, Washington, DC.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ijcnn-rwr.pdf>  
 Organization RB RTOP 519-20-21
- 487** Sachse, G. W.; Wang, L-G.; LeBel, P. J.; Steel, T. C.; and Rana, M.: Multi-Gas Sensor. U. S. Patent 6,008,928. Issued December 28, 1999.  
 Organization RF
- 488** Shams, Q. A.; and Zuckerwar, A. J.: Electronically Scanned Pressure Measurement Scanner for Cryogenic Wind Tunnel Applications. Presented at 18th International Congress on Instrumentation in Aerospace Simulation Facilities, June 14-17, 1999, Toulouse, France. In Proceedings.  
 Organization RB RTOP 519-20-21
- 489** Steinle, F. W., Jr.; Booth, D.; and Rhew, R. D.: Determination of Anelastic-Induced Error in Wind Tunnel Test Force and Moment Measurements. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0682.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0682.pdf>  
 Organization RB RTOP 522-31-51
- 490** Subramanian, C. S.; and Amer, T. R.: A Test of a New PSP Technique. Presented at American Physical Society of Fluid Dynamics 1999 Meeting, November 21-23, 1999, New Orleans, Louisiana. Published in Bulletin of the American Physical Society, Volume 44, No. 8, 1999.  
 Organization RB RTOP 992-20-03
- 491** Subramanian, C. S.; Amer, T. R.; Oglesby, D. M.; and Brooks, J.: Intensity Corrected PSP Measurement. Presented at Seventh Annual PSP Workshop, October 11-13, 1999, West Lafayette, Indiana.  
 Organization RB RTOP 992-20-03

- 492** Tripp, J. S.; and Tcheng, P.: Determination of Bias and Precision Uncertainties of a Strain Gauge Balance by Replicated Machine Calibration. Presented at Second International Symposium on Strain Gauge Balances, May 4-7, 1999, Bedford, United Kingdom.  
Organization RB RTOP 522-31-51
- 493** Tripp, J. S.; and Tcheng, P. (Compilers): Proceedings of the International Symposium on Strain Gauge Balances. NASA/CP-1999-209101/PT1, March 1999, 443 p.  
Organization RB RTOP 992-35-12
- 494** Tripp, J. S.; and Tcheng, P. (Compilers): Proceedings of the International Symposium on Strain Gauge Balances. NASA/CP-1999-209101/PT2, March 1999, 322 p.  
Organization RB RTOP 992-35-12
- 495** Tripp, J. S.; and Tcheng, P.: Uncertainty Analysis of Inertial Model Attitude Sensor Calibration and Application With a Recommended New Calibration Method. NASA/TP-1999-209835, December 1999, 132 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209835.pdf>  
Organization RB RTOP 519-20-21
- 496** Tripp, J. S.; and Tcheng, P.: Uncertainty Analysis of Instrument Calibration and Application. NASA/TP-1999-209545, October 1999, 77 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209545.pdf>  
Organization RB RTOP 519-20-21
- 497** Upchurch, B. T.; Wood, G. M.; Schryer, D. R.; Leighty, B. D.; Oglesby, D. M.; Kielin, E. J.; Brown, K. G.; and D'Ambrosia, C.: Solid State Carbon Monoxide Sensor. U. S. Patent 5,948,965. Issued September 7, 1999.  
Organization RB
- 498** Wright, K. D., II; Martinson, S. D.; and Comeaux, T.: A Remote Acquisition and Storage System. Presented at 45th International Instrumentation Symposium, May 2-6, 1999, Albuquerque, New Mexico. In Proceedings, p. 67-80.  
Organization RB RTOP 581-20-31
- 499** Yu, J. C.; Wright, K. D., II; Preisser, J. S.; and Marcolini, M. A.: Development of Field Measurement Systems for Flight Vehicle Noise. Presented at 137th ASA/EAA Forum Acusticum 1999, March 14-20, 1999, Berlin, Germany.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-137asaeaa-jcy.pdf>  
Organization RB RTOP 992-20-03
- 500** Yu, J.; Singh, U. N.; Barnes, N. P.; Petros, M.; and Phillips, M. W.: A Compact Diode-Pumped 2 $\mu$ m Power Oscillator. Presented at Advanced Solid State Laser Conference, January 31-February 3, 1999, Boston, Massachusetts.  
Organization RF RTOP 258-70-21



- 501** Zalameda, J. N.; and Winfree, W. P.: Quartz Lamp Characterization for Quantitative Thermal Nondestructive Evaluation. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
 Organization RC RTOP 522-18-00
- 502** Zuckerwar, A. J.: Phenomenological Theory of the Translational Relaxation Times in Gases. *Journal of the Acoustical Society of America*, Volume 105, No. 4, April 1999, p. 2210-2215.  
 Organization RB RTOP 522-31-11
- 503** Zuckerwar, A. J.; Hart, R. C.; Balla, R. J.; and Herring, G. C.: Nonresonant Referenced Laser-Induced Thermal Acoustics (LITA) for Measurement of the Speed of Sound in Gases. Presented at 138th Meeting of the Acoustical Society of America, November 1-5, 1999, Columbus, Ohio. In Proceedings, Volume 106.  
 Organization RB RTOP 522-31-61

### Category 36 Lasers and Masers

- 504** Choi, S. H.; Chu, S. H.; Kwak, M.; Cutler, A. D.; and Song, K. D.: Microwave-Driven Smart Material Actuators. Presented at 34th Intersociety Energy Conversion Engineering Conference, August 1-5, 1999, Vancouver, British Columbia, Canada.  
 Organization RC RTOP 274-00-98
- 505** Hart, R. C.; Balla, R. J.; and Herring, G. C.: Nonresonant Referenced LITA Thermometry in Air. *Applied Optics*, Volume 38, No. 3, January 20, 1999, p. 577-584.  
 Organization RB RTOP 242-33-01
- 506** Meyers, J. F.; and Lee, J. W.: Investigation of Measurement Errors in Doppler Global Velocimetry. Presented at 1999 World Aviation Congress and Exposition, October 19-21, 1999, San Francisco, California. SAE Paper No. 1999-01-5599.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-wace-jfm.pdf>  
 Organization RB RTOP 519-20-21
- 507** Roe, K. P.; and Mehrotra, P.: Parallelization of a Multigrid Incompressible Viscous Cavity Flow Solver Using OpenMP. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209551, ICASE Report No. 99-36, September 1999, 13 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-36.pdf>  
 Organization A RTOP 505-90-52

### Category 37 Mechanical Engineering

- 508** Hayhurst, A. R.: Modified Wire Tire. NASA Tech Brief LAR-15103, October 1999.  
 Organization SC
- 509** Hughes, S. J.: Combination Space Station Handrail Clamp and Pointing Device. U. S. Patent 5,893,533. Issued April 13, 1999.  
 Organization RF

- 510** Phelps, J. E.: Fabrication and Assembly of High-Precision Hinge and Latch Joints for Deployable Optical Instruments. (NAS1-96013 Nyma/ADF.) NASA/CR-1999-209117, August 1999, 26 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209117.pdf>

Organization RC

RTOP 632-10-14

- 511** Teter, J. E., Jr.: A Discussion of Zero Spring Rate Mechanisms Used for the Active Isolation Mount Experiment. NASA/TM-1999-209723, November 1999, 16 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209723.pdf>

Organization RF

RTOP 233-20-21

### **Category 38 Quality Assurance and Reliability**

- 512** Generazio, E. R.: Overview of the National Aeronautics and Space Administration's (NASA) Nondestructive Evaluation (NDE) Program. Presented at Ninth Annual Symposium on Nondestructive Characterization of Materials, June 28-July 2, 1999, Sydney, Australia.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-9asncm-erg.pdf>

Organization RC

RTOP 323-78-01

- 513** Generazio, E. R.; and Harris, C. E.: The Role of Modeling and Simulation in the Development of Advanced Nondestructive Evaluation Systems. *The Aeronautical Journal*, Volume 103, No. 1025, July 1999, p. 325-328.

Organization RC

RTOP 522-32-11

- 514** Heyman, J. S.; Abedin, M. N.; and Sun, K. J.: Method and Apparatus for Evaluating Multilayer Objects for Imperfections. U. S. Patent 5,969,253. Issued September 19, 1999.

Organization A

- 515** Lavell, J. S.: The Role of the Independent Assessment in Approving New Projects at NASA. Presented at Project Management Institute '99 Seminars and Symposium, October 11-13, 1999, Philadelphia, Pennsylvania.

Organization AH

RTOP 297-90-00

- 516** Roberts, M. J. (*Compiler*): Proceedings of the First Annual Symposium for Nondestructive Evaluation of Bond Strength. NASA/CP-1999-209137, May 1999, 133 p.

Organization RC

RTOP 522-18-11

- 517** Roberts, M. J. (*Compiler*): Proceedings of the Second Annual Symposium for Nondestructive Evaluation of Bond Strength. NASA/CP-1999-209140, May 1999, 196 p.

Organization RC

RTOP 522-18-11

- 518** Winfree, W. P.; and Cramer, K. E.: Reconstruction of Back Surface Profiles From Scanned Thermal Line Source Data Using Neural Networks. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.

Organization RC

RTOP 522-18-11

## Category 39 Structural Mechanics

- 519** Ambur, D. R.; Jaunky, N.; and Knight, N. F., Jr.: Buckling Analysis and Design Optimization for Composite Grid-Stiffened Shell Structures. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California.  
Organization RC RTOP 538-13-12
- 520** Ambur, D. R.; Jaunky, N.; Lawson, R. E.; Knight, N. F., Jr.; and Lyle, K. H.: A Gas-Actuated Projectile Launcher for High-Energy Impact Testing of Structures. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1385.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1385.pdf>  
Organization RC RTOP 522-11-41
- 521** Ambur, D. R.; and McGowan, D. M.: Response of Composite Plates With Inclined Elliptical Notches and Subjected to In-Plane Loading Conditions. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1276.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1276.pdf>  
Organization RC RTOP 538-13-11
- 522** Ambur, D. R.; McGowan, D. M.; and Baker, D. J.: Compression Response of Notched Composite Stiffened Panels: Analysis and Experiments. Presented at 1999 Society for Experimental Mechanics Spring Conference and Exposition, June 7-9, 1999, Cincinnati, Ohio.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-semsce-dra.pdf>  
Organization RC RTOP 538-13-12
- 523** Ambur, D. R.; Rouse, M.; Young, R. D.; and Perez-Ramos, C.: Evaluation of an Aluminum Fuselage Panel With Discrete-Source Damage and Subjected to Combined Loading Conditions. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1439.  
Organization RC RTOP 538-02-10
- 524** Ambur, D. R.; and Starnes, J. H., Jr.: Influence of Curved Composite Plate Nonlinear Characteristics on its Low-Speed Impact Response. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1324.  
Organization RC RTOP 522-11-41
- 525** Arbocz, J.; Starnes, J. H., Jr.; and Nemeth, M. P.: A Hierarchical Approach to Buckling Load Calculations. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1232.  
Organization RC RTOP 522-11-41

- 526** Chew, M-S.; Yang, L-F.; and Juang, J-N.: Suspension Devices for Vibration Testing of Structures. NASA Tech Brief LAR-14272, July 1999.  
Organization RC
- 527** Davila, C. G.; and Chen, T-K.: Advanced Modeling Strategies for the Analysis of Tile-Reinforced Composite Armor. NASA/TM-1999-209352, ARL-TR-1978, July 1999, 21 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209352.pdf>  
Organization RC RTOP 538-13-12
- 528** Estrada, H.; and Smeltzer, S. S., III: Design and Development of a Composite Dome for Experimental Characterization of Material Permeability. Presented at 1999 ASME Pressure Vessel and Piping Conference, August 2-5, 1999, Boston, Massachusetts.  
<ftp://techreports.larc.nasa.gov/pub/techreports/larc/1999/mtg/NASA-99-asme-he.ps.Z>  
Organization RC RTOP 522-11-41
- 529** Fleming, D. C.: Delamination Modeling of Composites for Improved Crash Analysis. (NAG1-2061 Florida Institute of Technology.) NASA/CR-1999-209725, October 1999, 78 p.  
Organization RC RTOP 522-18-31
- 530** Gibbs, G. P.; Eure, K. W.; and Lloyd, J. W.: Active Control of Turbulent Boundary Layer Induced Sound Radiation From Aircraft Style Panels. Presented at 1999 International Symposium on Active Control of Sound and Vibration, December 2-4, 1999, Ft. Lauderdale, Florida.  
Organization RB RTOP 538-03-14
- 531** Gibbs, G. P.; Eure, K. W.; and Lloyd, J. W.: Active Control of Turbulent Boundary Layer Induced Sound Radiation From Aircraft Style Panels. Presented at Fourth ARO Workshop on Smart Structures, August 16-18, 1999, State College, Pennsylvania.  
Organization RB RTOP 538-03-14
- 532** Hachkowski, M. R.; Peterson, L. D.; and Lake, M. S.: Analytical Model of Nonlinear Hysteresis Mechanisms in a Rolling Element Joint. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1268.  
Organization RC RTOP 632-10-14
- 533** Harris, C. E. (*Editor*): The Second Joint NASA/FAA/DoD Conference on Aging Aircraft. NASA/CP-1999-208982/PART1, January 1999, 403 p.  
Organization RC RTOP 538-10
- 534** Harris, C. E. (*Editor*): The Second Joint NASA/FAA/DoD Conference on Aging Aircraft. NASA/CP-1999-208982/PART2, January 1999, 611 p.  
Organization RC RTOP 538-10

- 535** Hilburger, M. W.; Britt, V. O.; and Nemeth, M. P.: Buckling Behavior of Compression-Loaded Quasi-Isotropic Curved Panels With a Circular Cutout. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1279.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1279.pdf>  
 Organization RC RTOP 511-11-41
- 536** Hilburger, M. W.; Waas, A. M.; and Starnes, J. H., Jr.: Response of Composite Shells With Cutouts to Internal Pressure and Compression Loads. *AIAA Journal*, Volume 37, No. 2, February 1999, p. 232-237.  
 Organization RC RTOP 511-11-41
- 537** Horner, G. C.; Bromberg, L.; and Teter, J. P.: A Cryogenic Magnetostrictive Actuator Using a Persistent High Temperature Superconducting Magnet, Part 1: Concept and Design. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-6spie-gch1.pdf>  
 Organization RC RTOP 522-32-41
- 538** Horner, G. C.; and Taleghani, B. K.: Single Axis Piezoceramic Gimbal. NASA/TM-1999-209721, ARL-TR-2120, November 1999, 14 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209721.pdf>  
 Organization RC RTOP 522-32-41
- 539** Horner, G. C.; and Taleghani, B. K.: Single Axis Piezoceramic Gimbal. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-6spie-gch2.pdf>  
 Organization RC RTOP 522-32-41
- 540** Hyder, C.; Clark, W. W.; and Horner, G. C.: Linear Traveling Wave Motor. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California.  
 Organization RC RTOP 522-32-41
- 541** Jackson, K. E.; Fasanella, E. L.; and Kellas, S.: Crash Simulation of a 1/5-Scale Model Composite Fuselage Concept. Presented at 1999 MSC Aerospace Users' Conference, June 7-10, 1999, Long Beach, California. In Proceedings.  
 Organization RC RTOP 274-00-99
- 542** Jegley, D. C.: Parametric Study of the Behavior of Graphite/Epoxy Panels With Stiffener Terminations. *Journal of Aircraft*, Volume 36, No. 6, November-December 1999, p. 1048-1054.  
 Organization RC RTOP 538-13-11

- 543** Jegley, D. C.: A Parametric Study of the Behavior of Compression-Loaded Graphite-Epoxy Panels With Stiffener Terminations. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1407.  
 Organization RC RTOP 538-13-11
- 544** Johnson, A. R.: A Viscoelastic Hybrid Shell Finite Element. Presented at Tenth Conference on the Mathematics of Finite Elements and Applications, June 22-25, 1999, Uxbridge, United Kingdom.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10cmfea-arj.pdf>  
 Organization RC RTOP 282-10-01
- 545** Johnson, A. R.; Tanner, J. A.; and Mason, A. J.: Quasi-Static Viscoelastic Finite Element Model of an Aircraft Tire. NASA/TM-1999-209141, ARL-TR-2000, April 1999, 33 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209141.pdf>  
 Organization RC RTOP 282-10-01
- 546** Juang, J-N.: Predictive Feedback and Feedforward Control for Systems With Unknown Disturbances. Presented at 1999 ASME Mechanics and Materials Conference, June 27-30, 1999, Blacksburg, Virginia.  
 Organization RC RTOP 522-32-41
- 547** Juang, J-N.; and Chen, Y-C.: Signal Prediction With Input Identification. NASA/TM-1999-209705, October 1999, 33 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209705.pdf>  
 Organization RC RTOP 632-10-14
- 548** Juang, J-N.; and Eure, K. W.: Predictive Feedback and Feedforward Control for Systems With Unknown Disturbances. Presented at 137th ASA/EAA Forum Acusticum 1999, March 14-20, 1999, Berlin, Germany.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1998/tm/NASA-98-tm208744.pdf>  
 Organization RC RTOP 522-32-41
- 549** Juang, J-N.; and Longman, R. W.: Optimized System Identification. NASA/TM-1999-209711, October 1999, 36 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209711.pdf>  
 Organization RC RTOP 632-10-14
- 550** Juang, J-N.; and Maghami, P. G.: Optimal Frequency-Domain System Realization With Weighting. NASA/TM-1999-209135, April 1999, 48 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209135.pdf>  
 Organization RD RTOP 522-32-41

- 551 Knight, N. F., Jr.; Jaunky, N.; Lawson, R. E.; and Ambur, D. R.: Modeling and Simulation for Uncontained Engine Debris Impact on Fuselage Skins Using LS-DYNA3D. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1573.  
 Organization RC RTOP 522-18-11
- 552 Lake, M. S.; Phelps, J. E.; Dyer, J. E.; Caudle, D. A.; Tam, A.; Escobedo, J.; and Kasl, E. P.: A Deployable Primary Mirror for Space Telescopes. NASA/TM-1999-209682, September 1999, 17 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-spie-msl.pdf>  
 Organization RC RTOP 632-10-14
- 553 Lake, M. S.; Phelps, J. E.; Dyer, J. E.; Caudle, D. A.; Tam, A.; Escobedo, J.; and Kasl, E. P.: A Deployable Primary Mirror for Space Telescopes. Presented at Advanced Telescope Design, Fabrication, and Control Conference, July 18-23, 1999, Denver, Colorado. SPIE Paper No. 3785.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-spie-msl.pdf>  
 Organization RC RTOP 632-10-14
- 554 Ley, R. P.; Lin, W.; and Mbanefo, L.: Facesheet Wrinkling in Sandwich Structures. (NAS1-19347 Northrop Grumman Corporation.) NASA/CR-1999-208994, January 1999, 49 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208994.pdf>  
 Organization RC RTOP 529-10-11
- 555 McGowan, D. M.: Development of Curved-Plate Elements for the Exact Buckling Analysis of Composite Plate Assemblies Including Transverse-Shear Effects. NASA/TM-1999-209512, August 1999, 112 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209512.pdf>  
 Organization RC RTOP 522-11-41
- 556 McGowan, D. M.; and Ambur, D. R.: Structural Response of Composite Sandwich Panels Impacted With and Without a Compression Loading. *Journal of Aircraft*, Volume 36, No. 3, May-June 1999, p. 596-602.  
 Organization RC RTOP 522-11-41
- 557 McGowan, D. M.; Ambur, D. R.; Hana, T. G.; and McNeill, S. R.: Evaluation of the Compressive Response of Notched Composite Panels Using a Full-Field Displacement Measurement System. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1406.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1406.pdf>  
 Organization RC RTOP 538-13-11

- 558** Nemeth, M. P.: Buckling Behavior of Long Anisotropic Plates Subjected to Restrained Thermal Expansion and Mechanical Loads. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1229.  
Organization RC RTOP 522-11-41
- 559** Nemeth, M. P.; Starnes, J. H., Jr.; Librescu, L.; and Lin, W.: Nonlinear Response of Flat and Curved Panels Exposed to Thermomechanical Loading. Presented at 1999 ASME Mechanics and Materials Conference, June 27-30, 1999, Blacksburg, Virginia.  
Organization RC RTOP 522-11-41
- 560** Nemeth, M. P.; Young, R. D.; Collins, T. J.; and Starnes, J. H., Jr.: Nonlinear Behavior of Space Shuttle Superlightweight Tank Under End-of-Flight Loads. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, November–December 1999, p. 828-835.  
Organization RC RTOP 522-11-41
- 561** Nemeth, M. P.; Young, R. D.; Collins, T. J.; and Starnes, J. H., Jr.: Effects of Welding-Induced Imperfections on Behavior of Space Shuttle Superlightweight Tank. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, November–December 1999, p. 812-819.  
Organization RC RTOP 522-11-41
- 562** Pappa, R. S.: GIF Animation of Mode Shapes and Other Data on the Internet. Presented at 17th International Modal Analysis Conference, February 8-11, 1999, Kissimmee, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1998/tm/NASA-98-tm208748.pdf>  
Organization RC RTOP 632-10-14
- 563** Pappa, R. S.: Independent Analysis of the Space Station Node Modal Test Data. *Journal of Guidance, Control, and Dynamics*, Volume 22, No. 1, January–February 1999, p. 22-27.  
Organization RC RTOP 522-32-41
- 564** Pappa, R. S.: GIF Animation of Mode Shapes and Other Data on the Internet. *Sound and Vibration*, Volume 33, No. 1, 1999, p. 20-28.  
Organization RC RTOP 632-10-14
- 565** Pappa, R. S.; Pritchard, J. I.; and Buehrle, R. D.: Vibro-Acoustics Modal Testing at NASA Langley Research Center. NASA/TM-1999-209319, ARL-TR-1980, May 1999, 18 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209319.pdf>  
Organization RC RTOP 632-10-14
- 566** Phillips, E. P.: Periodic Overload and Transport Spectrum Fatigue Crack Growth Tests of Ti62222STA and A12024T3 Sheet. NASA/TM-1999-208995, January 1999, 43 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm208995.pdf>  
Organization RC RTOP 522-18-11



- 567** Riddell, W. T.; and Piascik, R. S.: A Back Face Strain Compliance Expression for the Compact Tension Specimen. *Journal of Testing and Evaluation*, Volume 27, No. 2, 1999, p. 167-170.  
 Organization RC RTOP 538-02-10
- 568** Rose, C. A.; Young, R. D.; and Starnes, J. H., Jr.: Nonlinear Local Bending Response and Bulging Factors for Longitudinal Cracks in Pressurized Cylindrical Shells. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1412.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1412.pdf>  
 Organization RC RTOP 522-18-11
- 569** Rouse, M.; and Assadi, M.: Evaluation of a Scaling Approach for Stiffened Composite Flat Panels Loaded in Compression. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1404.  
 Organization RC RTOP 522-11-41
- 570** Rousseau, C. Q.; and Baker, D. J.: Parametric Study of Three-Stringer-Panel Compression-After-Impact Strength. Presented at ASTM Symposium on Composite Structures: Theory and Practice, May 17-18, 1999, Seattle, Washington. In Proceedings.  
 Organization RC RTOP 581-10-21
- 571** Ruggiero, T. J.; and Mikulas, M. M., Jr.: A One-Dimensional Constitutive Model for Wrinkled Thin Polymer Films. (NAG1-1700 University of Colorado at Boulder.) NASA/CR-1999-209129, April 1999, 143 p.  
 Organization RC RTOP 632-10-14
- 572** Sergeev, B.; Madenci, E.; and Ambur, D. R.: Stress Intensity Factors for an Arbitrarily Oriented Crack Near a Hole in Longeron Web. *Theoretical and Applied Fracture Mechanics*, Volume 31, No. 3, June 1999, p. 213-222.  
 Organization RC RTOP 538-13-12
- 573** Sleight, D. W.: Analysis of Progressive Failure in Laminated Composites. NASA Tech Brief L-17660, September 1999.  
 Organization RC
- 574** Sleight, D. W.: Progressive Failure Analysis Methodology for Laminated Composite Structures. NASA/TP-1999-209107, March 1999, 94 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209107.pdf>  
 Organization RC RTOP 538-13-12
- 575** Starnes, J. H., Jr.; Hilburger, M. W.; and Nemeth, M. P.: The Effects of Initial Imperfections on the Buckling of Composite Shells. Presented at ASTM Symposium on Composite Structures: Theory and Practice, May 17-18, 1999, Seattle, Washington.  
 Organization RC RTOP 522-11-41

- 576** Szewczyk, Z. P.; and Sleight, D. W.: Object-Oriented Approach to Interactive Analysis of Structures. Presented at 5th National Symposium on Large-Scale Analysis, Design and Intelligent Synthesis Environments, October 12-15, 1999, Williamsburg, Virginia.  
Organization RC RTOP 632-10-14
- 577** Tessler, A.; Annett, M. S.; and Gendron, G.: Thermomechanical Analysis of Laminated Composite and Sandwich Plates via Hierarchical {1,2}-Order Theory. Presented at Fifth National Congress on Computational Mechanics, August 4-6, 1999, Boulder, Colorado.  
Organization RC RTOP 522-31-71
- 578** Tessler, A.; Annett, M. S.; and Gendron, G.: A Higher-Order Theory Accounting for Through-Thickness Thermoelastic Deformations in Thick Composite and Sandwich Plates. Presented at 1999 ASME Mechanics and Materials Conference, June 27-30, 1999, Blacksburg, Virginia.  
Organization RC RTOP 522-31-71
- 579** Turner, T. L.: Environmentally Activated SMA Hybrid Composites. Presented at Fourth ARO Workshop on Smart Structures, August 16-18, 1999, State College, Pennsylvania.  
Organization RB RTOP 522-32-31
- 580** Wood, C. T.; Clark, W. W.; and Horner, G. C.: Active Piezoelectric-Driven Flexure Actuator. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California.  
Organization RC RTOP 522-32-41
- 581** Woodard, S. E.; and Nagchaudhuri, A.: Application of Least Mean Square Algorithms to Spacecraft Vibration Compensation. *The Journal of the Astronautical Sciences*, Volume 46, No. 1, January–March 1998, p. 83-90.  
Organization RC RTOP 632-10-14
- 582** Young, R. D.; Nemeth, M. P.; Collins, T. J.; and Starnes, J. H., Jr.: Nonlinear Behavior of the Space Shuttle Superlightweight Tank Under Booster Ascent Loads. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, November–December 1999, p. 820-827.  
Organization RC RTOP 522-11-41
- 583** Young, R. D.; and Rankin, C. C.: Modeling and Nonlinear Structural Analysis of a Large-Scale Launch Vehicle. *Journal of Spacecraft and Rockets*, Volume 36, No. 6, November – December 1999, p. 804-811.  
Organization RC RTOP 522-11-41
- 584** Young, R. D.; Rose, C. A.; and Starnes, J. H., Jr.: Nonlinear Local Bending Response and Bulging Factors for Longitudinal and Circumferential Cracks in Pressurized Cylindrical Shells. Presented at Third Joint FAA/DoD/NASA Conference on Aging Aircraft, September 20-23, 1999, Albuquerque, New Mexico.  
Organization RC RTOP 522-18-11

## Geosciences

### Category 42 Geosciences (General)

- 585** Chen, G.; *et al.*: A Comparison of Model Results With Observations Recorded During Project ISCAT. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
Organization RE RTOP 622-61-11
- 586** Cho, J. Y.; Newell, R. E.; and Barrick, J. D.: Horizontal Wavenumber Spectra of Winds, Temperature, and Trace Gases During the Pacific Exploratory Missions: 2. Gravity Waves, Quasi-Two-Dimensional Turbulence, and Vortical Modes. *Journal of Geophysical Research*, Volume 104, No. D13, July 20, 1999, p. 16,297-16,308.  
Organization RE RTOP 622-63-02
- 587** Schuster, G. L.; Kato, S.; Charlock, T. P.; Clothiaux, E.; Rutledge, C. K.; and Wilson, M.: Wavelength-Dependent Sensitivity of Angstrom Coefficient to Aerosol Density Distribution. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
Organization RE RTOP 229-01-02
- 588** Vay, S. A.; Anderson, B. E.; Conway, T. J.; Sachse, G. W.; Owens, M. A.; Blake, D. R.; and Westberg, D. J.: Tropospheric CO<sub>2</sub> Measurements Over the South Pacific Basin During the Pacific Exploratory Mission-Tropics Series. Presented at Sixth Scientific Conference of the International Global Atmospheric Chemistry Project, September 13-17, 1999, Bologna, Italy.  
Organization RE RTOP 622-63-14

### Category 43 Earth Resources and Remote Sensing

- 589** Chapman, J. J.; Shams, Q. A.; and Powers, W. T.: Cryogenic High Pressure Sensor Module. U. S. Patent 5,955,678. Issued September 21, 1999.  
Organization RE
- 590** Katzberg, S. J.; and Garrison, J. L., Jr.: Method and System for Producing Images of an Object. U. S. Patent 5,949,364. Issued September 7, 1999.  
Organization RA
- 591** Moore, A. S.; Cisewski, M.; Roell, M. M.; Rawls, J. R.; Veiga, R. E.; Borchardt, R. P., Jr.; Graves, S. S.; Hayhurst, A. R.; Hickman, J. C.; Holloway, S. E., III; Mauldin, L. E., III; and Tutterow, R. D.: Direct Solar and Lunar Viewing Ground Testing to Simulate Earth Orbit Scenarios With the Stratospheric Aerosol and Gas Experiment III (SAGE-III) Space Instrument. Presented at SPIE's International Symposium on Optical Science, Engineering, and Instrumentation, July 18-23, 1999, Denver, Colorado.  
Organization OB RTOP 227-92-43

- 592** Nolt, I. G.; Vanek, M.; Tappan, N. D.; Minnis, P.; Alltop, J. L.; Ade, P. A.; Lee, C.; Hamilton, P. A.; Evans, K. F.; Evans, A. H.; Clothiaux, E.; and Baran, A. J.: Far Infrared Measurements of Cirrus. Presented at EOS/SPIE Symposium on Remote Sensing, September 20-24, 1999, Florence, Italy.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-eosspie-ign.pdf>  
Organization RE RTOP 274-00-99

#### **Category 45 Environment Pollution**

- 593** Anderson, B. E.; Cofer, W. R., III; and McDougal, D. S.: Air Force F-16 Aircraft Engine Aerosol Emissions Under Cruise Altitude Conditions. NASA/TM-1999-209102, March 1999, 58 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209102.pdf>  
Organization RE RTOP 538-08-12
- 594** Crawford, J. H.; *et al.*: Origin, Evolution, and Chemical Consequences of Elevated NO Observed in the N. Atlantic Upper Troposphere: Evidence for Convective/Lightning Source. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
Organization RE RTOP 622-61-11
- 595** Crawford, J. H.; Davis, D. D.; Chen, G.; Shetter, R.; Muller, M.; Barrick, J. D.; Rogers, M.; and Pearson, J.: An Assessment of Cloud Effects on Photolysis Rates Coefficients: Comparison of Experimental and Theoretical Values. *Journal of Geophysical Research*, Volume 104, No. D5, 1999, p. 4725-5734.  
Organization RE RTOP 622-63-05
- 596** Delnore, V. E.; Cox, S. K.; and Curran, R. J.: CRYSTAL—The Cirrus Regional Study of Tropical Anvils and Cirrus Layers. Presented at Remote Sensing of Cloud Parameters Meeting, October 21-22, 1999, Delft, The Netherlands.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-rscpm-ved.pdf>  
Organization RE RTOP 622-46-01
- 597** Delnore, V. E.; Curry, J. A.; Curran, R. J.; and McDougal, D. S.: FIRE Arctic Cloud Experiment. Presented at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG '99), July 18-30, 1999, Birmingham, United Kingdom.  
Organization RE RTOP 622-46-01
- 598** Gregory, G. L.; Westberg, D. J.; Shipham, M. C.; Blake, D. R.; Newell, R. E.; Fuelberg, H. E.; Talbot, R. W.; Heikes, B. G.; Atlas, E.; Sachse, G. W.; Anderson, B. E.; and Thornton, D. C.: Chemical Characteristics of Pacific Tropospheric Air in the Region of the ITCZ and SPCZ. *Journal of Geophysical Research*, Volume 104, No. D5, 1999, p. 5677-5696.  
Organization RE RTOP 622-63-08

- 599** Hoell, J. M., Jr.: Preface to the Second Special Section on the NASA Global Tropospheric Experiment Pacific Exploratory Mission in the Tropical Pacific. *Journal of Geophysical Research*, Volume 104, No. D13, July 20, 1999, p. 16,177-16,180.  
 Organization RE RTOP 622-63-02
- 600** Hoell, J. M., Jr.; Davis, D. D.; Jacob, D. J.; Rogers, M.; Newell, R. E.; Fuelberg, H. E.; McNeal, R. J.; Raper, J. L., Sr.; and Bendura, R. J.: The Pacific Exploratory Mission in the Tropical Pacific: PEM-Tropics A, August–September, 1996. *Journal of Geophysical Research*, Volume 104, No. D5, 1999, p. 5567.  
 Organization RE RTOP 622-63-02
- 601** Vay, S. A.; Anderson, B. E.; Conway, T. J.; Sachse, G. W.; Collins, J. E., Jr.; Blake, D. R.; and Westberg, D. J.: Airborne Observations of the Tropospheric CO<sub>2</sub> Distribution and Its Controlling Factors Over the South Pacific Basin. *Journal of Geophysical Research*, Volume 104, No. D5, 1999, p. 5663-5676.  
 Organization RE RTOP 622-63-10

#### Category 46 Geophysics

- 602** Al-Saadi, J. A.; Pierce, R. B.; Kleb, M. M.; Grose, W. L.; Fairlie, T. D.; and Harvey, V. L.: Effects of Elevated Sulfate Aerosol on Middle Atmosphere Chemistry and Dynamics: 3-D Coupled Model Simulations. Presented at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG '99), July 18-30, 1999, Birmingham, United Kingdom.  
 Organization RE RTOP 291-01-61
- 603** Baker, D. N.; Pulkkinen, T. I.; Li, X.; Kanekal, S.; Ogilvie, K. W.; Lepping, R. P.; Blake, J. B.; Callis, L. B., Jr.; Rostiker, G.; Singer, H. J.; and Reeves, G. D.: A Strong CME-Related Magnetic Cloud Interaction With the Earth's Magnetosphere: ISTP Observation of Rapid Relativistic Electron Acceleration on May 15, 1997. *Geophysical Research Letters*, Volume 25, No. 15, 1998, p. 2975-2978.  
 Organization RE RTOP 370-21-08
- 604** Bhatt, P. P.; Remsberg, E. E.; and Deaver, L. E.: Variations on Lower Stratospheric Ozone From HALOE Data. Presented at 1999 Conference on Atmospheric Effects of Aviation, April 19-23, 1999, Virginia Beach, Virginia.  
 Organization RE RTOP 621-25-05
- 605** Bhatt, P. P.; Remsberg, E. E.; Gordley, L. L.; McInerney, J. M.; Brackett, V. G.; and Russell, J. M., III: An Evaluation of the Quality of Halogen Occultation Experiment Ozone Profiles in the Lower Stratosphere. *Journal of Geophysical Research*, Volume 104, No. D8, April 27, 1999, p. 9261-9275.  
 Organization RE RTOP 622-57-77

- 606** Callis, L. B., Jr.: Solar Wind and Energetic Electron Precipitation Variations: Effects on the Middle Atmosphere. Presented at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG '99), July 18-30, 1999, Birmingham, United Kingdom.  
Organization RE RTOP 370-21-08
- 607** Callis, L. B., Jr.: Mesospheric and Stratospheric Coupling by Descent of Odd Nitrogen Formed by Energetic Electron Precipitation. Presented at Chapman Conference on Atmospheric Science Across the Stratopause, April 19-22, 1999, Annapolis, Maryland.  
Organization RE RTOP 370-21-08
- 608** Callis, L. B., Jr.: Upper and Lower Stratospheric Ozone Changes 1979-1994: The Roles of Variable Transport and Temperature. Presented at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG '99), July 18-30, 1999, Birmingham, United Kingdom.  
Organization RE RTOP 370-21-08
- 609** Chu, W. P.; and McCormick, M. P.: Long-Term Monitoring of Stratospheric Ozone and Aerosol With the SAGE Instruments. Presented at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG '99), July 18-30, 1999, Birmingham, United Kingdom.  
Organization RE RTOP 621-45-20
- 610** Coffey, M. T.; Goldman, A.; Hannigan, J. W.; Mankin, W. G.; Schoenfeld, W. G.; Rinsland, C. P.; Bernardo, C.; and Griffith, D. W.: Improved Vibration-Rotation (0-1) HBr Line Parameters for Validating High Resolution Infrared Atmospheric Spectra Measurements. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 60, No. 5, 1998, p. 863-867.  
Organization RE RTOP 622-68-51
- 611** Considine, G. D.; Anderson, B. E.; Barrick, J. D.; Lenschow, D. H.; Grant, W. B.; and Browell, E. V.: Characterization of Turbulent Transport in the Marine Boundary Layer During Flight 7 of PEM-Tropics A. *Journal of Geophysical Research*, Volume 104, No. D5, 1999, p. 5855-5864.  
Organization RE RTOP 622-63-10
- 612** Considine, G. D.; Deaver, L. E.; Remsberg, E. E.; and Russell, J. M., III: Analysis of Near-Global Trends and Variability in Halogen Occultation Experiment HF and HCl Data in the Middle Atmosphere. *Journal of Geophysical Research*, Volume 104, No. D20, October 27, 1999, p. 24,291-24,308.  
Organization RE RTOP 665-25-31
- 613** Eckman, R. S.: The NASA Langley Interactive Modeling Project for Atmospheric Chemistry and Transport (IMPACT) General Circulation Model Overview and Recent Coupled Chemistry Simulations. Presented at 7th Canadian Middle Atmospheric Modeling Workshop, November 15-16, 1999, Toronto, Canada.  
Organization RE RTOP 291-01-61

- 614 Eckman, R. S.; Grose, W. L.; Al-Saadi, J. A.; Pierce, R. B.; and Fairlie, T. D.: Long-Term Chemical Modeling of the Middle Atmosphere: Results From the NASA Langley IMPACT General Circulation Model. Presented at Chapman Conference on Atmospheric Science Across the Stratopause, April 19-22, 1999, Annapolis, Maryland.  
Organization RE RTOP 291-01-61
- 615 Fairlie, T. D.; Pierce, R. B.; Al-Saadi, J. A.; Grose, W. L.; Russell, J. M., III; Proffitt, M. H.; and Webster, C. R.: The Contribution of Mixing in Lagrangian Photochemical Predictions of Polar Ozone Loss Over the Arctic in Summer 1997. *Journal of Geophysical Research*, Volume 104, No. D21, 1999, p. 26,597-26,610.  
Organization RE RTOP 622-56-09
- 616 Goldman, A.; Brown, L. R.; Spencer, M. N.; Chackerian, C., Jr.; Giver, L. P.; Rinsland, C. P.; Coudert, L. H.; Dana, V.; and Mandin, J-Y.: Nitric Oxide Line Parameters: Review of 1996 HITRAN Update and New Results. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 60, No. 5, 1998, p. 825-838.  
Organization RE RTOP 622-56-37
- 617 Goldman, A.; Chance, K. V.; Coffey, M. T.; Hannigan, J. W.; Mankin, W. G.; and Rinsland, C. P.: Improved Line Parameters for the  $X^1\Sigma^+$  (0,0) and (0,1) Bands of HI. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 60, No. 5, 1998, p. 869-874.  
Organization RE RTOP 622-68-51
- 618 Goldman, A.; Rinsland, C. P.; Flaud, J-M.; and Orphal, J.: CLIONO<sub>2</sub>: Spectroscopic Line Parameters and Cross-Sections in 1996 HITRAN. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 60, No. 5, 1998, p. 875-882.  
Organization RE RTOP 622-68-51
- 619 Goldman, A.; Rinsland, C. P.; Perrin, A.; and Flaud, J-M.: HNO<sub>3</sub> Line Parameters: 1996 HITRAN Update and New Results. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 60, No. 5, 1998, p. 851-861.  
Organization RE RTOP 622-68-51
- 620 Harvey, V. L.; Hitchman, M. H.; Pierce, R. B.; and Fairlie, T. D.: Tropical Aerosol in the Aleutian High. *Journal of Geophysical Research*, Volume 104, No. D6, 1999, p. 6281-6290.  
Organization RE RTOP 622-56-09
- 621 Kent, G. S.; Trepte, C. R.; and Lucker, P. L.: Long-Term Stratospheric Aerosol and Gas Experiment I and II Measurements of Upper Tropospheric Aerosol Extinction. *Journal of Geophysical Research*, Volume 103, No. D22, November 27, 1998, p. 28,863-28,874.  
Organization RE RTOP 621-45-20
- 622 Kent, G. S.; Trepte, C. R.; Skeens, K. M.; and Winker, D. M.: LITE an SAGE II Measurements of Aerosols in the Southern Hemisphere Upper Troposphere. *Journal of Geophysical Research*, Volume 103, No. D15, August 20, 1998, p. 19,111-19,127.  
Organization RE RTOP 621-45-20

- 623** Lee, K-M.; McInerney, J. M.; Sasano, Y.; Park, J. H.; Choi, W.; and Russell, J. M., III: Intercomparison of ILAS and HALOE Ozone at High Latitudes. *Journal of Geophysical Research*, Volume 26, No. 7, April 1, 1999, p. 835-838.  
 Organization RE RTOP 665-25-31
- 624** Levine, J. S.: Biomass Burning and Global Change. Presented at International Institute for Applied Systems Analysis (IIASA) Workshop, December 9-11, 1999, Laxenburg, Austria.  
 Organization RE RTOP 274-00-00
- 625** Levine, J. S.: The 1997 Fires in Kalimantan and Sumatra, Indonesia: Gaseous and Particulate Emissions. *Geophysical Research Letters*, Volume 26, No. 7, 1999, p. 815-818.  
 Organization RE RTOP 274-00-99
- 626** Levine, J. S.; Bobbe, T.; Ray, N.; Witt, R. G.; and Singh, A.: Wildland Fires and the Environment: A Global Synthesis. In *United Nations Environmental Program, UNEP/DEIA&EW/TR.99-1*, 1999, 50 p.  
 Organization RE RTOP 274-00-99
- 627** Lewellen, D. C.; Lewellen, W. S.; Poole, L. R.; DeCoursey, R. J.; Hansen, G.; and Hostetler, C. A.: Large-Eddy Simulations and Lidar Measurements of Vortex-Pair Breakup in Aircraft Wakes. *AIAA Journal*, Volume 36, No. 8, August 1998, p. 1439-1445.  
 Organization RE RTOP 621-45-20
- 628** Lingenfelter, G. S.; Grose, W. L.; Remsberg, E. E.; Fairlie, T. D.; and Pierce, R. B.: Comparison of Satellite and In Situ Ozone Measurements in the Lower Stratosphere. *Journal of Geophysical Research*, Volume 104, No. D11, June 20, 1999, p. 13,971-13,979.  
 Organization RE RTOP 291-01-61
- 629** Melfi, L. T., Jr.; Hansen, G.; Lucker, P. L.; Kent, G. S.; Poole, L. R.; Hostetler, C. A.; Vicroy, D. D.; and Newquist, L. A.: Wake Fluid Dynamics Experiment Observations and Analysis. Presented at 1999 Conference on Atmospheric Effects of Aviation, April 19-23, 1999, Virginia Beach, Virginia.  
 Organization RE RTOP 621-45-20
- 630** Mertens, C. J.; Mlynczak, M. G.; Garcia, R. R.; and Portmann, R. W.: A Detailed Evaluation of the Stratospheric Heat Budget. I: Radiation Transfer. *Journal of Geophysical Research*, Volume 104, No. D6, 1999, p. 6021-6038.  
 Organization RE RTOP 344-16-50
- 631** Mlynczak, M. G.: A New Perspective on the Molecular Oxygen and Hydroxyl Airglow Emissions. *Journal of Geophysical Research*, Volume 104, No. D22, 1999, p. 27,535-27,544.  
 Organization RE RTOP 344-16-50



- 632 Mlynczak, M. G.: Mesospheric Solar Energy Deposition Rates as Derived Directly From Airglow Observations. Presented at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG '99), July 18-30, 1999, Birmingham, United Kingdom.  
Organization RE RTOP 344-16-50
- 633 Mlynczak, M. G.: A Contemporary Assessment of the Mesospheric Energy Budget. Presented at Chapman Conference on Atmospheric Science Across the Stratopause, April 19-22, 1999, Annapolis, Maryland.  
Organization RE RTOP 344-16-50
- 634 Mlynczak, M. G.; Mertens, C. J.; Garcia, R. R.; and Portmann, R. W.: A Detailed Evaluation of the Stratospheric Heat Budget, 2, Global Radiation Balance and Diabatic Circulations. *Journal of Geophysical Research*, Volume 104, No. D6, 1999, p. 6039-6066.  
Organization RE RTOP 344-16-50
- 635 Mlynczak, M. G.; Zhou, D. K.; Lopez-Puertas, M.; Zaragoza, G.; and Russell, J. M., III: Kinetic Requirements for the Measurement of Mesospheric Water Vapor at 6.8  $\mu\text{m}$  Under Non-LTE Conditions. *Geophysical Research Letters*, Volume 26, No. 1, January 1999, p. 63-66.  
Organization RE RTOP 344-16-50
- 636 Olson, J. R.; Baum, B. A.; Cahoon, D. R., Jr.; and Crawford, J. H.: Frequency and Distribution of Forest, Savanna, and Crop Fires Over Tropical Regions During PEM-Tropics A. *Journal of Geophysical Research*, Volume 104, No. D5, March 20, 1999, p. 5865-5876.  
Organization RE RTOP 622-14-61
- 637 Park, J. H.: Comparison of HALOE and ILAS Data for Gases  $\text{O}_3$ ,  $\text{H}_2\text{O}$ , and  $\text{CH}_4$ . Presented at Improved Limb Atmospheric Spectrometer (ILAS) Science Team Meeting, December 6-10, 1999, Kyoto, Japan.  
Organization RE RTOP 622-65-63
- 638 Park, J. H.; Ko, M. K.; Jackman, C. H.; Plumb, R. A.; Kaye, J.; and Sage, K. H. (Editors): Models and Measurements Intercomparison II. NASA/TM-1999-209554, September 1999, 502 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209554.pdf>  
Organization RE RTOP 622-57-72
- 639 Perrin, A.; Flaud, J.-M.; Goldman, A.; Camy-Peyret, C.; Lafferty, W. J.; Arcas, P.; and Rinsland, C. P.:  $\text{NO}_2$  and  $\text{SO}_2$  Line Parameters: 1996 HITRAN Update and New Results. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 60, No. 5, 1998, p. 839-850.  
Organization RE RTOP 622-68-51

- 640** Perrin, A.; Rinsland, C. P.; and Goldman, A.: Spectral Parameters for the  $\nu_6$  Region of HCOOH and Its Measurement in the Infrared Tropospheric Spectrum. *Journal of Geophysical Research*, Volume 104, No. D15, August 20, 1999, p. 18,661-18,666.  
 Organization RE RTOP 622-68-51
- 641** Pierce, R. B.; Al-Saadi, J. A.; Fairlie, T. D.; Olson, J. R.; Eckman, R. S.; Grose, W. L.; Lingenfelter, G. S.; Grooss, J. U.; and Russell, J. M., III: Large-Scale Stratospheric Ozone Photochemistry and Transport During the POLARIS Campaign. *Journal of Geophysical Research*, Volume 104, No. D21, 1999, p. 26,525-26,546.  
 Organization RE RTOP 622-56-09
- 642** Pierce, R. B.; Grose, W. L.; Al-Saadi, J. A.; Fairlie, T. D.; and Eckman, R. S.: Dynamical Climatology of the NASA Langley Interactive Modeling Project for Atmospheric Chemistry and Transport (IMPACT) Model. Presented at Chapman Conference on Atmospheric Science Across the Stratopause, April 19-22, 1999, Annapolis, Maryland.  
 Organization RE RTOP 291-01-61
- 643** Pine, A. S.; and Rinsland, C. P.: The Role of Torsional Hot Bands in Modeling Atmospheric Ethane. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 62, No. 4, 1999, p. 445-458.  
 Organization RE RTOP 622-68-51
- 644** Platt, C. M.; Winker, D. M.; and Vaughan, M. A.: Backscatter to Extinction Ratios in the Top Layers of Tropical Mesoscale Convective Systems and Isolated Cirrus From LITE Observations. *Journal of Applied Meteorology*, Volume 38, No. 9, 1999, p. 1330-1345.  
 Organization RE RTOP 621-45-20
- 645** Poole, L. R.: Long-Term Satellite and Ground-Based Observations of Stratospheric Aerosol. Presented at First International Workshop on Long Term Changes and Trends in the Atmosphere, February 16-19, 1999, Pune, India.  
 Organization RE RTOP 621-45-20
- 646** Purcell, P. N.; Remsberg, E. E.; Russell, J. M., III; and Gordley, L. L.: Correlative Comparisons of Water Vapor With the Halogen Occultation Experiment. Presented at UARS Science Team Meeting, October 26-28, 1999, Virginia Beach, Virginia.  
 Organization RE RTOP 621-25-05
- 647** Remsberg, E. E.: Water Vapor in the Upper Troposphere/Lower Stratosphere (UT/LS) From Satellite Instruments. Presented at Chapman Conference on Water Vapor in the Climate System, October 12-15, 1999, Potomac, Maryland.  
 Organization RE RTOP 665-25-38

- 648** Rinsland, C. P.; Chu, W. P.; and Cunnold, D. M.: Solar Occultation Observations From the International Space Station: Deployment of a FTS for Atmospheric Chemistry and Trend Studies. Presented at Space Technology and Applications International Forum (STAIF '99), January 31–February 4, 1999, Albuquerque, New Mexico.  
 Organization RE RTOP 622-56-37
- 649** Rinsland, C. P.; Goldman, A.; Murcray, F. J.; Stephen, T. M.; Pougatchev, N. S.; Fishman, J.; David, S. J.; Blatherwick, R. D.; Novelli, P. C.; Jones, N. B.; and Connor, B. J.: Infrared Solar Spectroscopic Measurements of Free Tropospheric CO, C<sub>2</sub>H<sub>6</sub>, and HCN Above Mauna Loa, Hawaii: Seasonal Variations and Evidence for Enhanced Emissions From the Southeast Asian Tropical Fires of 1997-1998. *Journal of Geophysical Research*, Volume 104, No. D15, August 20, 1999, p. 18,667-18,680.  
 Organization RE RTOP 622-08-51
- 650** Roelle, P.; Aneja, V. P.; O'Connor, J.; Robarge, W. P.; Kim, D-S.; and Levine, J. S.: Measurement of Nitrogen Oxide Emissions From an Agricultural Soil With a Dynamic Chamber System. *Journal of Geophysical Research*, Volume 104, No. D1, January 20, 1999, p. 1609-1619.  
 Organization RE RTOP 274-00-99
- 651** Rothman, L. S.; *et al.*: The HITRAN Molecular Spectroscopic Database and HAWKS (HITRAN Atmospheric Workstation): 1996 Edition. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 60, No. 5, 1998, p. 665-710.  
 Organization RE RTOP 622-68-51
- 652** Russell, J. M., III; and Remsberg, E. E.: Observations of Dynamical and Solar Coupling in the Mesosphere and Stratosphere Provided by HALOE Observations. Presented at Chapman Conference on Atmospheric Science Across the Stratopause, April 19-22, 1999, Annapolis, Maryland.  
 Organization RE RTOP 621-25-05
- 653** Solomon, S.; Portmann, R. W.; Garcia, R. R.; Randel, W. J.; Wu, F.; Nagatani, R.; Gleason, J.; Thomason, L. W.; Poole, L. R.; and McCormick, M. P.: Ozone Depletion at Mid-Latitudes: Coupling of Volcanic Aerosols and Temperature Variability to Anthropogenic Chlorine. *Journal of Geophysical Research*, Volume 25, No. 11, June 1, 1998, p. 1871-1874.  
 Organization RE RTOP 621-45-20
- 654** Thomason, L. W.; Zawodny, J. M.; Iyer, N.; and Burton, S. P.: SAGE II Version 6.0. Presented at EOS/SPIE Symposium on Remote Sensing, September 20-24, 1999, Florence, Italy.  
 Organization RE RTOP 621-45-20

- 655** Wang, P-H.; Cunnold, D. M.; Zawodny, J. M.; Pierce, R. B.; Olson, J. R.; Kent, G. S.; and Skeens, K. M.: Seasonal Ozone Variations in the Isentropic Layer Between 330 and 380 K as Observed by SAGE II: Implications of Extratropical Cross-Tropopause Transport. *Journal of Geophysical Research*, Volume 103, No. D22, November 27, 1998, p. 28,647-28,659.  
 Organization RE RTOP 622-56-09
- 656** Williamson, C. K.; and De Young, R. J.: Reduction of PMT Signal-Induced Noise in Lidar Receivers Using an External Electrode. Presented at CLEO '99: 1999 Conference on Lasers and Electro-Optics, May 23-28, 1999, Baltimore, Maryland.  
 Organization RE RTOP 621-45-20
- 657** Williamson, C. K.; Ismail, S.; and Browell, E. V.: Spectroscopy of Water Vapor in the 930 nm to 960 nm Spectral Region. Presented at CLEO '99: 1999 Conference on Lasers and Electro-Optics, May 23-28, 1999, Baltimore, Maryland.  
 Organization RE RTOP 621-45-20
- 658** Winker, D. M.: Global Observations of Aerosols and Clouds From Combined Lidar and Passive Instruments to Improve Radiation Budget and Climate Studies. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 290-293.  
 Organization RE RTOP 621-45-20
- 659** Winker, D. M.: Prospects for the Characterization of Aerosol Radiative Forcing From PICASSO-CENA Observations. Presented at Sixth Scientific Conference of the International Global Atmospheric Chemistry Project, September 13-17, 1999, Bologna, Italy.  
 Organization RE RTOP 621-45-20
- 660** Winker, D. M.: Backscatter Lidar PICASSO-CENA. Presented at EOS/SPIE Laser Radar Techniques Conference, September 20-24, 1999, Florence, Italy.  
 Organization RE RTOP 259-40-01
- 661** Winker, D. M.; and Trepte, C. R.: Laminar Cirrus Observed Near the Tropical Tropopause by LITE. *Geophysical Research Letters*, Volume 25, No. 17, September 1, 1998, p. 3351-3354.  
 Organization RE RTOP 622-44-41
- 662** Yue, G. K.: A New Approach to the Retrieval of Aerosol Size Distributions From SAGE II Aerosol Extinction Spectra. *Journal of Geophysical Research*, Volume 104, No. D22, 1999, p. 27,491-27,506.  
 Organization RE RTOP 621-45-20
- 663** Zhou, D. K.; Mlynczak, M. G.; Lopez-Puertas, M.; and Zaragoza, G.: Evidence of Non-LTE Effects in Mesospheric Water Vapor From Spectrally-Resolved Emissions Observed by CIRRI-1A. *Geophysical Research Letters*, Volume 26, No. 1, January 1999, p. 67-70.  
 Organization RE RTOP 344-16-50

## Category 47 Meteorology and Climatology

- 664** Andreae, M. O.; and Fishman, J.: The Southern Tropical Atlantic Region Experiment (STARE): TRansport and Atmosphere Chemistry Near the Equator-Atlantic (TRACE-A) and Southern African Fire/Atmosphere Research Initiative (SAFARI). *AGACTivities Newsletter*, No. 15, December 1998, p. 3-6.  
Organization RE RTOP 622-56-61
- 665** Anklin, M.; Frohlich, C.; Wilson, R. C.; Lee, R. B., III; and Crommelynck, D.: Increase of the Total Solar Irradiance Since the Last Minimum in 1996. Presented at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG '99), July 18-30, 1999, Birmingham, United Kingdom. In Proceedings.  
Organization RE RTOP 229-01-02
- 666** Arduini, R. F.; Minnis, P.; and Young, D. F.: Parameterization of Cloud-Top Brightness Temperatures at Solar-IR and IR Wavelengths for Low Clouds and Fog. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
Organization RE RTOP 229-01-02
- 667** Ayers, J. K.; Heck, P. W.; Smith, W. L., Jr.; and Minnis, P.: Satellite-Derived Cloud Properties During FIRE ACE. Presented at American Meteorological Society 5th Conference on Polar Meteorology and Oceanography, January 10-15, 1999, Dallas, Texas. In Proceedings, p. 237-239.  
Organization RE RTOP 622-43-31
- 668** Ayers, J. K.; Minnis, P.; and Weaver, S. P.: Frequency of Contrail Occurrence From Surface Observations Over the United States. Presented at 1999 Conference on Atmospheric Effects of Aviation, April 19-23, 1999, Virginia Beach, Virginia.  
Organization RE RTOP 538-08-12
- 669** Balok, A. E.; and Fishman, J.: Comparison of SBUV Ozone Observations With Ozonesonde Measurements in the Troposphere and Lower Stratosphere. Presented at Sixth Scientific Conference of the International Global Atmospheric Chemistry Project, September 13-17, 1999, Bologna, Italy.  
Organization RE RTOP 622-56-61
- 670** Baum, B. A.; and Trepte, Q.: A Grouped Threshold Approach for Scene Identification in AVHRR Imagery. *Journal of Atmospheric and Oceanic Technology*, Volume 16, No. 6, 1999, p. 793-800.  
Organization RE RTOP 229-01-04

- 671** Baum, B. A.; Yang, P.; and Heymsfield, A. J.: Overlapping Cloud Layer Detection and Analysis Using MODIS Airborne Simulator Imagery. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 230-233.  
Organization RE                      RTOP 229-01-04
- 672** Berendes, T. A.; Kuo, K. S.; Logar, A. M.; Corwin, E. M.; Welch, R. M.; Baum, B. A.; Pretre, A.; and Weger, R. C.: A Comparison of Paired-Histogram, Maximum Likelihood Class Elimination, and Neural Network Approaches for Daylight Global Cloud Classification Using AVHRR Imagery. *Journal of Geophysical Research*, Volume 104, No. D6, 1999, p. 6199-6214.  
Organization RE                      RTOP 229-01-02
- 673** Bess, T. D.; Carlson, A. B.; Mackey, C. E.; Denn, F. M.; Wilber, A. C.; and Ritchey, N. A.: Satellite Radiation Data Sets for Global Environmental and Climate Change Studies. Presented at Eighth Education Symposium of the 79th Annual Meeting of the American Meteorological Society, January 10-15, 1999, Dallas, Texas.  
Organization RE                      RTOP 622-14-60
- 674** Bess, T. D.; Smith, G. L.; Bush, K. A.; and Rutan, D.: Intercomparison of ScaRaB and ERBS Monthly Mean Radiation Fluxes. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
Organization RE                      RTOP 229-01-02
- 675** Browell, E. V.; Ismail, S.; and Ferrare, R. A.: Airborne Lidar Measurements of Water Vapor, Aerosol, and Cloud Distributions for Climate Studies. Presented at Chapman Conference on Water Vapor in the Climate System, October 12-15, 1999, Potomac, Maryland.  
Organization RE                      RTOP 622-29-67
- 676** Bush, K. A.; Smith, G. L.; Rutan, D.; Barkstrom, B. R.; Lee, R. B., III; and Young, D. F.: The Earth Radiation Budget Satellite 13-Year Data Set. Presented at 10th Symposium on Global Changed Studies, January 10-15, 1999, Dallas, Texas. In Proceedings, p. 504-507.  
Organization RE                      RTOP 621-45-20
- 677** Bush, K. A.; Smith, G. L.; and Young, D. F.: The NOAA-9 Earth Radiation Budget Experiment Wide Field-of-View Data Set. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 95.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10ams-kab.pdf>  
Organization RE                      RTOP 291-01-60
- 678** Cahoon, D. R., Jr.; and Smith, G. L.: A Story of Perspective: Scales of Observation From the Ground to Satellites. Presented at International Workshop on Satellite Remote Sensing and Climate Simulations: Synergies and Limitations, September 20-24, 1999, Les Diablerets, Switzerland.  
Organization RE                      RTOP 229-01-02

- 679** Cahoon, D. R., Jr.; Wheeler, R. J.; and Rutledge, C. K.: BRDF Measurements From Aircraft: Past and Future Activities. Presented at 2nd International Workshop on Multiangular Measurements and Models, September 15-17, 1999, Ispra, Italy.  
 Organization RE RTOP 229-01-02
- 680** Chambers, L. H.: Theoretical Study of Scene Identification and Inversion of Satellite-Measured Radiance to Flux. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28-July 2, 1999, Madison, Wisconsin. In Proceedings, p. 587.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10ams-lhc.pdf>  
 Organization RE RTOP 229-01-02
- 681** Chambers, L. H.: The Shape of Bi-Directional Reflection From Nonhomogeneous Oceanic Boundary Layer Clouds. *Journal of Atmospheric and Oceanic Optics*, Volume 12, No. 3, March 1999, p. 222-226.  
 Organization RE RTOP 229-01-02
- 682** Chambers, L. H.: Effect of Orbital and Instrument Sampling Pattern on Error in Flux Retrievals. Presented at International Conference and Workshop on Radiation and Clouds, January 18-22, 1999, Meribel, France.  
 Organization RE RTOP 229-01-02
- 683** Chambers, L. H.; Barkstrom, B. R.; and Smith, G. L.: Degrees of Freedom of Anisotropic Functions for Non-Plane Parallel Clouds. Presented at 1999 Spring Meeting of the American Geophysical Union, June 1-4, 1999, Boston, Massachusetts. In EOS Transactions, Volume 80, No. 17, April 27, 1999, Supplement, p. S72.  
 Organization RE RTOP 229-01-02
- 684** Chambers, L. H.; and Green, C. J.: S'COOL Skywatchers for NASA. Presented at Australian Meteorological and Oceanographic Society Conference on Education: Weather, Ocean, Climate, July 5-9, 1999, Melbourne, Australia.  
 Organization RE RTOP 229-01-02
- 685** Chambers, L. H.; Young, D. F.; Green, C. J.; Haeffelin, M. P.; and Racel, A. M.: The CERES S'COOL Project: Operational But Not Routine. Presented at Eighth Education Symposium of the 79th Annual Meeting of the American Meteorological Society, January 10-15, 1999, Dallas, Texas. In Proceedings, p. 176-179.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-79ams-lhc.pdf>  
 Organization RE RTOP 229-01-02
- 686** Chapman, J. J.; Bockman, J.; Clark, V. M.; Hess, P. C.; and Grant, M. S.: Assessment of Selected CERES Electronic Component Survivability Under Simulated Overvoltage Conditions. Presented at SPIE's Earth Observing Systems IV, July 18-23, 1999, Denver, Colorado.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-spie-jjc.pdf>  
 Organization RE RTOP 229-01-71

- 687** Charlock, T. P.; Rose, F. G.; and Alberta, T. L.: An Observational Study of Cloud Forcing to the Atmospheric Absorption of SW Over Kansas and Oklahoma for January–August 1998. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-22-45
- 688** Charlock, T. P.; Rose, F. G.; Alberta, T. L.; Fu, Q.; Minnis, P.; Morcrette, J.-J.; and Wong, T.: Application of SGP Data to CERES Retrievals of Shortwave and Longwave Fluxes. Presented at ARM Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
 Organization RE RTOP 291-01-60
- 689** Chiacchio, M.; Francis, J.; and Stackhouse, P. W., Jr.: Evaluation and Development of Nighttime Arctic Cloud Base Algorithms for CERES. Presented at Eighth Education Symposium of the 79th Annual Meeting of the American Meteorological Society, January 10-15, 1999, Dallas, Texas.  
 Organization RE RTOP 621-82-52
- 690** Chyba, T. H.; Zenker, T.; Higdon, N. S.; Richter, D.; and Fishman, J.: Status of the Development of a Low-Cost Differential Absorption Lidar System for Tropospheric Ozone Studies. Presented at Sixth Scientific Conference of the International Global Atmospheric Chemistry Project, September 13-17, 1999, Bologna, Italy.  
 Organization RE RTOP 622-56-61
- 691** Clothiaux, E.; Ackerman, T. P.; Ackerman, S. A.; Minnis, P.; Miller, M. A.; Verlinde, J.; Di Girolamo, L.; Berendes, T. A.; Key, J.; Turner, D. D.; Frey, R. A.; and Bachmann, C. M.: Cloud Detection: One Possible Future in the DOE ARM and NASA EOS Time Frames. Presented at 10th American Meteorological Society Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-01-02
- 692** Currey, J. C.; and Green, R. N.: Validation of the CERES Shortwave Measurements Over Desert and Cloud Scenes. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10ams-jcc.pdf>  
 Organization RE RTOP 229-22-75
- 693** Doelling, D. R.; Ho, S.-P.; Smith, W. L., Jr.; and Minnis, P.: Initial Cloud Properties Derived From GMS Over the Tropical Western Pacific. Presented at Ninth Annual Atmospheric Radiation Measurement Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
 Organization RE RTOP 146-90-04
- 694** Doelling, D. R.; Smith, W. L., Jr.; Minnis, P.; and Valero, F. P.: Broadband Radiation Fluxes From Narrowband Radiances. Presented at International Conference and Workshop on Radiation and Clouds, January 18-22, 1999, Meribel, France. In Proceedings, p. WK-P-16,1,5.  
 Organization RE RTOP 146-90-04



- 695** Doelling, D. R.; Venkatesan, C.; Spangenberg, D. A.; and Minnis, P.: Scene Identification During FIRE ACE Using AVHRR Data. Presented at SHEBA/FIRE Workshop, January 25-29, 1999, Tucson, Arizona.  
 Organization RE RTOP 622-43-31
- 696** Doelling, D. R.; Venkatesan, C.; Spangenberg, D. A.; and Minnis, P.: Cloud Radiative Forcing During FIRE ACE Using AVHRR Data. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 622-43-31
- 697** Dong, X.; Mace, G. G.; Minnis, P.; and Young, D. F.: Arctic Stratus Cloud Properties Retrieved From Ground-Based Measurements and Validated by Aircraft Data. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
 Organization RE RTOP 229-01-02
- 698** Dong, X.; Minnis, P.; Ackerman, T. P.; Clothiaux, E.; and Long, C. N.: A 20-Month Database of Stratus Cloud Properties Generated From Ground-Based Measurements at the ARM SGP Site. Presented at Ninth Annual Atmospheric Radiation Measurement Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
 Organization RE RTOP 146-90-04
- 699** Dong, X.; Minnis, P.; Clothiaux, E.; Mace, G. G.; and Liljegren, J. C.: Comparison of Stratus Cloud Microphysical Retrievals That Utilize Radar, Microwave Radiometer, and Pyranometer Measurements. Presented at Ninth Annual Atmospheric Radiation Measurement Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
 Organization RE RTOP 146-90-04
- 700** Dong, X.; Minnis, P.; Sun-Mack, S.; Mace, G. G.; Clothiaux, E.; and Long, C. N.: Validation of CERES/VIRS Cloud Property Retrievals Using Ground-Based Measurements Obtained at the DOE ARM Sites. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-01-02
- 701** Duda, D. P.; Minnis, P.; Nguyen, L.; Doelling, D. R.; and Palikonda, R.: Estimates of Solar Cloud Radiative Forcing in Contrail Clusters Using GOES Imagery. Presented at 1999 Conference on Atmospheric Effects of Aviation, April 19-23, 1999, Virginia Beach, Virginia.  
 Organization RE RTOP 538-08-12
- 702** Fahey, D. W., *et al.* : Aviation-Produced Aerosols and Cloudiness. In *Aviation and the Global Atmosphere*, J. E. Penner, *et al.*, Editors, Cambridge University Press, 1999, p. 65-120.  
 Organization RE RTOP 538-08-12

- 703** Fenn, M. A.; *et al.*: Ozone and Aerosol Distributions and Air Mass Characteristics Over the South Pacific During the Burning Season. *Journal of Geophysical Research*, Volume 104, No. D13, July 20, 1999, p. 16,197-16,212.  
Organization RE RTOP 622-63-13
- 704** Ferrare, R. A.; *et al.*: LASE Measurements of Water Vapor, Aerosols, and Clouds During CAMEX-3. Presented at Optical Remote Sensing of the Atmosphere, June 7-10, 1999, Monterey, California.  
Organization RE RTOP 622-29-67
- 705** Ferrare, R. A.; Turner, D. D.; Heilman, L. A.; and Feltz, W. F.: CART Raman Lidar Retrievals of Aerosol Extinction and Relative Humidity Profiles. Presented at Optical Remote Sensing of the Atmosphere, June 7-10, 1999, Monterey, California.  
Organization RE RTOP 291-07-14
- 706** Ferrare, R. A.; Turner, D. D.; Heilman, L. A.; and Feltz, W. F.: CART Raman Lidar Retrievals of Aerosol Extinction and Relative Humidity Profiles. Presented at Atmospheric Radiation Measurement Science Team Meeting, September 28–October 1, 1999, Richland, Washington.  
Organization RE RTOP 291-07-14
- 707** Fishman, J.; and Balok, A. E.: Calculation of Daily Tropospheric Ozone Residuals Using TOMS and Empirically-Improved SBUV Measurements: Application to an Ozone Pollution Episode Over the Eastern United States. *Journal of Geophysical Research*, Volume 104, No. 23, 1999, p. 30,319-30,340.  
Organization RE RTOP 622-56-61
- 708** Fishman, J.; and Balok, A. E.: Satellite Studies of Widespread Ozone Pollution Episodes. Presented at Sixth Scientific Conference of the International Global Atmospheric Chemistry Project, September 13-17, 1999, Bologna, Italy.  
Organization RE RTOP 622-56-61
- 709** Fishman, J.; Ladd, I.; De Young, R. J.; Canright, S.; and Olson, J. R.: Surface Ozone Measurements: Exciting Science for All Seasons All the Time. Presented at Fourth Annual GLOBE Conference, July 19-23, 1999, Durham, New Hampshire.  
Organization RE RTOP 188-96-00
- 710** Frey, R. A.; Baum, B. A.; Menzel, W. P.; Ackerman, S. A.; Moeller, C. C.; and Spinhirne, J. D.: Validation of CO<sub>2</sub>-Slicing Cloud Heights Computed From MAS Radiance Data During SUCCESS. *Journal of Geophysical Research*, Volume 104, No. D20, October 27, 1999, p. 24,547-24,555.  
Organization RE RTOP 229-01-04
- 711** Gibson, G. G.: ERBE—14 Years of Earth Radiation Budget Measurements. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings.  
Organization RE RTOP 621-45-20

- 712** Gibson, G. G.; and Wielicki, B. A.: CERES: The Next Generation of Earth Radiation Budget Measurements. Presented at EOS/SPIE Symposium on Remote Sensing, September 20-24, 1999, Florence, Italy.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-eosspie-ggg.pdf>  
 Organization RE RTOP 229-01-02
- 713** Green, C. J.; and Chambers, L. H.: NASA's Summer S'COOL Workshop Enables Teacher Input for Learning Standards' Requirements. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
 Organization RE RTOP 229-01-02
- 714** Green, C. J.; and Chambers, L. H.: S'COOL Web Nets International Participation. Presented at National Science Teachers' Association Conference, March 25-28, 1999, Boston, Massachusetts.  
 Organization RE RTOP 622-14-60
- 715** Green, C. J.; and Chambers, L. H.: NASA's S'COOL Project Seeks Worldwide Communication of Observed Sky Conditions. Presented at 1999 Spring Meeting of the American Geophysical Union, June 1-4, 1999, Boston, Massachusetts.  
 Organization RE RTOP 229-01-02
- 716** Green, C. J.; and Chambers, L. H.: S'COOL Provides Research and Technological Involvement. Presented at Society for Information Technology and Teacher Education, March 1-4, 1999, San Antonio, Texas.  
 Organization RE RTOP 229-01-02
- 717** Green, C. J.; Chambers, L. H.; and Racel, A. M.: S'COOL Provides Research Opportunities and Current Data for Today's Technological Classroom. Presented at IEEE 1999 International Geoscience and Remote Sensing Symposium, June 28-July 2, 1999, Hamburg, Germany. In Proceedings, p. 2717-2718.  
 Organization RE RTOP 229-01-02
- 718** Green, R. N.: An Overview of the EOS-CERES Data Products. Presented at XIX Pacific Science Congress, July 4-9, 1999, Sydney, Australia.  
 Organization RE RTOP 291-01-60
- 719** Green, R. N.: An Overview of the ERBE and CERES Data Products and Associated Algorithms. Presented at IEEE 1999 International Geoscience and Remote Sensing Symposium, June 28-July 2, 1999, Hamburg, Germany.  
 Organization RE RTOP 291-01-60
- 720** Gupta, S. K.; Ritchey, N. A.; Wilber, A. C.; Whitlock, C. H.; Gibson, G. G.; and Stackhouse, P. W., Jr.: A Climatology of Surface Radiation Budget Derived From Satellite Data. *Journal of Climate*, Volume 12, No. 8, 1999, p. 2691-2710.  
 Organization RE RTOP 621-82-52

- 721** Gupta, S.; Wilber, A. C.; and Kratz, D. P.: Surface Emissivity Maps for Satellite Retrieval of the Longwave Radiation Budget. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 317-320.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10ams-skg.pdf>  
 Organization RE RTOP 229-01-02
- 722** Haeffelin, M. P.; Rutan, D.; Wong, T.; and Young, D. F.: Inter-Comparisons of ScaRAB/RESSURS and CERES/TRMM Unfiltered Radiance Products. Presented at International Conference and Workshop on Radiation and Clouds, January 18-22, 1999, Meribel, France.  
 Organization RE RTOP 291-01-60
- 723** Heck, P. W.; Minnis, P.; Young, D. F.; Arduini, R. F.; Nguyen, L.; Smith, W. L., Jr.; Ayers, J. K.; Doelling, D. R.; and Spangenberg, D. A.: Cloud Properties Derived From AVHRR During FIRE ACE. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 622-43-31
- 724** Heck, P. W.; Minnis, P.; Young, D. F.; Nguyen, L.; Smith, W. L., Jr.; Ayers, J. K.; Doelling, D. R.; and Spangenberg, D. A.: Cloud and Radiative Properties Derived Over the Arm NSA Domain From AVHRR Data. Presented at Ninth Annual Atmospheric Radiation Measurement Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
 Organization RE RTOP 146-90-04
- 725** Heck, P. W.; Smith, W. L., Jr.; Minnis, P.; and Young, D. F.: Multispectral Retrieval of Nighttime Cloud Properties for CERES, ARM, and FIRE. Presented at International Conference and Workshop on Radiation and Clouds, January 18-22, 1999, Meribel, France. In Proceedings, p. WK-P-03,1,4.  
 Organization RE RTOP 622-43-31
- 726** Hu, Y.; Wielicki, B. A.; Fu, Q.; Minnis, P.; Loeb, N. G.; Lin, B.; and Chambers, L. H.: Deep Convective Cloud Albedo From TRMM/CERES. Presented at International Conference and Workshop on Radiation and Clouds, January 18-22, 1999, Meribel, France. In Proceedings, p. WK2-0-17.  
 Organization RE RTOP 229-01-02
- 727** Ismail, S.; and Browell, E. V.: NASA Future Spaceborne Lidars. Presented at CLEO/Pacific Rim '99, August 30–September 3, 1999, Seoul, Korea.  
 Organization RE RTOP 622-29-26
- 728** Ismail, S.; Browell, E. V.; and Ferrare, R. A.: LASE Measurements of Water Vapor, Aerosols, and Clouds for Atmospheric Science Investigation. Presented at Conference on Lasers and Electro-Optics/Pacific Rim 1999, August 30–September 3, 1999, Seoul, Korea.  
 Organization RE RTOP 622-29-26

- 729** Ismail, S.; Browell, E. V.; Ferrare, R. A.; Kooi, S. A.; Clayton, M. B.; Fastig, S.; Brackett, V. G.; Harper, D.; Whiteman, D. N.; and Lauritsen, D.: LASE Measurements During CAMEX-3 to Characterize the Water Vapor and Aerosol Fields Associated With Hurricanes. Presented at IEEE 1999 International Geoscience and Remote Sensing Symposium, June 28–July 2, 1999, Hamburg, Germany.  
 Organization RE RTOP 622-29-26
- 730** Khaiyer, M. M.; Minnis, P.; Egli, L.; Mayor, S.; Nguyen, L.; Smith, W. L., Jr.; and Doelling, D. R.: Investigation of the Anisotropy of Surface-Emitted Longwave Radiation Using Satellite and Airborne Instrument Data. Presented at Ninth Annual Atmospheric Radiation Measurement (ARM) Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
 Organization RE RTOP 146-90-04
- 731** Kratz, D. P.; Priestley, K. J.; and Green, R. N.: Determining the Relationship Between the Total and Window Channel Nighttime Radiances for the CERES Instrument. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 37-39.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10ams-dpk.pdf>  
 Organization RE RTOP 229-01-02
- 732** Kratz, D. P.; and Rose, F. G.: Accounting for Molecular Absorption Within the Spectral Range of the CERES Window Channel. *Journal of Quantitative Spectroscopy and Radiative Transfer*, Volume 61, No. 1, 1999, p. 83-95.  
 Organization RE RTOP 229-01-02
- 733** Larar, A. M.; Roettker, W. A.; Puschell, J. J.; and Cook, W. B.: Fabry-Perot Interferometer for Geostationary-Based Observations of Tropospheric Ozone. Presented at Optical Spectroscopic Techniques and Instrumentation for Atmospheric and Space Research III, July 18-23, 1999, Denver, Colorado.  
 Organization RE RTOP 622-29-31
- 734** Lee, R. B., III; Alhajjah, A. Y.; Paden, J.; Pandey, D. K.; Priestley, K. J.; Thomas, S.; and Wilson, R. S.: On-Orbit Radiometric Calibrations of the Clouds and the Earth's Radiant Energy System (CERES) Sensors on the Tropical Rainfall Measuring Mission (TRMM) Spacecraft. Presented at 1999 Spring Meeting of the American Geophysical Union, June 1-4, 1999, Boston, Massachusetts. In EOS Transactions, Volume 80, No. 17, April 27, 1999, Supplement, p. S101.  
 Organization RE RTOP 229-01-02
- 735** Lee, R. B., III; Priestley, K. J.; Thomas, S.; Paden, J.; Pandey, D. K.; Al-Hajjah, A.; and Wilson, R. S.: On-Orbit Calibrations of the Clouds and the Earth's Radiant Energy System (CERES) Thermistor Bolometer Sensors. Presented at 7th International Conference on New Developments and Applications in Optical Radiometry, October 25-27, 1999, Madrid, Spain.  
 Organization RE RTOP 229-22-45

- 736** Lee, R. B., III; Priestley, K. J.; Thomas, S.; Paden, J.; Pandey, D. K.; Al-Hajjah, A.; and Wilson, R. S.: Ground Through On-Orbit Evaluations of the Clouds and the Earth's Radiant Energy System (CERES) Spacecraft Thermistor Bolometers; Measurement Precisions Using Built-In, Flight Calibration Systems. Presented at 1999 Conference on Characterization and Radiometric Calibration for Remote Sensing, November 9-11, 1999, Logan, Utah.  
 Organization RE RTOP 229-01-02
- 737** Lee, R. B., III; Priestley, K. J.; Wilson, R. S.; Al-Hajjah, A.; Paden, J.; Pandey, D. K.; and Thomas, S.: Total Solar Irradiance (TSI) Variability Measurements From Spacecraft Platforms. Presented at 1999 Conference on Characterization and Radiometric Calibration for Remote Sensing, November 9-11, 1999, Logan, Utah.  
 Organization RE RTOP 621-45-20
- 738** Lee, R. B., III; Priestley, K. J.; Wilson, R. S.; Al-Hajjah, A.; Paden, J.; Pandey, D. K.; and Thomas, S.: 1978-1998 Total Solar Irradiance (TSI) Variability Trends. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 284-287.  
 Organization RE RTOP 621-45-20
- 739** Lee, R. B., III; Thomas, S.; Priestley, K. J.; Barkstrom, B. R.; Paden, J.; Pandey, D. K.; Smith, G. L.; Al-Hajjah, A.; and Wilson, R. S.: Analyses of On-Orbit Determinations of the Clouds and the Earth's Radiant Energy System (CERES) Thermistor Bolometer Sensor Zero-Radiance Offsets. Presented at SPIE's 44th Annual Meeting, July 18-23, 1999, Denver, Colorado. Included in SPIE, Volume 3750, p. 482-493.  
 Organization RE RTOP 229-22-45
- 740** Lee, R. B., III; Thomas, S.; Wilson, R. S.; Priestley, K. J.; Paden, J.; Pandey, D. K.; and Al-Hajjah, A.: Ground Through On-Orbit-Transfer of the International Temperature Scale of 1990 (ITS-90) Radiometric Scale Using the CERES Thermistor Bolometers and Built-In, Flight Calibration Systems. Presented at EOS/SPIE Symposium on Remote Sensing, September 20-24, 1999, Florence, Italy. Included in SPIE, Volume 3870, p. 389-396.  
 Organization RE RTOP 229-22-45
- 741** Lee, R. B., III; and Wilson, R. S.: Variability Trends in the Solar Constant Determined From 1978-1999 Spacecraft Measurements. Presented at National Society of Black Physicists 1999 Meeting, March 19-22, 1999, Atlanta, Georgia.  
 Organization RE RTOP 621-45-20
- 742** Lee, R. B., III; Wilson, R. S.; Alhajjah, A. Y.; Paden, J.; Pandey, D. K.; and Thomas, S.: Total Solar Irradiance (TSI) Variability Measurements From Spacecraft Platforms. Presented at 22nd General Assembly of the International Union of Geodesy and Geophysics (IUGG '99), July 18-30, 1999, Birmingham, United Kingdom. In Proceedings.  
 Organization RE RTOP 229-01-02

- 743** Lin, B.; and Minnis, P.: Observed Relationships Between Land Surface Microwave Emissivity and Moisture Over the ARM Southern Great Plains Site. Presented at American Meteorological Society 13th Conference on Hydrology, January 10-15, 1999, Dallas, Texas.  
Organization RE RTOP 146-90-04
- 744** Long, C. N.; Ackerman, T. P.; Minnis, P.; and Smith, W. L., Jr.: A Comparison of Surface and Satellite Derived Cloud Fractions for the ARM SGP. Presented at Ninth Annual Atmospheric Radiation Measurement Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
Organization RE RTOP 146-90-04
- 745** Mayor, S.; Minnis, P.; Cahoon, D. R., Jr.; Doelling, D. R.; Khaiyer, M. M.; and Phipps, G. S.: Clear-Sky Bidirectional Reflectance Functions Derived From ARM-UAV MPIR and CERES Helicopter Data Over the ARM Southern Great Plains Site. Presented at Ninth Annual Atmospheric Radiation Measurement Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
Organization RE RTOP 146-90-04
- 746** Mayor, S.; Minnis, P.; Doelling, D. R.; Khaiyer, M. M.; and Cahoon, D. R., Jr.: Surface Bidirectional Reflectance Functions Derived From CERES Helicopter Data Over the ARM Southern Great Plains Site. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
Organization RE RTOP 229-01-02
- 747** McMaster, L. R.; and Ismail, S.: Use of Spaceborne Lidar for Atmospheric Science Studies. Presented at International Conference on Lasers and Applications, December 13-17, 1999, Quebec, Canada.  
Organization RE RTOP 622-43-31
- 748** Meerkotter, R.; Schumann, U.; Doelling, D. R.; Minnis, P.; Nakajima, T.; and Tsushima, Y.: Radiative Forcing by Contrails. *Annales Geophysicae*, Volume 17, No. 8, 1999, p. 1080-1094.  
Organization RE RTOP 538-08-12
- 749** Minnis, P.: Passive Spaceborne Remote Sensing of Clouds. Presented at 26th General Assembly of the International Union of Radio Science, August 13-21, 1999, Toronto, Canada.  
Organization RE RTOP 622-43-31
- 750** Minnis, P.; Cahoon, D. R., Jr.; Mayor, S.; and Doelling, D. R.: BRDFs Derived From Helicopter Data Over the ARM Southern Great Plains Site. Presented at 2nd International Workshop on Multiangular Measurements and Models, September 15-17, 1999, Ispra, Italy.  
Organization RE RTOP 229-01-02

- 751 Minnis, P.; Doelling, D. R.; Smith, W. L., Jr.; Nguyen, L.; and Ayers, J. K.: Validation of ARM TOA Radiative Fluxes From GOES-8 Using CERES Data. Presented at Ninth Annual Atmospheric Radiation Measurement Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
 Organization RE RTOP 146-90-04
- 752 Minnis, P.; Khaiyer, M. M.; Smith, W. L., Jr.; and Egli, L.: Anisotropy in Clear-Sky Infrared Radiances Over Land From Satellite and Aircraft Data. Presented at 2nd International Workshop on Multiangular Measurements and Models, September 15-17, 1999, Ispra, Italy.  
 Organization RE RTOP 229-01-02
- 753 Minnis, P.; Schumann, U.; and Doelling, D. R.: Estimates of Contrail-Induced Temperature Changes. Presented at 1999 Conference on Atmospheric Effects of Aviation, April 19-23, 1999, Virginia Beach, Virginia.  
 Organization RE RTOP 538-08-12
- 754 Minnis, P.; Schumann, U.; Doelling, D. R.; Gierens, K. M.; and Fahey, D. W.: Global Distribution of Contrail Radiative Forcing. *Geophysical Research Letters*, Volume 26, No. 13, July 1, 1999, p. 1853-1856.  
 Organization RE RTOP 538-08-12
- 755 Minnis, P.; Smith, W. L., Jr.; Young, D. F.; and Heck, P. W.: Diurnal Cycle of Cloud Microphysical Properties From GOES Over the ARM Southern Great Plains. Presented at Ninth Annual Atmospheric Radiation Measurement Science Team Meeting, March 22-26, 1999, San Antonio, Texas.  
 Organization RE RTOP 146-90-04
- 756 Minnis, P.; Young, D. F.; Spangenberg, D. A.; Heck, P. W.; Doelling, D. R.; Trepte, Q.; and Chen, Y.: Cloud Mask for CERES From VIRS on the TRMM Satellite. Presented at International Conference and Workshop on Radiation and Clouds, January 18-22, 1999, Meribel, France. In Proceedings, p. WK2-P-06-1,6.  
 Organization RE RTOP 622-14-60
- 757 Minnis, P.; Young, D. F.; Vedeler, J. A.; Smith, W. L., Jr.; Ayers, J. K.; Nguyen, L.; and Arduini, R. F.: Remote Sensing of Cloud Microphysical Properties From AVHRR Data During FIRE ACE. Presented at SHEBA/FIRE Workshop, January 25-29, 1999, Tucson, Arizona.  
 Organization RE RTOP 622-43-31
- 758 Minnis, P.; Young, D. F.; Wielicki, B. A.; Heck, P. W.; Dong, X.; Coakley, J. A., Jr.; Stowe, L. L.; and Welch, R.: CERES Cloud Properties Derived From Multispectral VIRS Data. Presented at EOS/SPIE Symposium on Remote Sensing, September 20-24, 1999, Florence, Italy.  
 Organization RE RTOP 229-01-02



- 759** Minnis, P.; Young, D. F.; Wielicki, B. A.; Heck, P. W.; Smith, W. L., Jr.; Murray, T. D.; and Sun-Mack, S.: Daytime Cloud Properties for CERES From VIRS on the TRMM Satellite. Presented at International Conference and Workshop on Radiation and Clouds, January 18-22, 1999, Meribel, France. In Proceedings, p. WK2-0-02-1,4.  
 Organization RE RTOP 622-14-60
- 760** Minnis, P.; Young, D. F.; Wielicki, B. A.; Heck, P. W.; Sun-Mack, S.; and Murray, T. D.: Cloud Properties Derived From VIRS for CERES. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-01-02
- 761** Mlynczak, M. G.; Garcia, R. R.; Roble, R. G.; and Hagan, M.: Solar Energy Deposition Rates in the Mesosphere Derived From Airglow Observations: Implications for the Ozone Deficit Problem. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
 Organization RE RTOP 229-01-02
- 762** Nguyen, L.; Minnis, P.; Ayers, J. K.; Smith, W. L., Jr.; and Ho, S-P.: Intercalibration of Geostationary and Polar Satellite Imager Data Using AVHRR, VIRS, and ATSR-2 Data. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-01-02
- 763** Paden, J.; Pandey, D. K.; Lee, R. B., III; and Priestley, K. J.: Self Validation of Radiance Measurements From the CERES (TRMM) Instrument. Presented at EOS/SPIE Symposium on Remote Sensing, September 20-24, 1999, Florence, Italy.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-eosspie-jp.pdf>  
 Organization RE RTOP 229-22-45
- 764** Paden, J.; Smith, G. L.; Lee, R. B., III; Pandey, D. K.; Priestley, K. J.; Thomas, S.; and Wilson, R. S.: Point Response Characteristics for the CERES/EOS-PM, FM3 & FM4 Instruments. Presented at SPIE's 44th Annual Meeting, July 18-23, 1999, Denver, Colorado. Included in SPIE Proceedings, Volume 3750, p. 395-406.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44spie-jp.pdf>  
 Organization RE RTOP 229-22-45
- 765** Palikonda, R.; Minnis, P.; Chakrapani, V.; and Mannstein, H.: Estimation of Contrail Coverage Over the United States From AVHRR. Presented at 1999 Conference on Atmospheric Effects of Aviation, April 19-23, 1999, Virginia Beach, Virginia.  
 Organization RE RTOP 538-08-12

- 766** Palikonda, R.; Minnis, P.; Doelling, D. R.; Heck, P. W.; Duda, D. P.; Mannstein, H.; and Schumann, U.: Potential Radiative Impact of Contrail Coverage Over Continental USA Estimated From AVHRR Data. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 181-184.  
 Organization RE RTOP 558-08-12
- 767** Pandey, D. K.; Lee, R. B., III; Paden, J.; Wilson, R. S.; and Thomas, S.: 1984-1999 Inferred Global Earth Atmospheric Temperature Trends From Earth Radiation Budget Satellite (ERBS) Active Cavity Radio-Metric Measurements. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
 Organization RE RTOP 621-45-20
- 768** Pougatchev, N. S.; Sachse, G. W.; Fuelberg, H. E.; Rinsland, C. P.; Chatfield, R. B.; Connors, V. S.; Jones, N. B.; Notholt, J.; Novelli, P. C.; and Reichle, H. G., Jr.: PEM-Tropics Carbon Monoxide Measurements in Historical Context. *Journal of Geophysical Research*, Volume 103, No. D15, August 20, 1998, p. 19,317-19,325.  
 Organization RE RTOP 622-63-06
- 769** Priestley, K. J.; Lee, R. B., III; Green, R. N.; Thomas, S.; and Wilson, R. S.: Radiometric Performance of the Clouds and the Earth's Radiant Energy System (CERES) Proto-Flight Model on the Tropical Rainfall Measuring Mission (TRMM) Spacecraft for 1998. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-01-02
- 770** Randel, W. J.; Stolarski, R. S.; Cunnold, D. M.; Logan, J. A.; Newchurch, M. J.; and Zawodny, J. M.: Trends in the Vertical Distributions of Ozone. *Science*, Volume 285, September 10, 1999, p. 1689-1692.  
 Organization RE RTOP 621-45-20
- 771** Schultz, M. G.; Jacob, D. J.; Logan, J. A.; Wang, Y.; Blake, D. R.; Bradshaw, J. P.; Gregory, G. L.; Sachse, G. W.; Heikes, B. G.; Shetter, R.; Singh, H. B.; and Talbot, R. W.: On the Origin of Tropospheric Ozone and NO<sub>x</sub> Over the Tropical South Pacific. *Journal of Geophysical Research*, Volume 104, No. D5, 1999, p. 5728-5844.  
 Organization RE RTOP 622-63-13
- 772** Smith, W. L., Jr.; Khaiyer, M. M.; Minnis, P.; and Egli, L.: The Anisotropy of Surface-Emitted Infrared Radiation Characterized With Satellite Data. Presented at International Conference and Workshop on Radiation and Clouds, January 18-22, 1999, Meribel, France. In Proceedings, p. WK2-P-17-1,4.  
 Organization RE RTOP 146-90-04

- 773** Smith, W. L., Jr.; Minnis, P.; Young, D. F.; and Chen, Y.: Satellite-Derived Land Surface Emissivity for ARM and CERES. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-01-02
- 774** Spangenberg, D. A.; Doelling, D. R.; Smith, W. L., Jr.; Venkatesan, C.; Nguyen, L.; Palikonda, R.; Minnis, P.; and Valero, F. P.: Cloud Radiative Forcing Over the Arctic. Presented at American Meteorological Society 5th Conference on Polar Meteorology and Oceanography, January 10-15, 1999, Dallas, Texas. In Proceedings, p. 216-220.  
 Organization RE RTOP 622-43-31
- 775** Spangenberg, D. A.; Smith, G. L.; and Young, D. F.: Temporal Sampling Errors of Monthly Mean Data Products From the Earth Radiation Budget Satellite Nonscanning Radiometers. Presented at 79th Annual Meeting of the American Meteorological Society, January 10-15, 1999, Dallas, Texas.  
 Organization RE RTOP 291-01-60
- 776** Stackhouse, P. W., Jr.: Satellites and Sensors: Satellite Missions Impacting the Estimation of Solar Irradiance. Presented at Second Workshop on Satellites for Solar Energy Assessments, February 3-4, 1999, Golden, Colorado.  
 Organization RE RTOP 621-82-52
- 777** Stackhouse, P. W., Jr.: Global Solar Insolation Estimations at 1 Degree Resolution. Presented at Second Workshop on Satellites for Solar Energy Assessments, February 3-4, 1999, Golden, Colorado.  
 Organization RE RTOP 621-82-52
- 778** Stackhouse, P. W., Jr.; Cox, S. J.; Gupta, S. K.; Dipasquale, R. C.; and Brown, D. E.: The WCRP/GEWEX Surface Radiation Budget Project Release 2: First Results at 1 Degree Resolution. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10amscar-pws2.pdf>  
 Organization RE RTOP 621-82-52
- 779** Stackhouse, P. W., Jr.; Pierce, R. B.; Baum, B. A.; Cahoon, D. R., Jr.; Harvey, V. L.; Cox, S. J.; Saunders, J. H.; and Chiacchio, M.: Characterizing the Clear and All-Sky Radiative Effects of Smoke From Large Scale Vegetation Fire Events Using Trajectory Modeling, Satellite Retrievals and Surface Observations. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
 Organization RE RTOP 622-44-60

- 780** Stackhouse, P. W., Jr.; Pierce, R. B.; Baum, B. A.; and DiPasquale, R. C.: Combining Satellite Data, Trajectory Modeling and Surface Insolation Measurements to Deduce the Direct Radiative Effect of Smoke Aerosol. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10amscar-pws.pdf>  
 Organization RE RTOP 622-44-60
- 781** Sun-Mack, S.; Chen, Y.; Murray, T. D.; Minnis, P.; and Young, D. F.: Visible Clear-Sky and Near-Infrared Surface Albedos Derived From VIRS Data for CERES. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-01-02
- 782** Thomas, S.; Lee, R. B., III; Priestley, K. J.; Barkstrom, B. R.; Paden, J.; Pandey, D. K.; Smith, G. L.; Wilson, R. S.; and Alhajah, A. Y.: Radiometric Performances of the Clouds and the Earth's Radiant Energy System (CERES) Instrument for the Tropical Rainfall Measuring Mission (TRMM) Using In-Flight Calibration Sources. Presented at IEEE 1999 International Geoscience and Remote Sensing Symposium, June 28–July 2, 1999, Hamburg, Germany. In Proceedings, p. 446-448.  
 Organization RE RTOP 229-22-45
- 783** Trepte, Q.; Chen, Y.; Sun-Mack, S.; Minnis, P.; Young, D. F.; Baum, B. A.; and Heck, P. W.: Scene Identification for the CERES Cloud Analysis Subsystem. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 229-01-02
- 784** Uttal, T.; Doelling, D. R.; Minnis, P.; and Orr, B. W.: Detection of Cloud Fraction Over the Arctic Ice Pack: Comparison of AVHRR Satellite Data With Ground-Based Cloud Radar. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
 Organization RE RTOP 622-43-31
- 785** Wang, P-H.; Minnis, P.; Wong, T.; Wielicki, B. A.; Vann, L. B.; Yue, G. K.; Kent, G. S.; and Lucker, P. L.: Satellite Observations of Tropical Clouds and Outgoing Longwave Radiation From 1985 to 1998: Preliminary Results. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
 Organization RE RTOP 229-01-02
- 786** Weckmann, S.; Young, D. F.; Wielicki, B. A.; Haeffelin, M. P.; Smith, G. L.; Green, R. N.; and Wong, T.: A Validation Technique for the CERES Monthly Mean Earth Radiation Scanner Data Using ERBS Nonscanner. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
 Organization RE RTOP 291-01-60

- 787** Wielicki, B. A.; Wong, T.; Young, D. F.; Barkstrom, B. R.; Lee, R. B., III; and Haeffelin, M. P.: Differences Between ERBE and CERES Tropical Mean Fluxes: ENSO, Climate Change or Calibration? Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 48-51.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10ams-baw.pdf>  
 Organization RE RTOP 229-01-02
- 788** Wilber, A. C.; Kratz, D. P.; and Gupta, S. K.: Surface Emissivity Maps for Use in Satellite Retrievals of Longwave Radiation. NASA/TP-1999-209362, August 1999, 35 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209362.pdf>  
 Organization RE RTOP 291-01-60
- 789** Wilber, A. C.; Smith, G. L.; and Stackhouse, P. W., Jr.: Regional Climatology and Surface Radiation Budget. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 524-527.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10ams-acw.pdf>  
 Organization RE RTOP 621-82-52
- 790** Wong, T.; Haeffelin, M. P.; Weckmann, S. A.; and Young, D. F.: Effects of 1998 ENSO Event on Outgoing Clear-Sky Longwave Radiation Over Tropical Oceans: Initial Results From CERES. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin. In Proceedings, p. 8-11.  
 Organization RE RTOP 229-01-02
- 791** Young, D. F.; Minnis, P.; and Arduini, R. F.: A Comparison of Cloud Microphysical Properties Derived Using VIRS 3.7  $\mu\text{m}$  and 1.6  $\mu\text{m}$  Data. Presented at American Meteorological Society 10th Conference on Atmospheric Radiation, June 28–July 2, 1999, Madison, Wisconsin.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10ams-dfy.pdf>  
 Organization RE RTOP 291-01-60
- 792** Young, D. F.; Minnis, P.; and Ayers, J. K.: Regional and Global Trends in Cirrus Coverage From Surface Observations. Presented at 1999 Conference on Atmospheric Effects of Aviation, April 19-23, 1999, Virginia Beach, Virginia.  
 Organization RE RTOP 538-08-12
- 793** Young, D. F.; Minnis, P.; Doelling, D. R.; Venkatesan, C.; and Spangenberg, D. A.: Radiation Budget of the Arctic During FIRE ACE From AVHRR Data. Presented at SHEBA/FIRE Workshop, January 25-29, 1999, Tucson, Arizona.  
 Organization RE RTOP 622-43-31
- 794** Young, D. F.; Minnis, P.; Wielicki, B. A.; and Heck, P. W.: Cloud Microphysical Properties Derived for the CERES Experiment. Presented at Progress in Electromagnetics Research Symposium, March 22-26, 1999, Taipei, Taiwan.  
 Organization RE RTOP 291-01-60

- 795** Yue, G. K.; Weisenstein, D. K.; Ko, M. K.; and Wang, P-H.: The Temporal Variation of Effective Radius Between 1992 and 1998 Observed by SAGE II and Its Comparison With Measurements and Modeling Results. Presented at 1999 Fall American Geophysical Union Meeting, December 13-17, 1999, San Francisco, California.  
Organization RE RTOP 621-45-84

## **Life Sciences**

### **Category 52 Aerospace Medicine**

- 796** Farmer, F. H.; Yost, W. T.; and Cantrell, J. H., Jr.: The Invention, Development and Commercialization of a Non-Invasive Intracranial Pressure Monitor. Presented at 36th Space Congress—Countdown to the Millennium, April 27-29, 1999, Cocoa Beach, Florida.  
Organization OA RTOP 251-10-01
- 797** Yost, W. T.; Cantrell, J. H., Jr.; and Taler, G.: Method of and Apparatus for Histological Human Tissue Characterization Using Ultrasound. U. S. Patent 6,007,489. Issued December 28, 1999.  
Organization RC

### **Category 53 Behavioral Sciences**

- 798** Trujillo, A. C.; and Schutte, P. C.: Non-Traditional Displays for Mission Monitoring. Presented at American Nuclear Society 1999 Winter Meeting and Embedded Topical Meetings, November 14-18, 1999, Long Beach, California. In Proceedings, Volume 81, p. 80-82.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-answm-act.pdf>  
Organization RD RTOP 522-14-11

### **Category 54 Man/System Technology and Life Support**

- 799** Cardullo, F. M.; Telban, R. J.; and Houck, J. A.: Motion Cueing Algorithms: A Human Centered Approach. Presented at Fifth International Symposium on New Aviation Technologies, August 17-21, 1999, Moscow, Russia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-5isnat-fmc.pdf>  
Organization RD RTOP 576-02
- 800** Latorella, K. A.: Investigating Interruptions: Implications for Flightdeck Performance. NASA/TM-1999-209707, October 1999, 309 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209707.pdf>  
Organization RD RTOP 522-14-11

- 801** Pope, A. T.; and Palsson, O. S.: Brainwave-Assisted Videogames for Training Individuals With Attention Deficit Hyperactivity Disorder. Presented at 30th Annual Meeting of the Association for Applied Psychophysiology and Biofeedback, April 7-11, 1999, Vancouver, Canada.  
 Organization RD RTOP 522-33-51
- 802** Stewart, J. E.; Graham, R. S.; Samareh, J. A.; Oberlander, E. J.; and Broaddus, W. C.: Creation of Anatomically Accurate Computer Aided Design (CAD) Solid Models From Medical Images. Presented at American Association of Neurological Surgeons Annual Meeting, April 24-29, 1999, New Orleans, Louisiana.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-aans-jes.pdf>  
 Organization RB RTOP 509-10-11
- 803** Telban, R. J.; Cardullo, F. M.; and Houck, J. A.: Developments in Human Centered Cueing Algorithms for Control of Flight Simulator Motion Systems. Presented at AIAA Modeling and Simulation Technologies Conference and Exhibit, August 9-11, 1999, Portland, Oregon. AIAA Paper No. 99-4328.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-4328.pdf>  
 Organization RD RTOP 576-02

## Mathematical and Computer Sciences

### Category 59 Mathematical and Computer Sciences (General)

- 804** Anon.: Semiannual Report—April 1, 1999 Through September 30, 1999. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209728, November 1999, 69 p.  
 Organization A RTOP 505-90-52
- 805** Anon.: Semiannual Report—October 1, 1998 Through March 31, 1999. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209333, May 1999, 53 p.  
 Organization A RTOP 505-90-52
- 806** Kincaid, R. K.; and Padula, S. L.: Sensor and Actuator Placement Problems. Presented at International Symposium on Locational Decisions, June 23-29, 1999, Coimbra, Portugal. In Proceedings.  
 Organization RB RTOP 522-32-31
- 807** Padula, S. L.; and Kincaid, R. K.: Applications of Combinatorial Optimization for Sensor and Actuator Placement. Presented at Third World Congress on Structural and Multidisciplinary Optimization, May 17-21, 1999, Amherst, New York. In Proceedings.  
 Organization RB RTOP 522-32-31

- 808** Padula, S. L.; and Kincaid, R. K.: Optimization Strategies for Sensor and Actuator Placement. NASA/TM-1999-209126, April 1999, 17 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209126.pdf>  
 Organization RB RTOP 522-32-31
- 809** Padula, S. L.; Korte, J. J.; Dunn, H. J.; and Salas, A. O.: Multidisciplinary Optimization Branch Experience Using iSIGHT Software. Presented at 1999 International iSIGHT Users' Conference, October 4-6, 1999, Chapel Hill, North Carolina.  
 Organization RA RTOP 509-10-11
- 810** Padula, S. L.; Korte, J. J.; Dunn, H. J.; and Salas, A. O.: Multidisciplinary Optimization Branch Experience Using iSIGHT Software. NASA/TM-1999-209714, November 1999, 19 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209714.pdf>  
 Organization RA RTOP 509-10-11

### Category 60 Computer Operations and Hardware

- 811** Baggag, A.; Atkins, H. L.; and Keyes, D. E.: Parallel Implementation of the Discontinuous Galerkin Method. Presented at International Parallel CFD 1999 Conference, May 23-26, 1999, Williamsburg, Virginia.  
 Organization RB RTOP 522-31-61
- 812** Baggag, A.; Atkins, H. L.; and Keyes, D. E.: Parallel Implementation of the Discontinuous Galerkin Method. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209546, ICASE Report No. 99-35, August 1999, 12 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-35.pdf>  
 Organization A RTOP 505-90-52
- 813** Baggag, A.; Atkins, H. L.; Ozturan, C.; and Keyes, D. E.: Parallelization of an Object-Oriented Unstructured Aeroacoustics Solver. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209098, ICASE Report No. 99-11, February 1999, 16 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-11.pdf>  
 Organization A RTOP 505-90-52
- 814** Belcastro, C. M.: Detecting Controller Malfunctions in Electromagnetic Environments: Part II—Design & Analysis of the Detector. Presented at 1999 IEEE International Conference on Control Applications, August 22-27, 1999, Kohala Coast, Hawaii.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ieeeicca-cmb.pdf>  
 Organization RD RTOP 522-14-21
- 815** Belcastro, C. M.; and Chang, B.-C.: Numerical Formulation of Parametric Linear Fractional Transformation (LFT) Models for Nonlinear Parameter-Dependent Systems. Presented at IEEE International Symposium on Computer Aided Control System Design, August 22-27, 1999, Kohala Coast, Hawaii.  
 Organization RD RTOP 522-33-41



- 816** Belcastro, C. M.; Morelli, E. A.; and Lim, K. B.: Computer-Aided Uncertainty Modeling of Nonlinear Parameter-Dependent Systems. Presented at IEEE International Symposium on Computer Aided Control System Design, August 22-27, 1999, Kohala Coast, Hawaii.  
Organization RD RTOP 522-33-41
- 817** Ciardo, G.; Luttggen, G.; and Siminiceanu, R.: Efficient Symbolic State-Space Construction for Asynchronous Systems. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209827, ICASE Report No. 99-50, December 1999, 43 p.  
ftp://ftp.icase.edu/pub/techreports/99/99-50.pdf  
Organization A RTOP 505-90-52
- 818** Cleaveland, R.; Luttggen, G.; and Natarajan, V.: Priority in Process Algebras. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208979, ICASE Report No. 99-3, January 1999, 48 p.  
ftp://ftp.icase.edu/pub/techreports/99/99-3.pdf  
Organization A RTOP 505-90-52
- 819** Dobrian, F.; Kumfert, G.; and Pothen, A.: The Design of Sparse Direct Solvers Using Object-Oriented Techniques. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209558, ICASE Report No. 99-38, September 1999, 37 p.  
ftp://ftp.icase.edu/pub/techreports/99/99-38.pdf  
Organization A RTOP 505-90-52
- 820** Dobrian, F.; Kumfert, G.; and Pothen, A.: Object-Oriented Design for Sparse Direct Solvers. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208978, ICASE Report No. 99-2, January 1999, 12 p.  
ftp://ftp.icase.edu/pub/techreports/99/99-2.pdf  
Organization A RTOP 505-90-52
- 821** Kumfert, G.; and Pothen, A.: An Object-Oriented Collection of Minimum Degree Algorithms: Design, Implementation, and Experiences. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208977, ICASE Report No. 99-1, January 1999, 15 p.  
ftp://ftp.icase.edu/pub/techreports/99/99-1.pdf  
Organization A RTOP 505-90-52
- 822** Luttggen, G.; Bhat, G.; and Cleaveland, R.: A Practical Approach to Implementing Real-Time Semantics. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208980, ICASE Report No. 99-4, January 1999, 33 p.  
ftp://ftp.icase.edu/pub/techreports/99/99-4.pdf  
Organization A RTOP 505-90-52

- 823** Luttgen, G.; and Carreno, V. A.: Analyzing Mode Confusion via Model Checking. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209332, ICASE Report No. 99-18, May 1999, 67 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-18.pdf>  
 Organization A RTOP 505-90-52
- 824** Luttgen, G.; Von Der Beeck, M.; and Cleaveland, R.: Statecharts via Process Algebra. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209713, ICASE Report No. 99-42, October 1999, 23 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-42.pdf>  
 Organization A RTOP 505-990-5
- 825** Ma, K-L.; and Crockett, T. W.: Parallel Visualization of Large-Scale Aerodynamics Calculations: A Case Study on the Cray T3E. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209709, ICASE Report No. 99-41, October 1999, 17 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-41.pdf>  
 Organization A RTOP 505-90-52
- 826** Malekpour, M. R.; and Torres, W.: Characterization of a Recoverable Flight Control Computer System. Presented at 1999 IEEE International Conference on Control Applications, August 22-27, 1999, Kohala Coast, Hawaii.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-icca-mrm.pdf>  
 Organization RD RTOP 522-14-21
- 827** Munoz, C.: Dependent Types and Explicit Substitutions. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209722, ICASE Report No. 99-43, November 1999, 31 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-43.pdf>  
 Organization A RTOP 505-90-52
- 828** Munoz, C.: Proof-Term Synthesis on Dependent-Type Systems via Explicit Substitutions. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209730, ICASE Report No. 99-47, November 1999, 33 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-47.pdf>  
 Organization A RTOP 505-90-52
- 829** Povitsky, A.: Wavefront Cache-Friendly Algorithm for Compact Numerical Schemes. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209708, ICASE Report No. 99-40, October 1999, 12 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-40.pdf>  
 Organization A RTOP 505-90-52

- 830** Weinstein, B.: Detecting Controller Malfunctions in Electromagnetic Environments: Part I—Modeling and Estimation of Nominal System Function. Presented at 1999 IEEE International Conference on Control Applications, August 22-27, 1999, Kohala Coast, Hawaii.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-icca-bw.pdf>  
Organization RD RTOP 522-14-21

### Category 61 Computer Programming and Software

- 831** Biedron, R. T.; Mehrotra, P.; Nelson, M. L.; Preston, F. S.; Rehder, J. J.; Rogers, J. L.; Rudy, D. H.; Sobieszczanski-Sobieski, J.; and Storaasli, O. O.: Compute as Fast as the Engineers Can Think!—Ultrafast Computing Team Final Report. NASA/TM-1999-209715, September 1999, 54 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209715.pdf>  
Organization RA RTOP 509-10-31
- 832** Hayhurst, K. J.; Dorsey, C. A.; Knight, J. C.; Leveson, N. G.; and McCormick, G. F.: Streamlining Software Aspects of Certification: Report on the SSAC Survey. NASA/TM-1999-209519, August 1999, 100 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209519.pdf>  
Organization RD RTOP 505-64-10
- 833** Holloway, C. M.: From Bridges and Rockets, Lessons for Software Systems. Presented at 17th International System Safety Conference, August 16-21, 1999, Orlando, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-17issc-cmh.pdf>  
Organization RD RTOP 522-33-31
- 834** Kaplan, J. A.; McManus, J. W.; and Bynum, W. L.: Automated Concurrent Blackboard System Generation in C++. NASA/TM-1999-209128, April 1999, 24 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209128.pdf>  
Organization RD RTOP 992-30-11
- 835** Macaraeg, M. G.; Lockard, D. P.; and Streett, C. L.: In Search of the Physics: NASA's Approach to Airframe Noise. Presented at SWING Aeroacoustic Workshop, October 28-29, 1999, Dresden, Germany.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-swing-mgm.pdf>  
Organization RB RTOP 538-03-13
- 836** Miller, S. P.; Greve, D. A.; Wilding, M. M.; and Srivas, M. K.: Formal Verification of the AAMP-FV Microcode. (NAS1-19704 Rockwell Collins, Inc., and NAS1-20334 SRI International.) NASA/CR-1999-208992, February 1999, 72 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208992.pdf>  
Organization RD RTOP 519-30-31

- 837** Miller, S. P.; and Potts, J. N.: Detecting Mode Confusion Through Formal Modeling and Analysis. (NAS1-19704 Rockwell Collins, Inc.) NASA/CR-1999-208971, January 1999, 69 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208971.pdf>  
 Organization RD RTOP 522-33-31
- 838** Munoz, C.; and Rushby, J.: Structural Embeddings: Mechanization With Method. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209360, ICASE Report No. 99-26, July 1999, 22 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-26.pdf>  
 Organization A RTOP 505-90-52
- 839** Noor, A. K.; and Malone, J. B. (*Compilers*): Intelligent Agents and Their Potential for Future Design and Synthesis Environment. NASA/CP-1999-208986, February 1999, 295 p.  
 Organization OI RTOP 282-10-01
- 840** Noor, A. K.; and Malone, J. B. (*Compilers*): Advanced Training Technologies and Learning Environments. NASA/CP-1999-209339, July 1999, 451 p.  
 Organization OI RTOP 282-10-01
- 841** Noor, A. K.; and Malone, J. B. (*Compilers*): Advanced Group Support Systems and Facilities. NASA/CP-1999-209823, December 1999, 166 p.  
 Organization OI RTOP 282-10-01
- 842** Rogers, J. L.: Optimum Actuator Selection With a Genetic Algorithm for Aircraft Control. Presented at Conference on Artificial Neural Network in Engineering, November 7-10, 1999, St. Louis, Missouri.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-cannie-jlr.pdf>  
 Organization RB RTOP 522-32-31
- 843** Rogers, J. L.: DeMAID—A Software Tool for Analyzing and Optimizing the DSM. Presented at Design Structure Matrix Research Workshop, September 27-28, 1999, Boston, Massachusetts.  
 Organization RA RTOP 522-31-81
- 844** Rogers, J. L.; McCulley, C. M.; and Bloebaum, C. L.: Optimizing the Process Flow for Complex Design Projects. *Design Optimization: International Journal for Product and Process Impro*, Volume 1, No. 3, 1999, p. 281-292.  
 Organization RB RTOP 522-31-81
- 845** Rogers, J. L.; and Salas, A. O.: Toward a More Flexible Web-Based Framework for Multidisciplinary Design. *Advances in Engineering Software*, Volume 30, No. 2, 1999, p. 439-444.  
 Organization RB RTOP 509-10-11

- 846** Rogers, J. L.; Salas, A. O.; and Weston, R. P.: A Web-Based Monitoring System for Multidisciplinary Design Projects. *Journal of Aircraft*, Volume 36, No. 1, January–February 1999, p. 266-274.  
 Organization RB RTOP 509-10-11
- 847** Srivas, M. K.; Hosabettu, R.; and Gopalakrishnan, G.: A Systematic Methodology for Verifying Superscalar Microprocessors. (NAS1-20334 SRI International.) NASA/CR-1999-208991, February 1999, 39 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208991.pdf>  
 Organization RD RTOP 519-50-11
- 848** Townsend, J. C.; Salas, A. O.; and Schuler, M. P.: Configuration Management of an Optimization Application in a Research Environment. NASA/TM-1999-209335, June 1999, 17 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209335.pdf>  
 Organization RB RTOP 505-10-11
- 849** Townsend, J. C.; Salas, A. O.; and Schuler, M. P.: Configuration Management of an Optimization Application in a Research Environment. Presented at Optimization in Industry II, June 6-11, 1999, Alberta, Canada. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209335.pdf>  
 Organization RB RTOP 509-10-11

## Category 62 Computer Systems

- 850** Cooper, E. G.; Patelli, R.; and Hayhurst, K. J.: Software Systems. *Aerospace America*, Volume 37, No. 12, 1999, p. 29.  
 Organization RD RTOP 522-35-21
- 851** Cooper, E. G.; Presson, J.; Rahmani, S.; Kohl, R.; and Hafen, G.: Software Systems. *Aerospace America 1998 Year in Review*, Volume 36, No. 12, December 1998, p. 54-55.  
 Organization RD RTOP 538-11-11
- 852** Mukkamala, R.; Siman-Tov, E.; and Galland, L. D.: An Object-Oriented Monitoring System for Management of Large Networks. Presented at 20th American Society for Engineering Management National Conference, October 21-23, 1999, Virginia Beach, Virginia.  
 Organization RF RTOP 992-16-05
- 853** Owre, S.; and Shankar, N.: The Formal Semantics of PVS. (NAS1-18969 SRI International.) NASA/CR-1999-209321, May 1999, 74 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209321.pdf>  
 Organization RD RTOP 519-50-11

- 854** Rushby, J.: Partitioning in Avionics Architectures: Requirements, Mechanisms, and Assurance. (NAS1-20334 SRI International.) NASA/CR-1999-209347, June 1999, 73 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209347.pdf>  
Organization RD RTOP 519-51-11

### Category 63 Cybernetics

- 855** Haley, P. J.; Soloway, D. I.; and Gold, B.: Real-Time Adaptive Control Using Neural Generalized Predictive Control. Presented at 1999 American Control Conference, June 2-4, 1999, San Diego, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-acc-pjh.pdf>  
Organization RD RTOP 522-33-11
- 856** Isidori, A.; Joshi, S. M.; and Kelkar, A. G.: Asymptotic Stability of Interconnected Passive Nonlinear Systems. *International Journal of Robust and Nonlinear Control*, Volume 9, No. 5, April 30, 1999, p. 261-273.  
Organization RD RTOP 522-33-11
- 857** Joshi, S. M.; and Kelkar, A. G.: Robust Passification via Optimal Sensor Blending and Control Allocation. Presented at 1999 American Control Conference, June 2-4, 1999, San Diego, California.  
Organization RD RTOP 522-33-11
- 858** Mao, Y.; Kelkar, A. G.; and Joshi, S. M.: Synthesis of Optimal Constant-Gain Positive-Real Controllers for Passive Systems. Presented at 1999 American Control Conference, June 2-4, 1999, San Diego, California. In Proceedings, Volume 1, p. 273-277.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-acc-ym.pdf>  
Organization RD RTOP 522-33-11
- 859** Morris, A. T.: Comparing Parameter Estimation Techniques for an Electrical Power Transformer Oil Temperature Prediction Model. NASA/TM-1999-208974, January 1999, 34 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm208974.pdf>  
Organization RD RTOP 519-50-51
- 860** Motter, M. A.: Control of the NASA Langley 16-Foot Transonic Tunnel With the Self-Organizing Map. Presented at 1999 American Control Conference, June 2-4, 1999, San Diego, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-acc-mam.pdf>  
Organization RD RTOP 522-33-11
- 861** White, A. L.: Two Matrix Norm Conditions for Asymptotic Stability in the Presence of Controller Disturbances. *IEEE Transactions on Automatic Control*, Volume 44, No. 1, January 1999, p. 169-172.  
Organization RD RTOP 522-14-21

## Category 64 Numerical Analysis

- 862** Alexandrov, N. M.: Multilevel Optimization With Surrogates in Wing Design. Presented at Sixth SIAM Conference on Optimization, May 10-12, 1999, Atlanta, Georgia.  
Organization RB RTOP 522-31-81
- 863** Alexandrov, N. M.: Using Variable-Fidelity Models in Multidisciplinary Design Optimization. Presented at Fourth International Congress on Industrial and Applied Mathematics, July 5-9, 1999, Edinburgh, Scotland.  
Organization RB RTOP 522-31-81
- 864** Alexandrov, N. M.; and Lewis, R. M.: Comparative Properties of Collaborative Optimization and Other Approaches to MDO. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209354, ICASE Report No. 99-24, July 1999, 17 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-24.pdf>  
Organization A RTOP 505-90-52
- 865** Alexandrov, N. M.; Lewis, R. M.; Gumbert, C. R.; Green, L. L.; and Newman, P. A.: Optimization With Variable-Fidelity Models Applied to Wing Design. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209826, ICASE Report No. 99-49, December 1999, 23 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-49.pdf>  
Organization A RTOP 505-90-52
- 866** Arian, E.; Batterman, A.; and Sachs, E. W.: Approximation of the Newton Step by a Defect Correction Process. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209099, ICASE Report No. 99-12, February 1999, 35 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-12.pdf>  
Organization A RTOP 505-90-52
- 867** Diskin, B.: Solving Upwind-Biased Discretizations II: Multigrid Solver Using Semicoarsening. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209355, ICASE Report No. 99-25, July 1999, 34 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-25.pdf>  
Organization A RTOP 505-90-52
- 868** Diskin, B.; and Thomas, J. L.: Solving Upwind-Biased Discretizations: Defect-Correction Iterations. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209106, ICASE Report No. 99-14, March 1999, 27 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-14.pdf>  
Organization A RTOP 505-90-52

- 869** Kennedy, C. A.; Carpenter, M. H.; and Lewis, R. M.: Low-Storage, Explicit Runge-Kutta Schemes for the Compressible Navier-Stokes Equations. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209349, ICASE Report No. 99-22, June 1999, 57 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-22.pdf>  
 Organization A RTOP 505-90-52
- 870** Lian, Y.; and Xu, K.: A Gas-Kinetic Scheme for Multimaterial Flows and Its Application in Chemical Reaction. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209364, ICASE Report No. 99-28, July 1999, 34 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-28.pdf>  
 Organization A RTOP 505-90-52
- 871** Liu, J-G.; and Shu, C-W.: A High Order Discontinuous Galerkin Method for 2D Incompressible Flows. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209361, ICASE Report No. 99-27, July 1999, 22 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-27.pdf>  
 Organization A RTOP 505-90-52
- 872** Llorente, I. M.; Diskin, B.; and Melson, N. D.: Plane Smoothers for Multiblock Grids: Computational Aspects. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209331, ICASE Report No. 99-17, May 1999, 29 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-17.pdf>  
 Organization A RTOP 505-90-52
- 873** Lui, S-H.; and Xu, K.: Entropy Analysis of Kinetic Flux Vector Splitting Schemes for the Compressible Euler Equations. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208981, ICASE Report No. 99-5, January 1999, 18 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-5.pdf>  
 Organization A RTOP 505-90-52
- 874** Mavriplis, D. J.: Large-Scale Parallel Viscous Flow Computations Using an Unstructured Multigrid Algorithm. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209724, ICASE Report No. 99-44, November 1999, 19 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-44.pdf>  
 Organization A RTOP 505-90-52
- 875** Mavriplis, D. J.; and Pirzadeh, S. Z.: Large-Scale Parallel Unstructured Mesh Computations for 3D High-Lift Analysis. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208999, ICASE Report No. 99-9, February 1999, 26 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-9.pdf>  
 Organization A RTOP 505-90-52



- 876** Nordstrom, J.; and Carpenter, M. H.: High Order Finite Difference Methods, Multidimensional Linear Problems and Curvilinear Coordinates. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209834, ICASE Report No. 99-54, December 1999, 35 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-54.pdf>  
 Organization A RTOP 505-90-52
- 877** Ryaben'kii, V. S.; Turchaninov, V. I.; and Tsynkov, S. V.: Long-Time Numerical Integration of the Three-Dimensional Wave Equation in the Vicinity of a Moving Source. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209350, ICASE Report No. 99-23, June 1999, 25 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-23.pdf>  
 Organization A RTOP 505-90-52
- 878** Samareh, J. A.: A Novel Shape Parameterization Approach. NASA/TM-1999-209116, May 1999, 15 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209116.pdf>  
 Organization RA RTOP 509-10-11
- 879** Samareh, J. A.: Status and Future of Geometry Modeling and Grid Generation for Design and Optimization. *Journal of Aircraft*, Volume 36, No. 1, January–February 1999, p. 97-104.  
 Organization RA RTOP 509-10-11
- 880** Sidilkover, D.: Factorizable Schemes for the Equations of Fluid Flow. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209345, ICASE Report No. 99-20, June 1999, 18 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-20.pdf>  
 Organization A RTOP 505-90-52
- 881** Smith, R. C.; and Ounaies, Z.: A Hysteresis Model for Piezoceramic Materials. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209368, ICASE Report 99-29, August 1999, 13 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-29.pdf>  
 Organization A RTOP 505-90-52
- 882** Smith, R. C.; and Ounaies, Z.: A Domain Wall Model for Hysteresis in Piezoelectric Materials. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209832, ICASE Report No. 99-52, December 1999, 31 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-52.pdf>  
 Organization A RTOP 505-90-52

- 883** Thomas, J. L.; Diskin, B.; and Brandt, A.: Textbook Multigrid Efficiency for the Incompressible Navier-Stokes Equations: High Reynolds Number Wakes and Boundary Layers. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209831, ICASE Report No. 99-51, December 1999, 27 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-51.pdf>  
 Organization A RTOP 505-90-52
- 884** Trosset, M. W.: The Krigifier: A Procedure for Generating Pseudorandom Nonlinear Objective Functions for Computational Experimentation. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209000, ICASE Interim Report 35, February 1999, 11 p.  
<ftp://ftp.icase.edu/pub/interim/Interim35.pdf>  
 Organization A RTOP 505-90-52
- 885** Wood, W. A.; and Kleb, W. L.: On Multi-Dimensional Unstructured Mesh Adaption. Presented at 14th AIAA Computational Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3254.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3254.pdf>  
 Organization RB RTOP 242-80-01
- 886** Wood, W. A.; and Kleb, W. L.: Diffusion Characteristics of Finite Volume and Fluctuation Splitting Schemes. *Journal of Computational Physics*, Volume 153, No. 2, August 1999, p. 353-377.  
 Organization RB RTOP 242-80-01
- 887** Xu, K.: Gas Evolution Dynamics in Godunov-Type Schemes and Analysis of Numerical Shock Instability. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-208985, ICASE Report No. 99-6, January 1999, 21 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-6.pdf>  
 Organization A RTOP 505-90-52
- 888** Xu, K.: A Gas-Kinetic Method for Hyperbolic-Elliptic Equations and Its Application in Two-Phase Fluid Flow. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209515, ICASE Report No. 99-31, August 1999, 20 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-31.pdf>  
 Organization A RTOP 505-90-52
- 889** Yamaleev, N. K.: Minimization of the Truncation Error by Grid Adaptation. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209729, ICASE Report No. 99-46, November 1999, 40 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-46.pdf>  
 Organization A RTOP 505-90-52

- 890** Yefet, A.; and Petropoulos, P. G.: A Non-Dissipative Staggered Fourth-Order Accurate Explicit Finite Difference Scheme for the Time-Domain Maxwell's Equations. (NAS1-97046 Institute for Computer Applications in Science and Engineering.) NASA/CR-1999-209514, ICASE Report No. 99-30, August 1999, 30 p.  
<ftp://ftp.icase.edu/pub/techreports/99/99-30.pdf>  
Organization A RTOP 505-90-52

### Category 66 Systems Analysis

- 891** Alexandrov, N. M.; and Lewis, R. M.: Comparative Properties of Collaborative Optimization and Other Approaches to MDO. Presented at First ASMO/UK/ISSMO Conference on Engineering Design Optimization, July 8-9, 1999, Ilkley, United Kingdom.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-asmo-nma.pdf>  
Organization RA RTOP 522-31-81
- 892** Garn, M. A.; Angster, S.; Johns, B.; Mazanek, D. D.; and Troutman, P. A.: International Space Station Immersive Accommodation Environment. Presented at IEEE Virtual Reality '99, March 13-17, 1999, Houston, Texas.  
Organization RA RTOP 906-43-01

### Physics

#### Category 70 Physics (General)

- 893** Cmar-Mascis, N. A.; Winfree, W. P.; and Parker, F. R.: Advanced Radiographic Methods for Visualization of Corrosion in Aircraft Structures. Presented at SPIE's International Symposium on Nondestructive Evaluation Techniques for Aging Infrastructure and Manufacturing, March 3-5, 1999, Newport Beach, California. In Proceedings, SPIE Volume 3586, p. 332-341.  
Organization RC RTOP 522-18-11
- 894** Marinetti, S.; Plotnikov, Y.; Winfree, W. P.; and Bragiotti, A.: Pulse Phase Thermography for Defect Detection and Visualization. Presented at SPIE's International Symposium on Nondestructive Evaluation Techniques for Aging Infrastructure and Manufacturing, March 3-5, 1999, Newport Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-spie-sm.pdf>  
Organization RC RTOP 538-02-11
- 895** Plotnikov, Y.; and Winfree, W. P.: Visualization of Subsurface Defects in Composites Using a Focal Plane Array Infrared Camera. Presented at Thermosense XXI, April 5-9, 1999, Orlando, Florida.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-thermo-yap.pdf>  
Organization RC RTOP 538-02-11

- 896 Winfree, W. P.; Cmar-Mascis, N. A.; and Parker, F. R.: Enhanced Imaging of Corrosion in Aircraft Structures With Reverse Geometry X-Ray®. Presented at Third Joint FAA/DoD/NASA Conference on Aging Aircraft, September 20-23, 1999, Albuquerque, New Mexico. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-3jcaa-wpw.pdf>  
Organization RC RTOP 522-18-11

### Category 71 Acoustics

- 897 Anastasi, R. F.; and Madaras, E. I.: Pulse Compression Techniques for Laser Generated Ultrasound. Presented at IEEE International Ultrasonic Symposium, October 17-20, 1999, Lake Tahoe, Nevada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ieeeius-rfa.pdf>  
Organization RC RTOP 538-13-12
- 898 Anderson, W. K.; and Bonhaus, D. L.: Airfoil Design on Unstructured Grids for Turbulent Flows. *AIAA Journal*, Volume 37, No. 2, February 1999, p. 185-191.  
Organization RB RTOP 522-31-61
- 899 Atkins, H. L.: Steps Toward a Robust High-Order Simulation Tool for Aerospace Application. Presented at International Symposium on Discontinuous Galerkin Methods, May 24-26, 1999, Newport, Rhode Island.  
Organization RB RTOP 522-31-61
- 900 Barisciano, L. P., Jr.: Broadband Transmission Loss Due to Reverberant Excitation. (NCC1-14 George Washington University, JIAFS.) NASA/CR-1999-209687, November 1999, 102 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209687.pdf>  
Organization RB RTOP 537-06-37
- 901 Bielak, G. W.; Premo, J. W.; and Hersh, A. S.: Advanced Turbofan Duct Liner Concepts. (NAS1-20090 Boeing Commercial Airplane Group and Hersh Acoustical Engineering, Inc.) NASA/CR-1999-209002, February 1999, 235 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr209002.pdf>  
Organization RB RTOP 538-03-12
- 902 Booth, E. R., Jr.; McCluer, M.; and Tadghighi, H.: Acoustic Characteristics of a Model Isolated Tiltrotor in DNW. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-55ahs-erb.pdf>  
Organization RB RTOP 576-03-14
- 903 Brentner, K. S.: Rotorcraft Noise Prediction—A Successful Application of Computational Aeroacoustics. Presented at Third Computational Aeroacoustic Workshop on Benchmark Problems, November 8-10, 1999, Cleveland, Ohio.  
Organization RB RTOP 712-20-21

- 904** Brooks, T. F.; and Humphreys, W. M., Jr.: Effect of Directional Array Size on the Measurement of Airframe Noise Components. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1958.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1958.pdf>  
 Organization RB RTOP 538-07-14
- 905** Burley, C. L.; Brooks, T. F.; Charles, B. D.; and McCluer, M.: Tiltrotor Aeroacoustic Code (TRAC) Prediction Assessment and Initial Comparisons With Tram Test Data. Presented at 25th European Rotorcraft Forum, September 14-16, 1999, Rome, Italy.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-25erf-clb.pdf>  
 Organization RB RTOP 538-07-14
- 906** Cantrell, J. H., Jr.: Ultrasonics. In *Encyclopedia of Applied Physics*, Volume 22, G. L. Trigg, ed., American Institute of Physics, 1998, p. 495-526.  
 Organization RC RTOP 522-32-11
- 907** Charles, B. D.: Implementation of a Trailing-Edge Flap Analysis Model in the NASA Langley CAMRAD.MOD1/HIRES Program. (NAS1-20096 The Boeing Company.) NASA/CR-1999-209327, May 1999, 83 p.  
 Organization RB RTOP 538-07-14
- 908** Chien, W. E.; Kraft, R. E.; and Syed, A. A.: Acoustic Treatment Design Scaling Methods, Volume 5: Analytical and Experimental Data Correlation. (NAS3-26617 Rohr, Inc./General Electric Aircraft Engines.) NASA/CR-1999-209120/VOL5, April 1999, 81 p.  
 Organization RB RTOP 538-03
- 909** Clark, L. R.; and Gerhold, C. H.: Inlet Noise Reduction by Shielding for the Blended Wing-Body Airplane. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1937.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1937.pdf>  
 Organization RB RTOP 522-11-21
- 910** Conner, D. A.; Marcolini, M. A.; Decker, W. A.; Cline, J. H.; Edwards, B. D.; Nicks, C. O.; and Klein, P. D.: XV-15 Tiltrotor Low Noise Approach Operations. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada. In Proceedings.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-55ahs-dac.pdf>  
 Organization RB RTOP 576-03-15
- 911** Cox, J. S.; Brentner, K. S.; and Rumsey, C. L.: Computation of Vortex Shedding and Radiated Sound for a Circular Cylinder: Subcritical to Transcritical Reynolds Numbers. *Theoretical and Computational Fluid Dynamics Journal*, Volume 12, No. 4, 1998, p. 233-253.  
 Organization RB RTOP 522-31-61

- 912** Dunn, M. H.; Tweed, J.; and Farassat, F.: The Application of a Boundary Integral Equation Method to the Prediction of Ducted Fan Engine Noise. *Journal of Sound and Vibration*, Volume 227, No. 5, November 1999, p. 1019-1048.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-99-josv-mhd.pdf>  
 Organization RB RTOP 538-03-12
- 913** Eure, K. W.; Juang, J-N.; and Silcox, R. J.: Direct Adaptive Generalized Predictive Control Using Gradient Descent. Presented at 137th Meeting of the Acoustical Society of America, March 14-20, 1999, Berlin, Germany.  
 Organization RC RTOP 538-03-14
- 914** Farassat, F.; and Dunn, M. H.: A Simple Derivation of the Acoustic Boundary Condition in the Presence of Flow. *Journal of Sound and Vibration*, Volume 224, No. 2, 1999, p. 384-386.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-99-josav-ff.pdf>  
 Organization RB RTOP 538-03-12
- 915** Farassat, F.; and Farris, M.: Verification and Analysis of Formulation 4 of Langley for the Study of Noise From High Speed Surfaces. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1881.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1881.pdf>  
 Organization RB RTOP 581-20-21
- 916** Farassat, F.; and Farris, M.: Acoustic Energy Estimates in Inhomogeneous Moving Media. Presented at 137th ASA/EAA Forum Acusticum 1999, March 14-20, 1999, Berlin, Germany.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-acusticum-ff.pdf>  
 Organization RB RTOP 538-03-12
- 917** Farassat, F.; and Farris, M.: The Mean Curvature of the Influence Surface of Wave Equation With Sources on a Moving Surface. *Mathematical Methods in the Applied Sciences*, Volume 22, No. 17, November 25, 1999, p. 1485-1503.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-99-mmitas-ff.pdf>  
 Organization RB RTOP 538-03-11
- 918** Hinton, Y. L.: Problems Associated With Statistical Pattern Recognition of Acoustic Emission Signals in a Compact Tension Fatigue Specimen. NASA/TP-1999-209351, ARL-TR-1691, July 1999, 19 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209351.pdf>  
 Organization RC RTOP 538-10-11
- 919** Johnston, P. H.; Boghosian, J. S.; and Hinders, M. K.: Angular Dependence of In-Plane Ultrasonic Properties of Unidirectional Carbon Fiber-Reinforced Composites. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
 Organization RC RTOP 522-18-11

- 920** Khorrami, M. R.; Berkman, M. E.; Choudhari, M. M.; Singer, B. A.; Lockard, D. P.; and Brentner, K. S.: Unsteady Flow Computations of a Slat With a Blunt Trailing Edge. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1805.  
 Organization RB RTOP 522-31-61
- 921** Kraft, R. E.: Acoustic Treatment Design Scaling Methods, Volume 4: Numerical Simulation of the Nonlinear Acoustic Impedance of a Perforated Plate Single-Degree-of-Freedom Resonator Using a Time-Domain Finite Difference Method. (NAS3-26617 General Electric Aircraft Engines.) NASA/CR-1999-209120/VOL4, April 1999, 50 p.  
 Organization RB RTOP 538-03
- 922** Kraft, R. E.; and Yu, J.: Acoustic Treatment Design Scaling Methods, Volume 1: Overview, Results, and Recommendations. (NAS3-26617 General Electric Aircraft Engines/Rohr, Inc.) NASA/CR-1999-209120/VOL1, April 1999, 26 p.  
 Organization RB RTOP 538-03
- 923** Kraft, R. E.; Yu, J.; and Kwan, H. W.: Acoustic Treatment Design Scaling Methods, Volume 2: Advanced Treatment Impedance Models for High Frequency. (NAS3-26617 General Electric Aircraft Engines/Rohr, Inc.) NASA/CR-1999-209120/VOL2, April 1999, 99 p.  
 Organization RB RTOP 538-03
- 924** Lockard, D. P.: An Overview of Computational Aeroacoustic Modeling at NASA Langley. Presented at 10th Thermal and Fluids Analysis Workshop, September 13-17, 1999, Huntsville, Alabama.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10tfaw-dpl.pdf>  
 Organization RB RTOP 522-31-61
- 925** Lockard, D. P.: In Search of the Physics: NASA's Approach to Airframe Noise. Presented at Swing Aeroacoustics Workshop, October 26–November 1, 1999, Dresden, Germany.  
 Organization RB RTOP 538-03-13
- 926** Lockard, D. P.; and Atkins, H. L.: An Application of the Quadrature-Free Discontinuous Galerkin Method. Presented at Third Computational Aeroacoustic Workshop on Benchmark Problems, November 8-10, 1999, Cleveland, Ohio.  
 Organization RB RTOP 522-31-61
- 927** Lyle, K. H.; Burley, C. L.; and Prichard, D. S.: A Comparison of Measured and Predicted XV-15 Tiltrotor Surface Acoustic Pressures. *Journal of the American Helicopter Society*, Volume 44, No. 4, 1999, p. 285-292.  
 Organization RB RTOP 538-03-14

- 928** Madaras, E. I.; and Anastasi, R. F.: Pseudo-Random Modulation of a Laser Diode for Generating Ultrasonic Longitudinal Waves. Presented at 26th Annual Review of Progress in QNDE, July 25-30, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-26qnde-eim.pdf>  
 Organization RC RTOP 538-13-12
- 929** Maestrello, L.: Control of Shock Loading From a Jet in the Presence of a Flexible Structure. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1975.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1975.pdf>  
 Organization RB RTOP 538-03-14
- 930** Maestrello, L.: Chaotic Response of Panel Vibrations Forced by Turbulent Boundary Layer and Sound. *AIAA Journal*, Volume 37, No. 3, March 1999, p. 289-295.  
 Organization RB RTOP 505-63-50
- 931** Mukhopadhyay, V.: Transonic Flutter Suppression Control Law Design, Analysis, and Wind-Tunnel Test Results. Presented at CEAS/AIAA/ICASE/NASA Langley International Forum on Aeroelasticity and Structural Dynamics 1999, June 22-25, 1999, Williamsburg, Virginia. In NASA/CP-1999-209136/PT 1, p. 381-392.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-ceas-vm.pdf>  
 Organization RB RTOP 509-10-11
- 932** Mukhopadhyay, V.: Transonic Flutter Suppression Control Law Design Using Classical and Optimal Techniques With Wind-Tunnel Test Results. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1396.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1396.pdf>  
 Organization RB RTOP 509-10-11
- 933** Muravyov, A.: Determination of Nonlinear Stiffness Coefficients for Finite Element Models With Application to the Random Vibration Problem. Presented at 1999 MSC Aerospace Users' Conference, June 7-10, 1999, Long Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-mscauc-aam.pdf>  
 Organization RB RTOP 537-06-49
- 934** Muravyov, A.; Turner, T. L.; Robinson, J. H.; and Rizzi, S. A.: A New Stochastic Equivalent Linearization Implementation for Prediction of Geometrically Nonlinear Vibrations. Presented at 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, April 12-15, 1999, St. Louis, Missouri. AIAA Paper No. 99-1376.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1376.pdf>  
 Organization RB RTOP 537-06-37



- 935** Palumbo, D. L.; Cabell, R. H.; Cline, J. H.; and Sullivan, B. M.: Flight Test of ASAC Aircraft Interior Noise Control System. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1933.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1933.pdf>  
 Organization RB RTOP 538-03-14
- 936** Ponton, M. K.; Ukeiley, L. S.; and Lee, S. W.: Aeroacoustic Data for a High Reynolds Number Axisymmetric Subsonic Jet. NASA/TM-1999-209336, May 1999, 89 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209336.pdf>  
 Organization RB RTOP 522-32-31
- 937** Powell, C. A.; and Preisser, J. S.: Research for Quieter Skies. *Aerospace America*, Volume 37, No. 8, August 1999, p. 26-29.  
 Organization RB RTOP 538-03-11
- 938** Prosser, W. H.; Hamstad, M. A.; Gary, J.; and O'Gallagher, A.: Reflections of AE Waves in Finite Plates: Finite Element Modeling and Experimental Measurements. *Journal of Acoustic Emission*, Volume 17, No. 1-2, June 1999, p. 37-47.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-99-joaep37-whp.pdf>  
 Organization RC RTOP 242-33-03
- 939** Prosser, W. H.; Hamstad, M. A.; Gary, J.; and O'Gallagher, A.: Finite Element and Plate Theory Modeling of Acoustic Emission Waveforms. *Journal of Nondestructive Evaluation*, Volume 18, No. 3, 1999, p. 83-90.  
 Organization RC RTOP 242-33-01
- 940** Prosser, W. H.; Perey, D. F.; Scales, E. F.; and Gorman, M. R.: Prototype Multiplexing System for AE Acquisition. Presented at 42nd Meeting of the Acoustic Emission Working Group, June 15-17, 1999, Princeton, New Jersey.  
 Organization RC RTOP 242-33-01
- 941** Robinson, J. H.: Shape Optimization of Cylindrical Shell for Interior Noise. Presented at OptiCON '99, October 14-15, 1999, Newport Beach, California.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-opticon-jhr.pdf>  
 Organization RB RTOP 538-03-14
- 942** Russell, J. W.: Development of an Empirical Method for Predicting Jet Mixing Noise of Cold Flow Rectangular Jets. (NAS1-96014 Lockheed Martin Engineering & Sciences.)  
 NASA/CR-1999-209719, November 1999, 97 p.  
 Organization RB RTOP 537-09-42
- 943** Santa Maria, O. L.: Two-Dimensional Fourier Transform Applied to Helicopter Flyover Noise. NASA/TM-1999-209114, March 1999, 64 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209114.pdf>  
 Organization RB RTOP 581-20-31

- 944 Santa Maria, O. L.; Farassat, F.; and Morris, P. J.: Two-Dimensional Fourier Transform Analysis of Helicopter Flyover Noise. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-55ahs-olism.pdf>  
 Organization RB RTOP 581-20-31
- 945 Seiner, J. M.; and Gilinsky, M. M.: Jet Nozzle Having Centerbody for Enhanced Exit Area Mixing. U. S. Patent 5,942,632. Issued July 20, 1999.  
 Organization RB
- 946 Seiner, J. M.; Ukeiley, L. S.; and Ponton, M. K.: Jet Noise Source Measurements Using PIV. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1869.  
 Organization RB RTOP 537-05-21
- 947 Silcox, R. J.: Developments in Active Control of Aircraft Interior Noise—Directions for Tonal and Broadband Noise Sources. Presented at 137th Meeting of the Acoustical Society of America, March 14-20, 1999, Berlin, Germany.  
 Organization RB RTOP 538-03-14
- 948 Singer, B. A.; Brentner, K. S.; Lockard, D. P.; and Lilley, G. M.: Simulation of Acoustic Scattering From a Trailing Edge. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0231.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0231.pdf>  
 Organization RB RTOP 522-31-61
- 949 Singer, B. A.; Lockard, D. P.; Brentner, K. S.; Khorrami, M. R.; Berkman, M. E.; and Choudhari, M. M.: Computational Aeroacoustic Analysis of Slat Trailing-Edge Flow. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1802.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1802.pdf>  
 Organization RB RTOP 522-31-61
- 950 Swanson, R. C., Jr.; Radespiel, R.; and Turkel, E.: On Some Numerical Dissipation Schemes. *Journal of Computational Physics*, Volume 147, No. 2, December 1998, p. 518-544.  
 Organization RB RTOP 522-31-61
- 951 Tadghighi, H.; and Rajagopalan, G.: A User's Manual for ROTTILT Solver: Tiltrotor Fountain Flow Field Prediction. (NAS1-20096 The Boeing Company.) NASA/CR-1999-208973, January 1999, 88 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/cr/NASA-99-cr208973.pdf>  
 Organization RB RTOP 576-03-14

- 952** Thomas, J. L.; Bonhaus, D. L.; Anderson, W. K.; Rumsey, C. L.; and Biedron, R. T.: An  $O(Nm^2)$  Plane Solver for the Compressible Navier-Stokes Equations. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0785.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0785.pdf>  
 Organization RB RTOP 505-50-53
- 953** Thomas, J. L.; Diskin, B.; and Brandt, A.: Distributed Relaxation Multigrid and Defect Correction Applied to the Compressible Navier-Stokes Equations. Presented at 14th AIAA Computational Fluid Dynamics Conference, June 28–July 1, 1999, Norfolk, Virginia. AIAA Paper No. 99-3334.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-3334.pdf>  
 Organization RB RTOP 522-31-61
- 954** Thomas, R. H.; Farassat, F.; Clark, L. R.; Gerhold, C. H.; Kelly, J. J.; and Becker, L. E.: A Mode Detection Method Using the Azimuthal Directivity of a Turbofan Model. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1954.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-1954.pdf>  
 Organization RB RTOP 538-03-12
- 955** Wat, J. K.; Yamamoto, K. J.; Golub, R. A.; and Garber, D. P.: Assessment of Lateral Attenuation of Aircraft Noise Based on F-15 Active Aircraft Flight Test Data. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1960.  
 Organization RB RTOP 537-09-42
- 956** Wat, J. K.; Yamamoto, K. J.; Golub, R. A.; and Garber, D. P.: Comparison of Jet Mixing Noise Predictions With Data at High Subsonic Mach Number. Presented at 5th AIAA/CEAS Aeroacoustics Conference, May 10-12, 1999, Bellevue, Washington. AIAA Paper No. 99-1969.  
 Organization RB RTOP 537-09-42
- 957** Watson, W. R.; Jones, M. G.; and Parrott, T. L.: Validation of an Impedance Eduction Method in Flow. *AIAA Journal*, Volume 37, No. 7, July 1999, p. 818-824.  
 Organization RB RTOP 522-31-61
- 958** Watson, W. R.; and Storaasli, O. O.: Application of NASA General-Purpose Solver to Large-Scale Computations in Aeroacoustics. Presented at 5th National Symposium on Large-Scale Analysis, Design and Intelligent Synthesis Environments, October 12-15, 1999, Williamsburg, Virginia.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-5slsadise-wrw.pdf>  
 Organization RB RTOP 538-03-11

- 959** Yamauchi, G. K.; Burley, C. L.; Mercker, E.; Pengel, K.; and JanikiRam, R.: Flow Measurements of an Isolated Model Tilt Rotor. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
Organization RB RTOP 576-03-14
- 960** Young, L. A.; Booth, E. R., Jr.; Yamauchi, G. K.; Botha, G. B.; and Dawson, S.: Overview of the Testing of a Small-Scale Proprotor. Presented at American Helicopter Society 55th Annual Forum and Technology Display, May 25-27, 1999, Montreal, Canada.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-55ahs-lay.pdf>  
Organization RB RTOP 576-03-14
- 961** Yu, J.; Kwan, H. W.; Echternach, D. K.; Kraft, R. E.; and Syed, A. A.: Acoustic Treatment Design Scaling Methods, Volume 3: Test Plans, Hardware, Results, and Evaluation. (NAS3-26617 Rohr, Inc./General Electric Aircraft Engines.) NASA/CR-1999-209120/VOL3, April 1999, 81 p.  
Organization RB RTOP 538-03

### Category 72 Atomic and Molecular Physics

- 962** Benner, D. C.; Devi, V. M.; Smith, M. A.; Rinsland, C. P.; Guelachvili, G.; Picque, N.; and Brown, L. R.: Temperature Dependence of Line Mixing in the  $\nu_3$  Band of  $^{12}\text{CH}_4$ . Presented at 54th International Symposium on Molecular Spectroscopy, June 14-19, 1999, Columbus, Ohio.  
Organization RE RTOP 622-67-65
- 963** Devi, V. M.; Benner, D. C.; Smith, M. A.; Rinsland, C. P.; and Brown, L. R.: Air-Broadening and Shift Coefficients and Line Mixing in the  $\nu_3$  Band of  $^{12}\text{CH}_3\text{D}$ . Presented at 54th International Symposium on Molecular Spectroscopy, June 14-19, 1999, Columbus, Ohio. In Proceedings, p. 179.  
Organization RE RTOP 622-67-65
- 964** Devi, V. M.; Benner, D. C.; Smith, M. A.; Rinsland, C. P.; and Brown, L. R.: Measurements of Air-Broadening and Pressure-Shift Coefficients and Line Mixing in the  $\nu_6$  Fundamental Band of  $^{12}\text{CH}_3\text{D}$ . Presented at 54th International Symposium on Molecular Spectroscopy, June 14-19, 1999, Columbus, Ohio. In Proceedings, p. 178.  
Organization RE RTOP 622-67-65
- 965** Devi, V. M.; Benner, D. C.; Smith, M. A.; Rinsland, C. P.; Guelachvili, G.; Picque, N.; and Brown, L. R.: Temperature Dependences of Pressure-Broadening, Pressure-Shifting and Line Mixing Due to Air in the  $\nu_3$  Band Region of  $^{12}\text{CH}_4$ . Presented at 16th Colloquium on High Resolution Molecular Spectroscopy, September 6-10, 1999, Dijon, France.  
Organization RE RTOP 622-67-65

**966** Exton, R. J.; Balla, R. J.; Shirinzadeh, B.; Hillard, M. E., Jr.; and Brauckmann, G. J.: Flow Visualization Using Fluorescence From Locally Seeded I<sub>2</sub> Excited by an ArF Excimer Laser. *Experiments in Fluids*, Volume 26, 1999, p. 335-339.

Organization RB

RTOP 242-80-01

**967** Smith, M. A.; Devi, V. M.; Benner, D. C.; and Rinsland, C. P.: Assigning Database Broadening and Shift Parameters: O<sub>3</sub> and CH<sub>3</sub>D. Presented at Fifth Colloquium on Atmospheric Spectroscopy Applications, September 1-3, 1999, Reims, France.

Organization RE

RTOP 622-67-65

**968** Smith, M. A.; Rinsland, C. P.; Devi, V. M.; and Benner, D. C.: Air-Broadening and Shift Coefficients and Line Mixing in the ν<sub>3</sub>, ν<sub>5</sub>, and ν<sub>6</sub> Bands of <sup>12</sup>CH<sub>3</sub>D. Presented at 16th Colloquium on High Resolution Molecular Spectroscopy, September 6-10, 1999, Dijon, France.

Organization RE

RTOP 622-67-65

#### Category 74 Optics

**969** Brown, T. L.; Wood, K.; Childers, B. A.; Cano, R. J.; Jensen, B. J.; and Rogowski, R. S.: Fiber Optic Sensors for Health Monitoring of Morphing Aircraft. Presented at SPIE 6th Annual International Symposium on Smart Structures and Materials, March 1-5, 1999, Newport Beach, California.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-6spie-tlb.pdf>

Organization RC

RTOP 552-32-11

**970** Goldschmidt, S.; and De Young, R. J.: An Ozone Differential Absorption Lidar (DIAL) Receiver System for Use on Unpiloted Atmospheric Vehicles. NASA/TM-1999-209716, November 1999, 40 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209716.pdf>

Organization RE

RTOP 274-00-99

#### Category 76 Solid-State Physics

**971** Barnes, N. P.: Improved Q-Switch Drivers. NASA Tech Brief LAR-14803, July 1999.

Organization RF

**972** Barnes, N. P.; and Walsh, B. M.: Amplified Spontaneous Emission Application to 0.946 μm Nd:YAG Lasers. *IEEE Journal of Quantum Electronics*, Volume 35, No. 1, January 1999, p. 101-110.

Organization RF

RTOP 258-70-21

**973** Barnes, N. P.; and Walsh, B. M.: Efficient Solid State Lasers. Presented at Advanced Study Institute Conference, June 17-July 1, 1999, Erice, Italy.

Organization RF

RTOP 258-70-21

- 974 Brockman, P.; Barker, B. C.; Koch, G. J.; Nguyen, D. C.; Britt, C. L.; and Petros, M.: Coherent Pulsed Lidar Sensing of Wake Vortex Position and Strength, Winds and Turbulence in the Terminal Area. Presented at 10th Biennial Coherent Laser Radar Technical and Applications Conference, June 28–July 2, 1999, Mount Hood, Oregon.  
Organization RF RTOP 576-02-11
- 975 Dausch, D. E.: Asymmetric 90° Domain Switching in Rainbow Actuators. *Ferroelectrics*, Volume 210, 1998, p. 31-45.  
Organization RC RTOP 522-32-11
- 976 Hooker, M. W.; and Wise, S. A.: On-Orbit Performance of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub> Thick Films. *Cryogenics*, Volume 38, No. 6, 1998, p. 665.  
Organization RC RTOP 956-17-00
- 977 Singh, U. N.: Diode-Pumped Pulsed Laser Transmitter for Coherent Wind Detection From Space. Presented at International Laser Sensing Symposium, September 6-8, 1999, Fukui, Japan.  
Organization RF RTOP 258-70-21
- 978 Singh, U. N.: 2-Micron Solid State Laser Transmitter for Wind Measurements From Space. Presented at 11th International Meeting on Electro-Optics and Microelectronics, November 8-12, 1999, Tel Aviv, Israel.  
Organization RF RTOP 258-70-21

### Category 77 Thermodynamics and Statistical Physics

- 979 Cramer, K. E.; and Winfree, W. P.: Method and Apparatus for the Portable Identification of Material Thickness and Defects Using Spatially Controlled Heat Application. U. S. Patent 6,000,844. Issued December 14, 1999.  
Organization RC

## Social Sciences

### Category 80 Social Sciences (General)

- 980 Ponton, M. K.; and Carr, P. B.: A Quasi-Linear Behavioral Model and an Application to Self-Directed Learning. NASA/TM-1999-209094, February 1999, 16 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209094.pdf>  
Organization RB RTOP 522-32-31

## Category 81 Administration and Management

- 981 Motley, A. E., III: Goals Analysis Procedure—Guidelines for Applying the Goals Analysis Process. Presented at 18th Digital Avionics Systems Conference, October 24-29, 1999, St. Louis, Missouri.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-18dasc-aem.pdf>  
Organization RF RTOP 282-10-01

## Category 82 Documentation and Information Science

- 982 Anon.: NASA Publications Guide for Authors. NASA/SP-1999-7602, November 1999, 42 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/spec/NASA-99-sp7602.pdf>  
Organization RF
- 983 Hopkins, R.; and Helmetsie, C. L.: Managing Multiple Media and Extraordinary Expectations. Presented at 14th Annual NASIG Conference, June 10-13, 1999, Pittsburgh, Pennsylvania.  
Organization SL RTOP 505-90
- 984 Machie, H. B.; and Stewart, S. H. (Compilers): NASA Langley Scientific and Technical Information Output—1998. NASA/TM-1999-209095, February 1999, 157 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209095.pdf>  
Organization SL
- 985 Maly, K.; Nelson, M. L.; and Zubair, M.: Smart Objects, Dumb Archives: A User-Centric, Layered Digital Library Framework. *D-Lib Magazine*, Volume 5, No. 3, March 1999.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-99-dlib-mln.pdf>  
Organization RF RTOP 505-90
- 986 Maly, K.; Zubair, M.; Liu, X-M.; Nelson, M. L.; and Zeil, S. J.: Structured Course Objects in a Digital Library. Presented at International Symposium on Digital Libraries (ISDL '99), September 28-29, 1999, Tsukuba, Japan.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-isdl-km.pdf>  
Organization RF RTOP 992-16-05
- 987 Nelson, M. L.: A Digital Library for the National Advisory Committee for Aeronautics. NASA/TM-1999-209127, April 1999, 15 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209127.pdf>  
Organization RF
- 988 Nelson, M. L.; and Maly, K.: Preserving the Pyramid of STI Using Buckets. Presented at Fourth International Conference on Grey Literature, October 4-5, 1999, Washington, DC.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-4icgl-mln.pdf>  
Organization RF RTOP 992-16-05

- 989** Nelson, M. L.; Maly, K.; Croom, D. R., Jr.; and Robbins, S. W.: Metadata and Buckets in the Smart Object, Dumb Archive (SODA) Model. Presented at Third IEEE Metadata Conference, April 6-7, 1999, Bethesda, Maryland. In Proceedings.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-3ieeemc-mln.pdf>

Organization RF

RTOP 505-90

- 990** Nelson, M. L.; Maly, K.; Zubair, M.; and Shen, S. N.: SODA: Smart Objects, Dumb Archives. Presented at Third European Conference on Research and Advanced Technology for Digital Libraries, September 22-24, 1999, Paris, France.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-3ecratdl-mln.pdf>

Organization RF

RTOP 992-16-05

## Space Sciences

### Category 91 Lunar and Planetary Exploration

- 991** Gupta, R. N.: Aerothermodynamic Analysis of Stardust Sample Return Capsule With Coupled Radiation and Ablation. Presented at 37th AIAA Aerospace Sciences Meeting and Exhibit, January 11-14, 1999, Reno, Nevada. AIAA Paper No. 99-0227.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/aiaa/NASA-aiaa-99-0227.pdf>

Organization RB

RTOP 242-80-01

### Category 92 Solar Physics

- 992** Tripathi, R. K.; Wilson, J. W.; and Cucinotta, F. A.: Nuclear Absorption Cross-Sections Using Medium Modified Nucleon-Nucleon Amplitudes. *Nuclear Instruments and Methods in Physics Research B*, Volume 145, No. 3, 1998, p. 277-282.

Organization RC

RTOP 962-21-00

- 993** Wilson, J. W.; Kim, M.; Shinn, J. L.; Tai, H.; Cucinotta, F. A.; Badhwar, G. D.; Badavi, F. F.; and Atwell, W.: Solar Cycle Variation and Application to the Space Radiation Environment. NASA/TP-1999-209369, September 1999, 36 p.

<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209369.pdf>

Organization RC

RTOP 199-45-16

### Category 93 Space Radiation

- 994** Cloudsley, M. S.; Heinbockel, J. H.; Shinn, J. L.; Singleterry, R. C., Jr.; Tripathi, R. K.; and Wilson, J. W.: An Improved Algorithm for Neutron Exposures. Presented at 10th Space Radiation Health Workshop, June 13-16, 1999, Upton, New York. In Proceedings, p. 99-101.

Organization RC

RTOP 111-10-95

- 995** Cucinotta, F. A.; Katz, R.; and Wilson, J. W.: Radial Distribution of Electron Spectra From High-Energy Ions. *Journal of Radiation Environmental Biophysics*, Volume 37, 1998, p. 259-265.

Organization RC

RTOP 111-10-50



- 996** Golovchenko, A. N.; Skvar, J.; Ili, R.; Sihver, L.; Bamblevski, V. P.; Tretyakova, S. P.; Schardt, D.; Tripathi, R. K.; and Wilson, J. W.: Fragmentation of 200 and 244 MeV/n Carbon Beams in Thick Tissue-Like Absorbers. *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions With Materials and Atoms*, Volume 159, No. 4, 1999, p. 233-240.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/jp/NASA-99-niam-ang.pdf>  
 Organization RC RTOP 199-45-16
- 997** Heilbronn, L. H.; Miller, J.; Zeitlin, C. J.; Cucinotta, F. A.; Townsend, L. W.; and Wilson, J. W.: Ground-Based Studies of GCR-Like Heavy Charged Particle Interactions in Shielding. Presented at Space Radiation Environment Workshop, November 1-3, 1999, Hampshire, England.  
 Organization RC RTOP 111-10-50
- 998** Kim, M. Y.; Shinn, J. L.; Singleterry, R. C., Jr.; Atwell, W.; and Wilson, J. W.: Solar Particle Event Exposures and Local Tissue Environments in Free Space and on Martian Surface. Presented at 10th Space Radiation Health Workshop, June 13-16, 1999, Upton, New York.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10srhw-myk.pdf>  
 Organization RC RTOP 111-10-95
- 999** Kim, M. Y.; Wilson, J. W.; Simonsen, L. C.; Cucinotta, F. A.; Atwell, W.; Badavi, F. F.; and Miller, J.: Contribution of High Charge and Energy (HZE) Ions During Solar-Particle Event of September 29, 1989. NASA/TP-1999-209320, May 1999, 20 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209320.pdf>  
 Organization RC RTOP 199-45-16
- 1000** Miller, J.; Heilbronn, L. H.; Zeitlin, C. J.; Cloudsley, M. S.; Cucinotta, F. A.; Townsend, L. W.; and Wilson, J. W.: ISS Crew Exposures to High Energy Heavy Ions and Neutrons—What In-Flight Measurements are Needed? Presented at Workshop on Radiation Monitoring for the International Space Station, November 3-5, 1999, Hampshire, England.  
 Organization RC RTOP 111-10-50
- 1001** Schimmerling, W.; Cucinotta, F. A.; and Wilson, J. W.: Requirements for Dosimetry on the International Space Station. Presented at Workshop on Radiation Monitoring for the International Space Station, November 3-5, 1999, Hampshire, England.  
 Organization RC RTOP 101-21-23
- 1002** Schimmerling, W.; Wilson, J. W.; Cucinotta, F. A.; and Kim, M.: Evaluation of Risk From Space Radiation With High-Energy Heavy Ion Beams. *Physica Medica*, Volume XIV, Supplement 1, July 1998, p. 29-38.  
 Organization RC RTOP 199-45-16
- 1003** Shinn, J. L.; Badhwar, G. D.; Xapsos, M. A.; Cucinotta, F. A.; and Wilson, J. W.: An Analysis of Energy Deposition in Tissue Equivalent Proportional Counter Onboard the Space Shuttle. *Radiation Measurements*, Volume 30, No. 1, 1999, p. 19-28.  
 Organization RC RTOP 199-45-16

- 1004** Shinn, J. L.; Cucinotta, F. A.; Simonsen, L. C.; Wilson, J. W.; Badavi, F. F.; Badhwar, G. D.; Miller, J.; Zeitlin, C. J.; Heilbronn, L. H.; Tripathi, R. K.; Cloudsley, M. S.; Heinbockel, J. H.; and Xapsos, M. A.: Validation of a Comprehensive Space Radiation Transport Code. *IEEE Transactions on Nuclear Science*, Volume 45, No. 6, December 1998, p. 2711-2719.  
Organization RC RTOP 199-45-16
- 1005** Shinn, J. L.; Cucinotta, F. A.; Singleterry, R. C., Jr.; Wilson, J. W.; Badavi, F. F.; Badhwar, G. D.; Miller, J.; Zeitlin, C. J.; Heilbronn, L. H.; Tripathi, R. K.; Cloudsley, M. S.; and Heinbockel, J. H.: A Radiation Shielding Code for Spacecraft and Its Validation. Presented at 44th International SAMPE Symposium and Exhibition, May 23-27, 1999, Long Beach, California. In Proceedings, Volume 44, p. 1299-1311.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-44sampe-jls.pdf>  
Organization RC RTOP 199-45-16
- 1006** Shinn, J. L.; Wilson, J. W.; Cucinotta, F. A.; Simonsen, L. C.; Miller, J.; Badhwar, G. D.; Singleterry, R. C., Jr.; Cloudsley, M. S.; Heinbockel, J. H.; and Norbury, J. W.: Space Radiation Shielding Code (HZETRN) Development. Presented at 1999 NASA/JPL Conference on Electronics for Extreme Environments, February 9-11, 1999, Pasadena, California.  
Organization RC RTOP 199-45-16
- 1007** Shinn, J. L.; Wilson, J. W.; Singleterry, R. C., Jr.; and Xapsos, M. A.: Implication of Microdosimetric Distributions in Estimation of Radiation Quality. *Health Physics*, Volume 76, No. 5, 1999, p. 510-515.  
Organization RC RTOP 537-09-21
- 1008** Singleterry, R. C., Jr.; Cloudsley, M. S.; and Heinbockel, J. H.: Enhanced Low Energy Neutron Transport Modeling for the High Charge and Energy Transport Code HZETRN. Presented at International Conference on Mathematics and Computation, Reactor Physics and Environmental Analysis in Nuclear Applications, September 27-30, 1999, Madrid, Spain.  
Organization RC RTOP 101-15-01
- 1009** Singleterry, R. C., Jr.; Shinn, J. L.; Wilson, J. W.; Thibeault, S. A.; Maiden, D. L.; Badavi, F. F.; Conroy, T.; and Braby, L. A.: Aircraft Radiation Shield Experiments—Preflight Laboratory Testing. NASA/TM-1999-209131, April 1999, 36 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tm/NASA-99-tm209131.pdf>  
Organization RC RTOP 199-45-16
- 1010** Singleterry, R. C., Jr.; Wilson, J. W.; Whitehead, A. H., Jr.; and Goldhagen, P.: Atmospheric Ionizing Radiation (AIR) Project Review. Presented at 10th Space Radiation Health Workshop, June 13-16, 1999, Upton, New York.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10srhw-rcs.pdf>  
Organization RC RTOP 537-09-42

- 1011** Tripathi, R. K.; Cucinotta, F. A.; and Wilson, J. W.: Accurate Universal Parameterization of Absorption Cross Sections III—Light Systems. *Nuclear Instruments and Methods in Physics Research B*, Volume 155, 1999, p. 349-356.  
Organization RC RTOP 101-21-23
- 1012** Tripathi, R. K.; Cucinotta, F. A.; and Wilson, J. W.: Medium Modified Nucleon-Nucleon Cross Sections in a Nucleus. *Nuclear Instruments and Methods in Physics Research B*, Volume 152, 1999, p. 425-431.  
Organization RC RTOP 101-15-01
- 1013** Tripathi, R. K.; Cucinotta, F. A.; and Wilson, J. W.: Universal Parameterization of Absorption Cross Sections. NASA/TP-1999-209726, December 1999, 22 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209726.pdf>  
Organization RC RTOP 111-10-50
- 1014** Tripathi, R. K.; Cucinotta, F. A.; and Wilson, J. W.: A Simple Method for Nucleon-Nucleon Cross Sections in a Nucleus. NASA/TP-1999-209125, April 1999, 16 p.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/tp/NASA-99-tp209125.pdf>  
Organization RC RTOP 199-45-16
- 1015** Wilson, J. W.; Cucinotta, F. A.; Schimmerling, W.; and Kim, M. Y.: Impact of Track Structure Effects on Shielding and Dosimetry. Presented at First Biennial Space Biomedical Investigators' Workshop, January 11-13, 1999, League City, Texas.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-1bsbiw-jww.pdf>  
Organization RC RTOP 962-21-00
- 1016** Wilson, J. W.; Cucinotta, F. A.; Shinn, J. L.; Simonsen, L. C.; Dubey, R. R.; Jordan, W.; Jones, T. D.; Chang, C. K.; and Kim, M. Y.: Shielding From Solar Particle Event Exposures in Deep Space. *Radiation Measurements*, Volume 30, 1999, p. 361-382.  
Organization RC RTOP 101-21-23
- 1017** Wilson, J. W.; Kim, M. Y.; Cloudsley, M. S.; Heinbockel, J. H.; Tripathi, R. K.; Singleterry, R. C., Jr.; Shinn, J. L.; and Suggs, R.: Mars Surface Ionizing Radiation Environment: Need for Validation. Presented at MARS 2001 Workshop, October 2-4, 1999, Houston, Texas. In Proceedings, p. 112-114.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-marsw-jww.pdf>  
Organization RC RTOP 110-10-50
- 1018** Wilson, J. W.; Shinn, J. L.; Badhwar, G. D.; Cucinotta, F. A.; Badavi, F. F.; and Miller, J.: Space Flight Validation of the HZETRN Radiation Shielding Code. Presented at Workshop on Radiation Monitoring for the International Space Station, November 3-5, 1999, Hampshire, England.  
Organization RC RTOP 111-10-50

- 1019** Wilson, J. W.; Shinn, J. L.; Singleterry, R. C., Jr.; Badavi, F. F.; Badhwar, G. D.; Reitz, G.; Beaujean, R.; and Cucinotta, F. A.: Spaceflight Validation of HZETRN Code. Presented at 10th Space Radiation Health Workshop, June 13-16, 1999, Upton, New York.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-10srhw-jww.pdf>  
Organization RC RTOP 111-10-95
- 1020** Wilson, J. W.; Simonsen, L. C.; Shinn, J. L.; Kim, M-H.; Cucinotta, F. A.; Badavi, F. F.; and Atwell, W.: Astronaut Exposures to Ionizing Radiation in a Lightly-Shielded Spacesuit. Presented at 29th International Conference on Environmental Systems, July 12-15, 1999, Denver, Colorado. SAE Paper No. 1999-01-2173.  
<http://techreports.larc.nasa.gov/ltrs/PDF/1999/mtg/NASA-99-29ices-jww.pdf>  
Organization RC RTOP 199-45-16

## General

### Category 99 General

- 1021** Anon.: NASA Langley Highlights—1998. NASA/TM-1999-209363, August 1999, 79 p.  
<http://larcpubs.larc.nasa.gov/randt/1998>  
Organization SH
- 1022** Grant, W. B.: Summary of the 19th International Laser Radar Conference. *Photonics Spectra*, Volume 32, No. 9, September 1998, p. 43-44.  
Organization RE RTOP 538-08-17

## Author Index

### A

Abdol-Hamid, K. S.: 81  
Abedin, M. N.: 514  
Abhiraman, A. S.: 349  
Ackerman, S. A.: 691, 710  
Ackerman, T. P.: 691, 698, 744  
Adamovsky, G.: 485  
Ade, P. A.: 592  
Akgun, M. A.: 407  
Al-Hajjah, A.: 735, 736, 737, 738, 739, 740  
Al-Saadi, J. A.: 602, 614, 615, 641, 642  
Alberta, T. L.: 687, 688  
Alexandrov, N. M.: 862, 863, 864, 865, 891  
Alhajjah, A. Y.: 734, 742, 782  
Alltop, J. L.: 592  
Alter, S. J.: 47, 430, 455  
Alter-Gartenberg, R.: 480  
Ambur, D. R.: 245, 327, 519, 520, 521, 522, 523, 524, 551, 556, 557, 572  
Amer, T. R.: 468, 469, 490, 491  
Amundsen, R. M.: 408  
Anastasi, R. F.: 897, 928  
Anders, J. B., Jr.: 17  
Anders, S. G.: 18  
Anderson, B. E.: 588, 593, 598, 601, 611  
Anderson, K.: 16  
Anderson, W. K.: 17, 898, 952  
Andreae, M. O.: 664  
Andrisani, D., II: 182, 193  
Aneja, V. P.: 650  
Angster, S.: 892  
Anklin, M.: 665  
Annett, M. S.: 577, 578  
Anon.: 804, 805, 982, 1021  
Antaki, J.: 395  
Antol, J.: 215, 220  
Arbocz, J.: 525  
Arcas, P.: 639  
Arduini, R. F.: 666, 723, 757, 791  
Arian, E.: 866  
Arrington, G. L.: 240  
Arya, S. P.: 91, 101  
Asbury, S. C.: 19, 20, 34  
Assadi, M.: 569

Atkins, H. L.: 1, 11, 21, 811, 812, 813, 899, 926  
Atlas, E.: 598  
Atwell, W.: 993, 998, 999, 1020  
Auslender, A. H.: 172, 179, 180, 459  
Aust, J. F.: 337  
Ayers, J. K.: 667, 668, 723, 724, 751, 757, 762, 792

### B

Bachmann, C. M.: 691  
Bacon, B. J.: 189  
Badavi, F. F.: 993, 999, 1004, 1005, 1009, 1018, 1019, 1020  
Badhwar, G. D.: 993, 1003, 1004, 1005, 1006, 1018, 1019  
Baggag, A.: 21, 811, 812, 813  
Bagwell, D. R.: 92, 93  
Baker, D. J.: 242, 522, 570  
Baker, D. N.: 603  
Bakos, R. J.: 173  
Balakumar, P.: 433, 434  
Balepin, V.: 239  
Balla, R. J.: 503, 505, 966  
Ballin, M. G.: 87, 99  
Balok, A. E.: 669, 707, 708  
Bamblevski, V. P.: 996  
Banks, D. W.: 22  
Bar-Cohen, Y.: 338, 378  
Baran, A. J.: 592  
Barisciano, L. P., Jr.: 900  
Barker, B. C.: 974  
Barker, L. K.: 88  
Barkstrom, B. R.: 676, 683, 739, 782, 787  
Barnes, N. P.: 470, 471, 500, 971, 972, 973  
Barnwell, R. W.: 61  
Barrick, J. D.: 586, 595, 611  
Barros, T.: 200  
Bartels, R. E.: 112, 113  
Bartram, S. M.: 477  
Batterman, A.: 866  
Bauer, S. X.: 22, 85  
Baum, B. A.: 636, 670, 671, 672, 710, 779, 780, 783  
Beaujean, R.: 1019

- Beck, F. B.: 110  
 Becker, L. E.: 954  
 Belcastro, C. M.: 814  
 Belcastro, C. M.: 815, 816  
 Bell, J. H.: 472  
 Belvin, H. L.: 262, 339, 341, 342  
 Belvin, W. K.: 163  
 Bement, L. J.: 221  
 Bendura, R. J.: 600  
 Benner, D. C.: 962, 963, 964, 965, 967, 968  
 Bennett, J. E.: 341, 342  
 Bennett, R. L.: 126  
 Bennett, R. M.: 23, 24, 121, 145  
 Berendes, T. A.: 672, 691  
 Berkman, M. E.: 920, 949  
 Bernardo, C.: 610  
 Berner, C.: 31  
 Berry, S. A.: 409, 410, 411, 430, 431  
 Bess, T. D.: 673, 674  
 Bhat, G.: 822  
 Bhatt, P. P.: 604, 605  
 Biedron, R. T.: 831, 952  
 Bielak, G. W.: 901  
 Bindiganavale, S.: 110  
 Bird, R. K.: 309, 315, 318, 329  
 Bittner, R. D.: 37  
 Blackburn, C. L.: 207  
 Blake, D. R.: 588, 598, 601, 771  
 Blake, J. B.: 603  
 Blanchard, R. C.: 445  
 Blatherwick, R. D.: 649  
 Bloebaum, C. L.: 844  
 Blosser, M. L.: 212  
 Bobbe, T.: 626  
 Bockman, J.: 686  
 Boeing Commercial Airplane Gr.: 25, 26, 27  
 Bogert, P. B.: 314  
 Boggs, C. M.: 385  
 Boghosian, J. S.: 919  
 Bonesteel, C.: 9  
 Bonhaus, D. L.: 898, 952  
 Book, P.: 16  
 Booth, D.: 489  
 Booth, E. R., Jr.: 902, 960  
 Borchardt, R. P., Jr.: 591  
 Bose, D.: 183  
 Botha, G. B.: 960  
 Bouchard, K. A.: 178  
 Boyer, R.: 315  
 Braby, L. A.: 1009  
 Brackett, V. G.: 605, 729  
 Bradley, K. A.: 2  
 Bradshaw, J. P.: 771  
 Bragiotti, A.: 894  
 Brandon, J. M.: 192  
 Brandt, A.: 883, 953  
 Brauckmann, G. J.: 28, 58, 65, 966  
 Braun, R. D.: 57, 213, 217, 231, 426, 445  
 Brentner, K. S.: 903, 911, 920, 948, 949  
 Breuer, K. S.: 436  
 Britt, C. L.: 29, 974  
 Britt, V. O.: 136, 535  
 Broaddus, W. C.: 802  
 Brockman, P.: 974  
 Bromberg, L.: 537  
 Brooks, J.: 491  
 Brooks, T. F.: 904, 905  
 Browell, E. V.: 611, 657, 675, 727, 728, 729  
 Brown, D. E.: 778  
 Brown, J.: 2  
 Brown, K. G.: 497  
 Brown, L. R.: 616, 962, 963, 964, 965  
 Brown, P. L.: 222  
 Brown, T.: 484  
 Brown, T. L.: 969  
 Bryant, R. G.: 340, 347  
 Bryant, W. H.: 107  
 Buckley, J. D.: 347, 412  
 Buehrle, R. D.: 140, 565  
 Burgess, M. A.: 109  
 Burkett, C. G., Jr.: 468, 469  
 Burley, C. L.: 905, 927, 959  
 Burner, A. W.: 149, 472, 476  
 Burton, S. P.: 654  
 Bush, K. A.: 674, 676, 677  
 Bynum, W. L.: 834  
 Byrne, C. A.: 353
- C**
- Cabell, R. H.: 935  
 Cahoon, D. R., Jr.: 636, 678, 679, 745, 746,  
 750, 779  
 Callis, L. B., Jr.: 603, 606, 607, 608  
 Camarda, C. J.: 422

Campbell, J. F.: 159, 160  
 Camy-Peyret, C.: 639  
 Cano, R. J.: 262, 339, 341, 342, 343, 358, 969  
 Canright, S.: 709  
 Cantrell, J. H., Jr.: 297, 310, 320, 326, 335, 336, 796, 797, 906  
 Cardullo, F. M.: 799, 803  
 Carlson, A. B.: 673  
 Carlson, J. R.: 36  
 Carmine, T.: 468  
 Carpenter, M. H.: 30, 413, 869, 876  
 Carr, P. B.: 980  
 Carreno, V. A.: 823  
 Carty, A. A.: 174, 175  
 Casper, J. H., Jr.: 413  
 Cassell, R.: 89, 90  
 Caudle, D. A.: 552, 553  
 Cesnik, C. E.: 164  
 Chackerian, C., Jr.: 616  
 Chakrapani, V.: 765  
 Chambers, L. H.: 680, 681, 682, 683, 684, 685, 713, 714, 715, 716, 717, 726  
 Chance, K. V.: 617  
 Chanetz, B.: 446  
 Chang, A. C.: 344, 363  
 Chang, B-C.: 815  
 Chang, C. K.: 1016  
 Chang, K.: 366  
 Chapman, G. T.: 31, 32  
 Chapman, J. J.: 589, 686  
 Charles, B. D.: 905, 907  
 Charlock, T. P.: 587, 687, 688  
 Charnock, J. K.: 92, 93  
 Chatfield, R. B.: 768  
 Chawan, A. D.: 287  
 Cheatwood, F. M.: 57, 58, 203, 204, 205, 213, 234  
 Chen, C-S.: 243  
 Chen, F-J.: 51, 340  
 Chen, G.: 585, 595  
 Chen, P-S.: 414  
 Chen, T-K.: 527  
 Chen, Y-C.: 547  
 Chen, Y.: 756, 773, 781, 783  
 Chew, M-S.: 526  
 Chiacchio, M.: 689, 779  
 Chien, W. E.: 908  
 Childers, B. A.: 473, 484, 969  
 Cho, J. Y.: 586  
 Choi, S. H.: 311, 312, 345, 384, 504  
 Choi, W.: 623  
 Choudhari, M. M.: 920, 949  
 Chu, S. H.: 312, 345, 504  
 Chu, W. P.: 609, 648  
 Chyba, T. H.: 690  
 Ciardo, G.: 817  
 Cisewski, M.: 591  
 Clark, L. R.: 909, 954  
 Clark, R. L.: 223, 233  
 Clark, V. M.: 686  
 Clark, W. W.: 540, 580  
 Clayton, M. B.: 729  
 Clayton, W. R.: 352  
 Cleaveland, R.: 818, 822, 824  
 Cline, J. H.: 910, 935  
 Clothiaux, E.: 587, 592, 691, 698, 699, 700  
 Cloudsley, M. S.: 994, 1000, 1004, 1005, 1006, 1008, 1017  
 Cmar-Mascis, N. A.: 893, 896  
 Coakley, J. A., Jr.: 758  
 Coats, T. W.: 244, 255, 256  
 Cockrell, C. E., Jr.: 37  
 Cockrell, C. R.: 110  
 Cofer, W. R., III: 593  
 Coffey, M. T.: 610, 617  
 Cole, D.: 33  
 Collins, J. E., Jr.: 601  
 Collins, T. J.: 136, 560, 561, 582  
 Comeaux, T.: 498  
 Comstock, J. R., Jr.: 150  
 Connell, J. W.: 346, 355, 374, 375  
 Conner, D. A.: 910  
 Connor, B. J.: 649  
 Connors, V. S.: 768  
 Conroy, T.: 1009  
 Considine, G. D.: 611, 612  
 Conway, S. R.: 87  
 Conway, T. J.: 588, 601  
 Cook, W. B.: 733  
 Cooper, B. A.: 399  
 Cooper, E. G.: 850, 851  
 Cooper, J. B.: 337  
 Copeland, B. M.: 347

Copeland, C. E.: 412  
Corso, L. M.: 138, 139  
Corwin, E. M.: 672  
Costen, R. C.: 348, 353  
Cotton, J. D.: 313  
Coudert, L. H.: 616  
Coultrip, R. H.: 412  
Coumeri, M.: 9  
Cox, D. E.: 223, 233  
Cox, J. S.: 911  
Cox, S. J.: 778, 779  
Cox, S. K.: 596  
Cramer, K. E.: 518, 979  
Crawford, J. H.: 594, 595, 636  
Criminale, W. O.: 440, 441, 442  
Crites, R. C.: 52  
Crockett, T. W.: 825  
Crommelynck, D.: 665  
Croom, D. R., Jr.: 989  
Crouch, J. D.: 130  
Cucinotta, F. A.: 992, 993, 995, 997, 999,  
1000, 1001, 1002, 1003, 1004, 1005,  
1006, 1011, 1012, 1013, 1014, 1015,  
1016, 1018, 1019, 1020  
Cunnold, D. M.: 648, 655, 770  
Curran, R. J.: 596, 597  
Currey, J. C.: 692  
Curry, J. A.: 597  
Cutler, A. D.: 174, 175, 311, 312, 345, 418,  
504  
Cvitkovich, M. K.: 264

## D

D'Ambrosia, C.: 497  
Dagenhart, J. R.: 415  
Dana, V.: 616  
Daniels, T. S.: 400  
Daryabeigi, K.: 416, 429, 474  
Daugherty, R. H.: 122, 123  
Dausch, D. E.: 975  
David, S. J.: 649  
Davidson, J. B., Jr.: 182, 183  
Davila, C. G.: 245, 527  
Davis, D. D.: 595, 600  
Davis, P.: 131  
Davis, P. P.: 241  
Dawicke, D. S.: 246, 277

Dawson, S.: 960  
De Young, R. J.: 402, 403, 404, 405, 656,  
709, 970  
DeCoursey, R. J.: 627  
DeMarco, K.: 287  
Deaver, L. E.: 604, 612  
Decker, W. A.: 910  
Deere, K. A.: 34, 35, 48  
DeInore, V. E.: 596, 597  
Demuren, A. O.: 417  
Denn, F. M.: 673  
Derry, S. D.: 185  
Desai, P. N.: 203, 204, 205, 349  
Devi, V. M.: 962, 963, 964, 965, 967, 968  
Dexter, H. B.: 292, 303, 382  
Dezern, J. F.: 356  
Di Girolamo, L.: 691  
DiFulvio, M.: 231, 409  
DiPasquale, R. C.: 780  
Dicus, D. L.: 309  
Dilley, A. D.: 423, 424  
Ding, C. F.: 307  
Ding, F.: 101  
Dipasquale, R. C.: 778  
Diskin, B.: 867, 868, 872, 883, 953  
Diskin, G. S.: 175, 176  
Dixon, D.: 353  
Dobrian, F.: 819, 820  
Doelling, D. R.: 693, 694, 695, 696, 701,  
723, 724, 730, 745, 746, 748, 750, 751,  
753, 754, 756, 766, 774, 784, 793  
Doerner, S. E.: 175, 418  
Domack, M. S.: 314  
Dong, X.: 697, 698, 699, 700, 758  
Dorsey, C. A.: 832  
Dorsey, J. T.: 208  
Dorsey, K. D.: 349  
Douglas, M. J.: 270  
Dowell, E. H.: 118, 119  
Draughon, G. K.: 357  
Dress, D. A.: 194  
Driscoll, G. C.: 207  
Drummond, J. P.: 175  
Dubey, R. R.: 1016  
Duda, D. P.: 701, 766  
Dunn, H. J.: 809, 810  
Dunn, M. H.: 912, 914



Duquesne, N.: 36  
Dyer, J. E.: 552, 553

## E

Echigo, Y.: 358, 388, 389  
Echternach, D. K.: 961  
Eckhardt, D. E.: 107  
Eckman, R. S.: 613, 614, 641, 642  
Edlich, A.: 4  
Edwards, B. D.: 910  
Ege, R.: 2, 3  
Egli, L.: 730, 752, 772  
Egoavil, M. A.: 195  
El-Soudani, S. M.: 315  
Elber, W.: 316  
Engelund, W. C.: 37, 234, 426  
Equall, R. W.: 470  
Erdogan, T.: 396, 397  
Escobedo, J.: 552, 553  
Estes, E. D.: 343  
Estes, E. E.: 270  
Estrada, H.: 528  
Eure, K. W.: 530, 531, 548, 913  
Evans, A. H.: 475, 592  
Evans, K. F.: 475, 592  
Everett, R. A., Jr.: 316, 317, 322  
Everhart, J. L.: 52, 62  
Evers, C.: 89  
Exton, R. J.: 966

## F

Fahey, D. W.: 702, 754  
Fairlie, T. D.: 602, 614, 615, 620, 628, 641, 642  
Fales, C. L., Jr.: 480  
Farassat, F.: 912, 914, 915, 916, 917, 944, 954  
Farmer, B. L.: 390  
Farmer, F. H.: 796  
Farris, M.: 915, 916, 917  
Fasanella, E. L.: 259, 260, 261, 541  
Fastig, S.: 729  
Fay, C. C.: 350, 351  
Feifel, W. M.: 130  
Feltz, W. F.: 705, 706  
Fenn, M. A.: 703

Ferlemann, S. M.: 178  
Ferrare, R. A.: 675, 704, 705, 706, 728, 729  
Feuz, L.: 356  
Fine, L. W.: 240  
Fischer, M. C.: 18  
Fishman, J.: 649, 664, 669, 690, 707, 708, 709  
Flaud, J.-M.: 618, 619, 639  
Fleming, D. C.: 529  
Fleming, G. A.: 149, 476, 477  
Florance, J. P.: 149  
Fox, J. H.: 145  
Fox, R. L.: 340, 347, 412  
Francis, J.: 689  
Fremaux, C. M.: 56  
Frey, R. A.: 691, 710  
Fridlyander, J. N.: 318  
Frink, N. T.: 81  
Froggatt, M. E.: 396, 397, 484  
Frohlich, C.: 665  
Fu, Q.: 688, 726  
Fuelberg, H. E.: 598, 600, 768  
Fulton, J. P.: 321, 334  
Funk, J. G.: 314

## G

Gaier, E. M.: 4, 12, 13  
Galbraith, R. W.: 145  
Galland, L. D.: 852  
Garber, D. P.: 955, 956  
Garcia, R. R.: 630, 634, 653, 761  
Gardner, J. E.: 240  
Garg, D. P.: 235  
Garg, S.: 472  
Garn, M. A.: 892  
Garrison, J. L., Jr.: 590  
Garriz, J. A.: 38  
Gary, J.: 938, 939  
Gates, T. S.: 247, 248, 249, 279, 280, 306, 370  
Gatski, T. B.: 36, 73, 435, 457, 467  
Gendron, G.: 577, 578  
Generazio, E. R.: 250, 512, 513  
Gerhold, C. H.: 909, 954  
Geurts, E.: 121, 145  
Ghaffari, F.: 39  
Ghiringhelli, G. L.: 114, 115

Gibbs, G. P.: 223, 530, 531  
 Gibson, G. G.: 711, 712, 720  
 Gierens, K. M.: 754  
 Gierow, P. A.: 352  
 Giles, G. L.: 116  
 Gilinsky, M. M.: 945  
 Girimaji, S. S.: 419  
 Giunta, A. A.: 117  
 Giver, L. P.: 616  
 Glaessgen, E. H.: 251, 252, 253, 254, 256  
 Glaser, B.: 6  
 Glass, C. E.: 409, 420, 421  
 Glass, D. E.: 207, 422, 423, 424  
 Glauser, M. N.: 33  
 Gleason, J.: 653  
 Gnoffo, P. A.: 209, 425, 426, 427, 428, 432  
 Gold, B.: 855  
 Goldhagen, P.: 1010  
 Goldman, A.: 610, 616, 617, 618, 619, 639,  
 640, 649  
 Goldschmidt, S.: 970  
 Golovchenko, A. N.: 996  
 Golub, R. A.: 955, 956  
 Goodman, D. L.: 353  
 Goodman, W. L.: 468  
 Gopalakrishnan, G.: 847  
 Gordley, L. L.: 605, 646  
 Gorman, M. R.: 293, 940  
 Gottlieb, D. I.: 30  
 Graham, R. S.: 802  
 Grandi, F.: 2  
 Grant, M. S.: 686  
 Grant, W. B.: 611, 1022  
 Graves, S. S.: 40, 591  
 Green, C. J.: 684, 685, 713, 714, 715, 716,  
 717  
 Green, L. L.: 86, 187, 190, 865  
 Green, R. N.: 692, 718, 719, 731, 769, 786  
 Greene, F. A.: 57, 58  
 Gregory, G. L.: 598, 771  
 Gregory, I. M.: 184  
 Gregory, P. B.: 196  
 Grenoble, R. W.: 303, 382  
 Greve, D. A.: 836  
 Gribko, J.: 6  
 Griffith, D. W.: 610  
 Grigsby, D. W.: 93

Grimsley, B. W.: 359, 388  
 Groom, N. J.: 395  
 Grooss, J. U.: 641  
 Grose, W. L.: 602, 614, 615, 628, 641, 642  
 Guelachvili, G.: 962, 965  
 Guillemot, S.: 121  
 Gumbert, C. R.: 41, 865  
 Gupta, R. N.: 991  
 Gupta, S.: 721  
 Gupta, S. K.: 720, 778, 788

## H

Hachkowski, M. R.: 532  
 Haeffelin, M. P.: 685, 722, 786, 787, 790  
 Hafen, G.: 851  
 Haftka, R. T.: 407  
 Hagan, M.: 761  
 Hahne, D. E.: 42, 43, 44, 45  
 Haigler, K. J.: 38  
 Hales, S. J.: 313  
 Haley, P. J.: 855  
 Hamilton, H. H., II: 410, 428, 430, 431  
 Hamilton, P. A.: 592  
 Hammers, W.: 109  
 Hamouda, M-N.: 76  
 Hamstad, M. A.: 938, 939  
 Han, J.: 91, 100, 101  
 Hana, T. G.: 557  
 Hankins, W. W., III: 88  
 Hannigan, J. W.: 610, 617  
 Hansen, G.: 627, 629  
 Hanson, D.: 9  
 Hanuska, A.: 429  
 Harper, D.: 729  
 Harris, C. E.: 244, 250, 255, 256, 257, 258,  
 277, 327, 513, 533, 534  
 Harris, H.: 171  
 Harrison, J. S.: 129, 338, 371, 376, 387, 448,  
 449  
 Hart, R. C.: 503, 505  
 Harvey, G. A.: 224, 225  
 Harvey, V. L.: 602, 620, 779  
 Harvin, S. F.: 197  
 Hassan, A. A.: 5  
 Hathaway, W.: 32  
 Hayhurst, A. R.: 508, 591  
 Hayhurst, K. J.: 832, 850

- Headley, D. E.: 215, 220  
 Heck, P. W.: 667, 723, 724, 725, 755, 756,  
 758, 759, 760, 766, 783, 794  
 Heeg, J.: 118, 119  
 Heikes, B. G.: 598, 771  
 Heilbronn, L. H.: 366, 997, 1000, 1004, 1005  
 Heilman, L. A.: 705, 706  
 Heinbockel, J. H.: 994, 1004, 1005, 1006,  
 1008, 1017  
 Hellbaum, R. F.: 237, 238, 347  
 Helmetsie, C. L.: 983  
 Hemm, R. V.: 6  
 Henderson, D. A.: 120, 137, 146  
 Henshaw, M. J.: 121, 145  
 Hepner, T. E.: 46  
 Hereford, J. M.: 478, 479  
 Hergenrother, P. M.: 354, 355, 374  
 Herring, G. C.: 200, 503, 505  
 Hersh, A. S.: 901  
 Hess, P. C.: 686  
 Heyman, J. S.: 514  
 Heymsfield, A. J.: 671  
 Hibler, D. L.: 486  
 Hickman, J. C.: 591  
 Hicok, D.: 89, 90  
 Higdon, N. S.: 690  
 Hilburger, M. W.: 535, 536, 575  
 Hillard, M. E., Jr.: 966  
 Hinders, M. K.: 919  
 Hinkley, J. A.: 279, 280, 343, 349, 356, 360,  
 370, 390, 393, 448  
 Hinton, D. A.: 92, 93  
 Hinton, Y. L.: 319, 918  
 Hitchman, M. H.: 620  
 Ho, S-P.: 693, 762  
 Hodge, J. S.: 148, 197  
 Hoell, J. M., Jr.: 599, 600  
 Holland, S. D.: 37  
 Hollis, B. R.: 47, 59, 410, 430, 431  
 Holloway, C. M.: 833  
 Holloway, N. M.: 357  
 Holloway, S. E., III: 591  
 Hom, K. W.: 398, 399  
 Hooker, M. W.: 976  
 Hopkins, M.: 146  
 Hopkins, R.: 983  
 Horner, G. C.: 537, 538, 539, 540, 580  
 Horta, L. G.: 51, 122, 123, 129  
 Horvath, T. J.: 231, 409, 410, 411, 430, 431  
 Hosabettu, R.: 847  
 Hostetler, C. A.: 627, 629  
 Hou, G. J.: 41, 60  
 Hou, T-H.: 358, 359  
 Houck, J. A.: 799, 803  
 Housner, J. M.: 394  
 Hu, H.: 7  
 Hu, Y.: 726  
 Huang, X-Z.: 145  
 Huck, F. O.: 480  
 Hudson, L.: 367  
 Hueschen, R. M.: 88  
 Hughes, M. F.: 87  
 Hughes, S. J.: 509  
 Hulcher, A. B.: 262, 360, 393  
 Humes, D. H.: 224, 225, 293  
 Humphreys, W. M., Jr.: 904  
 Hunt, J. L.: 94, 177, 178  
 Hunter, C. A.: 19, 20, 35, 48  
 Hussaini, M. Y.: 464  
 Hutcheson, R. L.: 470  
 Hyder, C.: 540  
 Hyer, P. V.: 95
- I**
- Ili, R.: 996  
 Inger, G. R.: 427, 432  
 Ingraffea, A.: 243  
 Isidori, A.: 856  
 Ismail, S.: 657, 675, 727, 728, 729, 747  
 Iyer, N.: 654
- J**
- Jackman, C. H.: 638  
 Jackson, E. B.: 185  
 Jackson, K. E.: 259, 260, 261, 541  
 Jackson, T. L.: 440, 441, 442  
 Jacob, D. J.: 600, 771  
 Jacobs, J. A.: 240  
 Jalink, A., Jr.: 237, 238  
 JanikiRam, R.: 959  
 Janke, E.: 433, 434  
 Jaunky, N.: 519, 520, 551  
 Jegley, D. C.: 542, 543

Jenkins, R. V.: 391, 392  
Jensen, B. J.: 337, 341, 342, 361, 362, 363,  
969  
Johns, B.: 892  
Johnson, A. R.: 544, 545  
Johnson, E. J.: 95  
Johnson, J. P.: 8, 12, 13  
Johnson, S. D.: 412  
Johnson, T. F.: 364, 388  
Johnston, N. J.: 262, 303, 360, 365, 382, 393  
Johnston, P. H.: 919  
Jones, C. T.: 161  
Jones, D. R.: 107  
Jones, M. G.: 957  
Jones, N. B.: 649, 768  
Jones, T. D.: 1016  
Jones, W. R.: 222  
Jongen, T.: 435  
Jordan, T. L.: 481  
Jordan, W.: 1016  
Jorgensen, C. A.: 226, 227, 228  
Joshi, S. M.: 856, 857, 858  
Joslin, R. D.: 10, 49, 50, 51, 440, 441, 442  
Juang, J-N.: 124, 126, 526, 546, 547, 548,  
549, 550, 913

## K

Kanekal, S.: 603  
Kaneshiro, H.: 358, 388, 389  
Kaplan, J. A.: 834  
Kasl, E. P.: 552, 553  
Kato, S.: 587  
Katz, R.: 995  
Katzberg, S. J.: 590  
Kaye, J.: 638  
Kaynes, I.: 145  
Kegelman, J. T.: 198  
Kelkar, A. G.: 856, 857, 858  
Kellas, S.: 232, 541  
Kelly, H. N.: 423, 424  
Kelly, J. J.: 954  
Kennedy, C. A.: 869  
Kent, G. S.: 621, 622, 629, 655, 785  
Kessel, G.: 319  
Key, J.: 691  
Keyes, D. E.: 21, 811, 812, 813  
Khayyer, M. M.: 730, 745, 746, 752, 772

Khorrami, M. R.: 920, 949  
Kiefer, R. L.: 366  
Kielin, E. J.: 497  
Kim, D-S.: 650  
Kim, M-H.: 1020  
Kim, M.: 366, 993, 1002  
Kim, M. Y.: 998, 999, 1015, 1016, 1017  
Kinard, W. H.: 224, 225  
Kincaid, R. K.: 806, 807, 808  
King, R. A.: 436  
Kleb, M. M.: 602  
Kleb, W. L.: 209, 437, 455, 885, 886  
Klein, P. D.: 910  
Klein, V.: 186  
Klinedinst, D.: 356  
Knight, J. C.: 832  
Knight, N. F., Jr.: 519, 520, 551  
Ko, M. K.: 638, 795  
Koch, G. J.: 29, 974  
Kodiyalam, S.: 125, 157  
Kogan, M. N.: 438  
Kohl, R.: 851  
Kolitz, S.: 9  
Kooi, S. A.: 729  
Kopchenov, V.: 180  
Korte, J. J.: 809, 810  
Kostiuk, P. F.: 9, 12, 13, 15  
Kowalkowski, M. K.: 411  
Kraft, R. E.: 908, 921, 922, 923, 961  
Kramer, L. J.: 96  
Kratz, D. P.: 721, 731, 732, 788  
Krueger, R.: 263, 264, 265, 266  
Kudlinski, K. E.: 401  
Kumar, R. R.: 229  
Kumfert, G.: 819, 820, 821  
Kunz, D. L.: 141  
Kuo, K. S.: 672  
Kvaternik, R. G.: 126  
Kwak, M.: 312, 345, 504  
Kwan, H. W.: 923, 961

## L

Lachowicz, J. T.: 10, 340, 439  
Ladd, I.: 709  
Lafferty, W. J.: 639  
Lake, M. S.: 532, 552, 553  
Lake, R. C.: 154

Lallman, F. J.: 183  
Lamontia, M. A.: 360  
Lan, C. E.: 192  
Larar, A. M.: 733  
Lasseigne, D. G.: 440, 441, 442  
Latorella, K. A.: 97, 150, 800  
Lauritsen, D.: 729  
Lavell, J. S.: 515  
Lawson, R. E.: 520, 551  
Lazur, A.: 367  
LeBel, P. J.: 487  
Leary, S.: 338  
Lee, C.: 592  
Lee, D.: 89  
Lee, D. A.: 6, 12, 13  
Lee, J. W.: 506  
Lee, K-M.: 623  
Lee, R. B., III: 665, 676, 734, 735, 736, 737,  
738, 739, 740, 741, 742, 763, 764, 767,  
769, 782, 787  
Lee, S. W.: 936  
Lefebvre, M.: 446  
Leighty, B. D.: 497  
Lenschow, D. H.: 611  
Leonard, C. P.: 178  
Leong, F.: 9  
Lepping, R. P.: 603  
Lepsch, R. A., Jr.: 236  
Leveson, N. G.: 832  
Levine, J. S.: 624, 625, 626, 650  
Lewellen, D. C.: 627  
Lewellen, W. S.: 627  
Lewis, R. M.: 864, 865, 869, 891  
Ley, R. P.: 554  
Li, X.: 603  
Lian, Y.: 870  
Librescu, L.: 559  
Liechty, D. S.: 411, 431  
Liljegren, J. C.: 699  
Lilley, G. M.: 948  
Lim, K. B.: 230, 816  
Lin, B.: 726, 743  
Lin, J. C.: 443  
Lin, W.: 554, 559  
Lin, Y-L.: 91, 101  
Lingenfelser, G. S.: 628, 641  
Liu, J-G.: 871

Liu, T.: 472  
Liu, X-M.: 986  
Llorente, I. M.: 872  
Lloyd, J. W.: 530, 531  
Lockard, D. P.: 1, 11, 835, 920, 924, 925,  
926, 948, 949  
Loeb, N. G.: 726  
Logan, J. A.: 770, 771  
Logar, A. M.: 672  
Long, C. N.: 698, 700, 744  
Long, D.: 12, 13  
Long, E. R., Jr.: 357  
Longman, R. W.: 549  
Lopez-Puertas, M.: 635, 663  
Loser, T.: 145  
Lotts, C. G.: 162  
Lowther, S. E.: 368, 369, 373, 374, 375  
Luck, W. S.: 402, 403, 404, 405  
Lucker, P. L.: 621, 629, 785  
Lui, S-H.: 873  
Luo, L-S.: 466  
Luttgen, G.: 817, 818, 822, 823, 824  
Lyle, K. H.: 520, 927  
Lytle, J. K.: 394

## M

Ma, K-L.: 825  
Maahs, H. G.: 366  
Macaraeg, M. G.: 835  
Mace, G. G.: 697, 699, 700  
Machie, H. B.: 984  
Mackey, C. E.: 673  
Madaras, E. I.: 210, 267, 298, 299, 300, 897,  
928  
Madenci, E.: 572  
Madhukar, M. S.: 297  
Maestrello, L.: 929, 930  
Maghami, P. G.: 124, 230, 550  
Maguire, J. F.: 207  
Maiden, D. L.: 1009  
Malekpour, M. R.: 826  
Malmuth, N. D.: 52  
Malone, J. B.: 394, 839, 840, 841  
Maly, K.: 985, 986, 988, 989, 990  
Mandin, J-Y.: 616  
Mankin, W. G.: 610, 617  
Mannstein, H.: 765, 766

Mantegazza, P.: 114, 115  
 Mao, Y.: 858  
 Marchello, J. M.: 262, 303, 348, 360, 382, 393  
 Marcolini, M. A.: 499, 910  
 Marinetti, S.: 894  
 Marshall, B. T.: 475  
 Martin, C. A.: 149  
 Martin, C. J., Jr.: 208, 212  
 Martin, J. A.: 183  
 Martin, J. G.: 14, 178  
 Martinez, D.: 185  
 Martinson, S. D.: 498  
 Martinson, V. J.: 122, 123  
 Martzaklis, K. S.: 102  
 Masarati, P.: 114, 115  
 Mason, A. J.: 199, 545  
 Mason, B. H.: 207  
 Massey, S. J.: 81  
 Mauldin, L. E., III: 591  
 Mavriplis, D. J.: 53, 874, 875  
 Mayor, S.: 730, 745, 746, 750  
 Mazanek, D. D.: 229, 892  
 Mbanefo, L.: 554  
 McClinton, C. R.: 69, 177  
 McCluer, M.: 902, 905  
 McCormick, G. F.: 832  
 McCormick, M. P.: 609, 653  
 McCulley, C. M.: 844  
 McDougal, D. S.: 593, 597  
 McGowan, A. R.: 127, 128, 129  
 McGowan, D. M.: 245, 521, 522, 555, 556, 557  
 McGrath, B. E.: 54  
 McInerney, J. M.: 605, 623  
 McKissick, B. T.: 98  
 McLean, J. D.: 130  
 McManus, J. W.: 834  
 McMaster, L. R.: 747  
 McMinn, J. D.: 183  
 McNeal, R. J.: 600  
 McNeill, S. R.: 557  
 Meerkotter, R.: 748  
 Mehrotra, P.: 507, 831  
 Melfi, L. T., Jr.: 629  
 Melson, N. D.: 872  
 Menzel, W. P.: 710  
 Mercker, E.: 959  
 Merrigan, M. A.: 422  
 Merski, N. R.: 409, 431, 482  
 Mertens, C. J.: 630, 634  
 Messier, B. C.: 393  
 Meyers, J. F.: 506  
 Mikulas, M. M., Jr.: 571  
 Miles, E.: 131  
 Miller, C. G.: 444  
 Miller, J.: 997, 999, 1000, 1004, 1005, 1006, 1018  
 Miller, J. B.: 222  
 Miller, M. A.: 691  
 Miller, S. P.: 836, 837  
 Mineck, R. E.: 55  
 Minguet, P. J.: 264, 265, 266  
 Minnis, P.: 592, 666, 667, 668, 688, 691, 693, 694, 695, 696, 697, 698, 699, 700, 701, 723, 724, 725, 726, 730, 743, 744, 745, 746, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 762, 765, 766, 772, 773, 774, 781, 783, 784, 785, 791, 792, 793, 794  
 Mirick, P. H.: 63, 164  
 Mitcheltree, R. A.: 31, 32, 56, 57, 58, 84, 204, 205, 231, 232, 426  
 Mlynczak, M. G.: 630, 631, 632, 633, 634, 635, 663, 761  
 Moeller, C. C.: 710  
 Monell, D. W.: 216  
 Monroe, C. A.: 196  
 Montgomery, R. C.: 187, 190  
 Moore, A. A.: 202  
 Moore, A. S.: 591  
 Moore, B.: 148  
 Moore, J. P.: 211, 397  
 Moore, J. S.: 484  
 Morcrette, J-J.: 688  
 Morelli, E. A.: 132, 188, 816  
 Morgan, D. G.: 472  
 Morris, A. T.: 859  
 Morris, P. J.: 451, 944  
 Morrison, J. H.: 73, 181  
 Moses, P. L.: 178  
 Moses, R. W.: 120, 133, 134, 135, 137, 146  
 Moss, J. N.: 57, 84, 445, 446, 447  
 Moster, G. E.: 14

Motley, A. E., III: 981  
Motter, M. A.: 860  
Moulton, R.: 353  
Mukhopadhyay, V.: 931, 932  
Mukkamala, R.: 852  
Muller, M.: 595  
Multhaup, H. A.: 221  
Munk, M. M.: 206  
Munoz, C.: 827, 828, 838  
Munroe, J.: 314  
Muravyov, A.: 933, 934  
Murcray, F. J.: 649  
Murphy, K. J.: 47, 59  
Murray, T. D.: 759, 760, 781  
Murri, G. B.: 268, 269  
Murthy, A. V.: 17  
Myers, D. E.: 212

## N

Na, J. K.: 319, 320  
Nagatani, R.: 653  
Nagchaudhuri, A.: 581  
Nakajima, T.: 748  
Namkung, M.: 321, 331, 332, 333, 334  
Natarajan, V.: 818  
Nath, S.: 321  
Nath, S. C.: 334  
Naudin, P.: 145  
Nelson, M. L.: 831, 985, 986, 987, 988, 989, 990  
Nemeth, M. P.: 136, 525, 535, 558, 559, 560, 561, 575, 582  
Nettles, A. T.: 270, 289  
Newchurch, M. J.: 770  
Newell, R. E.: 586, 598, 600  
Newman, J. C., III: 60, 61  
Newman, J. C., Jr.: 246, 257, 258, 271, 272, 273, 274, 275, 276, 277, 278, 301, 302, 307, 317, 322, 323  
Newman, P. A.: 38, 41, 52, 60, 61, 62, 865  
Newquist, L. A.: 629  
Nguyen, D. C.: 29, 974  
Nguyen, L.: 701, 723, 724, 730, 751, 757, 762, 774  
Nguyen, T. X.: 170  
Nicholson, L. M.: 249, 279, 280, 370  
Nicks, C. O.: 910

Nitzsche, F.: 137, 146  
Nixon, M. W.: 114, 115, 138, 139, 161  
Nolt, I. G.: 475, 592  
Noonan, K. W.: 63  
Noor, A. K.: 839, 840, 841  
Norbury, J. W.: 1006  
Nordstrom, J.: 30, 876  
Northam, G. B.: 281, 282, 283, 284, 285, 286, 296  
Notholt, J.: 768  
Novelli, P. C.: 649, 768  
Nowak, R. J.: 47, 59

## O

O'Brien, T. K.: 264, 265, 266, 287, 288  
O'Connor, J.: 650  
O'Gallagher, A.: 938, 939  
Obara, C. J.: 468  
Oberlander, E. J.: 802  
Ogilvie, K. W.: 603  
Oglesby, D. M.: 491, 497  
Oguro, K.: 338  
Olds, J. R.: 217  
Olson, J. R.: 636, 641, 655, 709  
Olynick, D. R.: 428  
Orphal, J.: 618  
Orr, B. W.: 784  
Ostroff, A. J.: 189  
Ounaies, Z.: 371, 372, 376, 387, 448, 449, 481, 881, 882  
Owens, M. A.: 588  
Owre, S.: 853  
Ozturan, C.: 21, 813

## P

Pack, L. G.: 64, 77, 462, 463  
Paden, B.: 395  
Paden, J.: 734, 735, 736, 737, 738, 739, 740, 742, 763, 764, 767, 782  
Padula, S. L.: 806, 807, 808, 809, 810  
Pagano, A.: 121  
Pahle, J. W.: 183  
Palikonda, R.: 701, 765, 766, 774  
Palmer, S. O.: 289  
Palsson, O. S.: 801  
Palumbo, D. L.: 935

- Pamadi, B. N.: 65  
 Pandey, D. K.: 734, 735, 736, 737, 738, 739,  
 740, 742, 763, 764, 767, 782  
 Pappa, R. S.: 140, 562, 563, 564, 565  
 Park, C.: 368, 369, 373, 374, 375, 376, 448,  
 449  
 Park, J. H.: 623, 637, 638  
 Park, K. C.: 163  
 Park, M. A.: 187, 190  
 Park, S. K.: 480  
 Parker, F. R.: 893, 896  
 Parker, P. A.: 478, 479, 483  
 Parrott, T. L.: 957  
 Paschal, K. B.: 33  
 Patelli, R.: 850  
 Pater, R. H.: 377  
 Pearson, J.: 595  
 Peddie, C. L.: 177  
 Pegg, R. J.: 94  
 Pengel, K.: 959  
 Perey, D. F.: 940  
 Perez-Ramos, C.: 523  
 Peri, F., Jr.: 222  
 Perrin, A.: 619, 639, 640  
 Perry, B., III: 153  
 Peterson, L. D.: 532  
 Petley, D. H.: 94, 178, 239  
 Petropoulos, P. G.: 890  
 Petros, M.: 500, 974  
 Pettit, R. G.: 314  
 Phelps, J. E.: 510, 552, 553  
 Phillips, C. T.: 99  
 Phillips, E. P.: 307, 317, 322, 323, 566  
 Phillips, M. W.: 500  
 Phipps, G. S.: 745  
 Piascik, R. S.: 258, 277, 324, 325, 567  
 Piatak, D. J.: 138, 139, 141  
 Picque, N.: 962, 965  
 Pierce, R. B.: 602, 614, 615, 620, 628, 641,  
 642, 655, 779, 780  
 Piland, W. M.: 216  
 Pinckney, S. Z.: 178  
 Pine, A. S.: 643  
 Pirzadeh, S. Z.: 53, 66, 67, 875  
 Platt, C. M.: 644  
 Plotnikov, Y.: 290, 894, 895  
 Plumb, R. A.: 638  
 Poe, C. C., Jr.: 252, 253, 254, 289, 291, 292  
 Ponton, M. K.: 936, 946, 980  
 Poole, L. R.: 627, 629, 645, 653  
 Pope, A. T.: 801  
 Popelka, D.: 138, 139  
 Portmann, R. W.: 630, 634, 653  
 Pot, T.: 446  
 Pothen, A.: 819, 820, 821  
 Potts, J. N.: 837  
 Pougatchev, N. S.: 649, 768  
 Povitsky, A.: 450, 451, 829  
 Powell, C. A.: 937  
 Powell, R. W.: 213, 426  
 Powers, W. T.: 589  
 Prabhu, R. K.: 47, 59, 68  
 Preisser, J. S.: 499, 937  
 Premo, J. W.: 901  
 Presson, J.: 851  
 Preston, F. S.: 831  
 Pretre, A.: 672  
 Price, J. M.: 447  
 Prichard, D. S.: 927  
 Priestley, K. J.: 731, 734, 735, 736, 737, 738,  
 739, 740, 763, 764, 769, 782  
 Pritchard, J. I.: 140, 142, 143, 565  
 Proctor, F. H.: 91, 100, 101  
 Proffitt, M. H.: 615  
 Prosser, W. H.: 293, 294, 938, 939, 940  
 Pulkkinen, T. I.: 603  
 Purcell, P. N.: 646  
 Puschell, J. J.: 733  
 Puster, R. L.: 195
- Q**
- Qian, M.: 326  
 Qian, Y-H.: 452  
 Queen, E. M.: 213
- R**
- Racel, A. M.: 685, 717  
 Radespiel, R.: 950  
 Ragsdale, W. A.: 401  
 Rahman, Z-U.: 480  
 Rahmani, S.: 851  
 Rajagopalan, G.: 951  
 Raju, I. S.: 251, 252, 253, 254, 292, 295, 304



Rana, M.: 222, 487  
 Randel, W. J.: 653, 770  
 Raney, D. L.: 129, 187, 190  
 Rankin, C. C.: 583  
 Rankin, J.: 108  
 Ransone, P. O.: 282, 283, 284, 285, 286, 296  
 Raper, J. L., Sr.: 600  
 Rasmussen, K.: 222  
 Rault, D. F.: 234  
 Rausch, R. D.: 75, 76  
 Rausch, V. L.: 69  
 Ravindran, S. S.: 70, 453, 454  
 Rawls, J. R.: 591  
 Ray, N.: 626  
 Reddy, C. J.: 110  
 Reeves, G. D.: 603  
 Refaat, T. F.: 402, 403, 404, 405  
 Rehder, J. J.: 831  
 Reichle, D. J., Jr.: 471  
 Reichle, H. G., Jr.: 768  
 Reid, R. S.: 422  
 Reightler, R. E.: 293  
 Reitz, G.: 1019  
 Rensberg, E. E.: 604, 605, 612, 628, 646,  
 647, 652  
 Reubush, D. E.: 71  
 Reukauf, P.: 177  
 Rhew, R. D.: 478, 479, 483, 489  
 Richie, R. W.: 202  
 Richter, D.: 690  
 Ricketts, R. H.: 177  
 Riddell, W. T.: 567  
 Riley, C. J.: 47, 455, 465  
 Rinsland, C. P.: 610, 616, 617, 618, 619, 639,  
 640, 643, 648, 649, 768, 962, 963, 964,  
 965, 967, 968  
 Ritchey, N. A.: 673, 720  
 Ritter, P.: 3  
 Rivers, H. K.: 144, 208, 214, 282, 283, 284,  
 285, 286, 296  
 Rivers, R. A.: 106  
 Rizzi, S. A.: 934  
 Robarge, W. P.: 650  
 Robbins, S. W.: 989  
 Roberts, E.: 15, 16  
 Roberts, M. J.: 516, 517  
 Roberts, T. W.: 456  
 Robinson, J. H.: 934, 941  
 Robinson, J. S.: 178  
 Roble, R. G.: 761  
 Roe, K. P.: 507  
 Roell, M. M.: 591  
 Roelle, P.: 650  
 Roettker, W. A.: 733  
 Rogers, J. F.: 202  
 Rogers, J. L.: 72, 831, 842, 843, 844, 845,  
 846  
 Rogers, M.: 595, 600  
 Rogers, R. C.: 173  
 Rogowski, R. S.: 484, 485, 969  
 Rohrbach, W. W.: 237, 238  
 Roithmayr, C. M.: 201  
 Rokni, M.: 457  
 Rosch, G.: 9  
 Rose, C. A.: 246, 568, 584  
 Rose, F. G.: 687, 688, 732  
 Rosholt, D.: 239  
 Ross, R. W.: 486  
 Rostiker, G.: 603  
 Rothman, L. S.: 651  
 Roudakov, A.: 180  
 Rouse, M.: 523, 569  
 Rousseau, C. Q.: 242, 570  
 Rowell, L. F.: 217  
 Rubinstein, R.: 179, 458, 459, 460, 461  
 Rudisill, M.: 102, 150  
 Rudy, D. H.: 831  
 Ruggiero, T. J.: 571  
 Ruiz-Calavera, L. P.: 121, 145  
 Rumsey, C. L.: 36, 73, 911, 952  
 Rush, H. M.: 130  
 Rushby, J.: 838, 854  
 Russell, J. M., III: 605, 612, 615, 623, 635,  
 641, 646, 652  
 Russell, J. W.: 942  
 Rutan, D.: 674, 676, 722  
 Rutledge, C. K.: 587, 679  
 Ryaben'kii, V. S.: 877  
 Ryall, T.: 120, 137, 146

S

Sachs, E. W.: 866  
 Sachse, G. W.: 487, 588, 598, 601, 768, 771  
 Sadcov, V. V.: 318

Sage, K. H.: 638  
 Sakurai, S.: 130  
 Salas, A. O.: 809, 810, 845, 846, 848, 849  
 Samareh, J. A.: 147, 802, 878, 879  
 Sancer, M.: 110  
 Sandler, V. S.: 318  
 Santa Maria, O. L.: 943, 944  
 Santmire, T. E.: 4, 8  
 Saric, W. S.: 415  
 Sasano, Y.: 623  
 Sathish, S.: 297  
 Saunders, J. H.: 779  
 Saunders, M. P.: 202  
 Sawyer, J. W.: 148, 367  
 Sawyer, K.: 148  
 Scales, E. F.: 940  
 Scallion, W. I.: 74  
 Scanlon, C. H.: 103, 111  
 Schaffner, P. R.: 102  
 Schardt, D.: 996  
 Scheidler, P., Jr.: 9  
 Scherer, L. B.: 149  
 Schimmerling, W.: 1001, 1002, 1015  
 Schoenfeld, W. G.: 610  
 Schryer, D. R.: 497  
 Schuler, M. P.: 848, 849  
 Schultz, M. G.: 771  
 Schumann, U.: 748, 753, 754, 766  
 Schuster, D. M.: 75, 76, 113  
 Schuster, G. L.: 587  
 Schutte, P. C.: 150, 798  
 Schwind, F. A.: 296  
 Scott, E. P.: 429  
 Seale, M. D.: 294, 298, 299, 300  
 Sealey, B. S.: 468, 469  
 Seidel, G. E.: 130  
 Seifert, A.: 64, 77, 462, 463  
 Seiner, J. M.: 945, 946  
 Selmon, J.: 183  
 Semenov, V.: 180  
 Sen, J. K.: 288  
 Sena, J. T.: 422  
 Sergeev, B.: 572  
 Seshadri, B. R.: 246, 278, 301, 302  
 Shaeffer, J. F.: 399  
 Shafer, D. B.: 171  
 Shah, G. H.: 135  
 Shahinpoor, M.: 378  
 Shahood, T. W.: 339  
 Shams, Q. A.: 488, 589  
 Shankar, N.: 853  
 Shapiro, G.: 6, 9  
 Shebalin, J. V.: 464  
 Shen, S.: 101  
 Shen, S. N.: 990  
 Shenk, S.: 397  
 Shetter, R.: 595, 771  
 Shih, A. T.: 173  
 Shin, S-J.: 164  
 Shinn, J. L.: 993, 994, 998, 1003, 1004,  
 1005, 1006, 1007, 1009, 1016, 1017,  
 1018, 1019, 1020  
 Shipham, M. C.: 598  
 Shirinzadeh, B.: 200, 966  
 Shivakumar, K.: 295, 304  
 Shu, C-W.: 871  
 Shuart, M. J.: 303, 379, 380, 381, 382  
 Shumilkin, V. G.: 438  
 Sickles, W. L.: 52  
 Sidilkover, D.: 456, 880  
 Sihver, L.: 996  
 Silcox, R. J.: 913, 947  
 Silva, W. A.: 151, 152, 153  
 Siman-Tov, E.: 852  
 Siminiceanu, R.: 817  
 Simonsen, L. C.: 366, 999, 1004, 1006, 1016,  
 1020  
 Simpson, J. O.: 372, 378, 383  
 Simpson, J. W.: 334  
 Sinapius, J. M.: 154  
 Singer, B. A.: 920, 948, 949  
 Singer, H. J.: 603  
 Singh, A.: 626  
 Singh, H. B.: 771  
 Singh, U. N.: 311, 500, 977, 978  
 Singleterry, R. C., Jr.: 994, 998, 1005, 1006,  
 1007, 1008, 1009, 1010, 1017, 1019  
 Singleton, J. D.: 63, 155  
 Siochi, E. J.: 359  
 Sitz, J.: 69  
 Skeens, K. M.: 622, 655  
 Skvar, J.: 996  
 Sleight, D. W.: 162, 573, 574, 576  
 Smart, M. K.: 180

- Smeltzer, S. S., III: 528  
 Smith, A.: 90  
 Smith, B. T.: 294  
 Smith, G. L.: 674, 676, 677, 678, 683, 739,  
 764, 775, 782, 786, 789  
 Smith, J. G., Jr.: 338, 355, 373, 374, 375,  
 376, 378, 448, 449  
 Smith, M. A.: 962, 963, 964, 965, 967, 968  
 Smith, M. S.: 191  
 Smith, R. C.: 881, 882  
 Smith, R. W.: 208  
 Smith, S. A.: 304  
 Smith, W. L.: 210  
 Smith, W. L., Jr.: 667, 693, 694, 723, 724,  
 725, 730, 744, 751, 752, 755, 757, 759,  
 762, 772, 773, 774  
 Sobieszczanski-Sobieski, J.: 125, 156, 157,  
 831  
 Solomon, S.: 653  
 Soloway, D. I.: 855  
 Song, K. D.: 312, 384, 504  
 Soto, H. L.: 477  
 South, B. W.: 477  
 Southward, R. E.: 385, 386  
 Spain, C. V.: 76  
 Spangenberg, D. A.: 695, 696, 723, 724, 756,  
 774, 775, 793  
 Spencer, M. N.: 616  
 Speziale, C. G.: 467  
 Spinhirne, J. D.: 710  
 Sprinkle, D. R.: 241  
 Srivas, M. K.: 836, 847  
 St. Clair, A. K.: 350, 351, 352, 385, 386  
 St. Clair, T. L.: 349, 358, 359, 368, 369, 374,  
 375, 383, 388, 389  
 Stackhouse, P. W., Jr.: 689, 720, 776, 777,  
 778, 779, 780, 789  
 Starnes, J. H., Jr.: 136, 246, 327, 524, 525,  
 536, 559, 560, 561, 568, 575, 582, 584  
 Steel, T. C.: 487  
 Steinle, F. W., Jr.: 489  
 Stephen, T. M.: 649  
 Stephens, R.: 315  
 Stephenson, M.: 183  
 Stevens, J. C.: 207  
 Stewart, E. C.: 78, 79, 106  
 Stewart, J. E.: 802  
 Stewart, S. H.: 984  
 Stillwagen, F. H.: 219  
 Stoakley, D. M.: 351  
 Stockwell, A. E.: 76  
 Stolarski, R. S.: 770  
 Stoner, R. C.: 130  
 Storaasli, O. O.: 831, 958  
 Stough, H. P., III: 102, 103  
 Stowe, L. L.: 758  
 Streett, C. L.: 835  
 Stuever, R. A.: 106  
 Su, J.: 338, 376, 387, 449  
 Subramanian, C. S.: 490, 491  
 Suggs, R.: 1017  
 Sullivan, B. J.: 367  
 Sullivan, B. M.: 935  
 Sun, K. J.: 514  
 Sun-Mack, S.: 700, 759, 760, 781, 783  
 Swain, M. H.: 307, 323  
 Swanson, R. C., Jr.: 456, 950  
 Swyler, K. J.: 240  
 Syed, A. A.: 908, 961  
 Szewczyk, Z. P.: 158, 576

## T

- Tadghighi, H.: 902, 951  
 Tadokoro, S.: 338  
 Tai, H.: 305, 993  
 Talbot, R. W.: 598, 771  
 Taleghani, B. K.: 159, 160, 538, 539  
 Taler, G.: 797  
 Tam, A.: 552, 553  
 Tamayama, M.: 145  
 Tanner, J. A.: 545  
 Tappan, N. D.: 592  
 Taylor, A. C., III: 60, 61  
 Taylor, L. W., III: 178  
 Tcheng, P.: 469, 481, 492, 493, 494, 495, 496  
 Telban, R. J.: 799, 803  
 Tessler, A.: 158, 577, 578  
 Teter, J. E., Jr.: 511  
 Teter, J. P.: 537  
 Thibeault, S. A.: 366, 1009  
 Thomas, J. L.: 868, 883, 952, 953  
 Thomas, R. H.: 954  
 Thomas, S.: 734, 735, 736, 737, 738, 739,  
 740, 742, 764, 767, 769, 782

Thomason, L. W.: 653, 654  
Thompson, D. W.: 385, 386  
Thompson, R. A.: 47, 59, 410  
Thornton, D. C.: 598  
Todd, E. N.: 82, 83  
Todhunter, R. G.: 334  
Torres, W.: 826  
Townsend, J. C.: 848, 849  
Townsend, L. W.: 997, 1000  
Treasure, M.: 339  
Trepte, C. R.: 621, 622, 661  
Trepte, Q.: 670, 756, 783  
Tretyakova, S. P.: 996  
Tripathi, R. K.: 992, 994, 996, 1004, 1005,  
1011, 1012, 1013, 1014, 1017  
Tripp, J. S.: 469, 481, 492, 493, 494, 495,  
496  
Troeger, L. P.: 328  
Trosset, M. W.: 884  
Troutman, P. A.: 892  
Trujillo, A. C.: 104, 150, 798  
Tsai, C-Y.: 173  
Tsushima, Y.: 748  
Tsynkov, S. V.: 877  
Turchaninov, V. I.: 877  
Turkel, E.: 950  
Turnbull, A.: 105  
Turner, D. D.: 691, 705, 706  
Turner, T. L.: 579, 934  
Turnock, D. L.: 76  
Tutterow, R. D.: 591  
Tweed, J.: 912

## U

Udd, E.: 485  
Ukeiley, L. S.: 936, 946  
Unal, R.: 217  
Upchurch, B. T.: 497  
Ustinov, M. V.: 438  
Uttal, T.: 784

## V

Valero, F. P.: 694, 774  
Van Leer, B.: 437  
Vanek, M.: 592  
Vann, L. B.: 785

Vatsa, V. N.: 38, 80  
Vaughan, M. A.: 644  
Vause, R. F.: 178, 207  
Vay, S. A.: 588, 601  
Vedeler, J. A.: 757  
Veiga, R. E.: 591  
Venkatapathy, E.: 428  
Venkatesan, C.: 695, 696, 774, 793  
Verlinde, J.: 691  
Vicroy, D. D.: 106, 629  
Villani, J. A.: 3, 16  
Vipperman, J. S.: 223, 233  
Vogler, W. A.: 76  
Volland, R. T.: 180  
Von Der Beeck, M.: 824

## W

Waas, A. M.: 536  
Wagner, J. A.: 328  
Walker, C. E.: 23, 24  
Wallace, T. A.: 329  
Waller, M. C.: 111  
Walsh, B. M.: 470, 471, 972, 973  
Walsh, J. L.: 407  
Wang, J. M.: 161  
Wang, J. T.: 162  
Wang, L-G.: 487  
Wang, P-H.: 655, 785, 795  
Wang, Q.: 81  
Wang, Y.: 771  
Wang, Z.: 192  
Warren, A. S.: 386  
Waszak, M. R.: 193  
Wat, J. K.: 955, 956  
Watson, W. R.: 957, 958  
Wawrzynek, P.: 243  
Weaver, S. P.: 668  
Webster, C. R.: 615  
Weckmann, S.: 786  
Weckmann, S. A.: 790  
Weger, R. C.: 672  
Weilmuenster, K. J.: 426, 428  
Weinstein, B.: 830  
Weinstein, L. M.: 330  
Weisenstein, D. K.: 795  
Weiser, E. S.: 359, 388, 389  
Welch, R.: 758

Welch, R. M.: 672  
West, M.: 149  
Westberg, D. J.: 588, 598, 601  
Weston, R. P.: 846  
Wheeler, D. R.: 222  
Wheeler, R. J.: 679  
White, A. L.: 861  
White, J. A.: 181  
Whitehead, A. H., Jr.: 1010  
Whiteman, D. N.: 729  
Whitley, K. S.: 249, 279, 280, 306, 370  
Whitlock, C. H.: 720  
Whitlow, W., Jr.: 82, 83  
Wielicki, B. A.: 712, 726, 758, 759, 760, 785,  
786, 787, 794  
Wieseman, C. D.: 149  
Wilber, A. C.: 673, 720, 721, 788, 789  
Wilbur, M. L.: 63, 164  
Wilding, M. M.: 836  
Wilkie, W. K.: 163, 164  
Will, J. D.: 313  
Williamson, C. K.: 656, 657  
Wilmoth, R. G.: 58, 84, 234, 445, 447  
Wilson, J. W.: 366, 992, 993, 994, 995, 996,  
997, 998, 999, 1000, 1001, 1002, 1003,  
1004, 1005, 1006, 1007, 1009, 1010,  
1011, 1012, 1013, 1014, 1015, 1016,  
1017, 1018, 1019, 1020  
Wilson, M.: 587  
Wilson, R. C.: 665  
Wilson, R. S.: 734, 735, 736, 737, 738, 739,  
740, 741, 742, 764, 767, 769, 782  
Wilson, R. V.: 417  
Wilson, W. C.: 406  
Winchenbach, G. L.: 31  
Wincheski, R. A.: 321, 331, 332, 333, 334  
Winfree, W. P.: 290, 501, 518, 893, 894, 895,  
896, 979  
Wing, D. J.: 87, 131  
Wingrove, E. R., III: 4  
Winker, D. M.: 622, 644, 658, 659, 660, 661  
Winn, P. M.: 207  
Wise, K. L.: 337  
Wise, S. A.: 976  
Witt, R. G.: 626  
Wlezien, R. W.: 439  
Wong, T.: 688, 722, 785, 786, 787, 790

Wood, C. T.: 580  
Wood, G. M.: 497  
Wood, K.: 969  
Wood, R. M.: 22, 54, 85  
Wood, W. A.: 47, 209, 218, 437, 885, 886  
Woodard, S. E.: 235, 581  
Woodgate, M.: 121  
Woodruff, S. L.: 464  
Wright, K. D., II: 498, 499  
Wu, F.: 653  
Wu, K. C.: 208, 236, 407  
Wu, X-M.: 326  
Wu, X. R.: 307  
Wurster, K. E.: 465

## X

Xapsos, M. A.: 1003, 1004, 1007  
Xu, K.: 466, 870, 873, 887, 888

## Y

Yager, T. J.: 165, 166, 167, 168, 169  
Yamaleev, N. K.: 889  
Yamamoto, K. J.: 955, 956  
Yamauchi, G. K.: 959, 960  
Yang, L-F.: 526  
Yang, P.: 671  
Yao, C-S.: 10, 33, 439  
Yates, L. A.: 56  
Yavrouian, A.: 338  
Yeager, W. T., Jr.: 63  
Yefet, A.: 890  
Yen, A.: 353  
Yin, Q-R.: 326  
Yost, W. T.: 297, 310, 319, 320, 335, 336,  
796, 797  
Young, D. F.: 666, 676, 677, 685, 697, 722,  
723, 724, 725, 755, 756, 757, 758, 759,  
760, 773, 775, 781, 783, 786, 787, 790,  
791, 792, 793, 794  
Young, J. A.: 371, 372, 390  
Young, L. A.: 960  
Young, R. D.: 246, 327, 523, 560, 561, 568,  
582, 583, 584  
Young, S. D.: 107, 108  
Younis, B. A.: 467  
Yu, J.: 500, 922, 923, 961

Yu, J. C.: 499  
Yuchnovicz, D. E.: 109  
Yue, G. K.: 662, 785, 795

## Z

Zalameda, J. N.: 308, 501  
Zang, T. A.: 86  
Zaragoza, G.: 635, 663  
Zawodny, J. M.: 654, 655, 770  
Zeil, S. J.: 986  
Zeitlin, C. J.: 997, 1000, 1004, 1005  
Zenker, T.: 690  
Zhang, B-Y.: 326  
Zhao, W.: 307  
Zhigulev, S. V.: 438  
Zhou, D. K.: 635, 663  
Zhou, Y.: 452, 460, 461  
Zimcik, D.: 120, 137, 146  
Zoby, E. V.: 465  
Zubair, M.: 985, 986, 990  
Zuckerwar, A. J.: 488, 502, 503

## Organization Index

### **Office of Director (A)**

82, 83, 414, 417, 419, 433, 434, 438, 440, 448, 449, 450, 451, 452, 458, 459, 460, 461, 464, 466, 507, 514, 804, 805, 812, 813, 817, 818, 819, 820, 821, 822, 823, 824, 825, 827, 828, 829, 838, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 880, 881, 882, 883, 884, 887, 888, 889, 890

### **Independent Program Assessment Office (AH)**

515

### **Technology Commercialization Program Office (OA)**

240, 796

### **Earth and Space Sciences Program Office (OB)**

202, 591

### **Space Access and Exploration Program Office (OC)**

14, 69, 71, 177, 178, 210

### **Advanced Subsonic Technology Program Office (OE)**

2, 3, 4, 6, 8, 9, 12, 13, 15, 16, 109

### **Intelligent Synthesis Environment Program Office (OI)**

216, 394, 839, 840, 841

### **Aerospace Systems, Concepts and Analysis Competency (RA)**

37, 65, 86, 94, 116, 117, 125, 156, 157, 201, 203, 204, 205, 206, 212, 213, 215, 217, 219, 220, 226, 227, 228, 229, 239, 398, 399, 465, 590, 809, 810, 831, 843, 878, 879, 891, 892

### **Aerodynamics, Aerothermodynamics and Acoustics Competency (RB)**

1, 5, 7, 10, 11, 17, 18, 19, 21, 22, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 38, 39, 40, 41, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 66, 67, 68, 70, 72, 73, 74, 77, 80, 81, 84, 85, 130, 147, 172, 173, 174, 175, 176, 179, 180, 181, 190, 194, 197, 198, 200, 209, 218, 231, 232, 234, 241, 289, 330, 391, 392, 409, 410, 411, 413, 415, 418, 420, 421, 425, 426, 427, 428, 430, 431, 432, 435, 436, 437, 439, 441, 442, 443, 444, 445, 446, 447, 453, 454, 455, 456, 457, 462, 463, 467, 468, 469, 472, 476, 477, 478, 479, 481, 482, 483, 486, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 502, 503, 505, 506, 530, 531, 579, 802, 806, 807, 808, 811, 835, 842, 844, 845, 846, 848, 849, 862, 863, 885, 886, 898, 899, 900, 901, 902, 903, 904, 905, 907, 908, 909, 910, 911, 912, 914, 915, 916, 917, 920, 921, 922, 923, 924, 925, 926, 927, 929, 930, 931, 932, 933, 934, 935, 936, 937,

941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 966, 980, 991

### **Structures and Materials Competency (RC)**

23, 24, 75, 76, 112, 113, 114, 115, 118, 119, 120, 121, 122, 123, 124, 126, 127, 128, 129, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 148, 149, 151, 152, 153, 154, 155, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 199, 207, 208, 214, 235, 236, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 348, 349, 350, 351, 352, 353, 354, 355, 356, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 393, 396, 397, 407, 416, 422, 423, 424, 429, 473, 474, 484, 485, 501, 504, 510, 512, 513, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 580, 581, 582, 583, 584, 797, 893, 894, 895, 896, 897, 906, 913, 918, 919, 928, 938, 939, 940, 969, 975, 976, 979, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020

### **Airborne Systems Competency (RD)**

20, 42, 43, 44, 45, 78, 79, 87, 88, 89, 90, 91, 92, 93, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 106, 107, 108, 110, 111, 131, 132, 150, 170, 171, 182, 183, 184, 185, 186, 187, 188, 189, 191, 192, 193, 211, 223, 230, 233, 395, 400, 401, 480, 550, 798, 799, 800, 801, 803, 814, 815, 816, 826, 830, 832, 833, 834, 836, 837, 847, 850, 851, 853, 854, 855, 856, 857, 858, 859, 860, 861

### **Atmospheric Sciences Competency (RE)**

222, 402, 403, 404, 405, 585, 586, 587, 588, 589, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 962, 963, 964, 965, 967, 968, 970, 1022



**Systems Engineering Competency (RF)**

29, 195, 196, 221, 224, 225, 237, 238, 347, 357, 406, 408, 412, 470, 471, 475, 487, 500, 509, 511, 592, 852, 971, 972, 973, 974, 977, 978, 981, 982, 985, 986, 987, 988, 989, 990

**Office of Safety and Mission Assurance (SC)**

105, 508

**Office of Education (SH)**

1021

**Office of the Chief Information Officer (SL)**

983, 984

## RTOP Index

RTOP 101-15-01 1008, 1012	RTOP 229-01-04 670, 671, 710
RTOP 101-21-23 1001, 1011, 1016	RTOP 229-01-71 686
RTOP 110-10-50 1017	RTOP 229-22-45 687, 735, 739, 740, 763, 764, 782
RTOP 111-10-50 995, 997, 1000, 1013, 1018	RTOP 229-22-75 692
RTOP 111-10-95 994, 998, 1019	RTOP 233-20-21 511
RTOP 146-90-04 693, 694, 698, 699, 724, 730, 743, 744, 745, 751, 755, 772	RTOP 242-23-02 214, 337
RTOP 188-96-00 709	RTOP 242-23-10 363
RTOP 199-45-16 993, 996, 999, 1002, 1003, 1004, 1005, 1006, 1009, 1014, 1020	RTOP 242-23-20 329
RTOP 225-12-02 222	RTOP 242-33-01 144, 212, 217, 236, 294, 396, 397, 465, 474, 484, 505, 939, 940
RTOP 227-92-43 591	RTOP 242-33-02 262, 388
RTOP 229-01-02 587, 665, 666, 672, 674, 678, 679, 680, 681, 682, 683, 684, 685, 691, 697, 700, 712, 713, 715, 716, 717, 721, 726, 731, 732, 734, 736, 742, 746, 750, 752, 758, 760, 761, 762, 769, 773, 781, 783, 785, 787, 790	RTOP 242-33-03 148, 208, 219, 293, 416, 422, 423, 424, 938
	RTOP 242-34-01 65

RTOP 242-80-01	RTOP 260-10-01
28, 31, 32, 47, 56, 57, 58, 59, 68, 74, 84, 209, 218, 231, 232, 234, 409, 410, 411, 420, 421, 425, 426, 428, 430, 431, 432, 437, 444, 445, 446, 447, 455, 482, 885, 886, 966, 991	211
RTOP 242-82-01	RTOP 274-00-00
94	624
RTOP 242-82-10	RTOP 274-00-93
328	349
RTOP 242-82-20	RTOP 274-00-98
359	345, 351, 504
RTOP 242-82-75	RTOP 274-00-99
367	356, 541, 592, 625, 626, 650, 970
RTOP 242-89-01	RTOP 282-10-01
427	239, 438, 544, 545, 839, 840, 841, 981
RTOP 242-90-63	RTOP 291-01-60
395	677, 688, 718, 719, 722, 775, 786, 788, 791, 794
RTOP 247-00-98	RTOP 291-01-61
259, 260	602, 613, 614, 628, 642
RTOP 251-10-01	RTOP 291-07-14
240, 796	705, 706
RTOP 251-30-07	RTOP 297-90-00
377	216, 515
RTOP 258-70-21	RTOP 322-21-51
470, 471, 480, 500, 972, 973, 977, 978	48
RTOP 259-40-01	RTOP 323-57-40
660	221
	RTOP 323-78-01
	512

RTOP 344-16-50  
630, 631, 632, 633, 634, 635, 663

RTOP 370-21-08  
603, 606, 607, 608

RTOP 505-10-11  
848

RTOP 505-50-53  
952

RTOP 505-59-53  
17

RTOP 505-63-50  
348, 353, 930

RTOP 505-64-10  
832

RTOP 505-90  
983, 985, 989

RTOP 505-90-52  
82, 83, 414, 417, 419, 433, 434, 440, 448,  
449, 450, 451, 452, 458, 459, 460, 461,  
464, 466, 507, 804, 805, 812, 813, 817,  
818, 819, 820, 821, 822, 823, 825, 827,  
828, 829, 838, 864, 865, 866, 867, 868,  
869, 870, 871, 872, 873, 874, 875, 876,  
877, 880, 881, 882, 883, 884, 887, 888,  
889, 890

RTOP 505-990-5  
824

RTOP 509-10-11  
72, 117, 147, 802, 809, 810, 845, 846,  
849, 878, 879, 931, 932

RTOP 509-10-31  
125, 156, 157, 831

RTOP 511-11-41  
535, 536

RTOP 519-20-21  
52, 62, 406, 472, 476, 477, 486, 488, 495,  
496, 506

RTOP 519-30-31  
836

RTOP 519-50-11  
847, 853

RTOP 519-50-51  
859

RTOP 519-51-11  
854

RTOP 522-11-21  
909

RTOP 522-11-41  
110, 136, 520, 524, 525, 528, 555, 556,  
558, 559, 560, 561, 569, 575, 582, 583

RTOP 522-11-48  
309, 315, 318

RTOP 522-12-51  
313, 314

RTOP 522-13-11  
143

RTOP 522-14-11  
97, 104, 150, 798, 800

RTOP 522-14-21

170, 814, 826, 830, 861

RTOP 522-18-00

501

RTOP 522-18-11

122, 123, 124, 142, 165, 166, 167, 168,  
169, 246, 255, 257, 273, 274, 278, 295,  
297, 305, 307, 308, 310, 317, 319, 320,  
321, 322, 326, 331, 332, 333, 335, 336,  
516, 517, 518, 551, 566, 568, 584, 893,  
896, 919

RTOP 522-18-31

529

RTOP 522-19-11

96, 324

RTOP 522-21-51

34, 35, 85, 120, 135, 137, 145, 146

RTOP 522-21-61

188, 189

RTOP 522-22-21

163, 182

RTOP 522-22-31

53, 66, 67

RTOP 522-22-71

398, 399

RTOP 522-24-11

385, 386

RTOP 522-25-21

191

RTOP 522-25-31

133, 134, 192

RTOP 522-25-41

112, 113, 118, 119, 141, 151, 152, 153

RTOP 522-31-11

38, 60, 415, 441, 442, 502

RTOP 522-31-21

81, 394

RTOP 522-31-51

198, 478, 489, 492

RTOP 522-31-61

21, 30, 46, 73, 80, 200, 413, 435, 436,  
456, 467, 503, 811, 898, 899, 911, 920,  
924, 926, 948, 949, 950, 953, 957

RTOP 522-31-71

577, 578

RTOP 522-31-81

23, 24, 41, 61, 86, 121, 126, 190, 843,  
844, 862, 863, 891

RTOP 522-32-00

371

RTOP 522-32-11

247, 248, 249, 279, 280, 303, 306, 312,  
339, 340, 343, 358, 370, 372, 390, 481,  
485, 513, 906, 975

RTOP 522-32-31

10, 25, 26, 27, 33, 49, 50, 51, 64, 77, 130,  
439, 443, 453, 462, 463, 579, 806, 807,  
808, 842, 936, 980

RTOP 522-32-41  
127, 128, 129, 149, 159, 160, 187, 537,  
538, 539, 540, 546, 548, 550, 563, 580

RTOP 522-33-11  
186, 193, 855, 856, 857, 858, 860

RTOP 522-33-31  
833, 837

RTOP 522-33-41  
184, 815, 816

RTOP 522-33-51  
801

RTOP 522-35-11  
132, 223, 233

RTOP 522-35-21  
850

RTOP 522-41-11  
116

RTOP 522-51  
176

RTOP 522-51-21  
408

RTOP 522-51-31  
172, 173, 174, 175, 179, 180, 181, 195,  
241, 418

RTOP 522-51-71  
14, 37, 69, 183

RTOP 528-18-11  
277

RTOP 529-10-11  
554

RTOP 532-10-14  
230

RTOP 536-16-11  
2, 9, 16

RTOP 537-05-21  
946

RTOP 537-06-32  
341, 342, 344, 354, 355, 360, 369, 373,  
374, 393

RTOP 537-06-33  
267, 299, 300

RTOP 537-06-34  
158, 429

RTOP 537-06-36  
75, 76

RTOP 537-06-37  
900, 934

RTOP 537-06-46  
368, 375

RTOP 537-06-48  
407

RTOP 537-06-49  
933

RTOP 537-07-23  
18

RTOP 537-07-51

39, 40, 42, 43, 44, 45

RTOP 537-07-52

185

RTOP 537-09-21

1007

RTOP 537-09-42

942, 955, 956, 1010

RTOP 538-02-10

243, 258, 263, 264, 272, 275, 276, 301,  
302, 323, 325, 327, 523, 567

RTOP 538-02-11

250, 894, 895

RTOP 538-03

908, 921, 922, 923, 961

RTOP 538-03-11

1, 917, 937, 958

RTOP 538-03-12

901, 912, 914, 916, 954

RTOP 538-03-13

11, 835, 925

RTOP 538-03-14

140, 530, 531, 913, 927, 929, 935, 941,  
947

RTOP 538-04-11

29, 79, 92, 93, 98, 100, 106, 111, 400

RTOP 538-04-13

89, 90, 95, 107, 108

RTOP 538-07-14

5, 7, 904, 905, 907

RTOP 538-08-12

593, 668, 701, 702, 748, 753, 754, 765,  
792

RTOP 538-08-17

1022

RTOP 538-10

533, 534

RTOP 538-10-11

289, 918

RTOP 538-10-12

253, 254, 304

RTOP 538-11-11

20, 109, 851

RTOP 538-11-22

105

RTOP 538-13-11

162, 242, 244, 245, 251, 252, 256, 270,  
292, 521, 542, 543, 557

RTOP 538-13-12

290, 291, 298, 379, 380, 381, 382, 519,  
522, 527, 572, 574, 897, 928

RTOP 538-14-12

19

RTOP 538-14-14

36, 196

RTOP 538-16-11

3, 4, 6, 8, 12, 13, 15

RTOP 538-18-11

271

RTOP 547-60-00

224, 225

RTOP 548-81-11

102, 103, 171

RTOP 552-32-11

969

RTOP 558-08-12

766

RTOP 576-01-26

87, 99, 131

RTOP 576-02

799, 803

RTOP 576-02-11

91, 101, 974

RTOP 576-02-13

88

RTOP 576-03-14

194, 902, 951, 959, 960

RTOP 576-03-15

910

RTOP 581-10-11

55, 63

RTOP 581-10-21

265, 266, 268, 269, 287, 288, 316, 570

RTOP 581-20-21

114, 115, 138, 139, 154, 155, 161, 164, 915

RTOP 581-20-31

498, 943, 944

RTOP 621-25-05

604, 646, 652

RTOP 621-45-20

609, 621, 622, 627, 629, 644, 645, 653, 654, 656, 657, 658, 659, 662, 676, 711, 737, 738, 741, 767, 770

RTOP 621-45-84

795

RTOP 621-82-52

689, 720, 776, 777, 778, 789

RTOP 622-08-51

649

RTOP 622-14-60

673, 714, 756, 759

RTOP 622-14-61

636

RTOP 622-29-26

405, 727, 728, 729

RTOP 622-29-31

733



RTOP 622-29-67

675, 704

RTOP 622-43-31

667, 695, 696, 723, 725, 747, 749, 757,  
774, 784, 793

RTOP 622-43-53

475

RTOP 622-44-41

661

RTOP 622-44-60

779, 780

RTOP 622-46-01

596, 597

RTOP 622-56-09

615, 620, 641, 655

RTOP 622-56-37

616, 648

RTOP 622-56-61

664, 669, 690, 707, 708

RTOP 622-57-72

638

RTOP 622-57-77

605

RTOP 622-61-11

585, 594

RTOP 622-63-02

586, 599, 600

RTOP 622-63-05

595

RTOP 622-63-06

768

RTOP 622-63-08

598

RTOP 622-63-10

601, 611

RTOP 622-63-13

402, 403, 404, 703, 771

RTOP 622-63-14

588

RTOP 622-65-63

637

RTOP 622-67-65

962, 963, 964, 965, 967, 968

RTOP 622-68-51

610, 617, 618, 619, 639, 640, 643, 651

RTOP 632-10-14

311, 346, 347, 357, 366, 384, 510, 532,  
547, 549, 552, 553, 562, 564, 565, 571,  
576, 581

RTOP 632-20-21

235

RTOP 632-40-41

378

RTOP 665-25-31

612, 623

RTOP 665-25-38

647

RTOP 706-12-11

199

RTOP 706-13-41

365, 376, 387

RTOP 706-31-11

457

RTOP 706-32-11

338

RTOP 706-32-21

70

RTOP 706-51-31

197

RTOP 706-51-71

71, 177, 178

RTOP 712-20-21

903

RTOP 713-10

207

RTOP 713-23-02

364

RTOP 859-00-00

203, 204, 205

RTOP 896-10-00

202, 206

RTOP 898-00-00

213

RTOP 906-43-00

201, 215, 220, 229

RTOP 906-43-01

892

RTOP 953-20-00

210, 226, 227, 228

RTOP 956-17-00

976

RTOP 962-21-00

992, 1015

RTOP 992-16-05

852, 986, 988, 990

RTOP 992-20-03

469, 490, 491, 499

RTOP 992-30-11

401, 834

RTOP 992-35-12

468, 479, 483, 493, 494

## Appendix

### Formerly Restricted Reports

The publications listed in this appendix were publicly released in 1999.

- 1 Baize, D. G. (Editor): 1997 NASA High-Speed Research Program Aerodynamic Performance Workshop, Volume I—Configuration Aerodynamics. NASA/CP-1999-209691/VOL1/PT1, December 1999, 804 p.  
Subject Category 02
- 2 Baize, D. G. (Editor): 1997 NASA High-Speed Research Program Aerodynamic Performance Workshop, Volume I—Configuration Aerodynamics. NASA/CP-1999-209691/VOL1/PT2, December 1999, 956 p.  
Subject Category 02
- 3 Baize, D. G. (Editor): 1997 NASA High-Speed Research Program Aerodynamic Performance Workshop, Volume II—High Lift. NASA/CP-1999-209691/VOL2, December 1999, 788 p.  
Subject Category 02
- 4 Baize, D. G. (Compiler): 1995 NASA High-Speed Research Program Sonic Boom Workshop—Volume II—Configuration Design, Analysis, and Testing. NASA/CP-1999-209520, December 1999, 187 p.  
Subject Category 01
- 5 Banks, D. W.; Gile-Laffin, B. E.; Kemmerly, G. T.; and Campbell, B. A.: Low-Speed Investigation of Upper-Surface Leading-Edge Blowing on a High-Speed Civil Transport Configuration. NASA/TP-1999-209538, December 1999, 62 p.  
Subject Category 02
- 6 Campbell, B. A.; Applin, Z. T.; and Kemmerly, G. T.: Subsonic Aerodynamic Assessment of Vortex Flow Management Devices on a High-Speed Civil Transport Configuration. NASA/TP-1999-209693, December 1999, 112 p.  
Subject Category 02
- 7 Campbell, B. A.; Applin, Z. T.; Kemmerly, G. T.; Coe, P. L., Jr.; Owens, D. B.; Gile-Laffin, B. E.; Parikh, P. G.; and Smith, D.: Subsonic Investigation of a Leading-Edge Boundary Layer Control Suction System on a High-Speed Civil Transport Configuration. NASA/TM-1999-209700, December 1999, 133 p.  
Subject Category 02
- 8 Campbell, B. A.; Kemmerly, G. T.; Kjerstad, K. J.; and Lessard, V. R.: Subsonic Investigation of Leading-Edge Flaps Designed for Vortex- and Attached-Flow on a High-Speed Civil Transport Configuration. NASA/TM-1999-209701, December 1999, 108 p.  
Subject Category 02

- 9** Fenbert, J. W.; Ozoroski, L. P.; Geiselhart, K. A.; Shields, E. W.; and McElroy, M. O.: Concept Development of a Mach 2.4 High-Speed Civil Transport. NASA/TP-1999-209694, December 1999, 31 p.  
Subject Category 05
- 10** Ghaffari, F.: Unstructured Grid Euler Method Assessment for Longitudinal and Lateral/ Directional Aerodynamic Performance Analysis of the HSR Technology Concept Airplane at Supersonic Cruise Speed. NASA/TP-1999-209543, December 1999, 43 p.  
Subject Category 02.
- 11** Ghaffari, F.: Unstructured Grid Euler Method Assessment for Longitudinal and Lateral/ Directional Stability Analysis of the HSR Reference H Configuration at Transonic Speeds. NASA/TM-1999-209526, December 1999, 20 p.  
Subject Category 02
- 12** Giesy, D. P.; and Christhlf, D. M.: Cg/Stability Map for the Reference H Cycle 3 Supersonic Transport Concept Along the High Speed Research Baseline Mission Profile. (NAS1-96014 Lockheed Martin Engineering & Sciences Company.) NASA/CR-1999-209527, December 1999, 37 p.  
Subject Category 08
- 13** Glaab, L. J.: Initial Piloted Simulation Evaluation of the Reference-H High-Speed Civil Transport Design During Takeoff and Recovery From Limit Flight Conditions. (NAS1-19000 Lockheed Martin Engineering & Sciences Company.) NASA/CR-1999-209523, December 1999, 113 p.  
Subject Category 08
- 14** Glaab, L. J.; Riley, D. R.; Brandon, J. M.; Person, L. H., Jr.; and Glaab, P. C.: Piloted Simulation Study of the Effect of High-Lift Aerodynamics on the Takeoff Noise of a Representative High-Speed Civil Transport. NASA/TP-1999-209696, December 1999, 51 p.  
Subject Category 02
- 15** Hahne, D. E.: Low-Speed Aerodynamic Data for an 0.18-Scale Model of an F-16XL With Various Leading-Edge Modifications. NASA/TM-1999-209703, December 1999, 169 p.  
Subject Category 02
- 16** Hahne, D. E.; and Glaab, L. J.: Experimental and Numerical Optimization of a High-Lift System To Improve Low-Speed Performance, Stability, and Control of an Arrow-Wing Supersonic Transport. NASA/TP-1999-209539, December 1999, 86 p.  
Subject Category 02
- 17** Jackson, E. B.; Raney, D. L.; Hahne, D. E.; Derry, S. D.; and Glaab, L. J.: Reference H Piloted Assessment (LaRC.1) Pilot Briefing Guide. NASA/TM-1999-209533, December 1999, 100 p.  
Subject Category 08

- 18** Kelly, J. J.; Wilson, M. R.; Rawls, J. W., Jr.; Norum, T. D.; and Golub, R. A.: F-16XL and F-18 High Speed Acoustic Flight Test Databases. NASA/TM-1999-209529, December 1999, 268 p.  
Subject Category 71
- 19** Kemmerly, G. T.; Campbell, B. A.; Banks, D. W.; and Yaros, S. F.: Low-Speed Stability-and-Control and Ground-Effects Measurements on the Industry Reference High Speed Civil Transport. NASA/TM-1999-209702, December 1999, 187 p.  
Subject Category 02
- 20** Kjerstad, K. J.; Campbell, B. A.; Gile-Laffin, B. E.; and Kemmerly, G. T.: Investigation of Vortex Flaps and Other Flow Control Devices on Generic High-Speed Civil Transport Planforms. NASA/TP-1999-209537, December 1999, 126 p.  
Subject Category 02
- 21** Kramer, L. J.; Parrish, R. V.; Williams, S. P.; and Lavell, J. S.: Effects of Inboard Horizontal Field of View Display Limitations on Pilot Path Control During Total In-Flight Simulator (TIFS) Flight Test. NASA/TP-1999-209542, December 1999, 38 p.  
Subject Category 06
- 22** Lessard, V. R.: Low Speed Analysis of Mission Adaptive Flaps on a High Speed Civil Transport Configuration. (NAS1-19672 ViGYAN, Inc.) NASA/CR-1999-209524, December 1999, 81 p.  
Subject Category 02
- 23** Lessard, W. B.: Navier-Stokes Simulation of Several High-Lift Reference H Configurations. NASA/TP-1999-209541, December 1999, 94 p.  
Subject Category 02
- 24** Londenberg, W. K.: Computational Assessment of Aft-Body Closure for the HSR Reference H Configuration. (NAS1-19672 ViGYAN, Inc.) NASA/CR-1999-209521, December 1999, 42 p.  
Subject Category 02
- 25** Mack, R. J.: Nacelle Integration to Reduce the Sonic Boom of Aircraft Designed to Cruise at Supersonic Speeds. NASA/TM-1999-209534, December 1999, 20 p.  
Subject Category 05
- 26** Mack, R. J.: A Rapid Empirical Method for Estimating the Gross Takeoff Weight of a High Speed Civil Transport. NASA/TM-1999-209535, December 1999, 20 p.  
Subject Category 05
- 27** Mann, M. J.; Carlson, H. W.; and Domack, C. S.: Design of Supersonic Transport Flap Systems for Thrust Recovery at Subsonic Speeds. NASA/TP-1999-209536, December 1999, 51 p.  
Subject Category 05

- 28** McCurdy, D. A. (Editor): High-Speed Research: 1994 Sonic Boom Workshop— Configuration Design, Analysis, and Testing. NASA/CP-1999-209699, December 1999, 304 p.  
Subject Category 02
- 29** McMillin, S. N. (Editor): 1998 NASA High-Speed Research Program Aerodynamic Performance Workshop, Volume I—Configuration Aerodynamics. NASA/CP-1999-209692/VOL1/PT2, December 1999, 953 p.  
Subject Category 02
- 30** McMillin, S. N. (Editor): 1998 NASA High-Speed Research Program Aerodynamic Performance Workshop, Volume II—High Lift. NASA/CP-1999-209692/VOL2, December 1999, 987 p.  
Subject Category 02
- 31** McMillin, S. N. (Editor): 1998 NASA High-Speed Research Program Aerodynamic Performance Workshop, Volume I—Configuration Aerodynamics. NASA/CP-1999-209692/VOL1/PT1, December 1999, 941 p.  
Subject Category 02
- 32** Morelli, E. A.; and Proffitt, M. S.: Modeling the High Speed Research Cycle 2B Longitudinal Aerodynamic Database Using Multivariate Orthogonal Functions. (NAS1-19000 Lockheed Martin Engineering & Sciences Company.) NASA/CR-1999-209525, December 1999, 85 p.  
Subject Category 08
- 33** Newman, B. A.: Multivariable Techniques for High-Speed Research Flight Control Systems. (NAS1-19858 Old Dominion University.) NASA/CR-1999-209528, December 1999, 294 p.  
Subject Category 08
- 34** Newman, B. A.; and Kassem, A.: Investigation of Inner Loop Flight Control Strategies for High-Speed Research. (NAS1-19858 Old Dominion University.) NASA/CR-1999-209522, December 1999, 171 p.  
Subject Category 08
- 35** Reaves, M. C.; and Horta, L. G.: Taxiing, Take-Off, and Landing Simulation of the High Speed Civil Transport Aircraft. NASA/TM-1999-209531, December 1999, 48 p.  
Subject Category 05
- 36** Riley, D. R.; Glaab, L. J.; Brandon, J. M.; Person, L. H., Jr.; and Glaab, P. C.: Piloted Simulation Study of a Dual Thrust-Cutback Procedure for Reducing High-Speed Civil Transport Takeoff Noise Levels. NASA/TP-1999-209698, December 1999, 72 p.  
Subject Category 02
- 37** Rivers, S. M.; and Wahls, R. A.: Turbulence Model Comparisons for a High-Speed Aircraft. NASA/TP-1999-209540, December 1999, 58 p.  
Subject Category 02

- 38** Shields, E. W.; Fenbert, J. W.; Ozoroski, L. P.; and Geiselhart, K. A.: Concept Development of a Mach 1.6 High-Speed Civil Transport. NASA/TP-1999-209697, December 1999, 25 p.  
Subject Category 05
- 39** Sotack, R. A.; Chowdhry, R. S.; and Buttrill, C. S.: High Speed Civil Transport Aircraft Simulation: Reference-H Cycle 1—MATLAB Implementation. NASA/TM-1999-209530, December 1999, 81 p.  
Subject Category 08
- 40** Williams, M. S.; Owens, L. R., Jr.; and Chu, J.: A Reynolds Number Study of Wing Leading-Edge Effects on a Supersonic Transport Model at Mach 0.3. NASA/TP-1999-209695, December 1999, 109 p.  
Subject Category 02
- 41** Wood, R. M. (Editor): First NASA/Industry High Speed Research Configuration Aerodynamics Workshop. NASA/CP-1999-209690/PT1, December 1999, 349 p.  
Subject Category 02
- 42** Wood, R. M. (Editor): First NASA/Industry High Speed Research Configuration Aerodynamics Workshop. NASA/CP-1999-209690/PT2, December 1999, 525 p.  
Subject Category 02
- 43** Wood, R. M. (Editor): First NASA/Industry High Speed Research Configuration Aerodynamics Workshop. NASA/CP-1999-209690/PT3, December 1999, 624 p.  
Subject Category 02

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 07704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE February 2000	3. REPORT TYPE AND DATES COVERED Technical Memorandum		
4. TITLE AND SUBTITLE NASA Langley Scientific and Technical Information Output—1999			5. FUNDING NUMBERS	
6. AUTHOR(S) Susan H. Stewart and Harriet B. Machie, Compilers				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) NASA Langley Research Center Hampton, VA 23681-2199			8. PERFORMING ORGANIZATION REPORT NUMBER L-17958	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) National Aeronautics and Space Administration Washington, DC 20546-0001			10. SPONSORING/MONITORING AGENCY REPORT NUMBER NASA/TM-2000-209852	
11. SUPPLEMENTARY NOTES Available electronically at the following URL address: <a href="http://techreports.larc.nasa.gov/ltrs">http://techreports.larc.nasa.gov/ltrs</a>				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Unclassified—Unlimited Subject Category 82                      Distribution: Nonstandard Availability: NASA CASI (301) 621-0390			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) This document is a compilation of the scientific and technical information that the Langley Research Center has produced during the calendar year 1999. Included are citations for Special Publications, Technical Publications, Conference Publications, Technical Memorandums, Contractor Reports, Journal Articles and Book Publications, Meeting Presentations, Technical Talks, Tech Briefs, and Patents.				
14. SUBJECT TERMS Bibliographies; Scientific and technical information; Documentation; Indexes			15. NUMBER OF PAGES 179	
			16. PRICE CODE A09	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	